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Essais sur les liens entre Mondialisation, Inégalité et Pauvreté en Asie

Dina Chhorn

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THÈSE DE DOCTORAT D'ÉTAT
DE
L'UNIVERSITÉ DE BORDEAUX

ÉCOLE DOCTORALE
Entreprise, Économie, et Société (EES)
Spécialité de Doctorat : **Inégalités, Développement, Mondialisation**

par

Dina CHHORN

**Essais sur les liens entre Mondialisation,
Inégalité et Pauvreté en Asie**

Sous la direction de

Prof. Bertrand BLANCHETON,
Professeur des Universités, Université de Bordeaux

Thèse présentée et soutenue à l'Université de Bordeaux, Septembre 20, 2019

Membres du Jury :

M. Olivier BARGAIN, Professeur des Universités, Université de Bordeaux, Président du Jury

Mme. Sandrine MESPLE SOMPS, Professeur des Universités, Université Paris Dauphine, Rapporteur

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DOCTOR OF PHILOSOPHY
OF
UNIVERSITY OF BORDEAUX

DOCTORAL SCHOOL
Economic Sciences, Management and Demographics (ED EES)
Doctoral Specialization: Inequalities, Development, Globalization

By

Dina CHHORN

**Essays on the Links between Globalisation,
Inequality and Poverty in Asia**

Under the direction of

Prof. Bertrand BLANCHETON,
Professor of Economics, University of Bordeaux

Thesis presented and defended at the University of Bordeaux, September 20, 2019

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**ESSAYS ON THE LINKS BETWEEN GLOBALISATION,
INEQUALITY AND POVERTY IN ASIA**

by

Dina CHHORN

Submitted to the Doctoral School of Economic Sciences, Management and
Demographics (ED EES)

in partial fulfilment of the requirements for the degree of

Doctor of Philosophy

at the

UNIVERSITY OF BORDEAUX

July 2019

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Doctor of Philosophy

RÉSUMÉ DE LA THÈSE EN FRANÇAIS

La thèse vise à éclairer empiriquement les liens multiples entre mondialisation, inégalités, et pauvreté aux pays asiatiques en portant une attention particulière au Cambodge. Le premier chapitre propose une perspective historique, l'héritage politique du Cambodge et son influence sur la trajectoire d'ouverture, sur l'évolution récente des inégalités, de la pauvreté et plus largement sur les performances macroéconomiques du pays. Le deuxième chapitre est centré sur le lien entre microcrédit et pauvreté au Cambodge via des données d'enquête appliquée à l'échelle de régions du pays. Le troisième chapitre se concentre sur la dimension commerciale et étudie les liens entre spécialisations commerciales et inégalités à une échelle plus globale, celle de 52 pays d'Asie et de l'Europe d'Ouest. Le quatrième chapitre souligne l'impact du développement financier sur la pauvreté et le développement humain dans les pays de l'Asie du Sud-Est. Enfin, le cinquième chapitre étudie la relation qui existe entre l'intervention du gouvernement, la qualité des institutions et les inégalités, en s'appuyant sur les données des pays de la région Asie-Pacifique.

Mots Clés: Mondialisation, inégalités, pauvreté, Asie, Cambodge

JEL Classification: F6, D6, I3

RÉSUMÉ DE LA THÈSE EN ANGLAIS

The thesis is to problematize the economics of globalisation, inequality and poverty in Asian countries with a focus on Cambodia as well. The first chapter examines with the historical perspective, the political legacy of Cambodia and its influence on the progress of openness, the recent evolution of inequality, poverty and more broadly on the country's macroeconomic performance. The second chapter focuses on the link between microfinance and poverty in Cambodia, applied across the country through the socio-economic survey data. The third chapter investigates the link between export diversification, specialization and inequality on a more global scale, that of 52 Asian and Western countries. The fourth chapter investigates the impact of financial development on poverty and human development in the Southeast Asian countries. Finally, the fifth chapter studies the association between the government intervention, institutional quality and inequality in the Asia-Pacific countries.

Keywords: Globalisation, inequality, poverty, Asia, Cambodia

JEL Classification: F6, D6, I3

Thesis Supervisor: Prof. Bertrand BLANCHETON

Title: University Professor of Economics

FOR THE MOTHERLAND AND THE HUMANKIND

Living is about to learn life as it truly is.

*In the end, we will realise that true
life is living less for ourselves.*

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Foremost, I would like to express my sincere gratitude to Prof. Bertrand BLANCHETON. It is more than words I could say to express my thankfulness to him. As my supervisor, he has supported me in countless ways. During the dissertation and progress, he contributed to the defining of the topic and research problems that rely on a cutting edge scientific methodology and go along well with my life goal. He reviewed my project timeline so that I could mobilize freely to work in Cambodia, France, Estonia and Switzerland. He suggested me to have many rendezvous with experts from the Groupe de Recherche en Économie Théorique et Appliquée (GREThA) and abroad so that I could access to the specific resources, learn, and save a lot of time in achieving the results. At the last stage of the thesis, he gave systematic comments, corrected manuscript and formed the committee members for my thesis defence. He authorised me to work with full freedom, and make my own decision. He always appreciated my work and cared for the non-academic aspect of my personal life, which means a lot to me. He also recruited me to teach “*Econometrics and Statistics*” at the University of Bordeaux, which provides me with a great experience.

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Being born in a very poor family from one of the poorest countries on earth and having only a single-parent *my mother* since the age of two years old, I never dreamt to study in higher education. I remember that I liked reading a lot as a small kid in primary school. Reading has become my habit until nowadays. In the class, I liked very much two

subjects, mathematics and historical literature. With this hobby and, probably, the influence from my childhood friend *Daro*, I decided to apply for the scholarship from the Royal Government of Cambodia (RGC) to pursue my bachelor degree in Economic Sciences and Management. Then, I took another exam to enter a special class of dual degree under the international cooperation between the Université Lumière Lyon 2 of France and the Royal University of Law and Economics (RULE) of Cambodia. I was much more interested in Economic Sciences than Management, especially the courses related to macro-economics, history of economic thought, monetary economics, macro-dynamics and public economics. I learned a lot from Prof. Jean-Jacque PAUL, M. Soleil LAMUN, M. Dara SOK, Prof. Santi GÉRARD and Prof. Nicolas CHAIGNEAU. However, I was probably too young, at that time, to understand profoundly Economics, but I have been feeling that Economics can solve problems of society and the world. Therefore, I have always dreamt of going further if I had the chance.

Life keeps going on. Because of hard work and also luck, I was granted for the scholarship from the Ministry of Europe and Foreign Affairs of the French government to pursue a master degree in Quantitative and Monetary Economics in Lyon. Studying in France has brought me, not only, to go further in Economics, but also, to learn from French or Western professors and societies. Afterwards, I returned to Cambodia to work and teach over there before pursuing my PhD study. My grateful attitude goes to Prof. Yannick BINEAU, Associate Professor of Economics at the University of Lille, and also my former director in Cambodia for sending my research proposal to Bordeaux.

Along the way to finish this PhD thesis, it is very challenging and demanding. However, working with my supervisor is a great and joyful gift of life. Meeting him for the first time, he asked me: *“Pourquoi faire un doctorat et après?”*, in English, i.e. *“What it meant for me to study PhD and what is next?”*. I replied: *“C’est l’amour pour mon pays. En fait, je voudrais devenir Professeur des Universités de Sciences Économiques et Économiste en Chef pour le gouvernement du Cambodge.”*, in English, i.e. *“It is the love for my country. I would like to become Professor of Economics and Chief Economist for the government of Cambodia.”* He also

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“No society can surely be flourishing and happy,
of which the far greater part of the members are
poor and miserable.”

Adam Smith. 1776. “An Inquiry into the
Nature and Causes of the Wealth of Nations.”

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CHAPITRE INTRODUCTIF EN FRANÇAIS

Le monde dans son ensemble est devenu plus profondément interconnecté et interdépendant dans presque toutes les régions de la planète et à un niveau qu'il n'a jamais connu. On fait valoir que, compte tenu de la paix mondiale historique, de la mondialisation économique, et du progrès humain, le monde que nous vivons est bien meilleur que n'importe quand dans l'histoire de l'humanité. À la fois, le monde partage également de nombreux défis mondiaux, y compris les inégalités mondiales, la pauvreté, le changement climatique, le terrorisme et tout le reste, dont quelques de risques mondiaux inattendus peuvent détruire tout progrès humain et rendre le monde vulnérable.

Pendant les dernières années, les thèmes de la mondialisation, des inégalités et de la pauvreté sont parmi les questions les plus largement débattues dans les débats sur les politiques académiques et économiques. La dernière mise à jour des sources de données et de nouveaux phénomènes politiques nous a amenés à réexaminer et repenser pourquoi la société divisée est importante et comment la mondialisation peut laisser une inégalité énorme entre les gagnants et les perdants au sein des sociétés. Il s'agit du *Credit Suisse Global Wealth Reports*¹, du *Oxfam report on global inequality*², du *World Inequality Database*³, de l'âge de *Trump* aux États-Unis, de l'événement choquant du *Brexit* de l'Union Européenne (UE), et du phénomène du *Populisme* dans les pays avancés. Il n'y a pas d'exception pour les pays en développement. Elle est considérée comme une nouvelle tendance sociale et politique d'anti-mondialisation et d'anti-coopération internationale. Cependant, le problème n'est pas nouveau.

¹ <https://www.credit-suisse.com/corporate/en/research/research-institute/global-wealth-report.html>

² <https://www.oxfam.org/en/research/reward-work-not-wealth>

³ <https://wid.world/>

Les Penseurs et le Patrimoine sur l'Économie de la Mondialisation, des Inégalités et de la Pauvreté

Connu comme le père de l'économie ou le père du capitalisme, Adam Smith a également averti qu'aucune société ne peut sûrement être florissante et heureuse, dont la plus grande partie des membres sont pauvres et misérables (Smith 1776), et c'est même qu'il a trouvé et défendu le principe de l'économie capitaliste, qui laissera par conséquent une inégalité économique sans fin.

Environ deux siècles et demi depuis l'introduction de *The Theory of Moral Sentiments* en 1759 et *An Inquiry into the Nature and Causes of the Wealth of Nations* en 1776 par Adam Smith, la façon dont l'humanité perçoit la richesse, le revenu, la pauvreté et les inégalités sont toujours un débat controversé. Piketty (2013) indique que le débat intellectuel et politique sur la répartition de la richesse a longtemps été basé sur une abondance de préjugés et une rareté de faits, mais il a également souligné que pour être sûr, ce serait une erreur de sous-estimer l'importance de la connaissance intuitive que chacun acquiert des richesses et des niveaux de revenus contemporains, même en l'absence de tout cadre théorique ou d'analyse statistique. Le film et la littérature, les romans du XIX^{ème} siècle en particulier, regorgent d'informations détaillées sur la richesse relative et le niveau de vie des différents groupes sociaux, et en particulier sur la structure profonde de l'inégalité, la manière dont elle est justifiée et son impact sur la vie individuelle. De même, entre la fin du 20^{ème} siècle et le début du 21^{ème} siècle, la compréhension commune de cette question mondiale devient cependant de plus en plus perceptible, grâce à la nouvelle mesure commune mondiale et à des discussions plus ouvertes par rapport à ce qui a été fait par le passé.

Pour donner un exemple, l'analyse de Karl Marx dépendait des perspectives qualitatives plutôt que des perspectives quantitatives. Karl Marx est connu comme le philosophe, économiste, historien, sociologue, théoricien politique, journaliste et

socialiste révolutionnaire.⁴ Contre l'idéologie libérale d'Adam Smith et de David Ricardo (voir, par exemple, Smith 1776, Ricardo 1817), Karl Marx dans *Das Kapital* (1867) a prédit que le capitalisme conduirait les riches à s'enrichir et les pauvres à rester pauvres. Il a également prédit que le capitalisme conduirait à une explosion économique et à un effondrement. Marx a également prédit que le capitalisme conduirait à la mondialisation et qu'un groupe d'entreprises aurait une énorme domination du marché. Cependant, Marx a sous-estimé la capacité du capitalisme à enrichir tout le monde en rendant les produits beaucoup moins chers. Depuis les années 1980s, le nombre de personnes en situation de pauvreté absolue a diminué d'environ un milliard. Il s'est également trompé sur la capacité du capitalisme à se réformer en créant des états-providence qui redistribuaient la richesse par la fiscalité. Bien qu'il y ait beaucoup à apprendre de Marx, sa solution était bien pire que la maladie. Dans le même temps, on ne peut pas dire que le capitalisme d'aujourd'hui, dominé par d'immenses inégalités et crises financières, a triomphé (The Economist 2018).

À l'époque moderne, la disparité sociale et économique est analysée avec de longues données historiques. Selon Alvaredo, et al. (2018), plusieurs bases de données sur les inégalités mondiales existent aujourd'hui. Ces bases de données sur les inégalités comprennent par exemple, *World Bank's PovcalNet*, *Luxembourg Income Study (LIS)*, *Socio-Economic Database for Latin America and the Caribbean (SEDLAC)*, et *OECD Income Distribution Database (IDD)*. Il existe également diverses sources qui combinent les bases de données susmentionnées pour accroître leur couverture, les plus importantes étant *World Panel Income Distribution (LM-WPID)*, et *Standardized World Income Inequality Database (SWIID)*. Enfin, les Nations Unies (NU) compilent *World Income Inequality Database (WIID)*, qui consiste en un recensement presque exhaustif

⁴ https://en.wikipedia.org/wiki/Karl_Marx

de toutes les bases de données primaires et des initiatives de recherche individuelles, avec des informations détaillées sur les concepts utilisés.

L'économiste et statisticien prix Nobel américain, Simon Kuznets, a innové la courbe de Kuznets, qui a étudié le cycle à long terme entre la croissance économique et l'inégalité des revenus (Kuznets 1955). En utilisant les comptes du revenu national avec des données américaines, Simon Kuznets est le premier économiste, qui a suggéré la transformation de l'économie en une science empirique et à la formation d'une histoire économique quantitative (Abramovitz 1986). L'économiste serbo-américain, Branko Milanović, connu pour ses études sur la répartition des revenus dans le monde et entre et au sein des inégalités, a utilisé l'histoire, la littérature et les histoires pour expliquer comment la richesse est répartie de manière inégale dans notre monde, aujourd'hui et dans le temps (Milanovic 2012). L'économiste prix Nobel anglo-américain, Angus Deaton, utilise des enquêtes auprès des ménages pour mesurer et analyser la façon dont les gens vivent, combien ils dépensent et sur quoi, a longtemps été utilisé comme un outil politique, pour rendre visibles les conditions de vie des pauvres à ceux qui vivent dans pouvoir, choquer et agiter pour la réforme. Ou, en un mot, c'est pour mesurer et comprendre le comportement, le bien-être, la pauvreté et les inégalités (Deaton 2016). Le succès du *Capital au 21^{ème} Siècle* de l'économiste français, Thomas Piketty, pour ses études sur la recherche sur les Hauts revenus nous a permis de voir comment la richesse et les inégalités de revenus ont évolué en Europe et aux États-Unis depuis le XVIII^{ème} siècle (Piketty 2013). Jusqu'à récemment, les études sur les inégalités, dans le cadre du *Projet WID.world* par l'équipe de Piketty, ont eu tendance à se concentrer sur les pays développés d'Europe, d'Amérique du Nord et du Japon, et des pays émergents et des pays en développement, dont la Chine, l'Inde, le Brésil, l'Afrique du Sud, La Russie et le Moyen-Orient (Alvaredo, et al. 2018). L'économiste britannique, Anthony B. Atkinson, dans *Inequality – What Can Be Done?*, a expliqué non pas l'inégalité mondiale, mais

davantage l'inégalité générale et son accent est davantage mis sur ce qui se cache derrière l'inégalité dans les pays développés (Atkinson 2015).

En ce qui concerne la réflexion sur la relation causale entre la mondialisation, la pauvreté, la distribution des revenus et ses mécontents, Eli Heckscher, Bertil Ohlin, Wolfgang Stolper, Paul Samuelson, Jagdish Bhagwati, Anne Krueger et d'autres ont soutenu la promotion de la libéralisation du commerce et la réduction des barrières commerciales et migratoires à améliorer la croissance économique et la répartir équitablement (Heckscher 1919, Ohlin 1933, Stolper et Samuelson 1941, Samuelson 1953, Bhagwati 1964, Krueger 1983). L'anthropologue indo-américain, Arjun Appadurai, connu comme le grand théoricien de la mondialisation, des études et de l'importance de la modernité des États-nations. Il a soutenu en théorie que la mondialisation concerne également les flux culturels et l'échange d'idées, et pas seulement le commerce international et les flux financiers (Appadurai 1996). Giovanni Andrea Cornia, Pinelopi Goldberg et David Autor figurent parmi les principaux économistes, qui fournissent une revue approfondie de la littérature connexe et une analyse économétrique considérable des effets de la mondialisation sur les inégalités et la pauvreté (Cornia 2004, Goldberg et Pavcnik 2007, Autor 2018).

L'économiste prix Nobel américain, Joseph Stiglitz, a largement contribué à la recherche entre la mondialisation et ses mécontents, y compris *Globalisation and Its Discontents*; *Fair Trade for All: How Trade Can Promote Development*; *Making Globalisation Work*; *The Price of Inequality: How Today's Divided Society Endangers Our Future*, et une version revisitée de *Globalisation and Its Discontents Revisited: Anti-Globalisation in the Era of Trump*. Tout au long de ses travaux, Joseph Stiglitz souligne comment la mondialisation a été contrôlée par les élites, y compris les institutions financières internationales (Stiglitz 2002, 2006, 2012, 2017, Stiglitz et Charlton 2005, Drezner 2019). Un autre économiste prix Nobel américain, Paul Krugman, considéré comme penseur de la mondialisation par *Alternatives Économiques* (2019), est également connu

comme l'un des principaux défenseurs du libre-échange et de la mondialisation. Cependant, il souligne également que l'hyper-globalisation depuis les années 1980 a joué son rôle dans l'explication de la montée des inégalités.

Branko Milanović, dans *Global Inequality: a New Approach for the Age of Globalisation*, explique les forces bénignes et malignes qui font monter et descendre les inégalités au sein des nations et entre elles, en s'appuyant sur de vastes ensembles de données et des recherches de pointe. Il révèle également qui a été le plus aidé par la mondialisation, qui a été retenu et quelles politiques pourraient faire pencher la balance vers la justice économique (Milanovic 2016). Il est possible que les inégalités augmentent dans la plupart ou la totalité des pays, même si elles diminuent à l'échelle mondiale. Et en effet, cela a été largement le cas. La mondialisation a augmenté les revenus de nombreux segments de la population dans de nombreux pays, mais au prix d'une inégalité croissante dans de nombreux pays (Lawson 2017).

The Great Escape: Health, Wealth, and the Origins of Inequality d'Angus Deaton explique comment la mondialisation influe sur la croissance économique et les inégalités. À leur tour, les inégalités affectent les progrès. Ça peut être bien. Les enfants indiens voient ce que l'éducation peut faire et vont aussi à l'école. Cela peut être mauvais si les gagnants tentent d'empêcher les autres de les suivre, en remontant les échelles derrière eux. Les nouveaux riches peuvent utiliser leur richesse pour influencer les politiciens afin de restreindre l'éducation publique ou les soins de santé dont ils n'ont pas besoin eux-mêmes (Deaton 2013).

L'économiste français, François Bourguignon, dans *the Globalisation of Inequality*, examine les liens complexes et paradoxaux entre une économie mondiale dynamique qui a élevé le niveau de vie de plus d'un demi-milliard de personnes dans les pays émergents comme la Chine, l'Inde et le Brésil, et de façon exponentielle augmentation des inégalités au sein des pays. Explorant le rôle de la mondialisation dans l'évolution des inégalités, Bourguignon adopte une approche originale et

véritablement internationale de la diminution des inégalités entre les nations, de l'augmentation des inégalités au sein des nations et des politiques qui pourraient atténuer les effets négatifs des inégalités (Bourguignon 2015).

Pour faire face aux inégalités, il s'agit de discussions sans fin et il n'y a pas de réponse à ce qui est tout à fait bien et mal. L'historien autrichien, Walter Scheidel, dans *The Great Leveler: Violence and the History of Inequality from the Stone Age to the Twenty-First Century*, a expliqué que seules la violence et les catastrophes ont systématiquement réduit les inégalités à travers l'histoire du monde (Scheidel 2017). Cependant, Joseph Stiglitz et Paul Krugman croient toujours que seul le gouvernement peut sauver le capitalisme. Thomas Piketty et Emmanuel Saez ainsi que son équipe dans le cadre du projet du Manifeste pour la Démocratisation de l'Europe⁵ figurent également parmi les principaux économistes, qui croient que l'État peut intervenir et changer le capitalisme. Pour Piketty, des niveaux élevés d'inégalité sont un problème - gâcher les incitations économiques, faire pencher les démocraties en faveur d'intérêts puissants et saper l'idéal selon lequel tous les êtres humains sont créés égaux. Le capitalisme n'est pas s'autocorrigé vers une plus grande égalité, c'est-à-dire qu'une concentration excessive de richesse peut avoir un effet boule de neige si elle n'est pas contrôlée. Les gouvernements peuvent jouer un rôle constructif pour compenser les tendances à la boule de neige s'ils le souhaitent et quand ils le souhaitent (Gates 2014). Pour faire face à ce problème, Thomas Piketty et Emmanuel Saez proposent une redistribution à travers un impôt global progressif sur la richesse (Tanenhaus 2014).

A Manifesto for Social Progress: Ideas for a Better Society par l'économiste français Marc Fleurbaey et *Rethinking Society for the 21st Century* vise à fournir des idées pour une société meilleure à cette époque où beaucoup ont perdu espoir au milieu des conflits, le terrorisme, la destruction de l'environnement, les inégalités économiques

⁵ <http://tdem.eu/en/manifesto>

et l'effondrement de la démocratie. Ce projet décrit comment repenser et réformer nos institutions clés, marchés, entreprises, politiques de protection sociale, processus démocratiques et gouvernance transnationale, pour créer de meilleures sociétés fondées sur les principes fondamentaux de la dignité humaine, de la durabilité et de la justice (Fleurbaey 2018, i).

En fait, l'idée de lutter contre les inégalités ou de repenser la justice sociale par l'intervention du gouvernement n'a rien de nouveau. Des économistes, dont Branko Milanović et Thomas Piketty, se sont demandé s'il s'agissait du retour de Karl Marx. Cependant, ce qui est nouveau et spécial pour le moment, c'est que nous parlons de ce problème à l'ère de la mondialisation, qui est complètement différente du passé. Dans le passé, la réflexion sur le problème pouvait être limitée et résolue au niveau national; pourtant, pour le problème d'aujourd'hui, c'est à l'échelle du niveau mondial. Cela signifie que même un pays peut, en principe, résoudre avec succès son problème et améliorer ses statistiques, cela ne signifie pas que le pays peut résoudre le problème avec succès dans la réalité.

Problématique sur l'Asie et le Cambodge

Les discussions historiques, politiques et économiques sur la mondialisation, les inégalités et la pauvreté et la manière dont leur existence pourrait être liée les unes aux autres ont longtemps été centrées sur les économies avancées, grâce à la disponibilité à la fois d'une base de données enregistrées de longue date et d'éminents intellectuels occidentaux.

Sans sources de données précises et fiables et sans tests théoriques basés sur des méthodes statistiques et économétriques, il est impossible de tout voir tel qu'il est réellement et cela peut être opposé comme nous l'avons pensé. Certains pourraient soutenir que les économies avancées traditionnelles, principalement représentées par les économies occidentales, sont le modèle universel des systèmes économiques et

politiques. Cependant, comme l'explique Robert Solow, il n'y a pas de théorie économique de tout (Todaro et Smith 2017). Lorsque les économies mondiales changent, le modèle standard de la pensée économique changerait également et c'est important pour les économies asiatiques, qui ne suivront probablement pas un modèle de développement similaire à celui de l'Occident.

Pour donner un exemple, dans les économies les plus avancées, c'est-à-dire les pays occidentaux, on croît de plus en plus que les forces de la mondialisation ne sont pas toutes bonnes; les gens, non seulement les citoyens ordinaires, mais aussi les gens politiques, pensent que la vie était meilleure dans le passé et que les fruits de la mondialisation pourraient ne revenir qu'aux hauts revenus et au reste du monde (Gray 2017, Willige 2017). Les sentiments négatifs à l'égard de la mondialisation et de la coopération internationale parmi de nombreux citoyens des classes moyennes et inférieures pourraient être l'une des principales raisons qui ont conduit aux chocs politiques du *Brexit* et de *Trump* en 2016. La montée du *Populisme*, principalement de droite, est le développement le plus important de la politique européenne du 21^{ème} siècle (Galston 2018), et c'est un signal clair indiquant aux politiciens que les motifs ne peuvent plus tenir et ont besoin de quelques changements. Dans le même temps, nous observons également diverses tendances sociales survenues dans les pays occidentaux au cours des dernières décennies, telles que la stagnation des salaires, une baisse globale de la mobilité sociale, une perte de sens de l'unité et une mentalité croissante de «nous contre eux» et, par conséquent, il y a des débats sans fin sur la hausse des Hauts revenus 0,01%, des Hauts revenus 0,1%, ou des Hauts revenus 1%. Cependant, sur la base des résultats d'une étude empirique dans cette thèse, nous constatons que l'effet de la mondialisation n'augmente pas l'inégalité des revenus dans les pays occidentaux mais diminue, en particulier dans les États membres de l'UE. En d'autres termes, l'effet de la mondialisation ne devrait pas être une source majeure de préoccupation concernant les inégalités dans les pays occidentaux. C'est pourquoi nous pourrions soupçonner que les bouleversements politiques de la mondialisation

pourraient également être liés au reste du monde. Dans ce cas, parce que le bien-être des citoyens est évalué relativement non seulement dans leur pays, mais également par rapport au reste du monde, l'Occident doit proposer un nouveau contrat social national et mondial.

D'un côté, les principaux commentateurs asiatiques ont considéré la mondialisation comme un mécanisme positif pour promouvoir la croissance économique, réduire la pauvreté et augmenter le niveau de vie des classes basses et moyennes, ainsi que la conviction que les forces de la mondialisation permettront à ces économies émergentes pour rattraper les pays avancés. C'est ce que prédit la théorie de la croissance du lauréat du prix Nobel Robert Solow et du grand historien économique de notre époque, Angus Maddison. D'un autre côté, il est à craindre que les fruits de la mondialisation ne soient pas répartis également, en particulier, les avantages pourraient ne pas atteindre les plus pauvres de chaque pays. Cela pourrait entraîner une aggravation des inégalités de revenus à l'intérieur des pays et entre eux, ce qui constituerait à son tour un défi majeur pour le progrès économique, social et politique. Au cours des dernières décennies, les pays d'Asie-Pacifique, par rapport à la part mondiale, ont réalisé leur développement économique de manière impressionnante; cependant, il est en retard par rapport à la préoccupation de la montée des inégalités économiques. Le film de comédie romantique hollywoodien intitulé «*Crazy Rich Asians*», le film coréen intitulé «*Parasite*» ou le drame taïwanais intitulé «*Meteor Garden*», qui sont célèbres à l'échelle internationale, peuvent être des preuves sociales pour expliquer comment les revenus les plus élevés vont loin du reste de la société. Selon la dernière base de données mise à jour du rapport sur la richesse mondiale du Credit Suisse et de l'Oxfam, le nombre de super-riches, appelés millionnaires et milliardaires, allant de l'Australie, la Chine, Hong Kong, Taiwan, l'Inde, l'Indonésie, le Japon, la Corée du Sud, la Thaïlande, Vietnam et autres, a dépassé celui de l'Amérique du Nord et de l'Europe. Autre signe d'augmentation des inégalités, le coefficient de Gini des revenus en Asie-Pacifique est passé de 0,37 à 0,48

entre 1990 et 2014 tandis que l'inégalité de richesse est encore plus grande; d'autre part, la région Asie-Pacifique abrite également près des deux tiers des travailleurs pauvres du monde (Ana 2018). Entre les pays, il existe une énorme inégalité entre les membres des économies asiatiques. Pour donner un exemple, le PIB par habitant de Singapour est près de 37 fois supérieur au PIB moyen par habitant des pays CLMV, Cambodge, Laos, Myanmar et Vietnam (basé sur l'estimations de la Banque mondiale).

En analysant la problématique à l'échelle mondiale, de nombreuses réponses peuvent être trouvées dans la littérature existante. Cependant, si nous souhaitons comprendre un contexte d'étude spécifique, par exemple dans les pays asiatiques où nous pouvons trouver d'énormes différences dans leur système économique, stade de développement, politique, société ou culture, et/ou avec un accent particulier sur le Cambodge avec environ 16 millions de personnes, la légitimité des questions est toujours en cause.

- *Avec une attention particulière sur le Cambodge, que pouvons-nous comprendre de l'influence historique de la mondialisation sur la dynamique et la vulnérabilité de la pauvreté et des inégalités depuis le régime des Khmers rouges (1975-1979)?*
- *En étant nommée Nation of Debtors par Bloomberg en 2018, quelle peut être l'influence du développement financier grâce à la microfinance sur la pauvreté et le bien-être du Cambodge?*
- *S'étendant à l'échelle mondiale, que savons-nous vraiment de l'évolution de la mondialisation au niveau désagrégé de la diversification et de la spécialisation des exportations à long terme dans les pays asiatiques et occidentaux?*
- *La dynamique de la mondialisation dans le développement financier conduit-elle à réduire la pauvreté et à augmenter le développement humain? Que savons-nous vraiment de l'évolution de cette relation dans les pays d'Asie du Sud-Est?*
- *Enfin, compte tenu des différentes institutions politiques, l'intervention gouvernementale peut-elle être utilisée comme des outils efficaces pour gérer les revenus les plus élevés dans les pays d'Asie-Pacifique?*

Dans cette thèse, j'essaierai de répondre à toutes ces questions avec les hypothèses prévisibles selon lesquelles, du chercheur en début de carrière, les

réponses sont imparfaites, incomplètes et doivent s'améliorer à la fois de par sa nature théorique et son économétrie empirique. Cependant, il peut fournir une analyse plus large et plus approfondie, grâce à une littérature plus spécifique, une base de données supplémentaire disponible, des discussions, des commentaires et des commentaires des collègues en Asie et en Occident ainsi que le reste.

Structure de la Thèse et Principaux Résultats

Réunissant de multiples dimensions, y compris la perspective historique, la diversification et la spécialisation des exportations, le développement financier, l'intervention publique et la qualité institutionnelle, l'objectif de cette thèse est de problématiser, qualitativement et quantitativement, à court et à long terme, l'économie de la mondialisation, les inégalités et la pauvreté dans les pays asiatiques, en particulier au Cambodge. La thèse est combinée de cinq chapitres traitant des liens empiriques entre la mondialisation, les inégalités et la pauvreté dans le contexte cambodgien, asiatique et mondial.

Le premier chapitre, intitulé «**Understanding the Influence of Globalisation on Historical Dynamics and Vulnerability of Poverty and Inequality in Cambodia since the Khmer Rouge Regime**», examine avec la perspective historique, l'héritage politique du Cambodge et son influence sur les progrès de l'ouverture, l'évolution récente des inégalités, de la pauvreté et plus largement des performances macroéconomiques du pays. Surtout, il s'intéresse à la question de savoir si la mondialisation (à travers notamment le commerce international, la diversification et/ou la spécialisation des exportations, le mouvement international des flux de capitaux, les migrations et la technologie) contribue de manière significative à avoir une influence sur la pauvreté et les inégalités au Cambodge. En bref, les résultats suggèrent que la mondialisation, via les canaux traditionnels du commerce international et des flux de capitaux, affecte les résultats de la pauvreté et des

inégalités beaucoup moins positives que nous ne le pensons probablement ou de manière indirecte dans l'histoire du Cambodge. L'impact positif de l'ouverture du Cambodge résulte de l'amélioration des ménages; pourtant, ils représentent principalement les ménages vivant dans la capitale Phnom Penh et dans d'autres zones urbaines.

Le deuxième chapitre, intitulé «**Microfinance Illusion, Poverty and Welfare in Cambodia**»⁶, se concentre sur le lien entre l'ouverture financière et la pauvreté au Cambodge à travers les données d'enquêtes socio-économiques, appliquées à travers le pays. Les études les plus récentes au niveau national mettent l'accent sur l'échec des microcrédits au Cambodge étant donné que la mauvaise pratique est liée au taux d'intérêt élevé, au prêt non productif, au surendettement, au *landless* et à la migration. Cet article examine l'effet des microcrédits, en focalisant également sur l'accès aux prêts formels et productifs, en utilisant des données en 2015 de 411 ménages, qui sont bénéficiaires de la communauté de Coopérative Agricole (CA) soutenue par le *World Vision*, dans 9 provinces du Cambodge. Le modèle à variables qualitatives binaires ainsi que le modèle de Tobit, en adressant l'effet du traitement endogène, ont été appliqués. Les résultats montrent que l'accès aux microcrédits réduit la pauvreté et améliore le bien-être des ménages, mesuré par le revenu par habitant. Par contre, il n'y a pas d'effet significatif sur les actifs économiques et les dépenses sur le bien-être des enfants après que le test d'exogénéité de Wald et l'estimateur de khi-carré minimum de Newey ont été estimés. Néanmoins, ces résultats doivent être interprétés avec prudence, car les données sont sujettes à une sélection d'échantillon spécifique.

⁶ Ce chapitre est basé sur l'article intitulé "**Effect of Microfinance on Poverty and Welfare: New Evidence from 9 provinces in Cambodia**", et publié comme Cahiers du GREThA, n°2018-12. <https://econpapers.repec.org/paper/grtwpegrt/2018-12.htm>. Ce document a été présenté à Seminar MEC9030 / European Project (Horizon 2020 Grant No. 734712). Octobre 01, 2018. Tallinn, Estonia.

Le troisième chapitre, intitulé «**Export Diversification, Specialization and Inequality: Evidence from Asian and Western Countries**»⁷, examine le lien entre la spécialisation commerciale et les inégalités à une échelle plus mondiale, celle de 52 pays asiatiques et occidentaux. Plus précisément, ce chapitre examine l'effet dynamique de la mondialisation au niveau désagrégé de la diversification des exportations sectorielles et de la spécialisation manufacturière sur l'inégalité des revenus à l'aide d'un ensemble de données de panel de 52 pays asiatiques et occidentaux de 1988 à 2014. Le chapitre utilise des modèles de données de panel dynamiques appliquant *System Generalized Method of Moments (GMM)*. Les résultats suggèrent qu'il n'y a pas de relation statistiquement significative entre la spécialisation manufacturière et les inégalités alors que la diversification sectorielle des exportations a été le moteur de l'inégalité. Pour les sous-groupes de pays, une plus grande diversification sectorielle des exportations accroît les inégalités, et une spécialisation dans le secteur manufacturier diminue les inégalités dans les pays asiatiques à revenu élevé et les États membres de l'UE. De plus, l'étude constate des effets insignifiants dans les pays asiatiques à faibles revenus et les pays Anglo-Saxons. Dans cette perspective, les implications politiques concernent la mise en œuvre de la politique industrielle pour développer les spécialisations manufacturières de base (travail non qualifié).

Le quatrième chapitre, intitulé «**Financial Development, Poverty and Human Development in the Fintech age: a Regional Analysis of the Southeast Asian States**»⁸, étudie l'effet du développement financier à l'ère *Fintech*, mesuré par la *broad*

⁷ Ce chapitre est basé sur l'article publié intitulé "**Export Diversification, Specialisation and Inequality: Evidence from Asian and Western Countries**", co-écrit avec Professeur Bertrand Blancheton dans *the Journal of International Trade & Economic Development*. 28(2), 189-229. <https://doi.org/10.1080/09638199.2018.1533032>. Ce document a été présenté à the Seminar Bordeaux-Development. February 9, 2017, Bordeaux, France.

⁸ Ce chapitre a été rédigé lors de la visite à Tallinn University of Technology, Estonia. Ce projet a reçu un financement de European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 734712.

money, le crédit intérieur et la *mobile money*, sur la pauvreté et le développement humain dans les économies d'Asie du Sud-Est. En utilisant un ensemble de données longitudinales déséquilibrées (1990-2017), les résultats suggèrent que la *broad money* et le crédit intérieur contribuent à la réduction de la pauvreté et favorisent le développement humain. Le rôle de *mobile money* ne semble avoir un impact statistiquement positif que si nous analysons avec le développement humain. De plus, lorsque nous examinons les différents stades de développement économique, politique et institutionnel dans cette région, nous avons constaté que l'effet positif de la *broad money* et du crédit intérieur ne se retrouve principalement que dans les pays moins développés et moins démocratiques. *Mobile money*, d'autre part, s'avère statistiquement promouvoir le développement humain dans les deux groupes de pays, mais il n'y a pas de relation statistique pour l'analyse de la pauvreté.

Enfin, le cinquième chapitre, intitulé «**Government Intervention, Institutional Quality and Inequality: Evidence from Asia-Pacific Countries (1988-2014)**»⁹, examine la relation d'équilibre à long terme entre les dépenses publiques, la qualité institutionnelle et l'inégalité des revenus dans les pays d'Asie-Pacifique aux antécédents institutionnels divers. En appliquant des méthodes de co-intégration de panel avec un ensemble de données de 1988 à 2014, nos principales conclusions suggèrent que les dépenses publiques ont un effet permanent à long terme négatif sur l'inégalité des revenus dans les pays avec une qualité institutionnelle plus faible. Son effet n'a qu'un lien de causalité à sens unique de Granger avec l'inégalité des revenus. Cependant, il n'y a pas suffisamment de preuves statistiques d'une telle relation à long terme, lorsque nous estimons l'effet dans les pays avec une qualité institutionnelle plus forte ou combinons tous les pays d'Asie-Pacifique. Les forces mondialisées,

⁹ Ce chapitre est co-écrit avec le professeur Bertrand Blancheton et il a été présenté lors de deux conférences internationales: the 6th Regulating for Decent Work Conference: Work and Well-being in the 21st Century. July 8-10, 2019, Geneva, Switzerland, et the Eighth Meeting of the Society for the Study of Economic Inequality (ECINEQ), July 3-5, 2019, Paris, France. It est "Revise and Resubmit" à the *Asian Development Review*.

mesurées par l'ouverture commerciale, augmentent l'inégalité des revenus tandis que la croissance démographique explique négativement l'inégalité des revenus dans tous les pays d'Asie-Pacifique et dans ceux dont la qualité institutionnelle est diverse.

CHAPITRE INTRODUCTIF EN ANGLAIS

The world as a whole has become deeper interconnected and interdependent in almost every corner of the globe and in level in which it has never experienced. It is argued that, considering the historical global peace, economic globalisation, human progress, and so on, the world we are living is far better comparing to anytime in the history of humankind. Stimulatingly, the world is also sharing many global challenges, including global inequality, poverty, climate change, terrorism, and all the rest, which few unexpected global risks can destroy all human progress and make the world vulnerable.

In recent years, the themes of globalisation, inequality and poverty, against all odds, are among the most widely discussed issues in academic and economic policy debates. The last update data sources and new political phenomena have brought us to revisit and rethink why the divided society matters, and how globalisation may leave a huge gap between the winners and the losers within and between the societies. It is counting from the Credit Suisse Global Wealth Reports¹⁰, the Oxfam report on global inequality¹¹, the World Inequality Database¹², the age of *Trump* in the United States (US), the shocking event of *Brexit* from the European Union (EU) and the rise of *populism* in almost advanced countries. There is no exception for the developing countries. It is seen as new social and political trend of anti-globalisation and international cooperation. However, the problematic is not new.

Thinkers and the Heritage on the Economics of Globalisation, Inequality and Poverty

Known as *the Father of Economics* or *the Father of Capitalism*, Adam Smith also warned that 'no society can surely be flourishing and happy, of which the far greater part of

¹⁰ <https://www.credit-suisse.com/corporate/en/research/research-institute/global-wealth-report.html>

¹¹ <https://www.oxfam.org/en/research/reward-work-not-wealth>

¹² <https://wid.world/>

the members are poor and miserable,' (Smith 1776), and it is even that he found and defended the principle of capitalist economy, which will leave consequently endless economic inequality.

For about two and half-centuries since the introduction of *the Theory of Moral Sentiments* in 1759 and *an Inquiry into the Nature and Causes of the Wealth of Nations* in 1776 by Adam Smith, the way in which the humankind perceives about the wealth, income, poverty and inequality is always a controversial debate. Piketty (2013) indicates that 'intellectual and political debate about the distribution of wealth has long been based on an abundance of prejudice and a paucity of fact', but he also emphasized that 'to be sure, it would be a mistake to underestimate the importance of the intuitive knowledge that everyone acquires about contemporary wealth and income levels, even in the absence of any theoretical framework or statistical analysis. Film and literature, nineteenth-century novels especially, are full of detailed information about the relative wealth and living standards of different social groups, and especially about the deep structure of inequality, the way it is justified, and its impact on individual lives.' Likewise, between the late 20th century and the beginning of the 21st century, the common understanding about this global issue become, however, increasingly noticeable, thanks to the new global common measurement and more opened discussions comparing to what has been done in the past.

To give one example, Karl Marx's analysis was depended on the qualitative perspectives rather than the quantitative database. Karl Marx is known as the philosopher, economist, historian, sociologist, political theorist, journalist and revolutionary socialist.¹³ Against the liberal ideology of Adam Smith and David Ricardo (see, e.g., Smith 1776, Ricardo 1817), Karl Marx in *Das Kapital* (1867) predicted that 'capitalism would lead to the rich getting richer and the poor staying poor. He also predicted that capitalism would lead to boom and bust economics. Marx predicted as well that

¹³ https://en.wikipedia.org/wiki/Karl_Marx

capitalism would lead to globalisation, and that a group of firms would have huge market dominance. However, Marx underestimated the ability of capitalism to make everybody richer by making products much cheaper. Since the 1980s, the number of people in absolute poverty has fallen by about one billion. He also got wrong on the capacity of capitalism to reform itself by creating welfare states that redistributed wealth through taxation. Although there is a lot to learn from Marx, his solution was far worse than the disease. At the same time, it can't be said that today's capitalism, dominated by immense inequality and financial crises has triumphed' (The Economist 2018).

In modern time, social and economic disparity is analysed with long historical data. According to Alvaredo, et al. (2018), 'several world inequality databases exist today. These inequality databases include for instance the World Bank's PovcalNet, the Luxembourg Income Study (LIS), the Socio-Economic Database for Latin America and the Caribbean (SEDLAC) and the OECD Income Distribution Database (IDD). There are also various sources that combine the aforementioned databases to increase their coverage, the most important being the World Panel Income Distribution (LM-WPID) and the Standardized World Income Inequality Database (SWIID). Lastly, the United Nations (UN) compiles the World Income Inequality Database (WIID), which consists of a nearly exhaustive census of all primary databases and individual research initiatives, with detailed information about the concepts used.'

American Nobel economist and statistician, Simon Kuznets, innovated the Kuznets curve, which studied the long-term cycle between economic growth and income inequality (Kuznets 1955). Using the national income accounts with USA data, Simon Kuznets is the first economist, who suggested the transformation of economics into an empirical science and to the formation of quantitative economic history (Abramovitz 1986). Serbian-American economist Branko Milanović, who is known for his studies on global income distribution and between and within inequality, used

history, literature and stories of today's newspapers to explain how wealth is unevenly spread throughout our world, now and through time (Milanovic 2012). British-American Nobel economist Angus Deaton uses household surveys for measurement and for analysis of how people live, how much they spend, and on what, has long been used as a political tool, to make visible the living conditions of the poor to those in power, to shock, and to agitate for reform. Or in a simple word, it is for measuring and understanding behaviour, welfare, poverty and inequality (Deaton 2016). The success of French economist Thomas Piketty's *Capital in the 21st Century* for his studies on the Top Income research has brought us to see how wealth and income inequality evolved in Europe and the United States since the 18th century (Piketty 2013). Until recently, the studies of inequality, under the *WID.world project* by Piketty's team, have tended to focus on the developed countries of Europe, North America, and Japan, and emerging and developing countries, including China, India, Brazil, South Africa, Russia, and the Middle East (Alvaredo, et al. 2018). British economist Anthony B. Atkinson, in *Inequality – What Can Be Done?*, explained not about global inequality, but more about general inequality and his emphasis is more on what is behind inequality in developed countries (Atkinson 2015).

On the thinking of causal relationship between globalisation, poverty, income distribution, and its discontents, Eli Heckscher, Bertil Ohlin, Wolfgang Stolper, Paul Samuelson, Jagdish Bhagwati, Anne Krueger and others have supported to promote trade liberalization and reduce trade and migration barrier to improve economic growth and equitably distributed (Heckscher 1919, Ohlin 1933, Stolper and Samuelson 1941, Samuelson 1953, Bhagwati 1964, Krueger 1983). Indian-American anthropologist Arjun Appadurai, who is known as the major theorist in globalisation, studies and the importance of the modernity of nation-states. He argued theoretically that globalisation is also about cultural flows and the exchange of ideas, not just international trade and financial flows (Appadurai 1996). Giovanni Andrea Cornia, Pinelopi Goldberg, and David Autor are among the leading economists, who provide an extensive review

of related literature and considerably econometric analysis of effects of globalisation on inequality and poverty (Cornia 2004, Goldberg and Pavcnik 2007, Autor 2018).

American Nobel economist Joseph Stiglitz has extensively contributed on the research between globalisation and its discontents, including *Globalisation and Its Discontents*; *Fair Trade for All: How Trade Can Promote Development*; *Making Globalisation Work*; *The Price of Inequality: How Today's Divided Society Endangers Our Future*, and a revisited version of *Globalisation and Its Discontents Revisited: Anti-Globalisation in the Era of Trump*. Throughout his works, Joseph Stiglitz highlights how globalisation has been controlled by the elites, including the international financial institutions (Stiglitz 2002, 2006, 2012, 2017, Stiglitz and Charlton 2005, Drezner 2019). Another American Nobel economist Paul Krugman, who is considered as *penseur de la mondialisation* by the Alternatives économiques (2019), is also known as one of the leading supporters of free trade and globalisation. However, he also emphasizes that the hyper globalisation since the 1980s has played its role in explaining the rising inequality.

Branko Milanović, in *Global Inequality: a New Approach for the Age of Globalisation*, explains the benign and malign forces that make inequality rise and fall within and among nations, drawing on vast data sets and cutting-edge research. He also reveals who has been helped the most by globalisation, who has been held back, and what policies might tilt the balance toward economic justice (Milanovic 2016). It is possible for inequality to increase within most or all countries even while falling globally. And indeed, this has largely been the case. Globalisation has increased incomes for many segments of the population in many countries, but at the price of increasing inequality within many countries (Lawson 2017).

Angus Deaton's *The Great Escape: Health, Wealth, and the Origins of Inequality* explains how globalisation influences economic growth and inequality. 'Inequalities, in turn, affect progress. This can be good. Indian children see what education can do and go to school too. It can be bad if the winners try to stop others from following

them, pulling up the ladders behind them. The newly rich may use their wealth to influence politicians to restrict public education or health care that they themselves do not need' (Deaton 2013).

French Economist François Bourguignon, in *the Globalisation of Inequality*, examines 'the complex and paradoxical links between a vibrant world economy that has raised the living standard of over half a billion people in emerging nations such as China, India, and Brazil, and the exponentially increasing inequality within countries. Exploring globalisation's role in the evolution of inequality, Bourguignon takes an original and truly international approach to the decrease in inequality between nations, the increase in inequality within nations, and the policies that might moderate inequality's negative effects' (Bourguignon 2015).

To deal with inequality, it is a matter of endless discussions and there is no answer to what is completely right and wrong. Austrian historian Walter Scheidel, in *the Great Leveler: Violence and the History of Inequality from the Stone Age to the Twenty-First Century*, argued how only violence and catastrophes have consistently reduced inequality throughout world history (Scheidel 2017). However, Joseph Stiglitz and Paul Krugman still believe only government can save capitalism. Thomas Piketty and Emmanuel Saez along with his team under the project of the Manifesto for the democratization of Europe are also among the leading economists, who believe the state can intervene and change capitalism.¹⁴ For Piketty, 'high levels of inequality are a problem—messing up economic incentives, tilting democracies in favour of powerful interests, and undercutting the ideal that all people are created equal. Capitalism does not self-correct toward greater equality—that is, excess wealth concentration can have a snowball effect if left unchecked. Governments can play a constructive role in offsetting the snowballing tendencies if and when they choose to

¹⁴ About the Manifesto for the democratization of Europe, please see <http://tdem.eu/en/manifesto>

do so' (Gates 2014). To deal with this problem, Thomas Piketty and Emmanuel Saez propose redistribution through a progressive global tax on wealth (Tanenhaus 2014).

A Manifesto for Social Progress: Ideas for a Better Society by French economist Marc Fleurbaey and the *Rethinking Society for the 21st Century* by the International Panel on Social Progress aims to provide ideas for a better society 'at this time when many have lost hope amidst conflicts, terrorism, environmental destruction, economic inequality and the breakdown of democracy. This project outlines how to rethink and reform our key institutions - markets, corporations, welfare policies, democratic processes and transnational governance - to create better societies based on core principles of human dignity, sustainability, and justice' (Fleurbaey 2018, i).¹⁵

Actually, the idea of dealing with inequality or rethinking of social justice by the government intervention is nothing new. Economists, including Branko Milanović and Thomas Piketty, have remarked whether it is the return of Karl Marx. However, what is novel and special for now is that we are talking about this problem in the age of globalisation, which is completely different from the past. In the past, the thinking on the problem can be limited and solved in a country level; yet, for today's problem, it is at the scale of global level. It means even a country can successfully, in principle, solve its problem and make their statistics become better, it does not mean that country can successfully solve the problem in the reality.

Existing Theoretical and Empirical Studies

Figure 1 shows graphically the causal links between globalisation, inequality and poverty, developing from the existing theoretical and empirical foundations (Bourguignon 2004, Nissanke and Thorbecke 2010, Gygli, et al. 2019). Globalisation, which is defined as a global single market, means greater openness among many

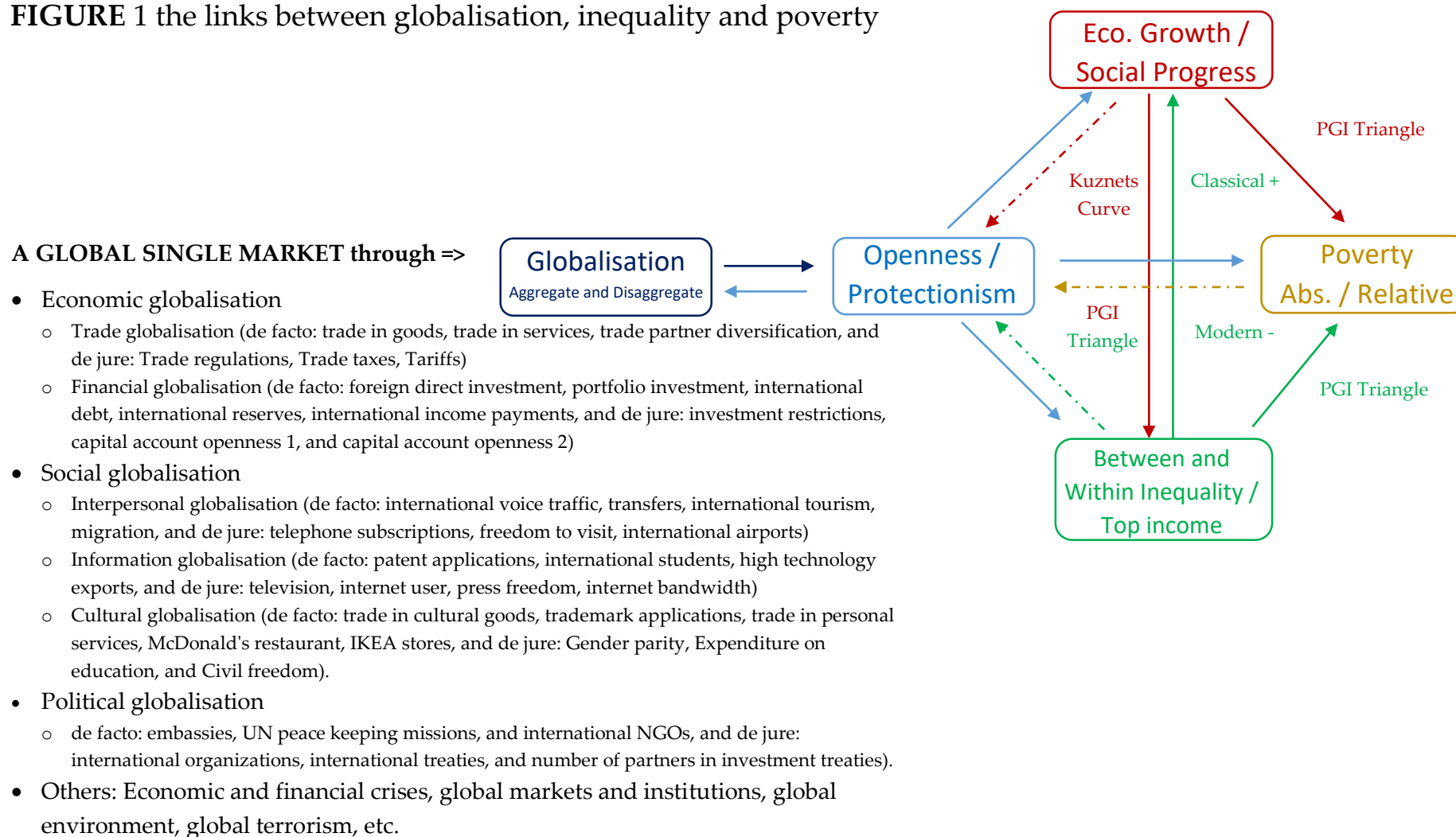
¹⁵ <https://www.ipsp.org/>

countries in the world, through for instance economic globalisation, social globalisation, and political globalisation, which are the components of the KOF Globalisation index. At the same time, the world in the age of globalisation also shares other globalized aspects, including economic and financial crises, global markets and institutions, global environment, global terrorism, etc. The globalized forces in aggregate and disaggregate level may have an impact on poverty through three different channels. Firstly, it is through its indirect effect on economic growth or social progress to poverty, secondly, through its indirect effect on income distribution to poverty, and finally, through its direct impact on poverty. The mechanisms from the recent literature also come from the opposite directions, meaning economic development, income distribution, or poverty itself may affect globalisation.

From the partial analysis of what Bourguignon (2004) named the PGI Triangle analysis, i.e. the Poverty-Growth-Inequality (PGI) Triangle, it is suggested that 'a change in the distribution of income can be decomposed into two effects. First, there is the effect of a proportional change in all incomes that leaves the distribution of relative income unchanged, i.e. a *growth* effect. Second, there is the effect of a change in the distribution of relative incomes which, by definition, is independent of the mean, i.e. a *distributional* effect. A change in poverty can then be shown to be a function of growth, distribution and the change in distribution. Change in *Poverty* = $F(\text{growth}, \text{distribution}, \text{change in distribution})$. At the same time, there is also two-way relationship between growth and distribution, which, in one side, economic growth may modify the distribution of income and welfare, and in another side, the link is leading from inequality to growth' (F. Bourguignon 2004, 4-5). In addition, 'relating the causal chain from income and wealth inequality to growth (the "inequality-growth" link), there are two conflicting theoretical strands: the traditional (classical) approach and the "new" political economy of development theories (modern). While the former emphasizes the growth enhancing effects of income inequality and wealth inequality, the latter links greater inequality to reduced growth

through various conditions such as the diffusion of political and social instability leading to greater uncertainty and lower investment; unproductive rent-seeking activities, high transaction costs, and increased insecurity of property rights' (Nissanke and Thorbecke 2010).

On the direct link from globalisation to economic development that is measured by economic growth or social progress, it is normally explained by the well-known inverted 'U' hypothesis developed by (Kuznets 1955). An increase in GDP per capita will increase overall economic welfare and income disparity. Following the process of economic development, inequality will increase during the first stage and after it arrives at the peak, inequality will decrease. However, according to Thomas Piketty (2013), 'the magical Kuznets curve theory was formulated in large part for the wrong reasons, and its empirical underpinnings were extremely fragile. The sharp reduction in income inequality that we observe in almost all the rich countries between 1914 and 1945 was due above all to the world wars and the violent economic and political shocks they entailed (especially for people with large fortunes). It had little to do with the tranquil process of intersectoral mobility described by Kuznets. The authors, moreover, argued that the inequality may continue to increase even later stage of economic development' (Piketty 2013, 15).

FIGURE 1 the links between globalisation, inequality and poverty

SOURCE Author's elaboration, developed from the KOF Globalisation Index, the globalisation-poverty nexus (Nissanke and Thorbecke 2010) and the PGI Triangle (Bourguignon 2004).

On the direct causality from globalisation to income distribution, it can be found in the neoclassical trade theory proposed by Heckscher (1919), Ohlin (1933), and Samuelson (1953). It is known as North-South HOS theory with the hypothesis of two countries, two goods and two factors of production. The theory argues that trade openness would increase the wages of low-skilled workers in developing countries, where low-skilled jobs are abundant, and a decrease in the wages of high-skilled workers in advanced countries, where high-skilled jobs are abundant. According to Stolper and Samuelson (1941), in developing countries, in which low-skill factors are relatively abundant, this would cause a reduction in income inequality and whereas in advanced countries, characterized by high-skill factors, it would lead to rising income inequality. From a survey of recent empirical and theoretical literature, however, there is still an unresolved debate. For instance, some findings suggest a positive distributional effect of globalisation, which generates higher incomes in both advanced and developing countries, at least in absolute terms. This promising view is in accord with many studies which suggested that, in the modern era of globalisation, even less-developed economies will become better off with more equal society in the long run (Barro 2000, Ravallion 2001, Lall, et al. 2007, Pavcnik 2017). However, there are also findings suggesting a negative distributional effect of globalisation on inequality. The principal idea argues that the benefits of globalisation are not distributed equally among the people within a country even though globalisation might increase overall income (Lundberg and Squire 2003, Lall et al. 2007).

Considering the stylized facts on globalisation and inequality over the last decades, the traditional theories are unable to explain the effects, where we found rising inequality in developing countries and lower or stable inequality trends in advanced countries, especially in European countries. New extensions to the theories have emerged to explain this paradox. According to literature, at least four major approaches are contributing to the analysis. The first model has been developed to extend the traditional North-South HOS model by fundamentally correcting the

restricted assumptions (Agell and Lundborg 1995, Davis 1998, Albert and Meckle 2001, Kreickemeier and Nelson 2006, Chusseau and Hellier 2012). The second model tries to explain the effect of globalisation on inequality by assessing technological and institutional changes (Krugman and Lawrence 1994, P. R. Krugman 1994). The third model analyses the effect of FDI, multinational enterprises (MNEs) and international outsourcing in explaining inequality in both advanced and developing countries (Chusseau and Hellier 2012). The fourth model has been developed to explain the effect of openness when firms are heterogeneous. This model is called heterogeneous firms and New New Trade Theory (Melitz and Redding 2015).

Problematic on Asia and Cambodia

Historical, political and economic discussions about globalisation, inequality and poverty and how its existence might be related to each other have long been centred around the advanced economies, thanks to the availability of both long-historical recorded database and western leading intellectuals.

Without precisely reliable data sources and theoretical testing based on statistical and econometric methods, it is impossible to see everything as it truly is and it may be opposite as we have thought. Some might argue that the traditional advanced economies, mostly representing by the Western economies, are the universal role model of economic and political systems. However, as Robert Solow explained, 'there is no economic theory of everything' (Todaro and Smith 2017). When the global economies change, the standard model of economic thoughts would also change and it matters for Asian economies, which may probably not follow a similar pattern of development as that of the West.

To give an example, in the most advanced economies, i.e. western countries, there is a rising belief that globalizing forces are not all good; people, not only ordinary citizens but also policymakers, think that life was better in the old days and that the

fruits of globalisation might go only to top earners and the rest of the world (Gray 2017, Willige 2017). Negative feelings about globalisation and international cooperation among many low- and middle-class citizens might be one of the major reasons that led to the political shocks of *Brexit* and *Trump* in 2016. The rise of populism, mostly right-leaning, is the most important European political development of the 21st century (Galston 2018), and it is a clear signal telling the politicians that the grounds can't stand anymore and need some changes. At the same time, we also observe various social trends occurring in western countries over the last few decades, such as stagnant wages, an overall decline in social mobility, a loss of sense of togetherness and a growing mentality of 'us against them' and, consequently, there are endless debates about the rise of the Top 0.01% or Top 0.1% or Top 1%. However, based on the results of empirical investigation in this thesis, we find that the effect of globalisation does not increase within-country income inequality in western countries but decreases, especially in EU member states. In other words, the effect of globalisation should not be a major cause for concern concerning inequality in western countries. That is why we might suspect that the political upsets of globalisation might also be related to the rest of the world. In this case, because citizens' welfare is evaluated relatively not only within their country but also in comparison with the rest of the world, the west needs to come up with a new domestic and global social contract.

Leading Asian commentators, on the one hand, have viewed globalisation as a positive mechanism in promoting economic growth, reducing poverty¹⁶, and increasing living standards among both the low and middle classes, along with the belief that globalizing forces will allow those emerging economies to catch up with advanced countries.¹⁷ This is what is predicted by the growth theory of Nobel Prize winner Robert Solow, and the great economic historian of our time, Angus Maddison. On the

¹⁶ See for instance Mahbubani (2009, 2014).

¹⁷ Discussion on the empirical investigation over the size of China and India is shown in the following section.

other hand, there is concern that the fruits of globalisation are not distributed equally, in particular, the benefits might not reach the poorest in each country. This might result in widening income inequality both within and between countries, which would, in turn, be a major challenge for economic, social and political progress. During the last few decades, Asia-Pacific countries, comparing relatively to the global share, have achieved their economic development impressively; however, it is lagging behind the concern of rising economic inequality. The Hollywood's romantic comedy-drama film entitled "*Crazy Rich Asians*", Korean film entitled "*Parasite*", or Taiwanese drama entitled "*Meteor Garden*", which are famous internationally, can be social evidence to explain how the top incomes go far from the rest of the society. According to the last updated database of the Credit Suisse's global wealth report and the Oxfam, the number of super-rich, called millionaires and billionaires, ranging from Australia, China, Hong Kong, Taiwan, India, Indonesia, Japan, South Korea, Thailand, Vietnam and others, has surpassed that of North America and Europe. In another sign of rising inequality, Asia-Pacific's income Gini coefficient increased from 0.37 to 0.48 between 1990 and 2014 while the wealth inequality is even wider; on the other hand, Asia-Pacific region is also the home of the nearly two-thirds of the world's working poor (Ana 2018). Between the countries, there is huge inequality among the members of the Asian economies. To give an example, the GDP per capita of Singapore is nearly 37 times higher than the average GDP per capita of the CLMV, Cambodia, Laos, Myanmar and Vietnam, countries (World Bank estimates).

Analysing the problematic on the global scale, many answers can be found from the existing literature. However, if we wish to understand a specific context of study, for example in Asian countries where we can find huge differences in their economic system, development stage, politics, society, or culture, and/or with special focus on Cambodia with about 16 million people, the legitimacy is always in question.

- *With special attention on Cambodia, what can we understand from the historical influence of globalisation on the dynamics and the vulnerability of poverty and inequality since the Khmer Rouge regime (1975-1979)?*
- *Being named as the Nation of Debtors by Bloomberg in 2018, what can be the influence of financial development through microfinance on Cambodia's poverty and welfare?*
- *Expanding to the global scale, what do we really know about the evolution of globalisation at the disaggregated level of export diversification and specialization over the long term in both Asian and Western countries?*
- *Do the dynamics of globalisation in financial development lead to reducing poverty and rising human development? What do we really know about how this relationship has evolved in Southeast Asian countries?*
- *Finally, considering different political institutions, can the governmental intervention be used as effective tools to deal with Top income in the Asian Pacific Countries?*

In this dissertation, I will try to answer all these questions with the predictable assumptions that, from the early-stage research scholar, the answers are imperfect, incomplete, and needed to improve from both its theoretical nature and empirical econometrics. However, it may provide broader and deeper analysis, thanks to more specific literature, additional available database, discussions, comments and feedback from the colleagues in the Asia and the West along with the rest.

Structure of the Thesis and Key Findings

Bringing together multiple dimensions, including historical perspective, export diversification and specialisation, financial development, public intervention and institutional quality, the objective of this thesis is to problematize, qualitatively and quantitatively, both in short and long term, the economics of globalisation, inequality and poverty in Asian countries with a focus on Cambodia as well. The thesis is combined of five chapters dealing with the empirical links between globalisation, inequality and poverty in the Cambodian, Asian and global context.

The *first* chapter, entitled **“Understanding the Influence of Globalisation on Historical Dynamics and Vulnerability of Poverty and Inequality in Cambodia since the Khmer Rouge Regime”**, examines with the historical perspective, the political legacy of Cambodia and its influence on the progress of openness, the recent evolution of inequality, poverty and more broadly on the country's macroeconomic performance. Above all, it is interested in the question of whether globalisation (through particularly international trade, export diversification and/or specialization, the international movement of capital flows, migration and technology) contributes significantly to have the influence on poverty and inequality in Cambodia. The findings, in short, suggests that globalisation, via the traditional channels of international trade and capital flows, affects poverty and inequality outcomes much less positive than we probably expect or in an indirect way in the history of Cambodia. The positive impact of Cambodia's openness can be found as a consequence of better-off households; yet, they represent mostly the households living in the capital city of Phnom Penh and other urban areas. Using Lewis (1954)'s two-sectors model, it explains the growth of Cambodia in term of a labour transition between two sectors, the capitalist sector (representing by industrial and service sectors) and the subsistence sector (representing by agricultural sectors). This transition explains an indirect positive impact of globalisation through the traditional channels on Cambodian households' welfare because it may increase wages of poor households, who involve in agricultural sectors. The findings also suggest that there is a piece of similar evidence in the historical trend of poverty, inequality and Cambodia's openness since the Khmer Rouge regime. From 1979 to the late 1980s, Cambodia's poverty remained high and inequality level remained low. Cambodia yet has opened to rest of the world. During the 1990s, Cambodia started reopening its economy to a few more countries through trade and FDI. However, its scale remains very low. The poverty remained over 50 per cent of the total population and inequality emerged itself with Gini index of around 0.40. It was only from the late 1990s or the early 2000s when Cambodia

joined the ASEAN in 1999 and the WTO in 2003, trade and FDI has importantly increased. However, the trade is dominated by garment sectors, which involve directly to the minority of Cambodian workers. The late 2000 remakes that the poverty rate reduced unexpectedly. Cambodia has achieved a good performance in poverty reduction and shared prosperity. From the 2010s, Cambodia has opened to the world through new channels, not just by traditional trade or capital flows, but also micro-finance and migration. Microfinance, mostly owned by foreign investors, is subjected to investigate as it is suggested to destruct the household's welfare; but, its negative effect is absorbed by international migration flows of Cambodians to abroad. The size of remittance inflows to Cambodia has increased to nearly 6 or 7 per cent of GDP, involving directly to around 2 million emigrants. As an alternative, technological openness through TV, the internet, smartphone, social media and e-banking, during last several years, demonstrated the highly emerging possibilities that households, especially in rural areas, evaluate their welfare relatively not only to their past and neighbours in one community but also to other urban citizens as well as other countries. Therefore, the legitimacy of social acceptance of inequality in the forecasting future would possibly be in question of social, economic and political instability. However, institutional quality of Cambodian government, except favourable political stability and absence of violence/terrorism, is always a concern.

The *second* chapter, entitled "**Microfinance Illusion, Poverty and Welfare in Cambodia**"¹⁸, focuses on the link between financial openness and poverty in Cambodia through the socio-economic survey data, applied across the country. We try to study the effect of microfinance, presently 87 per cent of which owned by the international NGOs and international private investors and involving more than 2

¹⁸ This chapter is based on the working paper entitled "**Effect of Microfinance on Poverty and Welfare: New Evidence from 9 provinces in Cambodia**", and published as Cahiers du GREThA, n°2018-12. <https://econpapers.repec.org/paper/grtwpegrt/2018-12.htm>. This paper was presented at the Seminar MEC9030 / European Project (Horizon 2020 Grant No. 734712). October 01, 2018. Tallinn, Estonia.

million Cambodians, two-third of Cambodian households if one person represents one household. Being named as the Nation of Debtors by Bloomberg in 2018, the effect of microfinance is expected to have a direct impact on poverty and welfare in Cambodia. However, the most recent studies at national level give emphasis to the failure of microfinance services in Cambodia since the bad practice is subordinate to the high-interest rate, non-productive loan, over-indebtedness, landless and intergenerational migration. In overall, this chapter examines the effect of microfinance, also putting weight on access to formal and productive loans, by using cross-sectional data in 2015 from 411 households in 48 districts of nine provinces in Cambodia. The households are beneficiaries of the Agriculture Cooperative (AC) community supported by the World Vision and the Australian Government. Applying the Wald test of exogeneity and the Newey's minimum chi-squared estimators with the two-step option, the binary choice model as well as bivariate and censoring model with addressing endogenous treatment effects are estimated. The findings suggest that access to microfinance services has an insignificant effect on household's welfare, proxied by per capita economic assets and expenditure on child well-being, although it leads to promote poverty reduction and increase households' per capita income. However, these results must be interpreted with caution because the data are subject to specific sample selection.

The *third* chapter, entitled **“Export Diversification, Specialization and Inequality: Evidence from Asian and Western Countries”**¹⁹, investigates the link between trade specialization and inequality on a more global scale, that of 52 Asian and Western countries. Specifically, this chapter examines the dynamic effect of globalisation at the disaggregated level of sectoral export diversification and

¹⁹ This chapter is based on the published article entitled **“Export Diversification, Specialisation and Inequality: Evidence from Asian and Western Countries”**, co-authored with Prof. Bertrand Blancheton in *the Journal of International Trade & Economic Development*. 28(2), 189-229. <https://doi.org/10.1080/09638199.2018.1533032>. This paper was presented at the Seminar Bordeaux-Development. February 9, 2017, Bordeaux, France.

manufacturing specialization on income inequality using a panel data set of 52 Asian and Western countries from 1988 to 2014. The chapter uses dynamic panel data models applying the System Generalized Method of Moments (GMM) estimations that provide more accurate and better results than those obtained with static panel data models. The results suggest that there is no statistically significant relationship between manufacturing specialization and inequality while sectoral export diversification has been the driving force of inequality. For sub-groups of countries, higher sectoral export diversification increases inequality and higher manufacturing specialization decreases inequality in high-income Asian countries and the European Union (EU) member states. Moreover, the study finds insignificant effects in low-income Asian countries and Anglo-Saxon countries. In this perspective, policy implications concern the implementation of industrial policy to develop basic manufactured specializations (unskilled labour).

The *fourth* chapter, entitled **“Financial Development, Poverty and Human Development in the Fintech age: a Regional Analysis of the Southeast Asian States”**²⁰, studies the effect of financial development in the Fintech age, measured by broad money, domestic credit and mobile money, on poverty and human development in the Southeast Asian economies. Using unbalanced longitudinal dataset (1990-2017), the findings suggest that broad money and domestic credit contribute to poverty reduction and promote human development. The role of mobile money is seen to have statistically positive impact only if we analyse with human development. Additionally, when we take a closer look at the different stage of economic, political and institutional development in this region, we found that the positive effect of broad money and domestic credit is mostly found only in the less developed and less democratic countries. The mobile money, on the other hand, is

²⁰ This chapter was written during the visit at the Tallinn University of Technology, Estonia. This project has received funding from the European Union’s Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 734712.

found to statistically promote human development in both groups of countries, but there is no statistical relationship for poverty analysis. To avoid the endogeneity bias driven by the fact that the variables in the analysis are not exogenous, the paper uses the instrumental variables and two-stage least squares for panel-data estimations, taking from the economic literature on the role of financial development in developing countries. In doing so along with many additional statistical tests, the results confirm the robustness in the analysis.

Finally, the *fifth* chapter, entitled **“Government Intervention, Institutional Quality and Inequality: Evidence from Asia-Pacific Countries (1988-2014)”**²¹, examines the long-run equilibrium relationship between public expenditure, institutional quality and income inequality in Asia-Pacific countries with diverse institutional backgrounds. By applying panel co-integration methods with a dataset from 1988 to 2014, our main findings suggest that public expenditure has a negative long-run steady-state effect on income inequality in countries with weaker institutional quality. Its effect has only one-way Granger causality link to income inequality. However, there is not enough statistical evidence of such a long-run relationship, when we estimate the effect in countries with stronger institutional quality or combine all Asia-Pacific countries. The globalized forces, measured by trade openness, does increase income inequality while population growth negatively explains income inequality in all Asia-Pacific countries and those with diverse institutional quality. To develop a full picture of how government intervention influences inequality, in the long run, additional studies would be needed. Firstly, it might be possible to use other tools of public intervention through government expenditure and/or taxation at a more disaggregated level, which are extensively studied in short and medium time analysis. Secondly, it might be an alternative way

²¹ This chapter is co-authored with Prof. Bertrand Blancheton and it was presented at two international conferences: the 6th Regulating for Decent Work Conference: Work and Well-being in the 21st Century. July 8-10, 2019, Geneva, Switzerland and the Eighth Meeting of the Society for the Study of Economic Inequality (ECINEQ), July 3-5, 2019, Paris, France. It is under “Revise and Resubmit” at the *Asian Development Review*.

if we could compare to other countries like Latin American countries, which are seen to have similar economic and political development. Thirdly, while using the average value of the WGI to distinguish strong and weak institutional quality, we have not taken a closer look at six sub-categories because each dimension can be subject to explain differently inequality. While the average score of WGI is higher, it does not mean that these sub-categories are all higher equally. Last but not least, a further study with more focus on investigating the non-linear relationship in long panels is, similarly, suggested.

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No matter how big or small the country is, it cannot escape from the globalized forces, particularly in this modern era. With whatever the political regime it is, make it work for everyone, the nation can stand together. If only for the elites or less for the grounds considering the rest of the world, they can't stand with formers, likely both in the short and long run.

Bordeaux, July 2019

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CHAPTER 1

Understanding the Influence of Globalisation on Historical Dynamics and Vulnerability of Poverty and Inequality in Cambodia since the Khmer Rouge Regime

ABSTRACT Since the Khmer Rouge regime (1975-1979), Cambodia's poverty has considerably declined, while inequality has emerged itself as a result that this country has transformed to the free-market economy and has remarkably opened to the world since the early 1990s. This chapter explores the historical dynamics of globalisation, poverty and inequality in Cambodia, both across regions and over time. Above all, it is interested in the question of whether globalisation, through particularly international trade, export diversification, capital flows, financial development, migration and technology, contributes significantly to have an influence on poverty and inequality in Cambodia. The findings, in short, suggests that globalisation, via the traditional channels of international trade and capital flows, affects poverty and inequality outcomes much less positive than we probably expect or in an indirect way in the history of Cambodia.

Keywords: History, globalisation, poverty, inequality, Khmer Rouge regime, Cambodia

JEL Classification: B27, F6, I32, D63

1 Introduction

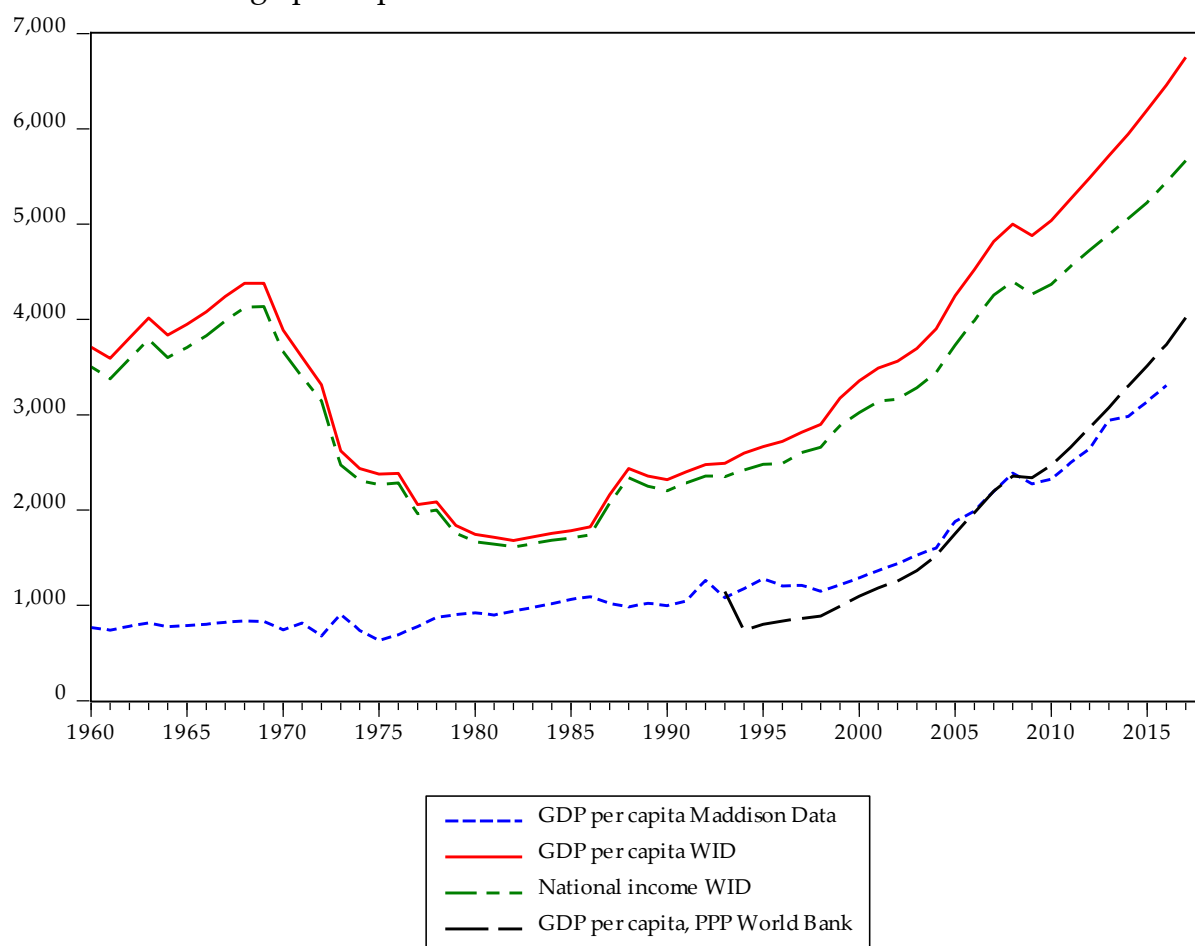
The world is making huge strides in overcoming global poverty. Since 1990, a quarter of the world has risen out of extreme poverty. Now, less than 10 per cent of the world lives in extreme poverty, surviving on \$1.90 a day or less (Peer 2018). Moreover, in recent decades, income inequality has increased in nearly all countries, but at different speeds, suggesting that institutions and policies matter in shaping inequality. The combination of large privatizations and increasing income inequality within countries has fuelled the rise of wealth inequality among individuals. For example, in Russia and the US, the rise in wealth inequality has been extreme, whereas in Europe it has been more moderate. Wealth inequality has not yet returned to its extremely high early-twentieth-century level in rich countries (Alvaredo, et al. 2018).

To narrate the story of the world's poverty and inequality during the last 250 years, Nobel economist Angus Deaton started the first sentence in his 2013 book, *the Great Escape: Health, Wealth, and the Origins of Inequality*, as follows:

'Life is better now than at almost any time in history. More people are richer and fewer people live in dire poverty. Lives are longer and parents no longer routinely watch a quarter of their children die. Yet millions still experience the horrors of destitution and of premature death. The world is hugely unequal. Inequality is often a consequence of progress. Not everyone gets rich at the same time, and not everyone gets immediate access to the latest life-saving measures, whether access to clean water, to vaccines, or to new drugs for preventing heart disease. Inequalities in turn affect progress. This can be good; Indian children see what education can do and go to school too. It can be bad if the winners try to stop others from following them, pulling up the ladders behind them. The newly rich may use their wealth to influence politicians to restrict public education or health care that they themselves do not need' (Deaton 2013, 1).

Since the Khmer Rouge regime, Cambodia's historical narratives have not been dissimilar to Angus Deaton's introductory sentence. The average national income in PPP term in \$US 2017 by *the World Inequality Database* (WID.world) increased from \$US 1,757 to \$US 5,667, i.e. about 3.23 times from 1979 to 2017 (See [Figure 1](#)). Life expectancy improved doubly from 35.79 years to 69.3 years during the same period. The expected years of schooling increased from 6.7 years in 1990 to 11.7 years in 2017. In overall, the Human Development Index (HDI) also increased from 0.364 in 1990 to 0.582 in 2017.

FIGURE 1 Average per capita income or wealth 1960-2017



SOURCE the Maddison Database, the World Inequality Database (WID.world), and the World Bank.
NOTES GDP per capita Maddison Data (in current international \$US based on the 2011 ICP round); GDP per capita, PPP WID (in GDP, total population in \$US, 2017); National income, PPP WID (in average income or wealth, total population in \$US, 2017); GDP per capita PPP World Bank (in current international \$US).

Presently, Cambodia has been named as the world leader in poverty reduction and shared prosperity (World Bank 2016, Cuesta and Negre 2016). Cambodia's poverty rate of the total population reduced from about 50 per cent in 1993-94 to 13.50 per cent in 2014. Inequality has emerged itself at the same moment, not just between households within one community or region, but between rural to urban areas and in the country as a whole. The emerging trend of inequality can be remarkably seen after Cambodia has opened itself to the rest of the world through international cooperation and economic globalisation. Using the KOF globalisation index, Cambodia is one among the most open societies in Asia (Gygli, et al. 2019). This significant change happened after the post-communist era, particularly when Cambodia held the national election 1993 under the support of the United Nations Transitional Authority in Cambodia (UNTAC), transformed to the free-market economic system in the early 1990s, joined the Association of Southeast Asian Nations (ASEAN) in 1999, and joined the World Trade Organization (WTO) in 2004.

Inequality is indeed itself matter; however, the technological progress of nowadays has also exacerbated the social and economic concerns even if the statistics may somehow look better. The households, especially in rural areas, can see the people's lifestyle in the city and urban areas, and probably also in the neighbouring countries from their TV, the internet, smartphone along with their connection to the social media. In principle, they can see their position, then relatively compare their welfare with others and wish for the social, economic and political changes. It is different from the past as welfare is relatively concerned only with their past or their neighbours within the community.

In this regard, what does the influence of globalisation have to do with poverty and inequality in Cambodia? How the effect has historically changed over time since the Khmer Rouge regime? How the other factors play their role in this relationship? What are the policy implications?

This chapter tells the historical narratives of Cambodia's openness to the rest of the world, through particularly international trade, export diversification, capital flows, financial development, migration and technology, and how it may likely have the influence on poverty and inequality in Cambodia since the Khmer Rouge regime. We use both macro-economic and micro-household database from multiple historical sources. Analysing with macro-economic data may allow us to understand the global picture and its dynamics during a long period of time, and micro-household data are also needed because it allows us to understand better Cambodian household's behaviour and a specific case of study during a particular period of time. It is worth noting that this study is not a quantitative monograph but mostly qualitative with supporting graphics.

The rest of this chapter is organized as follows. Section 2 describes the historical dynamics of Cambodia's political and socioeconomic conditions. Section 3 discusses Cambodia's historical openness. Section 4 analyses theoretically and empirically how globalisation may have the historical influence on poverty and inequality. Section 6 discusses the robustness checks and the reasons why using Cambodia's statistics is required with very high caution. Section 6 concludes the findings.

2 Cambodia's Bird's-eye View and its Historical Dynamics

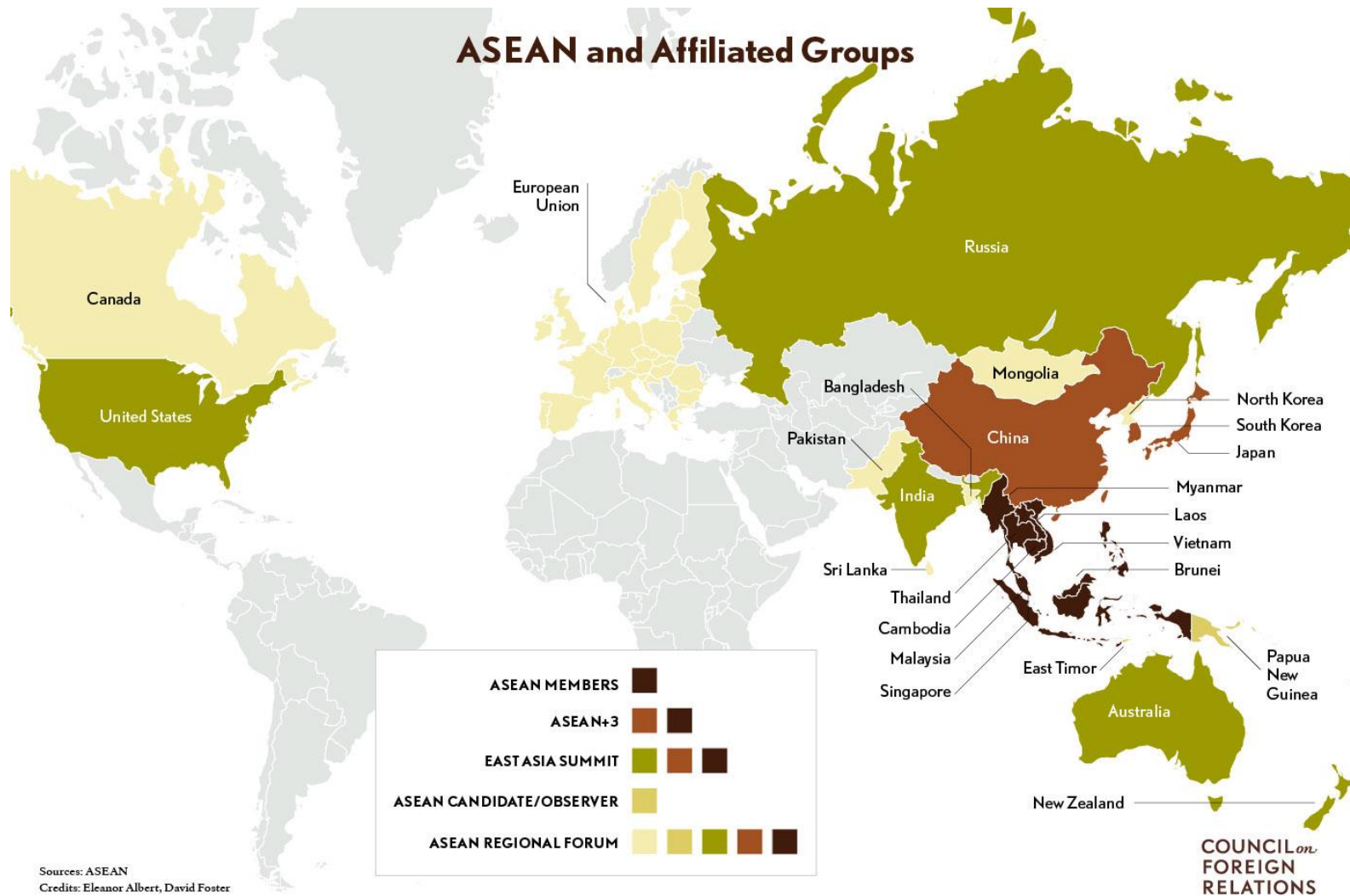
2.1 Political and Economic History

2.1.1 Geography and Geopolitics

As shown in [Figure 2](#) and [3](#), Cambodia's geography is in the heart of Asia and Pacific, which is known as the most populous region in the world, and represents about 60 per cent of the world's population by 2018. The Asia Pacific region typically includes East Asia, South Asia, Southeast Asia and Oceania. Historically, Cambodia was at the centre of the cold war between the Communist Bloc and the Western Bloc. That is the reason why this small nation had to face countless both international and internal threats. 'For many years Kampuchea (also known as Cambodia) has been a battle zone for local as well as superpower interests. The consequences of these ongoing rivalries have had a devastating effect on the Khmer people, their ancient civilization and culture. In recent times Kampuchea has seen more dramatic changes than most countries in the region. The country even has the doubtful distinction of being the only one where one Marxist regime (that of Pol Pot) was overthrown by another Marxist government with the help of a Marxist neighbour (Vietnam)', (Vickery 1986).

Regionally, Cambodia is one among 10 members of the ASEAN Community, including Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic (Lao PDR), Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam. Cambodia's neighbouring countries are (Lao PDR), Thailand, and Viet Nam. Its border also shares with four of five nations in Greater Mekong Subregion (GMS). The GMS is a natural economic area bound together by the Mekong River, covering 2.6 million square kilometres and a combined population of around 326 million. The GMS countries are Cambodia, the People's Republic of China (PRC, specifically Yunnan Province and Guangxi Zhuang Autonomous Region), Lao PDR, Myanmar, Thailand, and Viet Nam. About GMS, please see <https://www.adb.org/countries/gms/main>.

FIGURE 2 the World and ASEAN affiliated groups' map



SOURCE the ASEAN (2019)

FIGURE 3 Cambodia's regional map



SOURCE the Google Map (2019)

Cambodia is also a part of the region, where the historians called *the French Indochina* because it was historically influenced by the Indian and Chinese civilizations since ancient times and under the French colony in the 19th century. The *French Indochina* includes Cambodia, Laos PDR and Vietnam.

Cambodia is a small country, whose surface is relatively around 3/4 of Laos PDR, 1/2 of Vietnam, over 1/3 of Thailand or less than 1/3 of France. Cambodia is also small in term of its population. According to the 2019 general population census²², there are about 15.29 million Cambodian people in 2019. The male population is 7.42 million (48.5 per cent) and the female population stands at 7.87 million (51.5 per cent). Cambodia is rich in natural resources, considering per capita land, water, forests, biodiversity, wildlife, mineral resources, etc. Cambodia is also rich in cultural resources, considering the unique cultural heritages that were left from the Khmer empire or the Angkor Empire between the 9th and 13th centuries. However, this country remains one of the poorest countries in the world.

2.1.2 Political and Economic Ideology

From the synthesis of many historical documents (Prud'homme 1969, Osborne 1979, Chandler 1983, Vickery 1986, Pecotich and Shultz 2006, Chandler 2007, Vickery 2007, Chhair and Ung 2013, Chandler 2019), after gaining the full independence from France in 1953, Cambodia could only live with a very short time of peaceful moment and economic development, which many Cambodians, especially the senior citizens of today, call it as the Golden Era. Under the leadership of King Norodom Sihanouk, it was the first Kingdom of Cambodia or the Sangkum Reastr Niyum regime (known as *the Popular Socialist Community*, or in French, *Communauté Socialiste Populaire*). At the first stage, the industrial development policies were introduced and implemented

²² According to Xinhua (2019), the population in the new census had not included approximately 1.23 million Cambodian migrants working abroad.

with strong supports by foreign economic assistance from both the Western Bloc and the Communist Bloc, including the US, France, West Germany, Japan, Australia, China, Soviet Union, Czechoslovakia and Yugoslavia. Consequently, during the first 10 years, the Kingdom experienced moderate economic growth, were self-dependent in food production, and were able to export rice. It was recorded that the number of middle classes increased in the capital city of Phnom Penh and other big provinces of Battambang and Sihanoukville even though the country were still dominated by the agricultural sectors. From the early 1960s, however, the economic development was declined. The historians documented several major events during this period. Regionally, the Vietnam War was spreading to Cambodia and Lao PDR. Politically, Cambodia decided to reject economic, financial, military assistance from the US to continue its neutralist foreign policy and minimize the spillover effects of war in Vietnam. The US at that time was an ally of South Vietnam and Thailand, which had many disputes with Cambodia. Economically, Cambodia applied stronger governmental intervention in the economy by nationalizing banking, insurance, trade and other major industries. It was also the time when the Cambodian economy was inefficient and faced rent-seeking. Between 1970 and 1975, there was a new regime in Cambodia after the coup d'état in 1970. It was the Khmer Republic (or known in French: *République Khmère*), which was led by the general Lon Nol and was recognised as the pro-US government. This regime followed the liberal economic policy of a Western laissez-faire model. However, because of struggling with the spreading impact of the Vietnam War, corruption, internal conflicts, and civil war with the Khmer Rouge, there was a declining of almost all economic indicators. Cambodia even faced food shortage and could survive because of the strong supports from the US. All these allowed to the emerging of the Khmer Rouge regime.

Khmer Rouge Regime and its Closed Economy (1975-1979)

In 1975, the Democratic Kampuchea by the communist forces, known to the outside world as Khmer Rouge or Red Khmers, overthrew the pro-American regime that had seized power five years before. In the Khmer Rouge era that followed, at least 1.2 million Cambodians died of malnutrition, overwork, executions, and mistreated diseases as the Maoist-inspired regime sought to achieve total communism overnight (Chandler 2019). There are also documents, which comprehensively estimated of the death toll from 1970 to 1987 range from 2.3 to 3.9 million people or almost one-third to one-half of the 7.1 million Cambodians alive in 1970 (BBC 2018, World Bank 2013, Sharp 2008, Rummel 1994). The rule of the Khmer Rouge and the persistent civil strife following the regime's decline have had lasting consequences on the country's economic infrastructure and its human and natural capital. All urban centres were evacuated in 1975, and as of today, Cambodia has had the second-lowest urbanization rate in all of Asia. Most administrative records - including land tenancy and birth certificates, were either lost or destroyed. Many of the land issues faced today can be directly traced back to the massive displacement of people and the loss of proper documentation that took place during this time (World Bank 2006).

The economic policy in this regime was radically changed, following the ideology of Marxism and Maoism. One of the most powerful leaders in the regime was Khieu Samphan. He earned his PhD from the University of Paris in 1959 with his thesis titled "*L'Économie du Cambodge et ses Problèmes de Modernisation*" or in English "*The Cambodian Economy and the Problems of its Industrialization.*" He defended the idea of economic self-sufficiency and the maximum reduction of unproductive activities such as trade or bureaucracy (OEMV 2012). We should not forget to mention another important figure, whose idea heavily influenced economic and political policy in the Khmer Rouge regime. Hou Yuon, who also earned PhD in economics from the University of Paris, defended his 1955 thesis titled "*La Paysannerie du Cambodge et ses*

Projets de Modernisation” or in English “*The Cambodian Peasants and Their Prospects for Modernization.*” For him, the property in itself in the socio-economic system of Cambodia is a source of inevitable exploitation of the rural proletariat, 80 per cent of the population (DEBRE 1976). He challenged in question the economics approaches that the urbanization and industrialization are predecessors of economic development.

According to Chhair and Ung (2013), the ambition of the Khmer Rouge was to make the transition to communism in Cambodia in the shortest possible time. The economic policy was to demolish capitalists, enslave the labour force and focus on the rapid development of agriculture. To achieve this, private ownership was completely banned and money was eliminated. The bourgeoisie class was considered an enemy of the state and entrepreneurship disappeared. All assets were owned by the state. All international involvement was removed. The regime also banned all international trade leaving only very limited trade with a few allied communist countries. The regime completely and immediately collectivized agriculture, nationalized all sectors of the economy, and adopted a policy of self-reliance. Phnom Penh and other provincial cities were emptied and the urbanites were forced to work as collective farmers in the countryside.

People's Republic of Kampuchea and its Closed Economy (1979-1989)

Responding to Cambodian attacks, Vietnam invaded Cambodia in 1979 and established a protectorate there that lasted for 10 years (Chandler 1983, Vickery 1986, Morris 1999, Vickery 2007, Chandler 2019). During this period, Cambodia's economy and politics were heavily influenced by Vietnam. Moreover, the new regime, the People's Republic of Kampuchea (1979–89), remained a closed economy, following the ideology of socialism and Marxism. There were mountains of problems, being left

by the previous regime, including lack of physical infrastructures and human resources, and the concurrent internal conflict happening near the boundary.

Cambodia during this period is described as a revolutionary economy. The regimes closed the door to foreign investment and markets. The priority was food and self-sufficiency. Their priority sector was agriculture with industry playing only a supporting role in supplying agricultural implements and processing agricultural products (Chhair and Ung 2013, Slocomb 2010). The economy was dominated by subsistence agriculture with little or no industry.

Transitional Period, Re-opening Economy and the Kingdom of Cambodia (1990s to the present)

Politically, with the fall of the last pockets of Khmer Rouges, the country has reached a steady-state with a dominant party, the Cambodian People's Party (CPP), with Prime Minister Hun Sen in power since the mid-1980s. The ruling party won all general elections, including the most recent. Besides the national election in 1993 and 1998, other four national elections were held in 2003, 2008, 2013 and 2018. The political equilibrium is heavily influenced by the post-conflict situation, including its significant centralization (to ensure control during difficult times) and patronage-client networks developed for stability purposes. Importantly, the ruling party electoral successes seem to be increasingly linked to the regime's capacity to deliver economic development and infrastructure in particular (Guimbert 2009, 153). Cambodia, moreover, has also witnessed continued internal tensions (both for elections and for continued military operations) in the early 1990s. Fighting significantly reduced; nevertheless, it was strife with political instability because of the various political groups backed by their military forces (Chhair and Ung 2013). The use of military force to challenge political rivals, however, seemed to conclude, marking an end to decades of conflicts and wars (World Bank 2013). Until nowadays,

although everything has changed, the existence of the armed conflicts and mental instability is still present in both Cambodia society and its institutions (Guimbert 2009).

Economically, in the late 1980s, Cambodia began the process of market liberalization. The state monopoly to foreign trade was abolished in 1987, and the foreign investment law was brought into force in 1989, enabling private companies to engage in foreign trade. The period from 1989 to 1993 in Cambodia was under the transitional period to a market economy. With the collapse of Communist Block (or the fall of the Soviet Union and the Eastern Bloc) and the reform of Vietnam's economic policy, *Doi Moi*, beginning in 1986, Cambodia began the gradual process of economic reform. From the early 1990s, under peace agreements signed in Paris in 1991, Cambodia came under UN protection for a time in preparation for general elections that were held in 1993. Since then, Cambodia has been a constitutional monarchy ruled by a coalition government that has accepted large infusions of foreign aid (Chandler 2007). The Government also prepared and implemented a comprehensive macroeconomic policy and structural reform programme with efforts to integrate Cambodia's economy into the region and the world. During the reconstruction phase, entrepreneurship and private-sector development were also promoted to prepare for entry into a free-market economy. During this period, trade policies were further liberalized. Most quantitative restrictions and the licensing of imports were eliminated (Robertson, et al. 2009, Chhair and Ung 2013).

In the late 1990s, Cambodia started to attract FDI and find export markets for FDI-manufactured products. Cambodia became a member of ASEAN in 1999 and became for the first time, after centuries of isolation, a full-fledged member of the Southeast Asian community (Chandler 2019). The government committed - through the strengthening of its external sector - to reintegrating the domestic economy into the regional and global economies. The main strategies included joining the ASEAN5,

gaining full Most Favoured Nation (MFN) and Generalized System of Preferences (GSP) status with its trading nations, participating in economic cooperation with the Great Mekong Sub-region, and other such initiatives, and the wide promotion of foreign investment within the 1996–2006 time frame (Robertson, et al. 2009).

The 21st century, which has been nearly 20 years, have remarked political stability, economic development, and Cambodia's openness to the world. In 2003, Cambodia joined the WTO. Cambodia is presently known as one of the most open societies in term of international trade and capital flows. However, although Cambodia is called democratic country in the constitution and held the national election every five years, as shown in [Figure 4](#), this country's democracy index remains low, making 4.77/10 (hybrid regime) in 2006 then reducing to 3.59/10 (authoritarian regime) in 2018.²³ The government effectiveness score remains very low, ranking the 2nd lowest quality in the ASEAN economies.²⁴ Drawing data from multiple sources, Kheang Un argues that 'following the 1993 UN intervention to promote democracy, the ruling party perpetuated a patronage state weak in administrative capacity but strong in coercive capacity. This enabled them to maintain the presence of electoral authoritarianism, but increased political awareness among the public, the rise in political activism among community-based organizations and a united opposition led to the emergence of a counter-movement. Sensing that this counter-movement might be unstoppable, the ruling party has returned Cambodia to authoritarianism, a move made possible in part by China's pivot to Cambodia' (Un 2019).

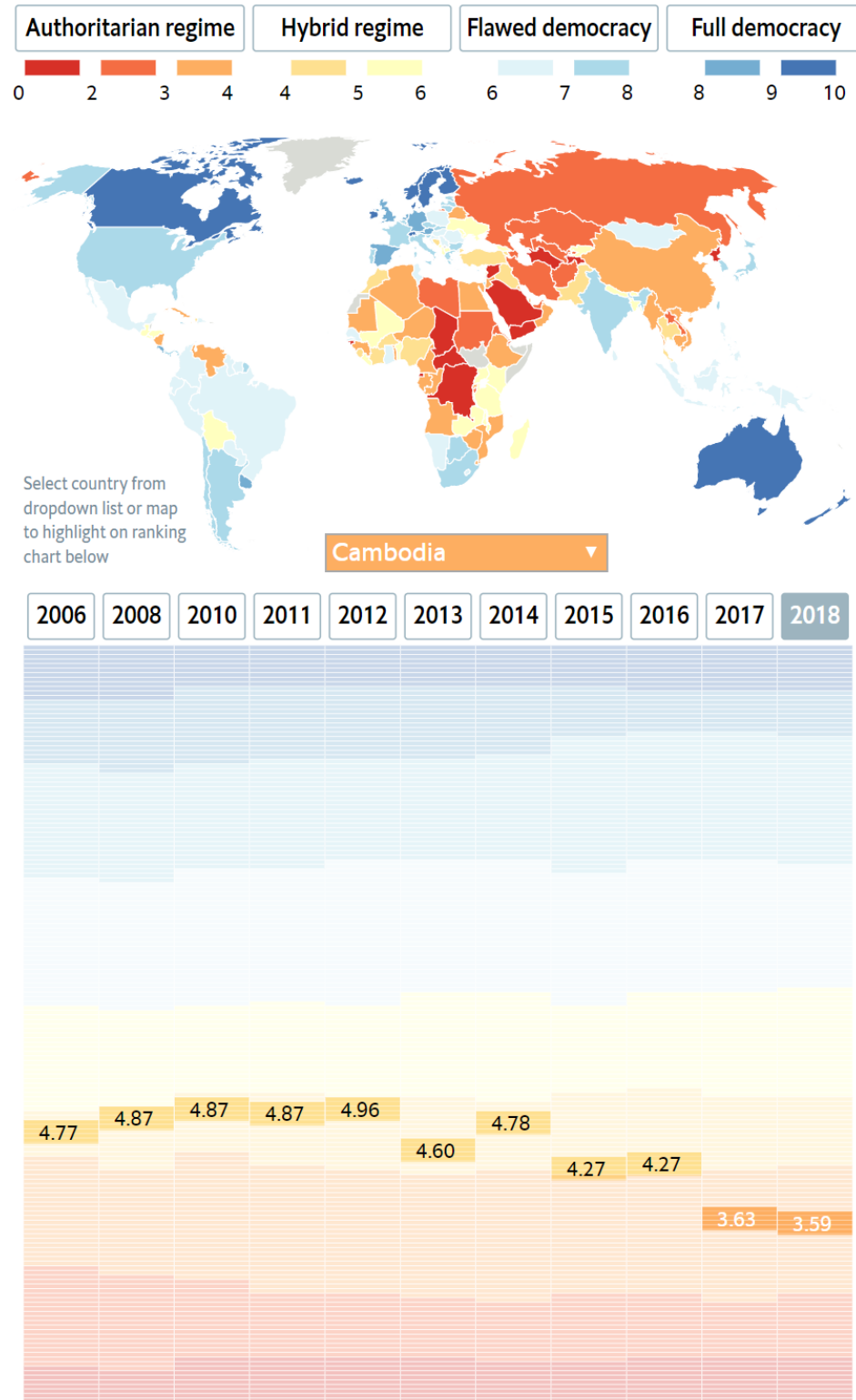
²³ Please see [Figure 4](#) the Economist Intelligence Unit's Democracy Index in Cambodia (2006-2018). The EIU Democracy Index provides a snapshot of the state of world democracy for 165 independent states and two territories. The Democracy Index is based on five categories: electoral process and pluralism; civil liberties; the functioning of government; political participation; and political culture. Based on their scores on 60 indicators within these categories, each country is then itself classified as one of four types of regime: full democracy; flawed democracy; hybrid regime; and authoritarian regime. Please access to <https://www.eiu.com/topic/democracy-index>

²⁴ World Bank government effectiveness index.

FIGURE 4 The Economist intelligence unit's democracy index in Cambodia 2006-2018

The Economist Intelligence Unit's Democracy Index

167 countries scored from 0 to 10 based on 60 indicators



SOURCE Economist Intelligence Unit (2019)

2.1.3 Economic Dynamics and How People Feed their Living

'Economics is defined as a study of men as they live and move and think in the ordinary business of life. But it concerns itself chiefly with those motives which affect, most powerfully and most steadily, man's conduct in the business part of his life' (Marshall 1890). In a simple word, it is about to study how man feeds their living in daily life. To economically understand Cambodia's socio-economic situations, it is, therefore, needed to view its historical dynamics and analyse how people feed their living.

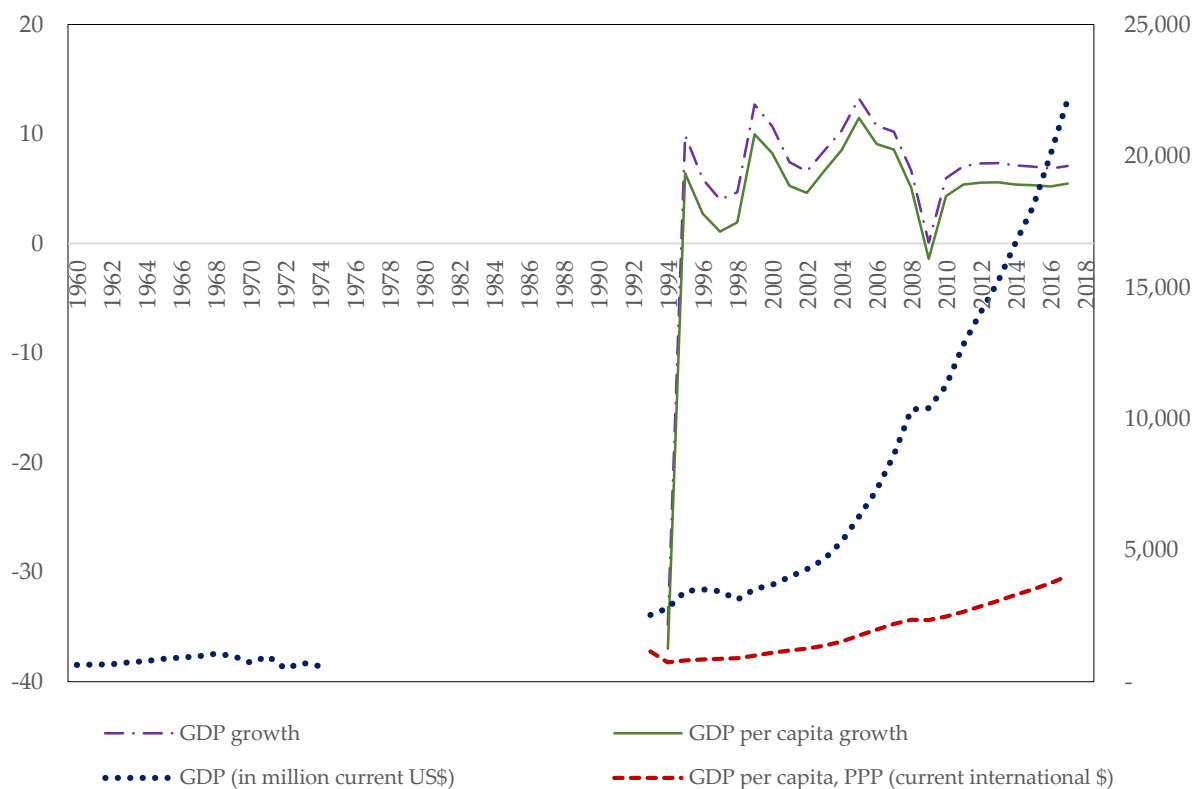
Throughout its long history, Cambodia is always the rural and agricultural country, considering the vast majority of its people living in the rural area and involving in the traditional sector. The high economic growth during the last two decades has remarked, however, that the fruits of economic development concentrate in the urban area, fuelled by industrial and service sectors.

Cambodia's the Wealth of Nations and its Welfare History

Figure 5 shows the evolution of GDP, GDP per capita and its growth rate in Cambodia during 1960 to 2017. Before 1975, Cambodia's GDP and GDP per capita changed very slightly and its size was very low. From the database we have, we cannot access any data during the Khmer Rouge regime and the People's Republic of Kampuchea (between 1975 and late 1980s). According to U.S. Library of Congress, 'measuring the economic performance of the Khmer Rouge regime was impossible because statistics were not available, and no monetary transactions or bookkeeping were carried out. The economic life described by foreign diplomats, by Western visitors, and by Cambodian refugees in Thai camps ranged from spartan to dismal. Phnom Penh became a ghost town of only about 10,000 people. There were no shops, post offices, telephones, or telegraph services. Frequent shortages of water and of electricity occurred in all urban areas, and the government prohibited movement across

provincial borders, except for that of trucks distributing rice and fuel' (U.S. Library of Congress 2019).

FIGURE 5 GDP, GDP per capita and its Growth Rate 1960-2017



SOURCE World Bank national accounts data, OECD National Accounts data files, World Bank, International Comparison Program database.

Ten years after the Khmer Rouge regime, the People's Republic of Kampuchea still applied the concept of cooperatives, but the economic system was transformed to a new model of a planned economy with the market, called socialism. There was re-introduction of banks, currency, trade, private sector and economic transactions. In the practices, people, in general, produced agricultural products and sold to the state; then, the state sold the people manufactured goods at the free-market prices. People's welfare during this regime remained depending on traditional activities, including agriculture, fishing, forestry and handicrafts. The people, following the national policy from the government, worked as solidarity groups (*krom samaki*) with the

production units of seven to fifteen families (Chandler 1983, Vickery 1986, Pecotich and Shultz 2006, Chandler 2007, Vickery 2007).

After a big drop in 1994, Cambodia remarks the robust economic growth from 1995 to the present. Cambodia's annual GDP and per capita income are respectively 7.72 per cent and 5.69 per cent. There are several factors to explain this rapid growth during this period. It includes the restoration of peace and security, openness to the regional and international economy, receiving very large capital inflows, both in the form of official development assistance and increasingly private capital, and the fact that Cambodia locates in a dynamic region (Hill and Menon 2013). The high growth performance in the last few years is also the result of hard-won macroeconomic stability, which is reflected in relatively low inflation, increasing international reserves, modest fiscal deficits and low public debt, and prudent economic policies (Furusawa 2017).

Although Cambodia's economic prospect of social and economic development becomes remarkably favourable, this Asian country remains vulnerable to both internal and external shocks. For instance, in 2009, the typhoon Ketsana swept through the Philippines, Viet Nam and Lao PDR before impacting Cambodia, where it affected 24 provinces, destroyed the livelihoods of 180,000 people (1.4 per cent of the population) and caused 43 casualties. The total damages were estimated at US\$ 132 million, of which 74 million were disaster losses. Transport, housing, education sectors suffered the most severe damages, whereas agriculture suffered the most severe future losses, over US\$ 56 million (UNDRR 2019). Another example of external shock can be taken from the effect of the global economic crisis in 2008-2009. During that time, Cambodia's economy hurt hardly. This led to the negative growth rate of Cambodia's GDP and GDP per capita.

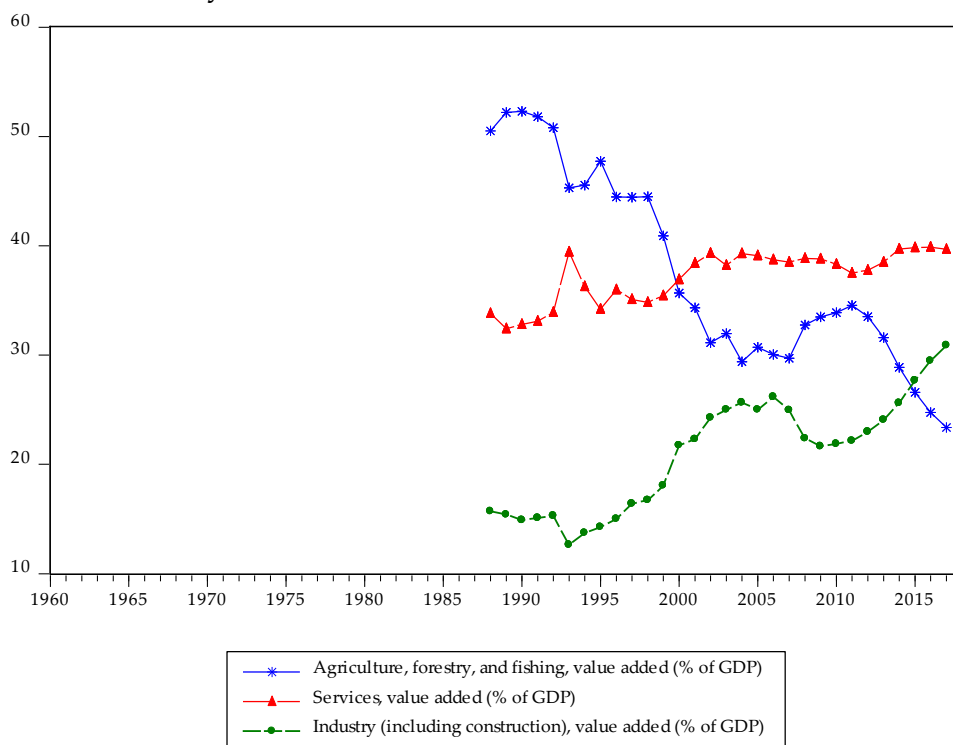
Economics, Employment by Sectors and Source of Growth

Since the past, the agricultural sector has played a greater role in the Cambodian economy, making the highest percentage of economic sector and employment compared to the service and industry sectors. However, from the early 2000s, the situation has gradually changed.

Before the Khmer Rouge regime, the industry sector increased its contribution to GDP although the majority of Cambodian people remained involved in the agricultural sector. The arrival of the Khmer Rouge regime recalled the importance of this traditional sector and it still continued in the next regime. By 1985, the share of agriculture in GDP increased to 90 per cent while the share of industry in GDP was only 5 per cent compared to 19 per cent in 1969 (Ross 1990).

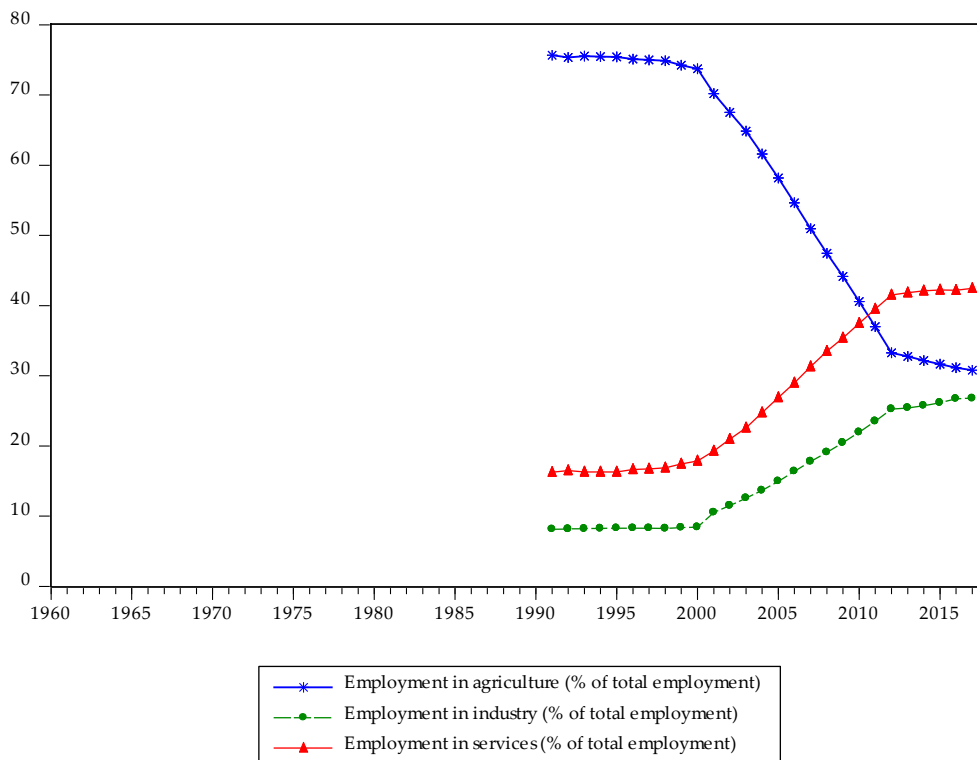
As shown in [Figure 6](#) and [7](#), the agricultural sector has slowly decreased in GDP since the early 1990s, but the employment in this sector remains stable until the early 2000s before it has progressively declined. In the coming future, the contribution of the service and industry sectors will see its higher percentage at the same time compared to the agricultural sector.

FIGURE 6 Economic by sector 1988-2017



SOURCE Economic by sector: the World Bank national accounts data, and OECD National Accounts data files

FIGURE 7 Employment by sector 1960-2017



SOURCE Employment by sector: International Labour Organization, ILOSTAT database. Data retrieved in April 2019.

The Table 1 and Figures 8-11 show in detail the evolution of Cambodia's economic structure in sub-sector, and its contribution to GDP growth since the 1990s. Agriculture is the major source of economic growth in the past; however, since the 2000s, urban manufacturing, construction and tourism have been the primary engines of growth, and they have concentrated predominantly in Siem Reap and Phnom Penh (World Bank 2006). This trend has continued in the past decade, adding more weight on garment, construction, trade and finance, real estate, and hotels and transportation. Besides, the GDP growth mostly involves the people living in the city or urban areas, including Phnom Penh, Siem Reap, Sihanoukville and Battambang, and have opportunities to involve in the service and industrial sector.

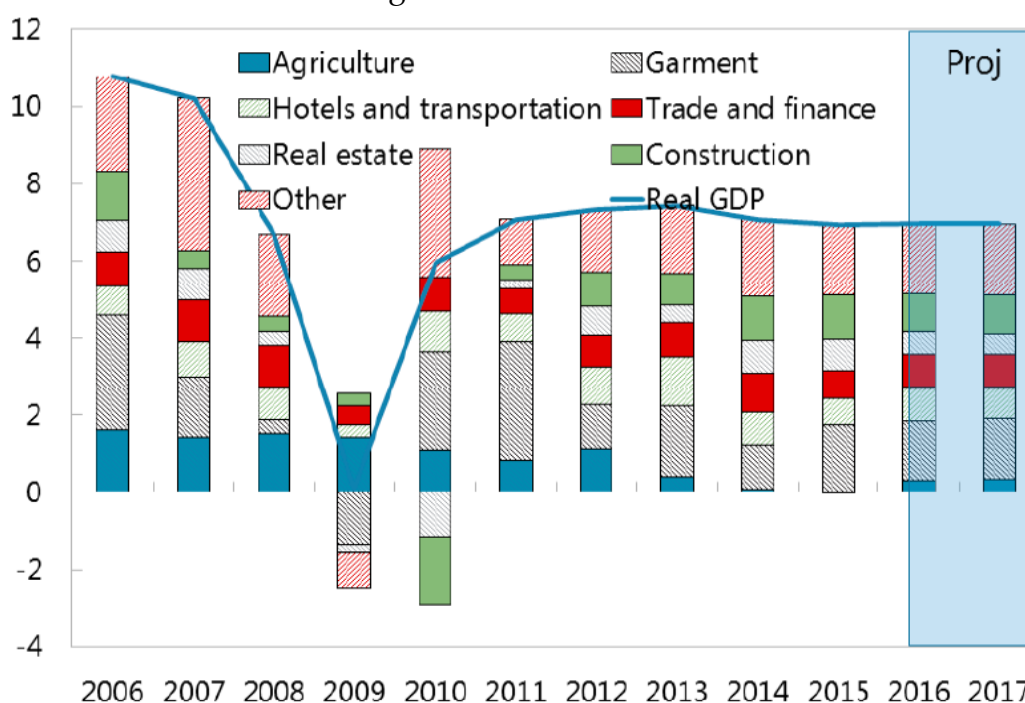
A report by the Ministry of Economy and Finance of Cambodia in 2016 shows that Cambodia is gradually transforming into an industrialized economy. The share of the industry continues expanding while that of agriculture is shrinking. Industry sector remains driven by the garment sector, however, increased domestic production has been observed in other sectors, i.e. food and beverages, light manufacturing industry. Service sector growth remains subdued, mainly driven by the slowdown of tourism and real-estate sector. The slowdown of the tourism sector is offset by the growth of domestic trade, coupled with transport and communication. Despite the light recovery, growth of agriculture remains slow due to sluggish commodity prices and delay in implementing supporting policies.²⁵

²⁵ About Cambodia's Macroeconomic Progress A Journey of 25 Years by the ADB and the Ministry of Economy and Finance, please see https://www.mef.gov.kh/documents/shares/Macroeconomic_Progress_at_ADB.pdf

TABLE 1 Economic Structure 1990–2010²⁶

As % of GDP	1990	1995	2000	2005	2010
Agriculture	55.6	47.7	35.9	30.7	33.8
Industry	11.2	14.3	21.8	25.0	21.6
Mining	0.5	0.2	0.2	0.4	0.6
Manufacturing	5.2	9.1	16.0	17.8	14.9
Electricity, gas, and water	0.4	0.4	0.4	0.5	0.5
Construction	5.0	4.5	5.2	6.3	5.5
Services	31.7	34.2	37.1	39.1	38.5
Trade	9.4	14.6	14.4	13.5	13.8
Transport and communications	3.8	5.2	6.6	7.4	7.5
Finance	6.8	6.6	7.3	7.7	1.5
Public administration	4.7	2.8	2.7	1.8	1.8
Other industries	7.0	4.9	6.1	8.6	14.0
Less: Imputed bank service charges		0.9	1.1	1.0	1.2
Taxes less subsidies on production and imports	1.5	4.7	6.2	6.2	7.2
Total	100.0	100.0	100.0	100.0	100.0

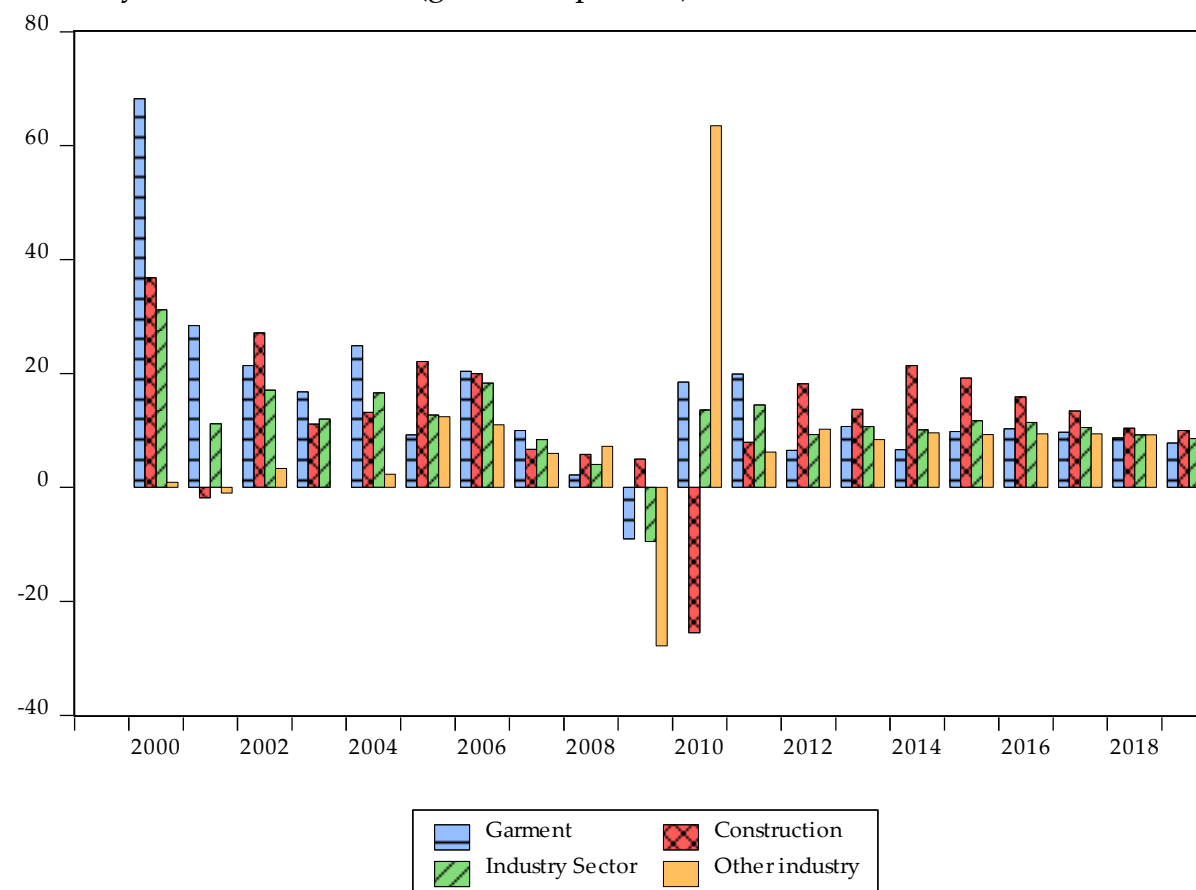
SOURCE ADB Statistical Database System

FIGURE 8 Contribution to GDP growth rate 2006-2017

SOURCE International Monetary Fund (IMF), 2017

²⁶ <https://www.adb.org/sites/default/files/publication/30140/economics-wp331-cambodia-rapid-growth.pdf>

FIGURE 9 Growth of industry and its sub-sectors (growth in percent) 2000-2015

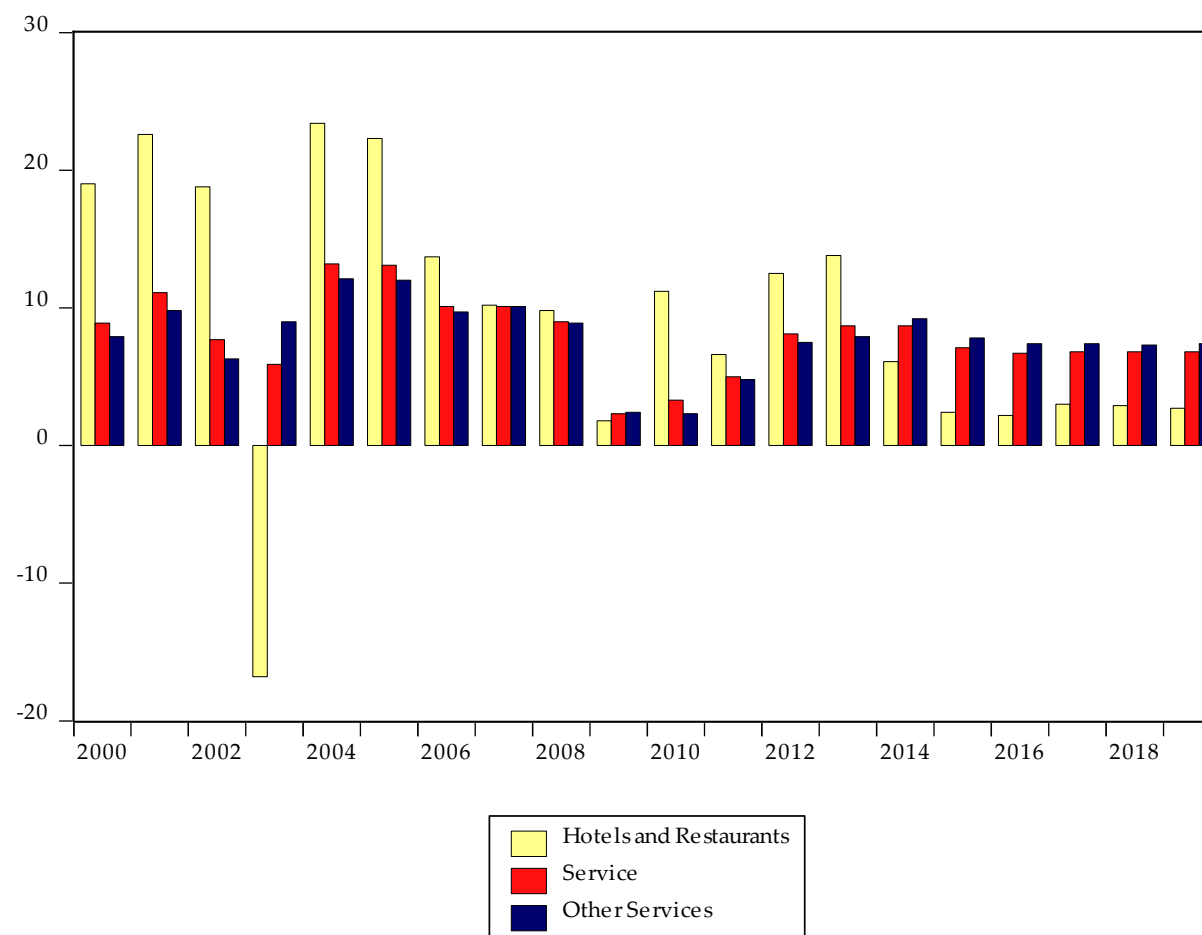


	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016e	2017p	2018p	2019p
Garment	68.2	28.4	21.4	16.8	24.9	9.2	20.4	10	2.2	-9	18.5	19.9	6.5	10.7	6.6	9.8	10.3	9.7	8.7	7.8
Construction	36.8	-1.8	27.1	11.1	13.2	22.1	20	6.7	5.8	5	-25.5	7.9	18.2	13.7	21.4	19.2	15.9	13.4	10.4	10
Other industry	0.9	-1	3.3	3.9	2.3	12.4	11	6	7.2	-27.8	63.5	6.2	10.2	8.4	9.6	9.3	9.4	9.4	9.2	9.2
Industry Sector	31.2	11.2	17.1	12	16.6	12.7	18.3	8.4	4	-9.5	13.6	14.5	9.3	10.7	10.1	11.7	11.4	10.5	9.2	8.6

SOURCE National Institute of Statistics, Ministry of Planning, 2016

NOTE MEF team's projection for 2016-2019

FIGURE 10 Growth of service and its sub-sectors 2000-2015

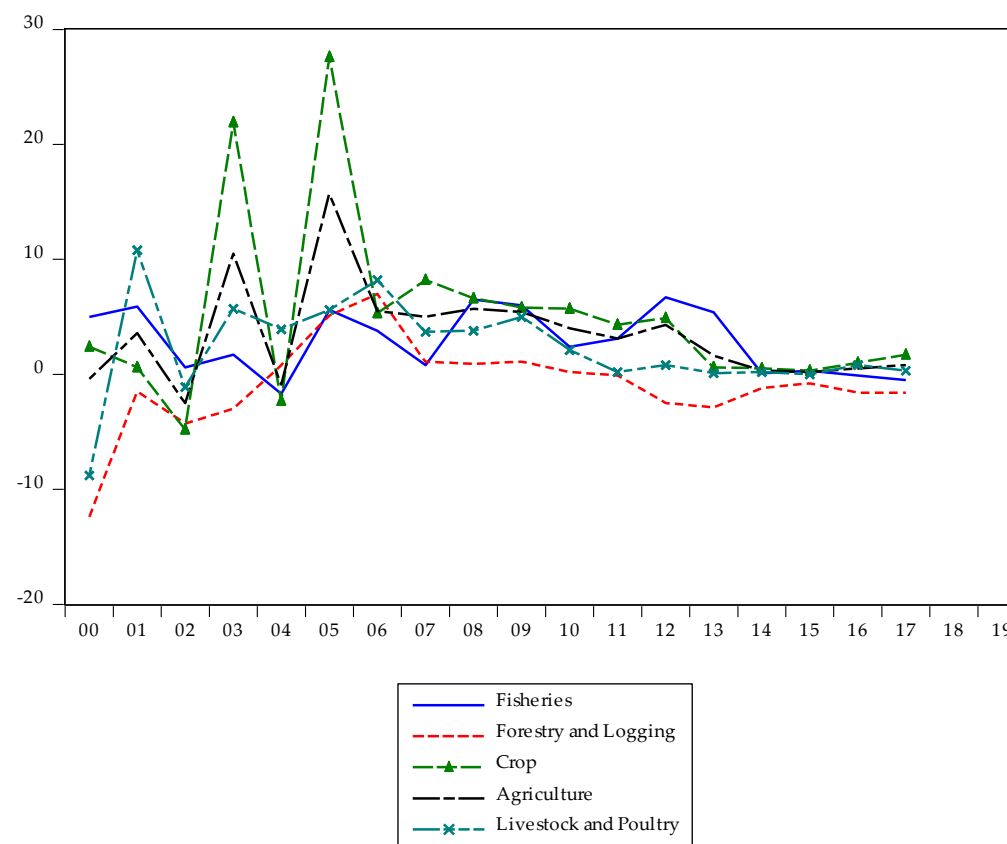


	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016e	2017p	2018p	2019p
Hotels and Rest.	19	22.6	18.8	-16.8	23.4	22.3	13.7	10.2	9.8	1.8	11.2	6.6	12.5	13.8	6.1	2.4	2.2	3	2.9	2.7
Other Services	7.9	9.8	6.3	9	12.1	12	9.7	10.1	8.9	2.4	2.3	4.8	7.5	7.9	9.2	7.8	7.4	7.4	7.3	7.4
Service	8.9	11.1	7.7	5.9	13.2	13.1	10.1	10.1	9	2.3	3.3	5	8.1	8.7	8.7	7.1	6.7	6.8	6.8	6.8

SOURCE National Institute of Statistics, Ministry of Planning, 2016

NOTE MEF team's projection for 2016-2019

FIGURE 11 Growth of agriculture 2000-2015



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016e	2017p
Fisheries	5	5.9	0.6	1.7	-1.7	5.6	3.8	0.8	6.5	6	2.4	3.1	6.7	5.4	0.1	0.3	-0.1	-0.5
Crop	2.4	0.6	-4.8	21.9	-2.3	27.6	5.3	8.2	6.6	5.8	5.7	4.3	4.9	0.6	0.5	0.3	1	1.7
Livestock and Poultry	-8.8	10.8	-1.1	5.7	3.9	5.6	8.2	3.7	3.8	5	2.1	0.2	0.8	0.1	0.2	0	0.8	0.3
Forestry and Logging	-12.4	-1.5	-4.3	-3	0.8	5.1	7	1.1	0.9	1.1	0.2	-0.1	-2.5	-2.9	-1.2	-0.8	-1.6	-1.6
Agriculture	-0.4	3.6	-2.5	10.5	-0.9	15.7	5.5	5	5.7	5.4	4	3.1	4.3	1.6	0.3	0.2	0.5	0.8

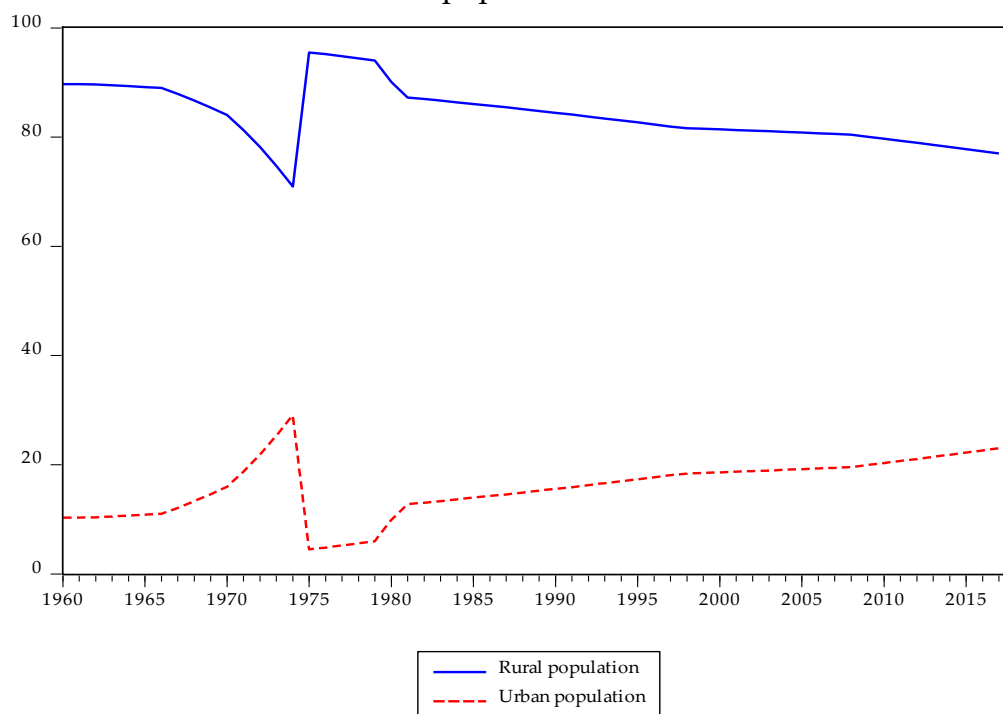
SOURCE National Institute of Statistics, Ministry of Planning, 2016

NOTE MEF team's projection for 2016-2019

Cambodia as a Rural Country

Cambodia remains a rural country, making the third-highest rate of the rural population (% of the total population) in Asia, behind only Sri Lanka and Nepal. It is worth noting that the rural population after the French colonisation decreased from 89.72 per cent in 1960 to 70.95 per cent in 1974 when Cambodia transformed itself to an industrialized economy and the people moved to the city. The arrival of the Khmer Rouge regime provoked to mobilize people to the rural area, which there was only 5.21 per cent of urban population at that time. During the People's Republic Kampuchea, rural Cambodia makes up nearly 90 per cent of the country's 1,621 communes, and this has changed very little over time (World Bank 2013). According to the last update data, as shown in Figure 12, the rural population decreased from 84.45 per cent in 1990 to 81.41 in 2000, 79.71 per cent in 2010 and 77.02 in 2017. Therefore, presently, there are nearly eight among ten Cambodian people, who still live in the rural area.

FIGURE 12 Share of rural and urban population 1960-2017



SOURCE the World Bank staff estimates based on the UN Population Division's World Urbanization Prospects: 2018 Revision.

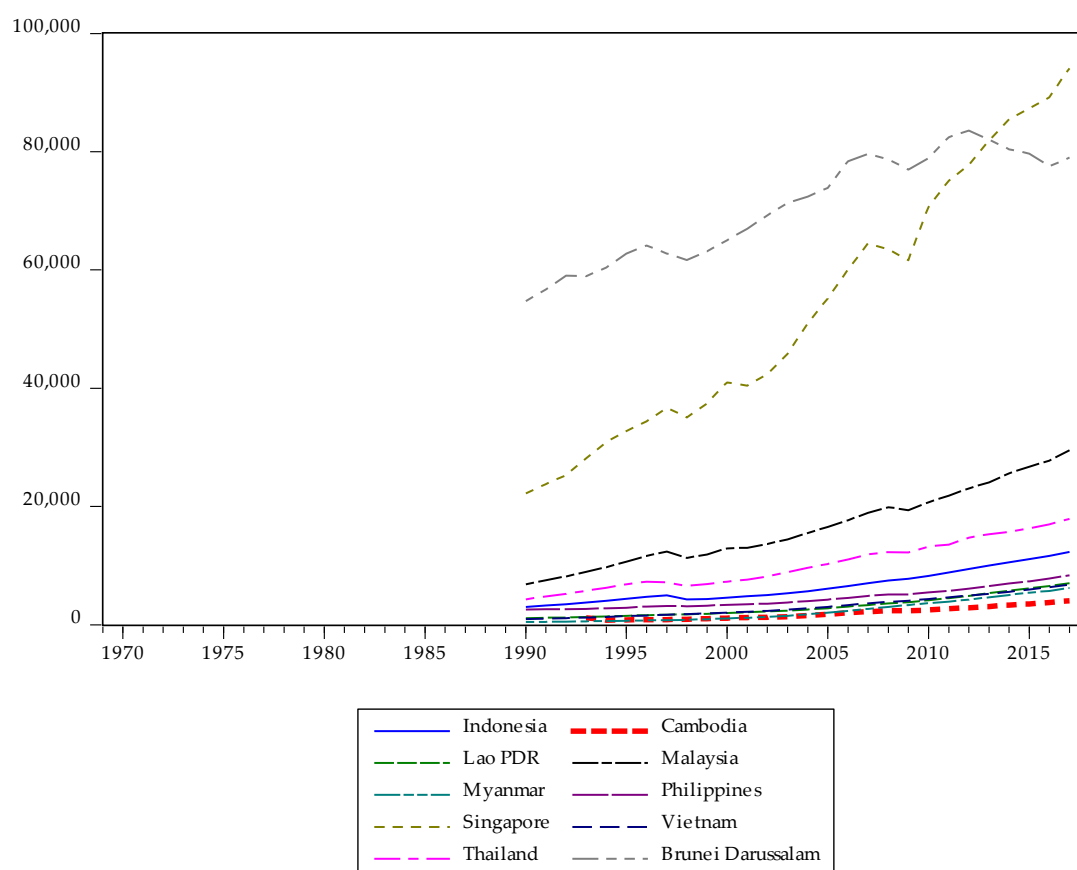
There are at least three major reasons why urbanization remains low in Cambodia. First, although 3.5 million Cambodians were migrants in 2008, most were moving from rural areas to other rural areas. Moreover, much of this took place during the 1980s and first part of the 1990s. After discounting for different population growth rates, the urban share increased from 18.3 per cent in 1998 to only 19.5 per cent in 2008. Second, it is still easy for urban migrants - either short term or long-term migrant - to return to their rural homes if a shock occurs, suggesting that rural areas provide a safety net during crises. This was clearly evident in 2009 when the global financial crisis affected the garment and footwear, construction, and service industries. Many of these laid-off workers returned to their families in rural areas, waiting for an opportunity to return to the cities. This caused a temporary increase of 1 per cent in the rural population in 2009 (World Bank 2013). Finally, a new trend of Cambodian immigrants, making up more than a million people, can be observed during the last decade. However, most of them have mobilized from Cambodia to abroad. Thailand, Korea and Malaysia are the top destinations for Cambodian immigrants.

2.1.4 Cambodia and the World: Comparative Reality

Cambodia is in the group of the top 10 fastest-growing economies in the World during the last two decades. The Asian Development Bank (ADB) named this small country as Asia's New Tiger Economy (ADB 2016). The new classification of Cambodia's economy by the World Bank is the lower-middle-income economies. According to the current government of Cambodia, the kingdom has dreamed its way forward for the upper-middle-income economy by 2030 and high-income economy by 2050. It should be pointed out that Cambodia's economy grows so fast since it starts from a very low initial level of the economy. Therefore, any positive change would explain huge growth. It is like growing phase of a person at a young age. However comparing to the rest of the world, Cambodia's GDP per capita and the HDI are very low. GDP per capita's ranking in 2019 is 137 of 185 by the IMF or 140 of 181 by the World Bank.

HDI's ranking in 2019 is 146 of 189 by the United Nations Development Programme (UNDP).²⁷ To give a clearer picture, although Cambodia has impressively achieved its economic development during the last decades, Cambodia's GDP per capita is, regionally, the lowest among its ASEAN neighbours (see Figure 13). Globally, this Asian nation remains one of the poorest countries on earth. Africa is the home of the poor country and there are a few of the world's poorest countries, which are not in Africa. Of the thirty-five low-income countries, twenty-seven are in Africa; the other eight are Afghanistan, Bangladesh, Cambodia, Haiti, Myanmar (Burma), Nepal, North Korea, and Tajikistan (Deaton 2013). Here, we can observe that Cambodia is also on the list.

FIGURE 13 Per capita GDP PPP (current international \$) of ASEAN countries 1970-2017



SOURCE the World Bank, International Comparison Program database.

²⁷ See IMF (2019), World Bank (2019) and UNDP (2019).

2.2 Poverty and Inequality History

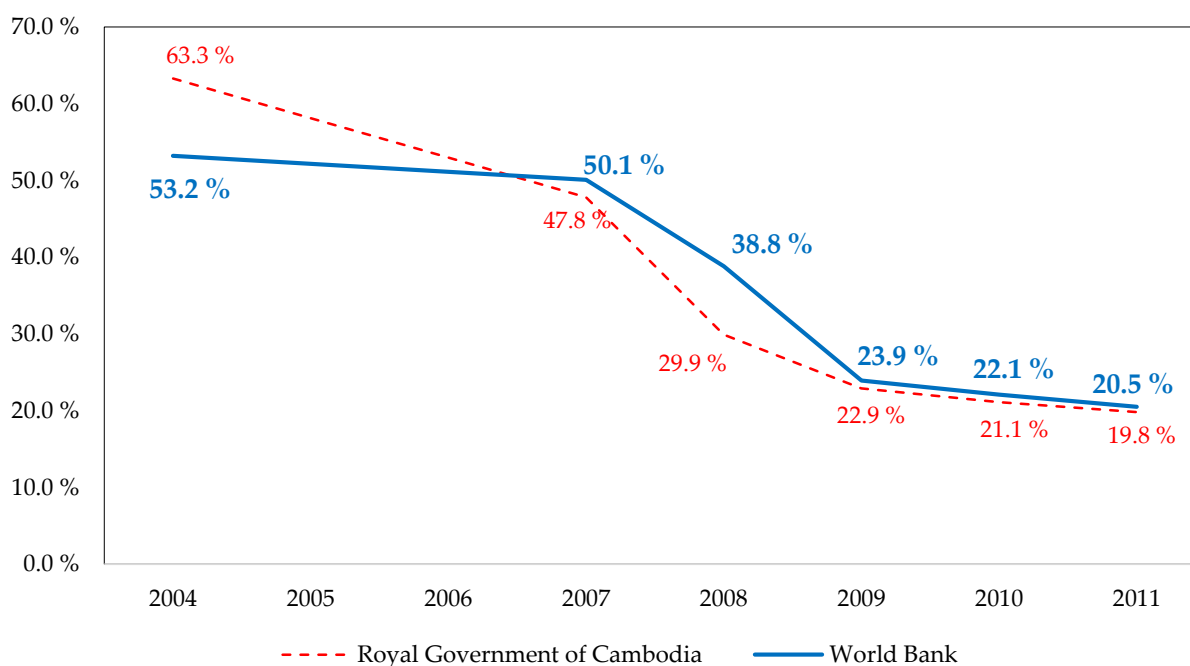
The profile of poverty in Cambodia has changed over time and varied across the region; however, like the overall trend of global poverty, it is, in general, in declining trends during the last few decades. This general trend is evident from the household survey data, no matter what poverty line is used: government, the World Bank, or other international databases (ADB 2014, 16).

Using the poverty line from the Cambodia Socio-Economic Survey (CSES), there are presently less than two people among ten, who live under poverty. However, the majority of these people escaped poverty only slightly. They remain highly vulnerable, even to small shocks, which could quickly bring them back into poverty. The majority of them lives in a rural area, and almost poor households, involving in agricultural sectors, live outside the city or urban areas (World Bank 2013, XIII). Additionally, the most recent studies at national level give emphasis that many Cambodian people, especially the poorer households, have involved in high debt, landless and intergenerational migration.

The profile of inequality has emerged itself as a result that Cambodia has transformed into the free-market economy and has remarkably opened to the world since the early 1990s. The statistics by the CSES show the declining level of inequality since 2007. However, there are several things to be concerned. On the one hand, despite a larger and more representative sample than used previously, the new CSES cannot capture the top income. For example, the average consumption in the richest quintile in the survey is at just \$3.75 per person per day. On the other hand, using tax data rather than the survey's micro-data would provide a clearer and more complete picture. However, it is yet available in Cambodia. According to the Inequality Transparency Index by the World Inequality Lab, Cambodia is among the countries with the lowest score of transparency on the access to quality data on the distribution of income and wealth.

It is worth noting that a profile of poverty and inequality in Cambodia can be different according to what indicator we use, for instance, the estimates by the Royal Government of Cambodia (RGC) or the World Bank (see Figure 14). However, consumption per capita was selected as the preferred indicator of a household's wellbeing (World Bank 2013, 6). To give an example, the RGC's poverty line in 2009 was measured by household's consumption of 3,871 Cambodian riels, and the World Bank's poverty line was measured by household's consumption of 4,081 Cambodian riels.²⁸ This means that the World Bank's poverty line is +1 per cent at least higher than that of the RGC (ADB 2014, 7).

FIGURE 14 Comparing new poverty estimates from World Bank and Government of Cambodia 2004–2011



SOURCE World Bank and Royal Government of Cambodia estimates using CSES. It was taken from World Bank (2013). "Where have all the poor gone?: Cambodia poverty assessment 2013." A World Bank country study. Washington, DC: World Bank Group, page 109.

Since the Khmer Rouge regime, the history of poverty and inequality in Cambodia can be analysed into four major stages: first, it is from the Khmer Rouge

²⁸ The average exchange rate in 2009 was \$US 1 = KR 4,183.

regime until the early 1990s when there is no available official database; second, it is from 1993-94 when the first-ever CSES were introduced; third, it is from 2004 until now when we used the new updated CSES, and finally, it is from the early 2010s when the Multidimensional Poverty Index (MPI) was also introduced.

2.2.1 From the Khmer Rouge Regime to 1990s: No Official Data

It is also statistically impossible to measure poverty and inequality in the Khmer Rouge regime from 1975-79. The regime was characterized by loss of all personal property, forced labour and migration, imprisonment, and executions. An estimated two million died, most owing to execution, famine and disease (World Bank 2013, XI). The economic life of the Khmer Rouge regime was described as being poor enough to not be able to feed the people. According to report of the U.S. Library of Congress, 'even after the better harvests of 1976 and 1977, however, rice distribution was unequal, and the government failed to reach the daily ration of 570 grams per person. The daily ration of rice per person actually varied by region from 250 to 500 grams. Party leaders, cadres, soldiers, and factory workers ate well, but children, the sick, and the elderly suffered from malnutrition and starvation.'²⁹ In this regard, we might presume that poverty in the Khmer Rouge regime should have been extremely high as everyone was poor. Consequently, inequality, which was perceived ideologically and practically as egalitarianism, would have been extremely low.

According to Michael Vickery, the inequality of living condition during the Khmer Rouge regime appeared by the zone where people lived. 'In general, living conditions considered by zone during the Democratic Kampuchea period were best in the East, and in the adjacent Kratie Special Region, partly because of their agricultural potential, but also because of the orientation of their leadership. Another favourable place to live was Region 3, in the North West, just west of Battambang city,

²⁹ <http://countrystudies.us/cambodia/61.htm>

where the agricultural potential was good and the leadership lenient. In the South-West working conditions and discipline were extremely strict, and executions more of a threat than in the East, but the tight organization ensured that food supplies were in most places adequate to prevent starvation, even though the zone had been relatively poor in normal times. Perhaps the very worst areas for death by starvation and overwork were those where urban evacuees had been assigned to carve new villages and fields out of forests, without adequate tools, food, or any experience in such work. Regions 5 and 6 of the North-West, in northern Battambang and western Pursat provinces respectively, were apparently the worst in this respect. A different type of situation, generally speaking, prevailed in the Central Zone, dominated by one of the most brutal of Pol Pot's military supporters. There, food shortages rarely reached starvation levels, but capricious brutality was an ever-present danger, and conditions varied considerably even among adjacent villages, depending on the character of the local leaders' (Vickery 1986, 30-31).

During the People's Republic of Kampuchea, even though everything has been relatively improved compared to the previous regime, poverty would have remained high enough and inequality would have remained low. However, per capita consumption for those, who live in some regions, should have been good enough to feed their daily life because Cambodia at that time was very rich in natural resources and people were not prohibited to use these resources like in the previous regime. For example, the statistics after the Khmer Rouge regime shows that forest area (% of land area) until 1990 in Cambodia was 73.33 per cent. Cambodia's fish resources per capita and per cubic meter of water were known as the highest rate in the region. These natural resources have been gradually declined until now. Furthermore, the high rate of the rural population, making in average over 87 per cent of the total population in Cambodia during 1979-1989, signified another evidence that only one among ten Cambodians, who left to the city and urban, could probably have the experience to

improve their higher welfare comparing to those who still stayed in the rural area. However, it was nearly the end of the regime.

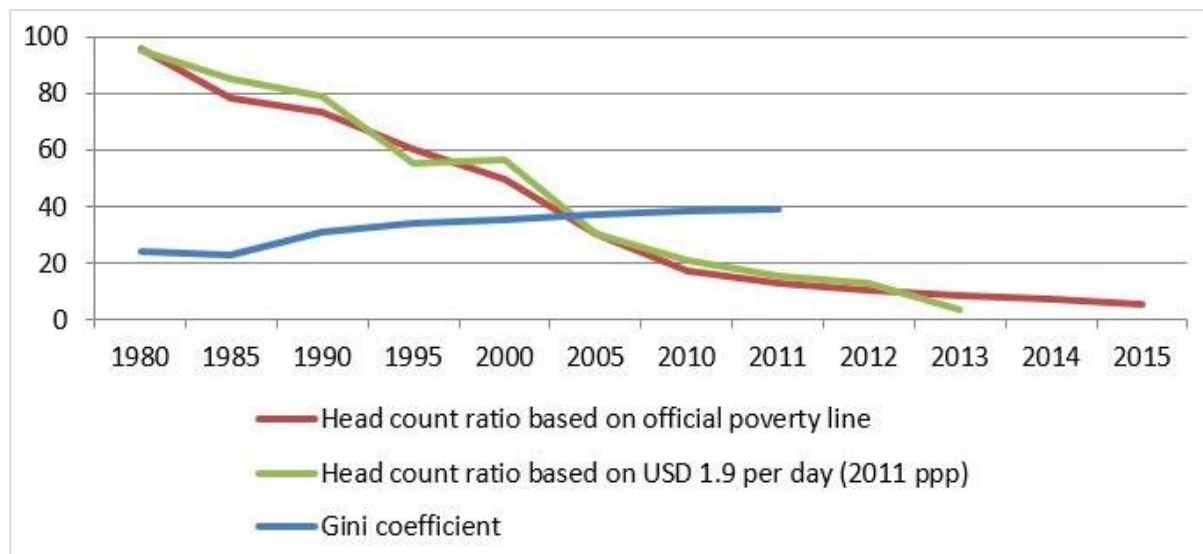
Like the global communist experience of the planned economic system, its ineffectiveness could not promote people's welfare. Consequently, most of the communist countries in the twentieth century have faced high poverty although they could have lower inequality. Vietnam, whose political and economic ideology and practices were not dissimilar to Cambodia during that time, was recorded to have the poverty rate of more than 50 per cent in 1980s.³⁰

With a notable limitation of size, the headcount ratio of poverty in China by the official poverty line in 1980, as shown in [Figure 15](#), was 94 per cent in rural China and it was nearly 80 per cent before 1990. Moreover, the Chinese economic reform to the socialist market economy was already introduced by the Communist Party of China, led by Deng Xiaoping, since 1978. This explains another example of how poverty was very high in the communist country and there is no exception for Cambodia.

The [Figure 16](#) shows, furthermore, the top 10% income shares across the world since 1980. Before the 1990s, the inequality in China and Russia was relatively low comparing to the western countries and others. According to Alvaredo, et al. (2018), 'the diversity of trends observed across countries since 1980 shows that income inequality dynamics are shaped by a variety of national, institutional and political contexts. This is illustrated by the different trajectories followed by the former communist or highly regulated countries, China, India, and Russia. The rise in inequality since 1990 was particularly abrupt in Russia, moderate in China, and relatively gradual in India, reflecting different types of deregulation and opening-up policies pursued over the past decades in these countries.'

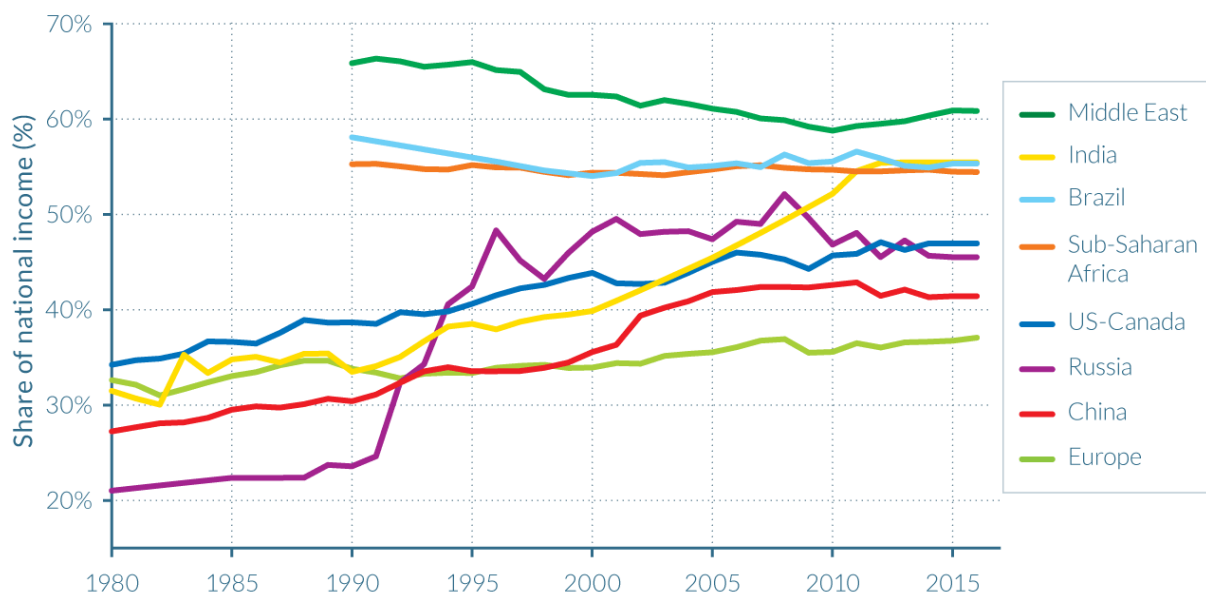
³⁰ <https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2019/03/Reducing-rural-poverty-in-Vietnam-Issues-Policies-Challenges.pdf>

FIGURE 15 Change in Poverty head count ratio and Gini coefficient in rural China since 1980



SOURCE China National Bureau of Statistics (2015), Poverty Monitoring Report of Rural China, China Statistics Press; the data for poverty by USD 1.9 per day is from PovcalNet: the online tool for poverty measurement developed by the Development Research Group of the World Bank. It is taken from (Wu 2016).

FIGURE 16 Top 10% income shares across the world, 1980–2016: Is world inequality moving towards the high-inequality frontier?



Source: WID.world (2017). See wir2018.wid.world/methodology.html for data series and notes.

In 2016, 55% of national income was received by the Top 10% earners in India, against 31% in 1980.

SOURCE It was taken from the World Inequality Report 2018 (Alvaredo, et al. 2018)

2.2.2 The First 1993/1994 CSES

The CSES has been conducted by the National Institute of Statistics (NIS) and Ministry of Planning (MOP) in 1993/94, 1996, 1997, 1999 and 2004. Since 2007, NIS conducts the CSES annually. The CSES is a household survey covering many areas relating to poverty and living conditions.³¹ Although the 1990s CSES was not the same as the current updated CSES, these surveys provided the official database, where we could access the wellbeing of Cambodian households.

Even though the 1990s CSES is conducted with both financial and technical support from many international institutions, there are still many limitations in those surveys, which is required our high attention in using it. It is included the consumption line that is no longer a good indicator of the poverty of nowadays, lack of reliable census information, or not representative nationwide samples.

As shown in [Table 2](#), the poverty line by government estimates shows a declining trend from 39.0% in 1993/94 to 35.9% in 1999, but it increases doubly to 63.3% in 2004. It is not because the number of poor households was doubling during this period, but the reason is due to the way that we estimate the poverty line. There are “old” and “new” poverty estimates. According to a report by the World Bank, ‘the old poverty estimates were developed based on the 1993-94 CSES household survey. They reflect conditions from almost twenty years ago. The new and old poverty estimates show almost the same evolution over time. For food poverty, the new estimates are slightly lower than the old estimates. For total poverty, the new estimates are significantly higher than the old estimates’ (World Bank 2013, 109).

³¹ <https://www.ilo.org/surveydata/index.php/catalog/38/study-description>

TABLE 2 Poverty estimates by region 1993-94, 1996, 1997, 1999, and 2004 to 2017

Region	1993/94	1996	1997	1999	2004	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Poverty headcount																
Primary investigator(s)	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS
Affiliation		MOP		MOP	MOP	MOP	MOP	MOP	MOP	MOP	MOP	MOP	MOP	MOP	MOP	MOP
Funding	UNDP ADB	ILO, ADB UNDP/ CARERE UNICEF	UNDP WB SIDA	UNDP	UNDP SIDA	SIDA	SIDA	SIDA	SIDA	SIDA	SIDA RGC	SIDA RGC	SIDA RGC	SIDA RGC	SIDA RGC	EU SIDA
Project executing agency			WB	WB												
Technical assistance				UNDP	SCB	SCB	SCB	SCB	SCB	SCB	SCB	SCB	SCB	SCB	SCB	SCB
Sample and Methodologies																
Households	5,578	9,000	6,010	6,000	12,096	3,600	3,600	12,000	3,600	-	-	3,600	12,096	3,840	3,840	3,840
Village	500	780	474	600	720	360	360	720	720	-	-	-	-	-	384	384
Representative / Provinces	15 / 21	-	-	24 / 24	Nation wide	Nation wide	Nation wide	Nation wide	Nation wide	Nation wide	Nation wide	Nation wide	Nation wide	Nation wide	Nation wide	Nation wide
Methodologies	Old	Old	Old	Old	New	New	New	New	New	New	New	New	New	New	New	New
Poverty line by Government estimates																
Phnom Penh	11.4%	-	11.1%	9.7%	-	19.1 %	13.6 %	12.8 %	12.4 %	10.9 %	16.3 %	-	-	-	-	-
Other Urban	36.6%	-	29.9%	24.73%	-	41.0 %	30.5 %	19.2 %	17.0 %	22.5 %	14.5 %	-	-	-	-	-
Rural	43.1%	-	40.1%	40.1%	-	53.2 %	31.9 %	24.6 %	22.7 %	20.7 %	20.0 %	-	-	-	-	-
Cambodia	39.0%	-	36.1%	35.9%	63.3%	47.8%	29.9%	22.9%	21.1%	19.8%	18.9%	16.0%	13.50%	-	-	-
Poverty line by World Bank estimates																
Phnom Penh	11%	-	-	-	15.8%	2.7%	2.5%	4.3%	4.5%	1.5%	-	-	-	-	-	-
Other Urban	-	-	-	-	39.7%	35.0%	26.8%	12.7%	12.6%	16.1%	-	-	-	-	-	-
Rural	-	-	-	-	59.0%	57.9%	44.6%	27.5%	25.4%	23.7%	-	-	-	-	-	-
Cambodia	47%	-	-	-	53.2%	50.1%	38.8%	23.9%	22.1%	20.5%	17.7%	-	-	-	-	-

SOURCE Poverty line in 1993/94, 1996, 1997 and 1999 was taken from JICA (2010, 3), Table 1-2, "Kingdom of Cambodia Study for Poverty Profiles in the Asian Region Final Report." Poverty line in 2004 to 2017 by Government estimates was taken from ADB (2014, 5), Figure 3, "Cambodia: Country Poverty Analysis 2014." Poverty line in 2004 to 2017 by World Bank estimates was taken from World Bank (2013, 9), Figure 5 and 6, "World Bank, Where Have All the Poor Gone?: Cambodia Poverty Assessment 2013".

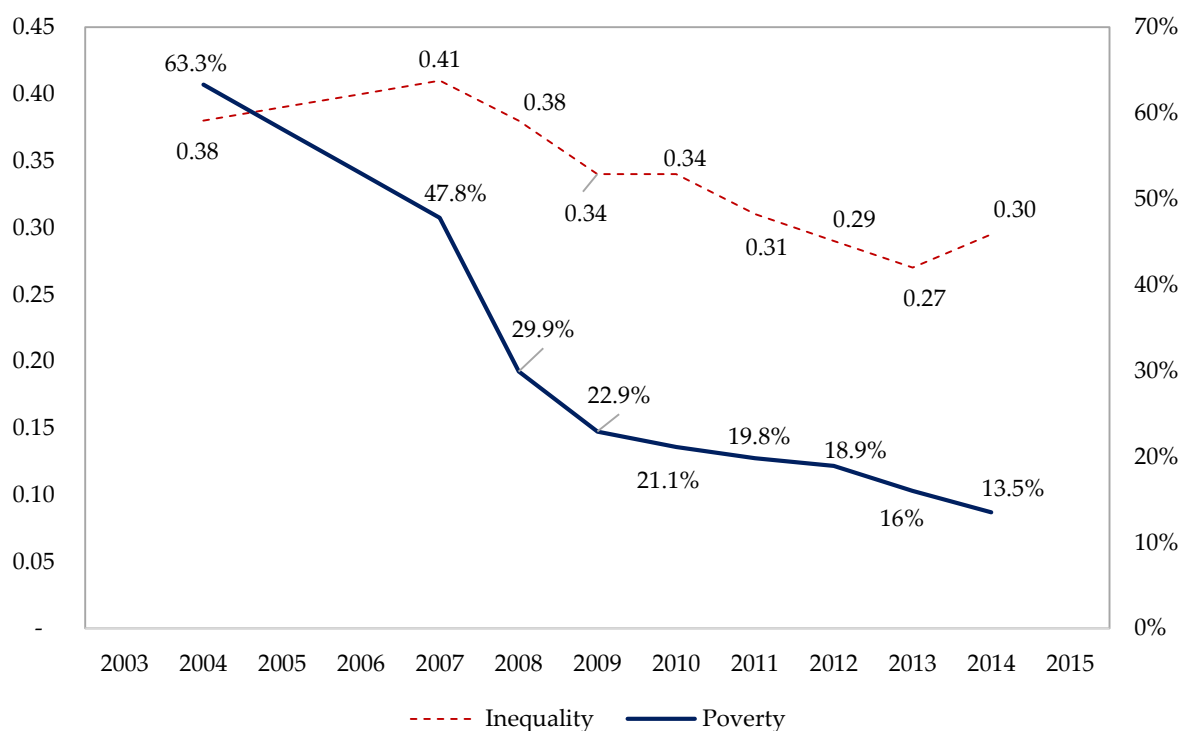
NOTE NIS (National Institute of Statistics), MOP (Ministry of Planning), UNDP/CARERE (United Nations Development Programme/Cambodia Area Rehabilitation and Regeneration Project), ADB (Asian Development Bank), UNICEF (United Nations Children's Fund), ILO (International Labour Organization), WB (World Bank), SIDA (the Swedish International Development Cooperation Agency), SCB (Statistics Sweden), and RGC (Royal Government of Cambodia), European Commission (EU).

2.2.3 From 2004 to present: the Updated CSES³²

The CSES 2009 was chosen as the year to update and to improve the way poverty is measured in Cambodia. However, the new measurement is also used to estimate for the CSES 2004, 2007 and 2008. Starting in 2004, the survey design, the questionnaire, the field work, and the overall methodology in collecting and processing the information were standardized (World Bank 2013, 85).

The poverty and inequality profile in Cambodia from 2004 until nowadays have evolved in few remarking trends: from 2004 to 2007, from 2007 to 2009, and from 2009 until now (see Figure 17).

FIGURE 17 Profile of poverty and inequality in Cambodia by government estimates 2004-2014



SOURCE National Institute of Statistics, Ministry of Planning. Data are based on primary household survey data obtained from government statistical agencies.

³² About the CSES reports since 2004, please see <https://www.nis.gov.kh/index.php/en/14-cses/12-cambodia-socio-economic-survey-reports>

Over the three years from 2004 to 2007, the high economic growth led not only to poverty reduction but also to increase inequality. The poverty line fell from 63.3 per cent to 47.8 per cent and the Gini coefficient increased from 0.38 to 0.41. The poverty reduction during this period mostly concentrates in Phnom Penh and other urban area. There was little change in the rural area (using available data from World Bank estimates). During this period, real per capita household consumption was increased. The picture of welfare improvements is reinforced by improvements in a wide range of variables related to ownership of consumer durables, service delivery and human development outcomes (Knowles 2009).

TABLE 3 Consumption shares and Gini values Cambodia 2004-2011

	2004	2007	2008	2009	2010	2011
Share of poorest 20%	0.084	0.075	0.084	0.085	0.09	0.096
Share richest 20%	0.42	0.46	0.41	0.41	0.4	0.38
Share richest/poorest	4.9	6.1	4.9	4.8	4.4	4
GINI * 100	32.6	37.4	32.3	31.9	30.2	28.2
Theil Index * 100	18.6	27	18.2	17.9	16	13.7

SOURCE World Bank staff estimates based on CSES. It was taken from World Bank (2013, 15).

By 2007, as shown in Table 3, nearly one-half of Cambodia's total consumption was enjoyed by the richest 20 percent of the population. Average expenditure per capita in Phnom Penh was more than 3.5 times that of the rural areas; the richest 20 percent were spending, on average, 8 times more than the poorest 20 percent and 2.6 times more than the average Cambodian. Consumption by the poorest 20 percent also fell from 8.5 percent in 1994 to 6.6 percent in 2007. Cambodia, during this period, is thus one of the most unequal countries in the region. This is somewhat unusual, as most countries in Southeast and East Asia saw inequality widen only in the later stages of development, when average levels of consumption were higher and poverty headcounts were lower (ADB 2011, Rushdy 2009).

From 2007 to 2009, the poverty reduction was unexpected. The poverty line continued to fall to 22.9. The poverty reduction during this period concentrates in the

rural area and other urban rather than in Phnom Penh. On the other hand, inequality shows its declining trend since 2007. All Cambodians' consumption increased in 2007 except for the poorest quintile, prompting the increase of inequality detected that year. Consumption also increased in 2008 and 2009 for the entire population except for the richest quintile in 2009, showing the impact of the financial crisis (World Bank 2013).

Since 2009, poverty reduction remains to continue. The poor households in Cambodia present currently about 14% compared to the total population. However, the evolution of Gini coefficient shows mostly a stable trend toward 0.30, describing an insignificant reduction in inequality.

2.2.4 From Early 2010s to Present: the MPI

Beyond income and consumption measurement of poverty, we might also observe the profile of poverty in Cambodia by using the MPI or in full name "Multidimensional Poverty Index". It was introduced in 2010 by the Oxford Poverty & Human Development Initiative (OPHI) and the UNDP to understand how people experience poverty in multiple and simultaneous dimension. The index is an international measure of acute multidimensional poverty covering over 100 developing countries. It complements traditional monetary-based poverty measures by capturing the acute deprivations that each person faces at the same time with respect to education, health and living standards.³³

Cambodia's multidimensional poverty rate was 45.9 percent in 2010. Compared with the reduction in consumption poverty, this relatively slower progress points to Cambodia's weaker performance in improving people's access to basic services (e.g.,

³³ About the Global Multidimensional Poverty Index, please see <https://ophi.org.uk/multidimensional-poverty-index/>

drinking water, sanitation, electricity, and modern cooking fuels), all of which play a very important role in promoting well-being).³⁴

According to the last report by the 2019 UNDP, 35 per cent of all Cambodians still mired in poverty and the majority is from the rural population, making up to 40 percent. The report also warns that this is especially worrisome as those nearing “poor” are also at risk of falling into multidimensional poverty, which could happen quickly if they suffer setbacks from, among others, sickness, drought and unemployment (UNDP 2019, Dara 2018). Additionally, according to the MPI based on 2014-15 data, this is repeated at the provincial level as multidimensional poverty in capital Phnom Penh is estimated at 7 percent of the population, versus a sizeable 64 percent in the far-flung provinces of Preah Vihear and Stung Treng. Cambodia is not alone in this phenomena, the latest data also reveals the vast majority - 1.1 billion - of the multidimensional poor live in rural areas around the world, where poverty rates, at 36 percent, are four times higher than among those living in urban areas (Xinhua 2018).

2.2.5 Poverty as a Rural Problem

Cambodia is considered as a rural country and its poverty is also a rural problem. As shown in [Figure 18](#), different sub-regions give a different profile of poverty in 2014. The sub-regions in Cambodia include Plains, Tonle Sap, Plateau/Mountain, Phnom Penh and Coastal. The poverty rate in the capital city and coastal region are the lowest in Cambodia. The regions of Plateau/Mountain, Tonle Sap and Plains, which are more populous, have a higher percentage of poor people.

³⁴ Please see the ADB (2014) and World Bank (2013).

FIGURE 18 A regional poverty profile of Cambodia, 2004

Region	Provinces	2008 Population (% of total population)	2004 Poverty Incidence (%)	2004 Poverty Magnitude (% of total poor people)
Plains	Kampong Cham, Kandal, Prey Veng, Svay Rieng, Takeo	5.2 million 39%	32	1.7 million 36%
Tonle Sap	Banteay Meanchey, Battambang, Kampong Chhnang, Kampong Thom, Pursat, Siem Reap	4.1 million 31%	43	1.8 million 38%
Plateau/ Mountain	Kampong Speu, Kratie, Mondolkiri, Oddar Meanchey, Pailin, PreahVihear, Rattanakiri, Stung Treng	1.8 million 13%	52	0.9 million 19%
Phnom Penh	Phnom Penh	1.3 million 10%	5	0.1 million 2%
Coastal	Kampot, Kep, Koh Kong, Sihanoukville	1.0 million 7%	27	0.3 million 6%
Cambodia	All provinces	13.4 million 100%	35	4.7 million 100%

SOURCE It was taken from (ADB 2011, 3), Table 1, "Cambodia: Country Poverty Analysis".

Table 4 shows the evolution of contribution to poverty by its region, including Phnom Penh, other urban region and rural region from 2004 to 2011. The rural area always remains home where the poor households live. During this period, more than eight among ten Cambodian people lived in a rural area; therefore, poverty remains greatly a rural problematic.

TABLE 4 Contribution to poverty Cambodia 2004-2011

	2004	2007	2008	2009	2010	2011
Phnom Penh	2.5%	0.5%	0.6%	1.7%	2.0%	0.8%
Other Urban	8.1%	7.2%	7.1%	5.1%	5.9%	8.2%
Rural	89.4%	92.3%	92.3%	93.2%	92.1%	91.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

SOURCE World Bank staff estimates based on CSES. It was taken from World Bank (2013, 11).

3 Cambodia's Historical Openness

After the long period of the closed economy since the Khmer Rouge regime, Cambodia has reopened itself to the rest of the world in the early 1990s. Joining the ASEAN in 1999 and the WTO in 2004 has remarked Cambodia's integration into the next step of globalisation and international cooperation, particularly through international trade and foreign capital flows.

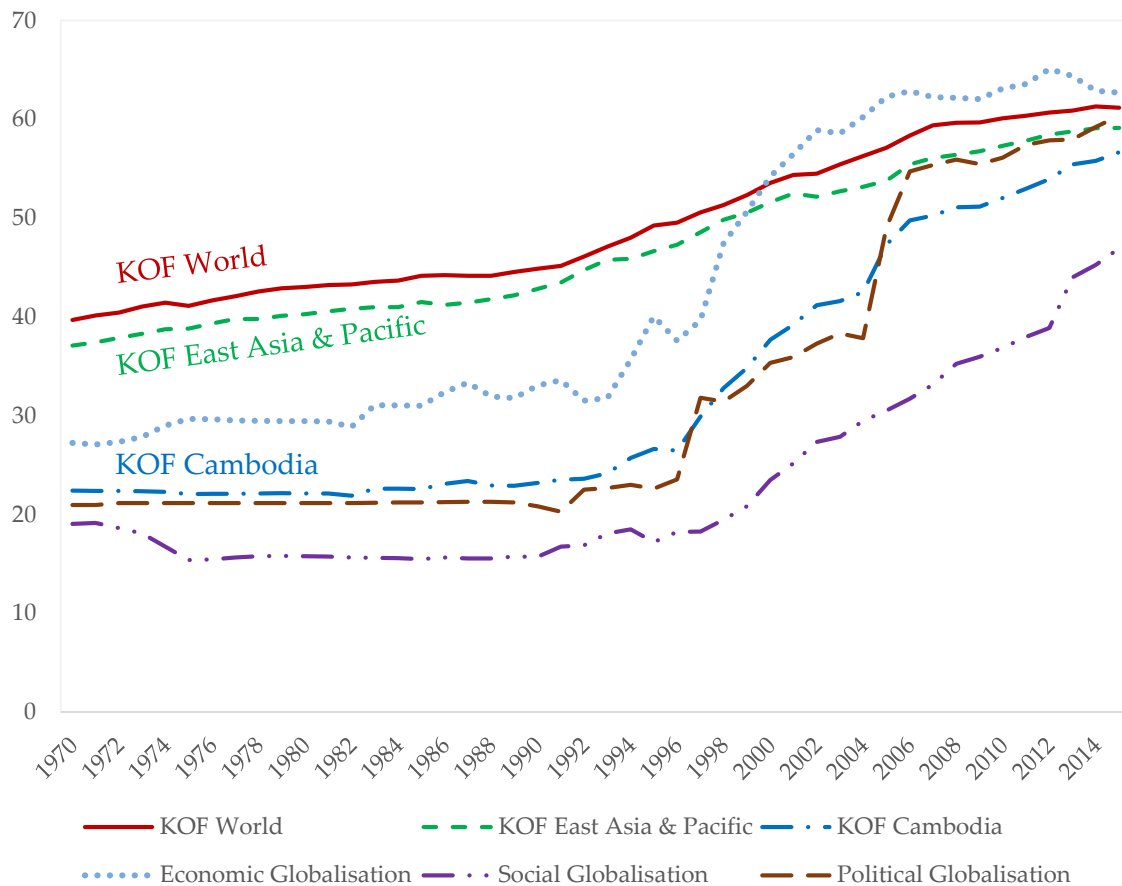
To see how Cambodia has integrated into the world, we might use the KOF Globalisation index³⁵, which calculates on a yearly basis from 1970 to 2015. The index measures the economic, social and political dimensions of globalisation with a scale from one to one hundred, where 100 is assigned to the maximum value of a specific variable over the whole sample of countries and the entire period of time³⁶. As shown in [Figure 19](#), globalisation's trend in Cambodia, East Asia and Pacific, and the world, has been on the rising trend since the 1970s. In Cambodia, from the 1970s to the 1990s, the overall trend remained stable, varying around 20 per cent. However, from the 1990s, the index has increased to more than 50 per cent until the present. Comparing to the KOF Globalisation index's trend, economic globalisation always moved above, political globalisation moved below, and social globalisation moved almost in a similar trend. Considering Cambodia's position with the rest of the world, the growth

³⁵ For more information, please go to <https://www.kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index.html>

³⁶ Economic globalisation is composed of trade globalisation (*de facto*: trade in goods, trade in services, trade partner diversification, and *de jure*: Trade regulations, Trade taxes, Tariffs) and financial globalisation (*de facto*: foreign direct investment, portfolio investment, international debt, international reserves, international income payments, and *de jure*: investment restrictions, capital account openness 1, and capital account openness 2). Social globalisation consists of interpersonal globalisation (*de facto*: international voice traffic, transfers, international tourism, migration, and *de jure*: telephone subscriptions, freedom to visit, international airports), information globalisation (*de facto*: patent applications, international students, high technology exports, and *de jure*: television, internet user, press freedom, internet bandwidth) and cultural globalisation (*de facto*: trade in cultural goods, trademark applications, trade in personal services, McDonald's restaurant, IKEA stores, and *de jure*: Gender parity, Expenditure on education, and Civil freedom). Political globalisation consists of *de facto*: embassies, UN peace keeping missions, and international NGOs, and *de jure*: international organizations, international treaties, and number of partners in investment treaties).

rate of Cambodia's KOR index has grown faster since the 1990s; however, its level is still lower than that of the world as a whole and countries in East Asia and Pacific.

FIGURE 19 KOF Globalisation Index 1970-2015



SOURCE the KOF Swiss Economic Institute (2019)

Using the KOF Globalisation index however allows only to understand the global picture of how a country integrates to the globalized world comparing the highest score because it is calculated as an average index from multiplied indicators. It is worth notice, therefore, that not all data are available for all countries and all years. Missing values within a series are imputed using linear interpolation. Missing values at the beginning or at the end of a series are substituted by the closest observation available. Specifically, this implies that we carry the last value backward in the case of missing data at the beginning of a series and forward in the case of missing data at the end of a series (Gygli, et al. 2019). To better understand Cambodia's openness, the

disaggregated data analysis of trade, capital flows and other dimensions are subject to investigate. This section discusses the historical dynamics of Cambodia's openness to the globalized forces, through particularly international trade, export diversification, foreign capital flows and how microfinance, migration as well as technology may get involved.

3.1 Trade Openness and Cambodia's Trade Policy

3.1.1 International Trade

Cambodia's international trade has significantly evolved, depending on its progress of trade policy. [Table 5](#) and [Figures 20-24](#) respectively demonstrate the evolution of Cambodia's trade policy, trade (% of GDP and billion current US\$)³⁷, and its trading partners.

With the available data as shown in [Figure 20](#) and [21](#), Cambodia has always run a trade deficit since 1960. Trade dropped significantly during a closed economy of the Khmer Rouge regime and the People's Republic of Kampuchea because trade was kept at a minimum with a few allied communist countries. The economic transformation in the 1990s remarked a significant change, especially, after Cambodia joined the ASEAN in 1999, the WTO in 2004, and other regional and global trade agreement.

During the Khmer Rouge regime, Cambodia nearly closed its door to the outside and there is no exception for international trade. Trade was kept at a minimum; however, the low volume of industrial-products trading was only to serve the development of agriculture, which the regime considered as the development priority and the principle of national self-reliance. Although it is recorded that the trade was limited with a few allied communist countries, we found that Cambodia's

³⁷ See Blancheton and Asselain (2005) on the robustness of using trade (% of GDP) to represent a country's trade openness.

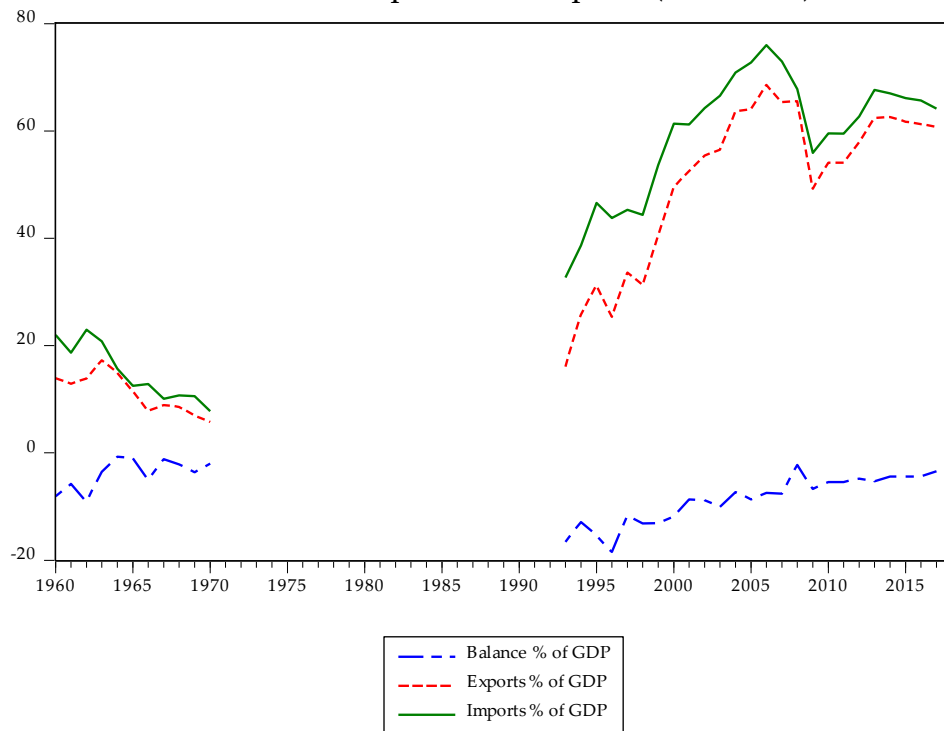
trading partners are from liberal countries, as shown in Figure 22 about Cambodia export and import's partners between 1965 and 1995 (SITC4 classification). The export includes foods, crude materials, and material manufactures to Asia (mainly to Saudi Arabia and Japan), Africa (mainly to Madagascar), and Europe. The import includes foods, machinery and vehicles, material manufactures, chemicals, and fuels from North America (mainly from the US), Asia (mainly from Hong Kong), and Europe.

TABLE 5 Evolution of Cambodia trade policy 1980s-2010s

Year	Trade Policy
1975-79	<ul style="list-style-type: none"> • Revolutionary period • Complete closed economy • All international involvement was removed. The regime also banned all international trade leaving only very limited trade with a few allied communist countries.
1980s	<ul style="list-style-type: none"> • Tightly controlled trading system: level and composition of trade determined through quantitative restrictions and state-owned trading bodies • Embarked on liberalization in the late 1980s <ul style="list-style-type: none"> ◦ <i>Abolished state monopoly of foreign trade</i> ◦ <i>Promulgated a foreign investment law, enabling private companies to engage in foreign trade</i>
1990s	<ul style="list-style-type: none"> • Largely removed restrictions on the ability of firms and individuals to engage in international trade (1993) • Eliminated all quantitative restrictions on trade (1994) • Gained MFN status from the United States (1996); GSP status from the European Union (1997); MFN/GSP status from 28 countries (1999) • Became a member of ASEAN in (1999) • Committed to a gradual reduction in most tariff rates by 2010
2000s	<ul style="list-style-type: none"> • Reduced maximum tariff rates from 120 per cent to 35 per cent and reduced the number of tariff bands from 12 to 4 • Lowered average unweighted tariff rates to 16.5 per cent from 17.3 per cent in 2000 and 18.4 per cent in 1997 • Eliminated most nontariff trade barriers • Initiated a Triangle Economic Cooperation strategy between Cambodia, Vietnam, and Lao in 2002 • PDR, focusing on commerce, industry, public works and transportation, and tourism in 2002 • Accession to WTO in 2003
2010s	<ul style="list-style-type: none"> • The ASEAN Free Trade Area (AFTA): lowering of intra-regional tariffs through the Common Effective Preferential Tariff (CEPT) Scheme for AFTA (the 0-5 per cent tariff range), Cambodia in 2010. • The ASEAN Economic Community (AEC) in 2015: to create a single market for ASEAN member (the free movement of skilled labour, goods, services and investment).

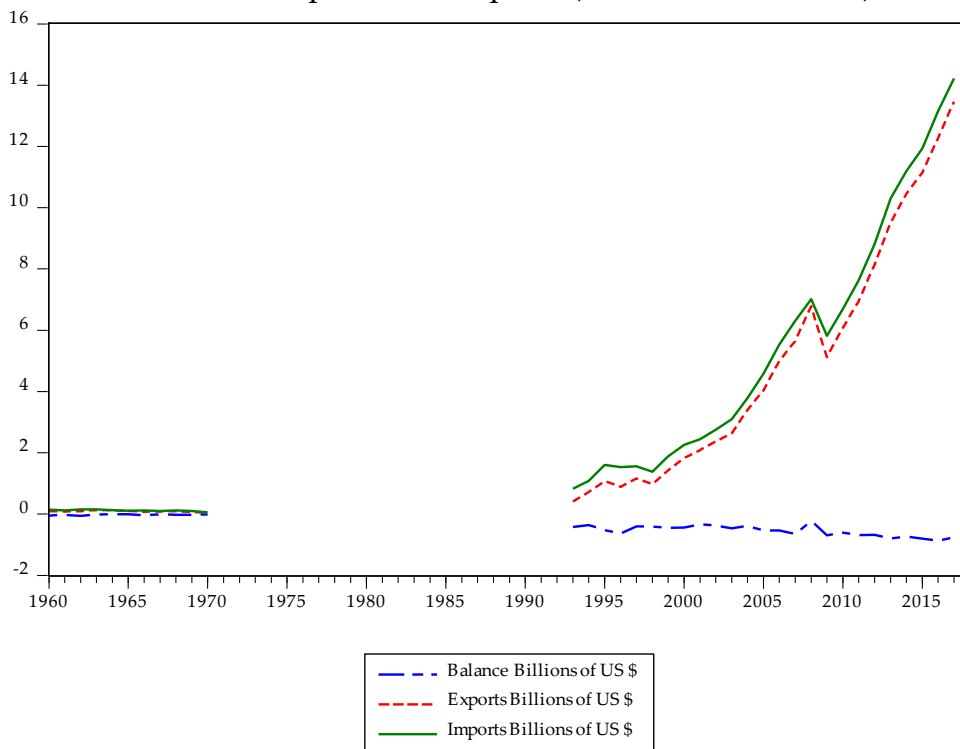
NOTES The database during the 1980s, 1990s and 2000s was taken from Robertson, et al. (2009, 100), BOX 4.1. The database during the 2010s was taken from the official website of the ASEAN <https://asean.org/>.

FIGURE 20 Trade balance, trade, exports and imports (% of GDP) 1960-2017



SOURCE the World Bank national accounts data, and OECD National Accounts data files.

FIGURE 21 Trade balance, exports and imports (billions current US\$) 1960-2017



SOURCE the World Bank national accounts data, and OECD National Accounts data files.

During the People's Republic of Kampuchea, Cambodia remained a closed economy. Cambodia's trade policy was a tightly controlled trading system. Its level and composition of trade determined through quantitative restrictions and state-owned trading bodies (Robertson, et al. 2009, 100). As shown in Figure 22, the low volume of exports remained stable until 1986 before it slightly increased until the late 1980s. Its export volume was between US\$ 10 million (current price) to US\$ 35 million from 1980 to 1989. Crude materials and material manufactures were exported to Asia, Europe and Africa. On the other hand, the volume of imports increased hugely in 1980, which was nearly equal to US\$ 300million (in current prices). Then, it declined gradually to US\$ 60 million in 1989. Cambodia's main importers were from Asia, mostly from Japan, Singapore, Thailand, and United State of America. The imported products represents mostly food, unspecified products, machinery and vehicles.

Between the late 1980s and the early 1990s, it was a transitional period where Cambodia prepared itself to open to the rest of the world, through for instance initiating a free-market-oriented program, liberalizing trade, and encouraging FDI. During the 1990s, Cambodia did many economic and trade transformations. The constraints to involve in international trade by firms and individual were mainly eliminated in 1993. Cambodia removed all quantitative restrictions on international trade in 1994. Cambodia gained a MFN status from the US in 1996, a GSP status from the EU in 1997, and the MFN/GSP status from 28 countries in 1999 (Robertson, et al. 2009, 100). In 1999, Cambodia integrated successfully into ASEAN as the last member. Trade volume during this period has increased nearly as a linear trend, considering both exports and imports. Its trading partners have expanded to more countries. Europe and the US are the major markets for Cambodia's export products; however, Cambodia's imports are mainly from Asian partners. The East Asian financial crisis in 1997 did not do much damage to Cambodian trade since it started from such a low base that it could hardly fall back (Jalilian, et al. 2009).

In the 2000s, Cambodia continued to reduce maximum tariff rates, decrease the number of tariff bands, lower the average unweight tariff rates, and eliminate most nontariff trade barriers, aiming to promote more trade and foreign investment. In 2002, the international economic cooperation, focusing on commerce, industry, public works and transportation, and tourism, between Cambodia, Vietnam, and Lao were initiated in 2002 (Robertson, et al. 2009, 100). In 2003, Cambodia received access to the Everything But Arms, known as the EBA (Chheng 2019). The EBA initiative grants full duty-free and quota-free access to the EU Single Market for all products (except arms and armaments). A country is being granted EBA status if it is listed as a Least Developed Country (LDC) by the UN Committee for Development Policy. Then, Cambodia became a member of the WTO in 2004 (European Commission 2019).

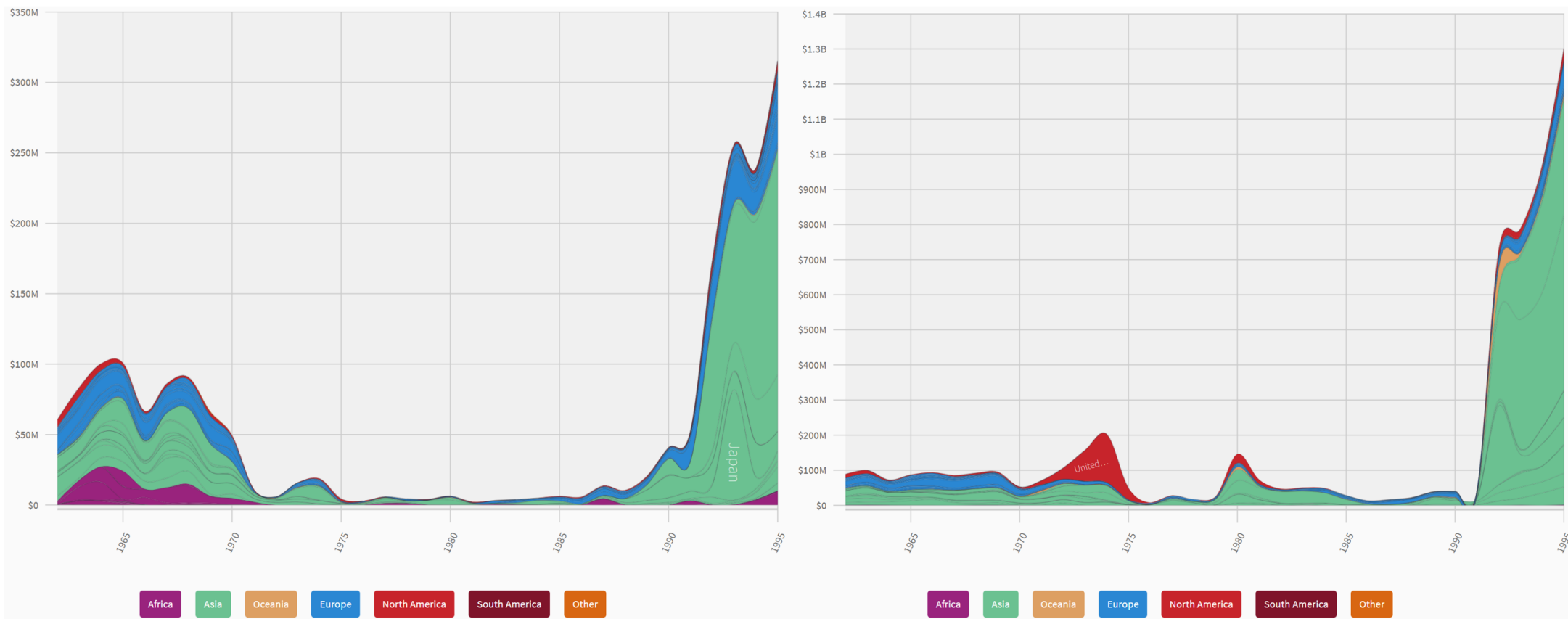
The 2010s have remarked other significant trading transformation in Cambodia, especially involving in the ASEAN Free Trade Area (AFTA). The AFTA aims to lower tariff at a minimum level and create the ASEAN single market by 2015 for the free movement of skilled labour, goods, services and investment. According the report from the ASEAN's official website, more than 99 per cent of the products in the Common Effective Preferential Tariff (CEPT) Inclusion List (IL) of ASEAN-6, comprising Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore and Thailand, have been brought down to the 0-5 per cent tariff range. ASEAN's newer members, namely Cambodia, Laos, Myanmar and Viet Nam, are not far behind in the implementation of their CEPT commitments with almost 80 per cent of their products having been moved into their respective CEPT ILS. Of these items, about 66 per cent already have tariffs within the 0-5 per cent tariff band. Viet Nam has until 2006 to bring down tariff of products in the Inclusion List to no more than 5 per cent duties, Laos and Myanmar in 2008 and Cambodia in 2010.³⁸

³⁸ About the ASEAN Free Trade Area (AFTA), please see <https://asean.org/asean-economic-community/asean-free-trade-area-afta-council/>

Throughout this long period from the 2000s until now, trade as a sum of exports and imports has emerged itself importantly, rising to 124.90 per cent in 2017, making its peak year of 144.61 per cent of GDP in 2006 (see [Figure 20](#) and [21](#)). The 2008 Global Financial Crisis hardly hurt Cambodia's economy. Trade as a sum of exports and import was significantly declined. However, the share of manufacturing trade in total exportation, driving by the garment sector, has gradually increased. The international markets for Cambodia's exportation are the EU, mainly to Germany, the United Kingdom, and France, the US and Asian countries, mainly to Vietnam, Japan, and China. At the same time, Cambodia's importations are mostly from Asian economies, mainly from China, Thailand, Vietnam and Singapore (see [Figure 23](#) and [24](#)).

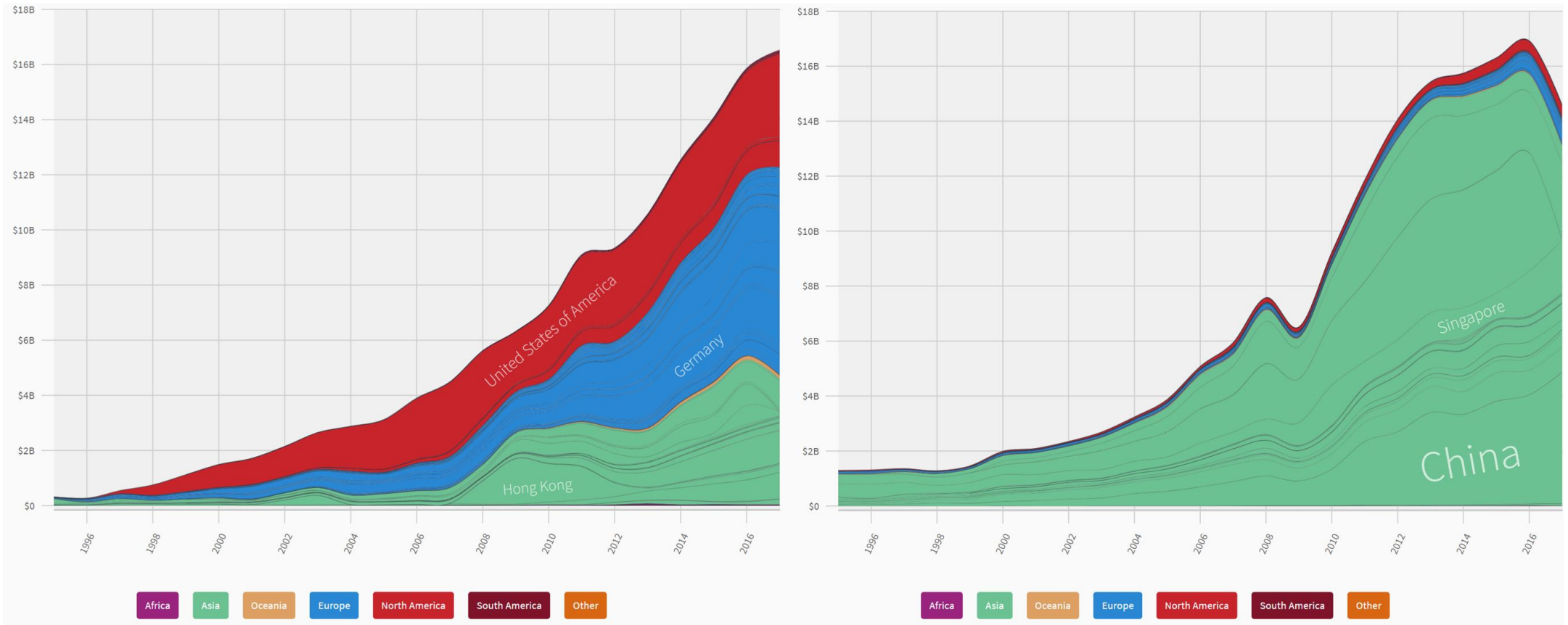
According to the European Commission (2019), the EU ranked as the second biggest trade partner of Cambodia (after China), accounting for 17.3 per cent of the country's total trade (China 23.8 per cent). However, the EU is Cambodia's largest export market, see [Figure 24](#), while China is Cambodia's largest import partner. Presently, the EU imported goods worth €5.4 billion from Cambodia. The key EU imports from Cambodia are dominated by textiles, footwear and agricultural products. Exports of textiles and footwear, prepared foodstuffs and vegetable products (rice) and bicycles represented 97 per cent of Cambodia's overall exports to the EU in 2018. Out of the total exports of €4.9 billion, 99 per cent (€4.8 billion) were eligible to EBA preferential duties. After the national election in 2018, which the current ruling party received 125/125 seats, the EU has begun the 18-month process of withdrawing the Kingdom's access to its preferential Everything But Arms (EBA) agreement over a deterioration of democracy [and] respect for human rights (Curtin 2019).

FIGURE 22 Cambodia export and import's partners between 1965 and 1995 (SITC4 classification)



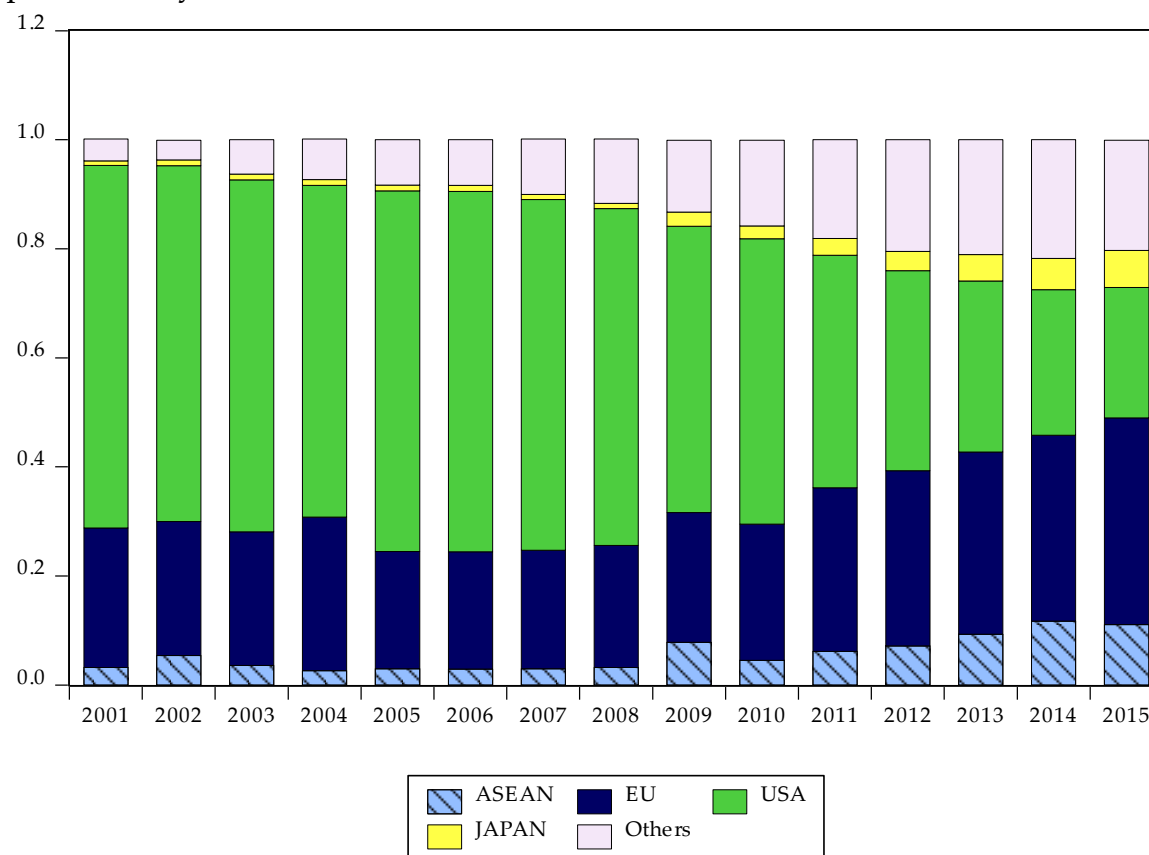
SOURCE the Atlas of Economic Complexity. The Atlas of Economic Complexity is a powerful data visualization tool that allows people to explore global trade flows across markets, track these dynamics over time and discover new growth opportunities for every country. The Atlas places the industrial capabilities and knowhow of a country at the heart of its growth prospects, where the diversity and complexity of existing capabilities heavily influence how growth happens. <http://atlas.cid.harvard.edu/>

FIGURE 23 Cambodia export and import's partners between 1996 and 2017 (HS4 classification)



SOURCE the Atlas of Economic Complexity. The Atlas of Economic Complexity is a powerful data visualization tool that allows people to explore global trade flows across markets, track these dynamics over time and discover new growth opportunities for every country. The Atlas places the industrial capabilities and knowhow of a country at the heart of its growth prospects, where the diversity and complexity of existing capabilities heavily influence how growth happens. <http://atlas.cid.harvard.edu/>

FIGURE 24 Share of export value by countries, 2001 to 2015



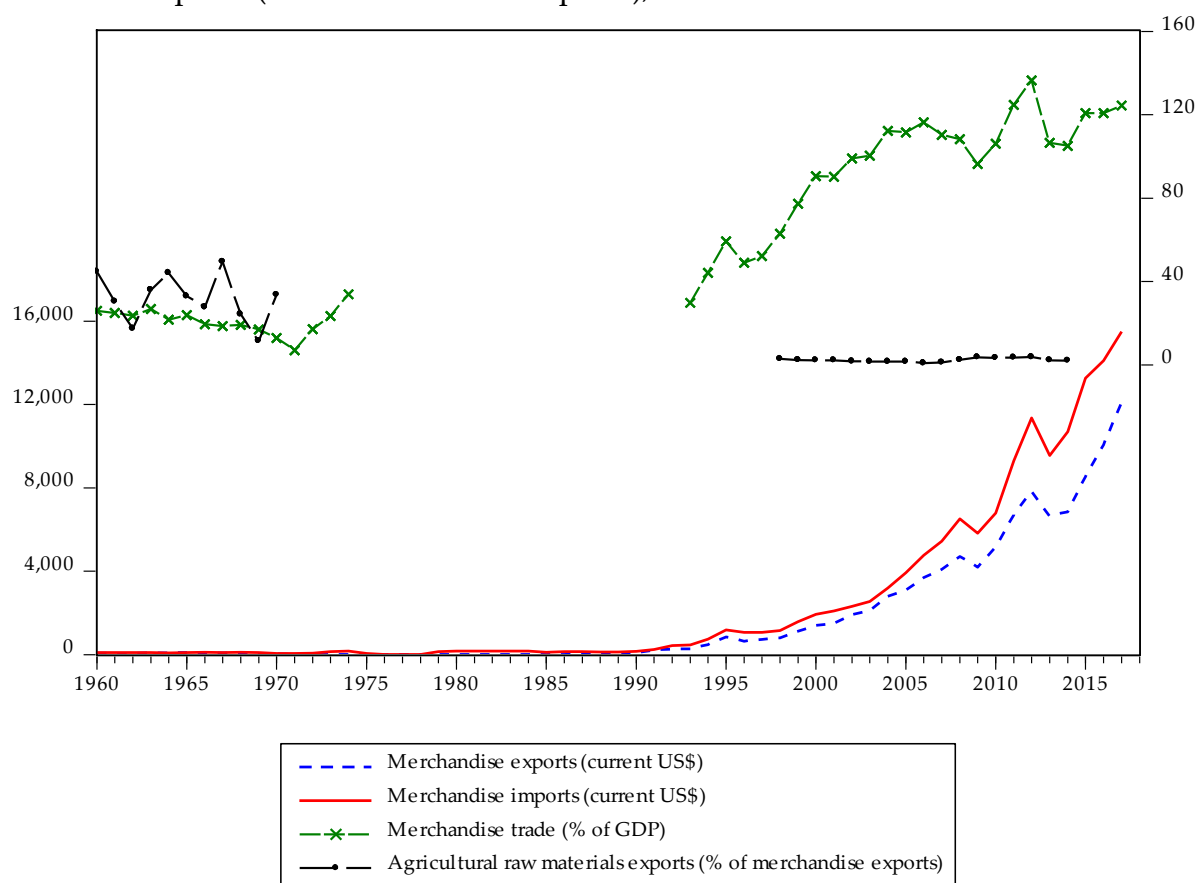
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
ASEAN	3.2%	5.4%	3.6%	2.6%	3.0%	2.9%	3.0%	3.2%	7.8%	4.5%	6.2%	7.2%	9.3%	11.7%	11.1%
EU	25.6%	24.6%	24.5%	28.2%	21.5%	21.5%	21.7%	22.4%	23.8%	25.0%	30.0%	32.1%	33.4%	34.1%	37.9%
US	66.5%	65.2%	64.5%	60.8%	66.1%	66.1%	64.3%	61.8%	52.5%	52.3%	42.6%	36.7%	31.4%	26.7%	23.9%
JAPAN	0.8%	1.1%	1.1%	1.1%	1.1%	1.1%	1.0%	0.9%	2.6%	2.4%	3.1%	3.5%	4.8%	5.7%	6.8%
Others	4.0%	3.6%	6.3%	7.4%	8.3%	8.4%	10.1%	11.8%	13.2%	15.7%	18.1%	20.5%	21.1%	21.8%	20.2%

SOURCE Ministry of Economy and Finance, 2016

3.1.2 Trade Export Specialization: Poorly Diversified and Low Complexity

Since the era of openness in the early 1990s, Cambodia's biggest export markets are always the EU and the US. However, during the last decade, the US's share has gradually decreased while ASEAN partner sees its rising (see Figure 24). The share of agricultural raw materials exports (% of merchandise exports) remains very low, making 2.29 per cent. In this regard, Cambodia's trade exports have always been driven by the manufacturing industry, even though it is poorly diversified and low complexity (see Figure 25).

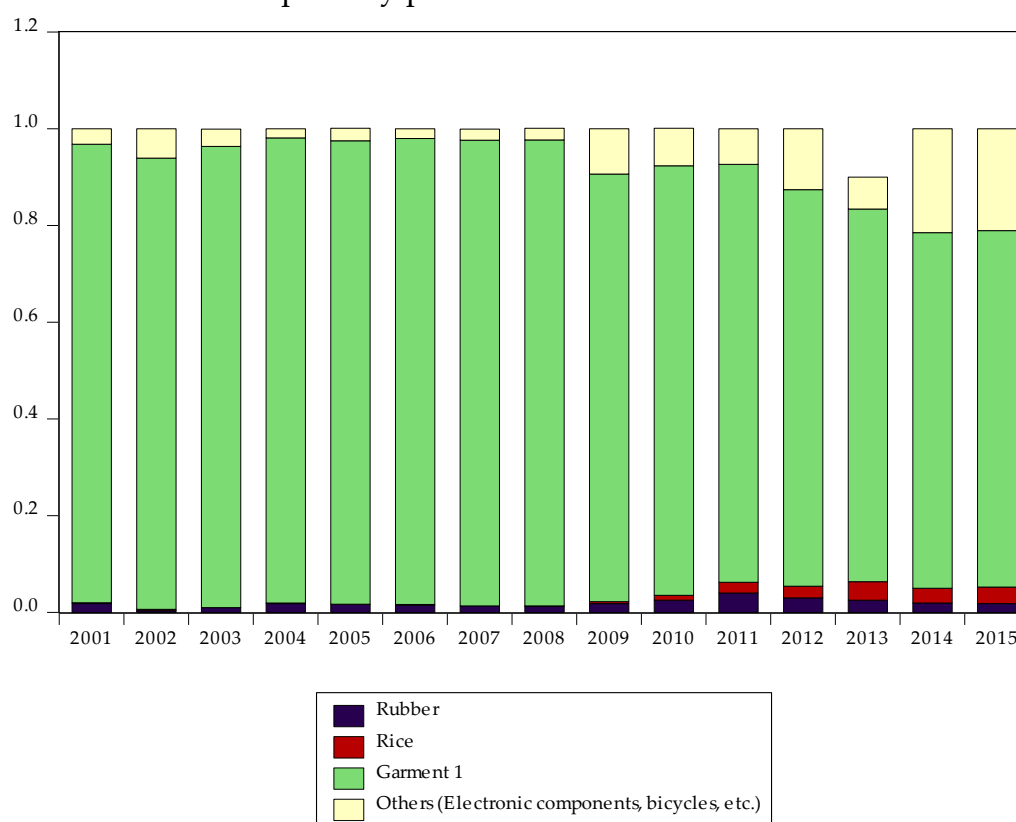
FIGURE 25 Merchandise trade (current US\$ and % of GDP) and agricultural raw materials exports (% of merchandise exports), 1960-2017



SOURCE the WTO, the World Bank, the IMF's Direction of Trade database, the WITS, and the UNSD.

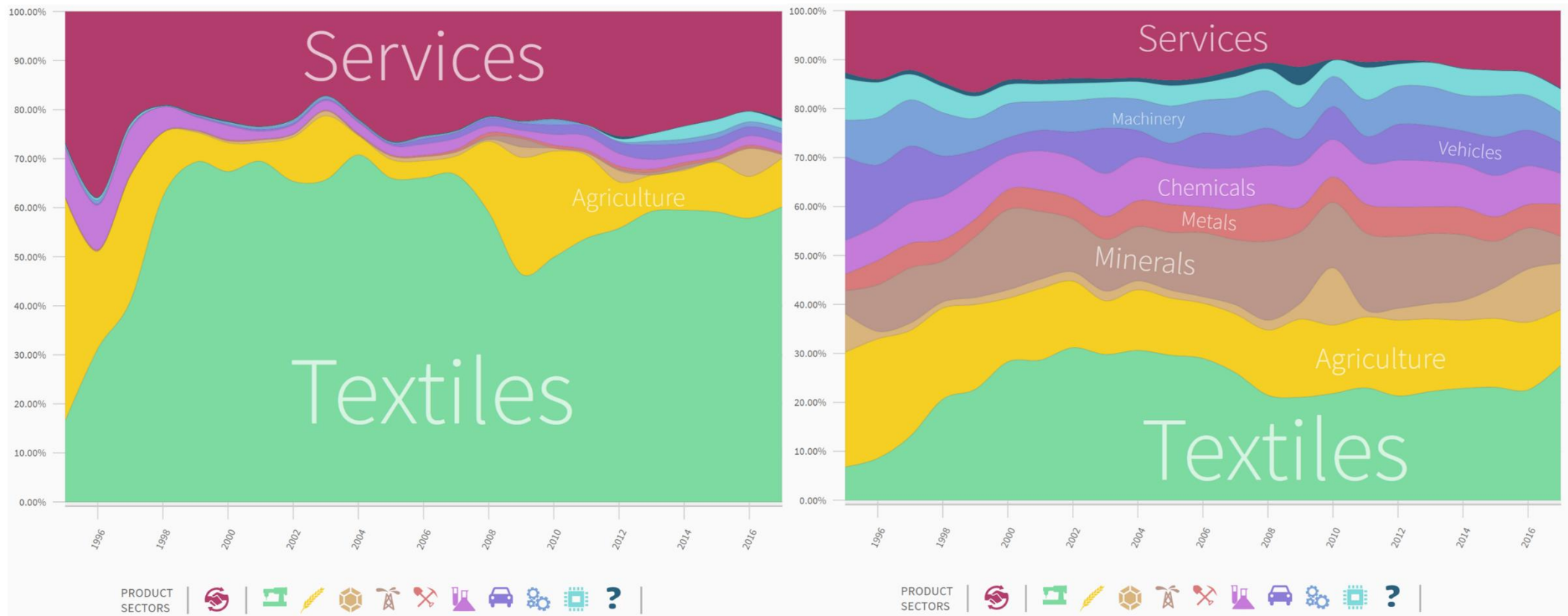
The trade export is dominated by the Garment, Textile and Footwear (GTF) sector (see Figure 26 and 27). Presently, the GTF sector in Cambodia directly generates employment for around one million workers, nearly 80 per cent of whom are women (see Table 6). The GTF sector in Cambodia directly provides income to support one-in-five Cambodian households. In Cambodia, GTF workers originate from nearly all of the country's provinces. Phnom Penh is the origin province of the largest proportion of GTF workers: Almost 18 per cent of the GTF workforce originate from Phnom Penh. Kandal province, which is located closed to Phnom Penh, accounts for a further 15 per cent, followed by Kampong Speu and Kampong Cham provinces, which are also located close to Phnom Penh, at 14.2 per cent and 13 per cent respectively. All of the provinces from which the largest numbers of GTF workers originate are located close to Phnom Penh (ILO 2019, 2).

FIGURE 26 Cambodia exports by products between 2001-2015



SOURCE the Ministry of Economy and Finance (2016)

FIGURE 27 Cambodia export and imports between 1995 and 2017 – HS4 classification



SOURCE the Atlas of Economic Complexity. The Atlas of Economic Complexity is a powerful data visualization tool that allows people to explore global trade flows across markets, track these dynamics over time and discover new growth opportunities for every country. The Atlas places the industrial capabilities and knowhow of a country at the heart of its growth prospects, where the diversity and complexity of existing capabilities heavily influence how growth happens. <http://atlas.cid.harvard.edu/>

TABLE 6 Province of origin of GTF workers in Cambodia 2018

Province	Male	Female	Total	Number of GTF workers
Phnom Penh	17.3%	17.8%	17.7%	187 605
Kandal	19.3%	13.8%	15.0%	158 558
Kampong Speu	11.8%	14.9%	14.2%	150 527
Kampong Cham (and Tboung Khmum)	13.8%	12.8%	13.0%	138 001
Takeo	8.3%	9.1%	9.0%	94 782
Prey Veng	3.1%	7.7%	6.7%	70 865
Svay Rieng	4.2%	5.7%	5.4%	56 925
Preah Sihanouk	5.1%	2.7%	3.2%	34 080
Kampong Chhnang	3.8%	3.0%	3.2%	33 882
Kampong Thom	2.3%	3.2%	3.0%	31 637
Kampot	3.1%	3.0%	3.0%	31 535
Battambang	3.1%	1.5%	1.8%	19 411
Banteay Meanchey	2.8%	1.5%	1.8%	19 179
Pursat	0.4%	1.4%	1.2%	12 780
Siemreap	0.9%	1.0%	1.0%	10 071
Koh Kong	0.3%	0.4%	0.3%	3 636
Kratie	-	0.2%	0.1%	1 530
Preah Vihear	-	0.1%	0.1%	1 053
Pailin	0.2%	0.1%	0.1%	938
Stung Treng	0.2%	0.1%	0.1%	779
Mondulkiri & Ratanak Kiri & Oddar Meanchey	-	-	-	-
Total	100%	100%	100%	1 057 776

SOURCE ILO Asia-Pacific Garment and Footwear Sector Research Note Issue 9 / Cambodia Garment and Footwear Sector Bulletin, Issue 8, December 2018

Since the early 2010s, the garment sectors have become less competitive, not like in the 1990s and 2000s. Other sectors, including electronic components, bicycles, etc., have gained its weight from around 3 per cent before 2009 to over 21 per cent in 2015. According to World Bank (2017 Oct, 17), there are some promising signs of diversification in the manufacturing sector, beyond the garments and footwear industry. The entry of high value added (FDI targeted) manufacturers, especially for electrical appliances and components, and auto parts is encouraging. Sustained macroeconomic stability and continued liberal investment and trade policy, motivated by regional integration, are attracting new breeds of foreign direct investors.

Up to the present, Cambodia also seeks the long-term, high-quality, and high-value-added/sophisticated development from foreign investors. The presence of non-textile industries which include manufacturers of electronic appliance parts, earphone, automobile parts, wire harnesses, electrical parts, optical parts, metal building materials, construction materials, and connectors are rising. These newly emerging high-value-added manufacturers are expanding, in terms of numbers and share of total manufacturers (World Bank 2017 Oct, 17).

3.2 Capital Flows

Besides international trade, capital flows also symbolise another important pillar of a country's openness. In this section, foreign aid, FDI and financial crisis are discussed, considering its theoretical importance and data's availability.

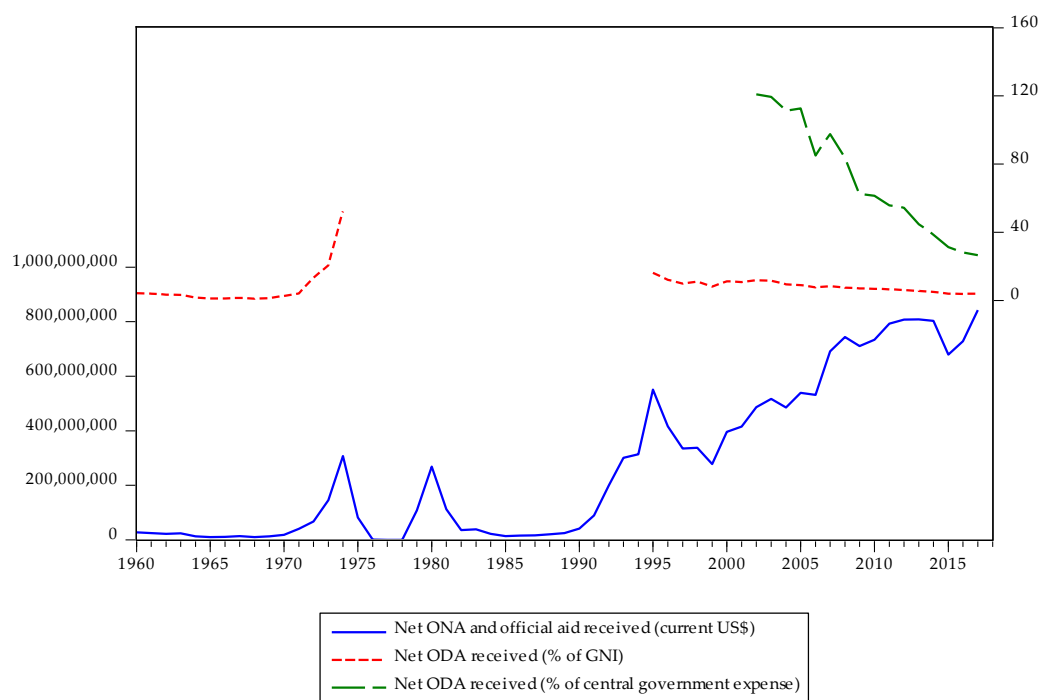
3.2.1 Foreign Aid and Political Constraints

Although there are many criticisms on the positive effect of foreign aid, it is suggested that, in some specific conditions, foreign aid plays an important role in promoting political and economic development in the developing countries, and there is no exception for Cambodia. Throughout its long history, Cambodia has been known as one of the most aid-dependent countries. Foreign aid flows to Cambodia depends on its political regimes. For example, foreign aid during the closed-economy periods, mostly from the communist allies, aims to support ideology and alliances. During the opened-economy periods in the early 1990s, foreign aid from the international community aims to restore Cambodia's institution and promote democracy. In this regard, foreign aid is likely to affect directly Cambodia's politics and institution rather than people's welfare. However, the last decade remarks that some specific development aids have been targeted to involve directly with the people.

During the period of complete closed economy, Cambodia remained open itself to receive foreign aid from its allies. Zachary Abuza explained that 'there is something ironic about the xenophobic and autarkic Pol Pot regime in Cambodia becoming completely dependent on foreign aid after being ousted from power by the Vietnamese in 1978. The party of Democratic Kampuchea (PDK), as the Khmer Rouge styled themselves, became one of the single greatest beneficiaries of Cold War competition, receiving massive Chinese military aid to carry out armed resistance to the Soviet-supported Vietnamese occupation', (Abuza 1993).

The new regime of the People's Republic of Kampuchea, after the catastrophic period, needed foreign aid to rebuild the country, especially for infrastructure, physical and human development. As shown in Figure 28, net official development assistance and official aid received (in current US\$) increased to over US\$ 268 million in 1980; however, it reduced gradually to less than US\$ 25 million in the late 1980s after the collapse of the Soviet Union. The foreign aid mostly came from the Eastern bloc countries because the Western nations, China and the ASEAN countries refused to recognise this new regime and to provide reconstruction assistance.

FIGURE 28 Net official development assistance and official aid received (current US\$), 1960-2017



SOURCE the World Bank, Development Assistance Committee of the Organisation for Economic Co-operation and Development, Geographical Distribution of Financial Flows to Developing Countries, Development Co-operation Report, and International Development Statistics database. Data are available online at: oecd.org/dac/stats/idsonline

In the early 1990s, the massive foreign aid flowed to Cambodia through the UN intending to restore peace, and rebuild human capital, physical infrastructure, and minimum institutions. The foreign aid increased from US\$ 41 million in 1990 to US\$ 551 million in 1995, which caused consequently dollarization in Cambodia. Measured as the ratio of foreign currency deposits to broad money, dollarization has risen - from

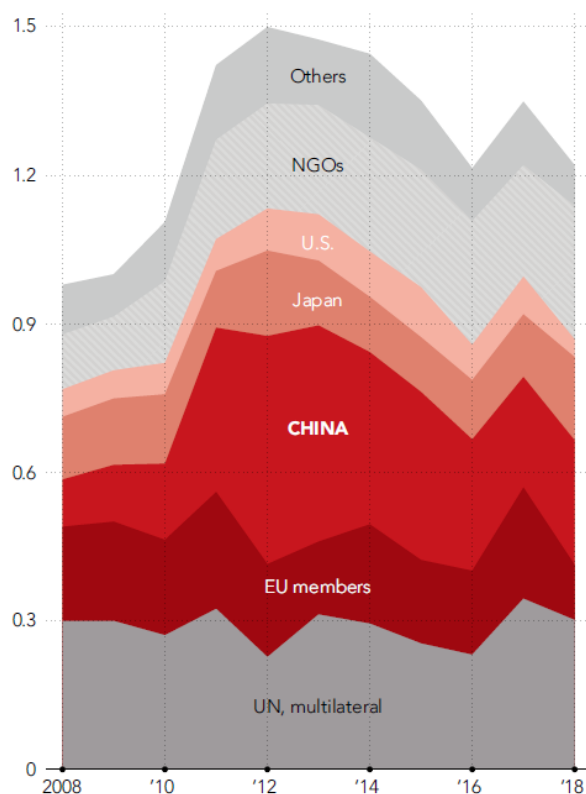
about 60 per cent in the late 1990s to about 80 per cent recently (Duma 2011, 3). However, to receive this foreign aid, Cambodia had to fulfil the condition of both economic and political reforms toward the laissez-faire economy, mostly following the western liberal economic systems.

Presently, many foreign contributors have joined hand, including the UN (multilateral), the EU members, Japan, the US, the NGOs, China, Australia, and so forth. France through the Agence Française de Développement (AFD) currently supports Cambodia in two structural areas: promoting balanced territorial development and supporting the environmental and social aspects of the productive sector. There is a wide range of tools for this purpose: technical assistance, grants, loans to the State, loans to companies and local authorities, ARIZ (Support for the Risk of Financing Private Investment in AFD's Areas of Operation)³⁹ guarantees (AFD 2018). Japan's assistance to Cambodia, which is mainly grant aid and technical cooperation, has focused on: development of social and economic infrastructure; improvement of basic social services like health and medical care; promotion of agriculture and rural development; and human resources development (The Government of Japan 2018). The US through the United States Agency for International Development (USAID) program in Cambodia traces its roots to humanitarian assistance, road and bridge building activities, meeting basic human needs, establishing a freely elected government, and improving health and education services also emerged as key concerns (USAID 2019). Australia is also a leading bilateral grant donor to Cambodia. Since 2015, Australia's aid investments have been prioritising three key objectives: improving access to infrastructure; increasing agricultural productivity; and better health and education (Australian Government 2018).

³⁹ In French, it stands for "Accompagnement du risque de financement de l'investissement privé en zone d'intervention".

Among the countries that provide the largest foreign aid to Cambodia, we could observe the higher role of China, especially after the fourth national election in 2008 (see [Figure 29](#)). China is Cambodia's largest bilateral creditor, accounting for about 50 per cent of its known external debt in 2017, which overall has risen 142 per cent in the five years through 2016 - the biggest increase in Southeast Asia. China overtook the U.S. as Cambodia's main trading partner in 2014, and there may be no going back ([Nikkei Asian Review 2018](#)).

FIGURE 29 Sources of aid for Cambodia (in billions of dollars) 2008-2018



SOURCE the Cambodian government

NOTES Estimate for 2017, projection for 2018 by Nikkei Asian Review (2018)

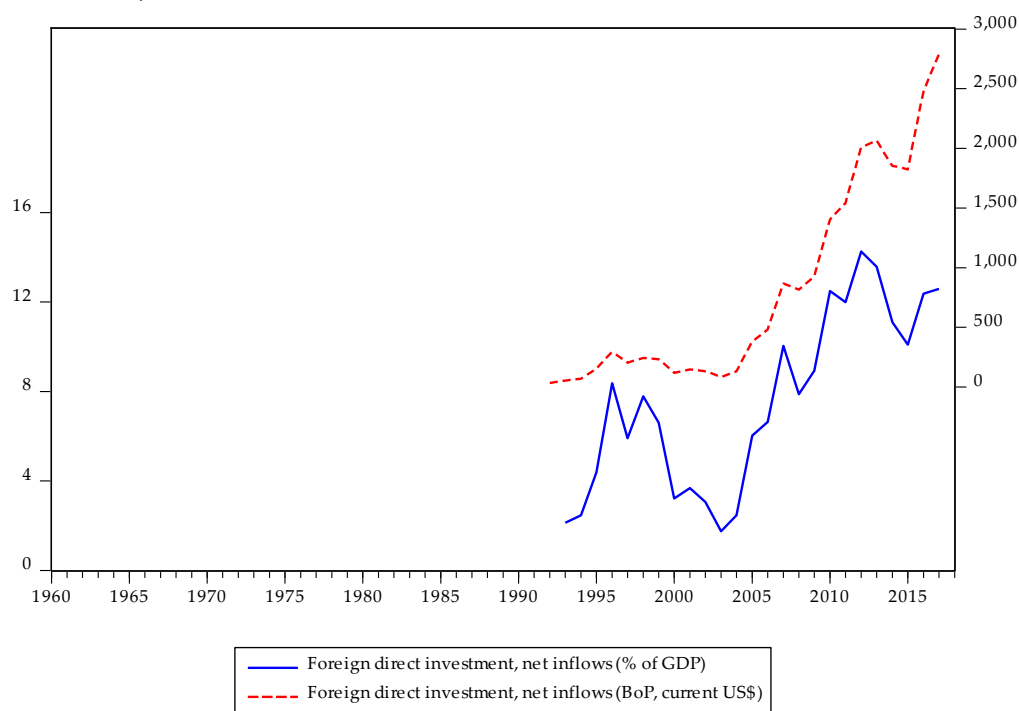
3.2.2 Foreign Investments

Inward FDI into Cambodia can be traced back after the French colonisation in the late 1950s. During this period, the main countries of origin of these investments were France, China and Japan. These investments were concentrated in industries such as

textiles, rubber, plastics, paper, cement, automobile tires, chemicals, metal and other manufacturing (Cuyvers, et al. 2011).

The foreign investments dropped to its lowest point during the period of the political instability of the Khmer Republic and the period of the closed economy of the Khmer Rouge regime and the People's Republic of Kampuchea (from the 1970s to 1980s). It was until the late 1980s when the political and economic transformations allowed the foreign investments to return to Cambodia. With the officially available data as shown in Figure 30, the FDI in 1993 shared 2.13 per cent of GDP, with the amount of about US\$ 54 million. During this period, the major foreign investors are from Thailand, Malaysia, Singapore, Hong Kong, and France. The foreign investment focuses on tourism, banking, construction, manufacturing and agriculture.

FIGURE 30 FDI, net inflows 1970-2017



SOURCE IMF, International Financial Statistics and BoP databases, World Bank, International Debt Statistics, and World Bank and OECD GDP estimates. FDI, net inflows (% of GDP); FDI, net inflows (BoP, current US\$ million)

The 2000s remarks two major trends of foreign investment in Cambodia. From 1994 until the mid-2000s, foreign investment (in current US\$) moved in a stationary trend, then it increased significantly from 2005. This happened after Cambodia joined the WTO in 2004. As shown in [Figure 30](#), FDI was 2.47 per cent of GDP in 1994 and 2.46 per cent of GDP in 2004, making its peak of 8.37 per cent in 1996. Since then, foreign investment in Cambodia shows an upward trend in the 2000s although there is a slight downturn during the global financial crises from 2007-2009. During this period, foreign investment in Cambodia originated from 32 countries. The majority of Cambodia's inward FDI was of Asian origins and came more particularly from Malaysia, Taiwan, and China, which together accounted for about 60 per cent of the total. The FDI from developed countries was quite small both in absolute and relative terms. The FDI from the world's largest investors i.e., the US and the EU (Cuyvers, et al. 2011). Trade and FDI have concentrated primarily in the garment sector. As trading activity increased in general, exports of ready-made garments grew rapidly. While garment exports accounted for 20 per cent of total exports in 1996, this share increased to 80 per cent between 2002 and 2005 (Robertson, et al. 2009, 101).

From the 2010s, according to preliminary revised data, the stock of FDI increased from US\$ 8.9 billion at the end of 2010 to US\$ 19.2 billion at the end of 2014, an increase of US\$ 10.3 billion or 117 per cent. 'Asia contributed almost 90 per cent of the total FDI Cambodia received up to 2014 (NIS, MPC and NBC 2016). Chinese FDI accounted for the largest sum, at US\$8.4 billion or 44 per cent of the total US\$19.2 billion in FDI stock by end-2014, concentrated in manufacturing, in particular the garment, accommodation and entertainment sectors. South Korean FDI was ranked second, accounting for US\$2.8 billion or 15 per cent of the total FDI stock, invested mainly in the construction and real estate sector. Vietnamese FDI, which is concentrated in agriculture and ICT, was ranked third, accounting for 8 per cent of the total FDI stock, followed by Malaysia, Thailand, Singapore and Japan in descending order of size' (World Bank, Ly and Martin, et al. 2016, 15). On the other hand, as shown

in [Appendix 3-6](#), the Western countries' foreign investment in Cambodia represented a small share, making 5.8 per cent in 2014 for the EU, where the UK and France were the biggest European investors, and about 2 per cent for the US. In overall, manufacturing, which was the biggest sector representing about 23.9 per cent in 2014, was almost dominated by garment and footwear. Then, FDI's other shares respectively went to real estate (14.6 per cent), agriculture (14.1 per cent), financial services (12.3 per cent), electricity (11.4 per cent), accommodation (11 per cent) and bank (10.1 per cent).

During the last few years, the construction sector continued to expand, driven by sustained FDI into the sector, although approvals decelerated. 'Strong garment sector exports are expected to help to offset weakness in the agriculture sector, while the FDI-driven construction is expected to continue to be a major engine of growth' (Ly 2016, 2). 'The recent construction and real estate boom has largely been fuelled by rising FDI inflows and domestic credit expansion. Approved FDI (in fixed assets) in the construction sector reached US\$1.3 billion in 2016. Domestic credit provided to the sector has grown rapidly over the past five years, averaging 32 per cent annually. The total FDI (stock) in the construction sector in the period 2000-2015 is estimated to have reached US\$3.5 billion (or 19 per cent of GDP), while outstanding domestic credit provided to the construction sector amounts to US\$3.0 billion or 17.4 per cent of GDP at the end of 2016' (World Bank 2017 Apr, 15).

Presently, private investment in 2018, largely driven by FDI inflows, climbed to new highs. 'The value of approved investment projects increased to US\$5.8 billion, of which two-thirds was FDI. FDI inflows have grown by 24.8 per cent, reaching a record high of more than US\$3.0 billion, or 13.4 per cent of GDP (see [Figure 30](#)). In the real sector, private investment continued in the construction, real estate, and tourism sectors, which together accounted for about 60 per cent of total (approved) investment in 2018. The construction boom has concentrated in the capital city of Phnom Penh

and more recently in the seaside town of Sihanoukville. The economy has been increasingly dependent on the construction sector, consequently, risks associated with construction boom have been rising. Supported by the construction boom, key manufacturing activities such as building material, furniture, metal, and plastic products have also quickly flourished. The non-garment manufacturing sector captures about 20 per cent of the total investment. Three-quarters of the (approved) FDI originated from China' (Ly, Sanchez Martin, et al. 2019, 10).

3.2.3 Global and Regional Financial Crisis

During the last several decades, the Southeast Asian region has experienced two major economic crises: First, the Asian financial crisis during 1997-1998, and second, the global financial crisis during 2007-2009. However, it is only the global financial crisis, which hurt Cambodia the most.

'The Asian financial crisis is generally considered to have started on July 2, 1997, with the devaluation of the Thai baht. Thailand had been showing signs of financial strain for more than a year. During 1996, it became apparent that far too many office towers had been built; first the nation's real estate market, then its stock market, went into decline. In the first half of 1997, speculation about a possible devaluation of the baht led to an accelerating loss of foreign exchange reserves, and on July 2 the country attempted a controlled 15 per cent devaluation. As in the case of Mexico in 1994, however, the attempted moderate devaluation spun out of control, sparking massive speculation and a far deeper plunge. Thailand itself is a small economy. However, the sharp drop in the Thai currency was followed by speculation against the currencies first of its immediate neighbour, Malaysia; then of Indonesia; and eventually of the much larger and more developed economy of South Korea' (Krugman, Obstfeld and Melitz 2012). For the Southeast Asian countries, only Thailand, Malaysia, the Philippines, Singapore and Indonesia were affected the most

by the crisis. On the other hand, the crisis had nearly no effect on Cambodia's economy because this small country's openness remained low during that time. The 2007-2009 global financial crisis affected many countries simultaneously and led to a global economic crisis unseen since the Great Depression. It was triggered by a proliferation of financial products linked to risky mortgage loans (Huwart and Verdier 2013). It was started in 2007 in the US from the subprime mortgage crisis to the international banking crisis after the collapse of the investment bank Lehman Brothers. Then, the crisis was followed by the global economic recession, the Euro crisis, and the European debt crisis. The American and European economies were affected the most by this crisis (Blancheton, Bordes, et al. 2012).

Since the American and European countries are Cambodia's largest export market, the global financial crisis had a serious impact on Cambodia's economy. In 2009, Cambodia's GDP growth rate dropped to 0.09 per cent and its per capita GDP growth rate was dropped to -1.40 per cent. It is the lowest growth rate since 1995. According to Jalilian, et al. (2009), 'the severest impacts were in the garment industry, where at least 51,000 workers were laid off, a significant proportion of the 350,000 workers in this leading industry during that time. Tourism registered a slowdown. Construction was decreased, as foreign investors in real estate were either scaling back or suspending their megaprojects as a result of the credit crunch at home. The global financial crisis also burst the bubble in the land and real-estate markets, which were arguably over-buoyed by the global bubble. This reduced directly construction activities and demand in general. The agriculture sector, on the other hand, was also affected by the crisis, but not a big impact. However, some crops faced lower prices or no markets at all as world conditions changed, which means less income and a harder situation for farmers, especially those who took loans to expand production in response to the rising prices in the first half of 2008. In overall, the 2007-2009 global financial crisis shows indeed that Cambodia's economy has highly integrated into the globalisation.'

3.3 Microfinance and Migration

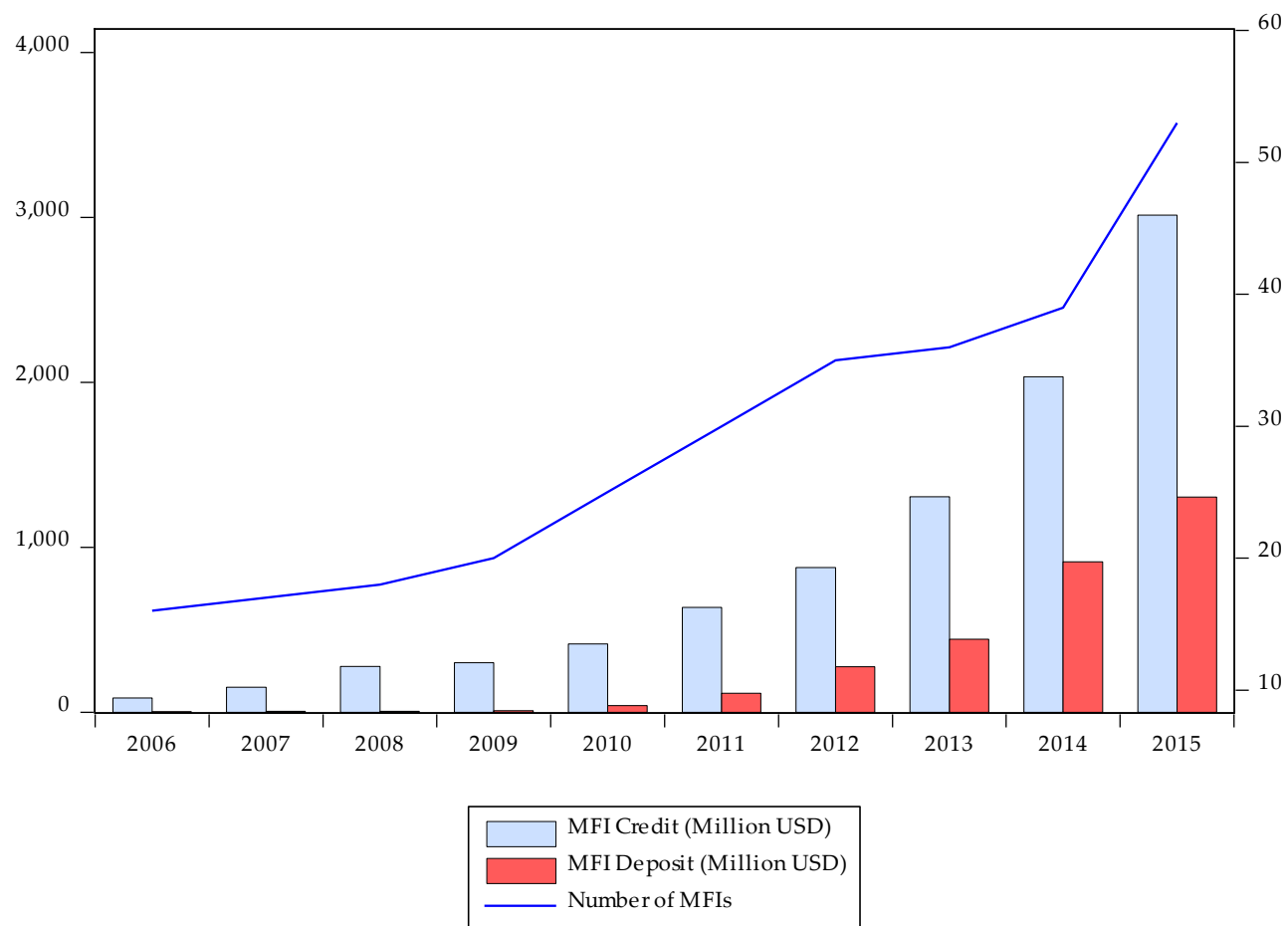
3.3.1 Microfinance and People's Welfare

The microfinance model was introduced in Cambodia in the early 1990s. It was provided by not-for-profit microfinance institutions (MFIs), following the Grameen Bank model with the primary objective to reduce poverty and stimulate economic development after the post-war period. In the early 2000s, because of financial sustainability constraints, the MFIs has transformed its model to be commercialized (Bateman 2017). The Bloomberg named Cambodia in 2018 as the Nation of Debtors (Philip 2018). The Kingdom is presently ranked among the top five for MFIs penetration rates and accounts for 10 per cent of the World's total investment in the microfinance sector.

Over the past two decades from 1995 to 2017, as shown in Figure 31-33, the microfinance and banking sector in Cambodia has impressively risen. The number of MFIs borrowers has increased from 50,000 to more than 2 million Cambodians. The sector is seen as a very profitable industry, which has been attractively by both local and foreign investors. According to Sanjay (2018), international NGOs, international private investors and DFIs between them own 87 per cent of the shares of the largest 15 MFIs (excluding ACLEDA which is a bank). During the past decade, the size of the microfinance industry has grown more than four-fold and nearly 40 fold in terms of portfolio, largely enabled by this inflow of foreign capital.

Cambodia's openness to trade and financial flows fuelled one of the fastest credit growth episodes in Asia, although Cambodia remains a predominantly cash-based economy (Pimhidzai, et al. 2019). Household indebtedness is another significant problem.

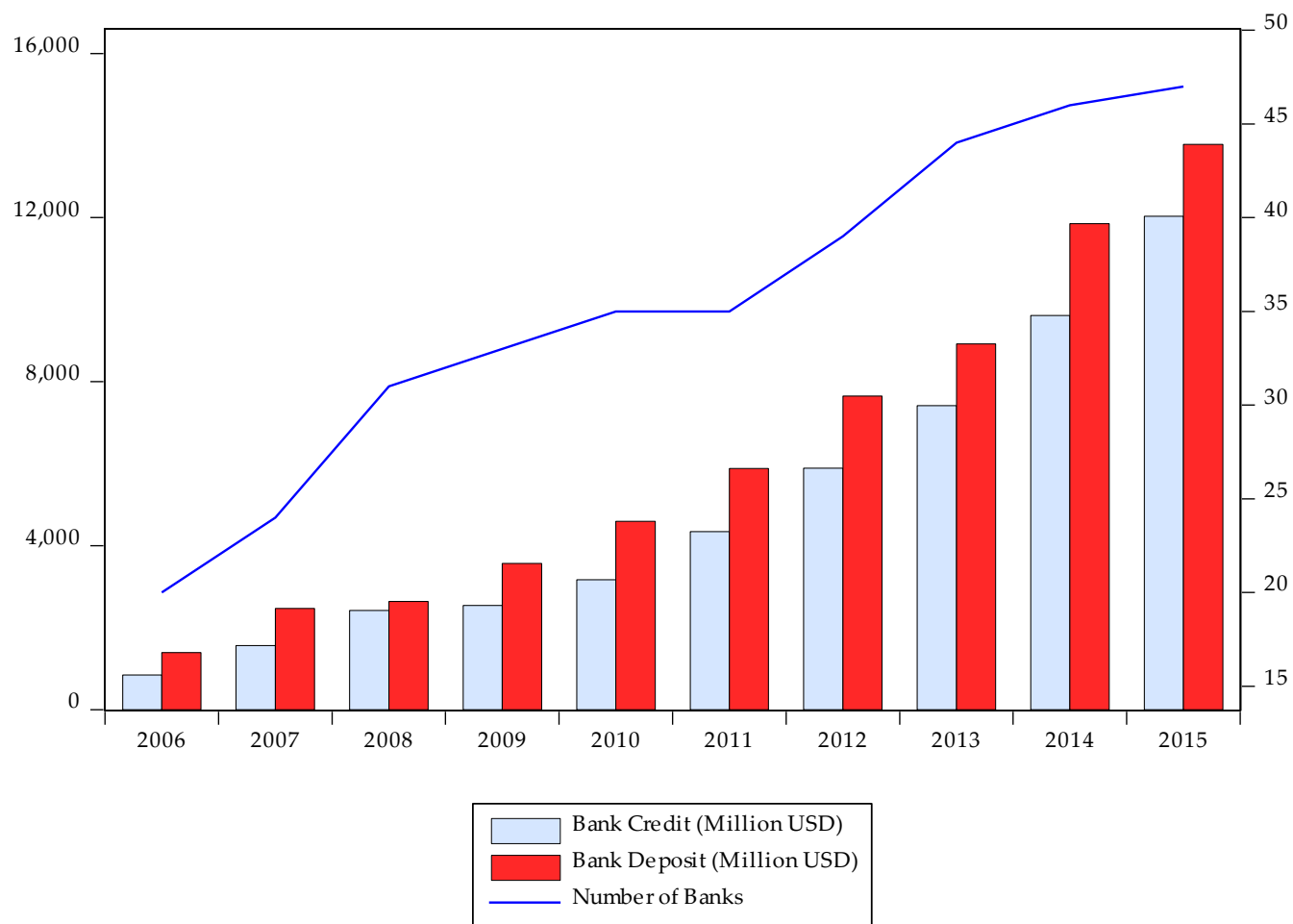
FIGURE 31 MFIs credit (million US\$), MFI deposit (million US\$) and number of MFIs 2006-2015



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
MFI Credit (Million USD)	87	152	278	300	413	636	877	1307	2035	3015
MFI Deposit (Million USD)	3	5	5	10	40	114	275	442	912	1305
Number of MFIs	16	17	18	20	25	30	35	36	39	53

SOURCE National Bank of Cambodia, 2016

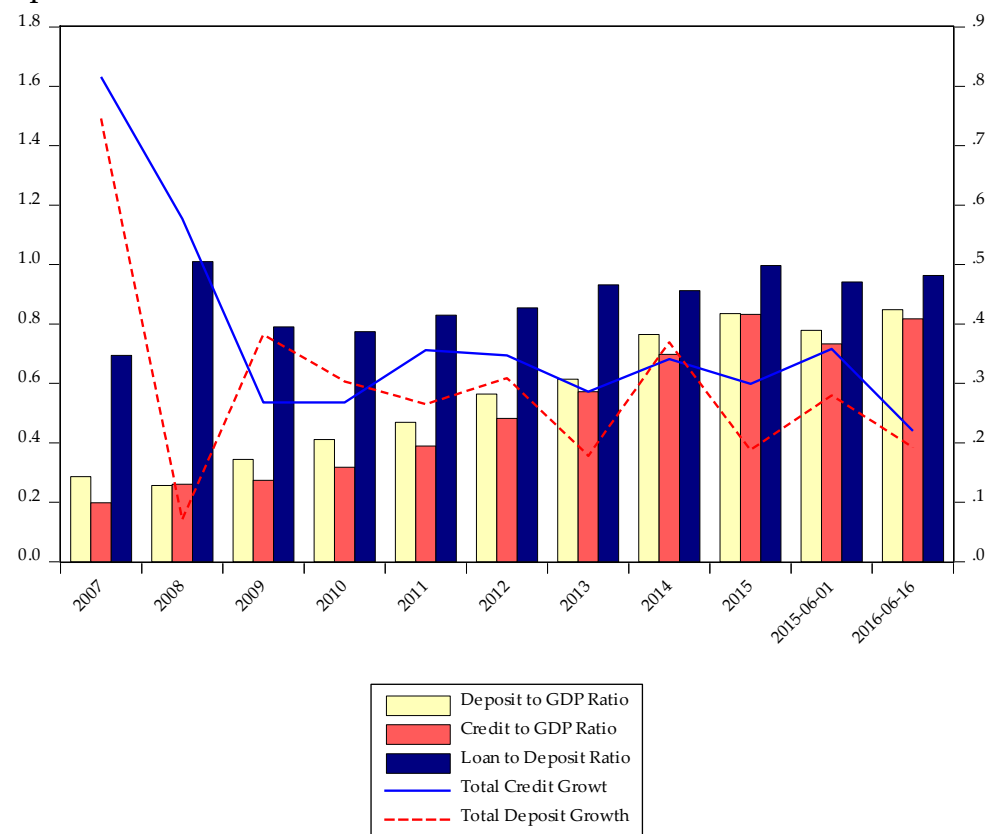
FIGURE 32 Bank credit (million US\$), bank deposit (million US\$), and number of banks 1993-2015



	1993	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Bank Credit (Million USD)	41	845	1,560	2,419	2,541	3,167	4,337	5,890	7,414	9,615	12,032
Bank Deposit (Million USD)	36	1,393	2,462	2,635	3,566	4,589	5,880	7,651	8,918	11,857	13,783
Number of Banks		20	24	31	33	35	35	39	44	46	47

SOURCE National Bank of Cambodia, 2016

FIGURE 33 Total credit and deposit in financial sectors 2007-2015



	2007	2008	2009	2010	2011	2012	2013	2014	2015	Jun-15	Jun-16
Deposit to GDP Ratio	0.286	0.256	0.344	0.411	0.469	0.564	0.614	0.765	0.835	0.779	0.848
Credit to GDP Ratio	0.198	0.261	0.274	0.318	0.389	0.482	0.572	0.698	0.832	0.733	0.817
Loan to Deposit Ratio	0.694	1.01	0.79	0.774	0.83	0.854	0.932	0.912	0.997	0.941	0.963
Total Deposit Growth	0.746	0.071	0.382	0.303	0.265	0.309	0.178	0.369	0.188	0.28	0.192
Total Credit Growth	0.816	0.577	0.268	0.268	0.356	0.347	0.286	0.341	0.299	0.358	0.22

SOURCE National Bank of Cambodia, 2016

According to the ADB (2014), poorer households are more likely to borrow from informal moneylenders, have a high ratio of outstanding debt to average annual per capita consumption, and borrow for unproductive purposes such as consumption, medical expenses, cultural and religious ceremonies, or to service existing debts. Evidence suggests that households are likely to underreport debt levels and, at the same time, most of them involve in debt from multiple sources. The Cambodia Microfinance Association in 2018 reports that there are more than 2 million people in debt. This data are approximately equal to two-thirds of Cambodian households in the whole country if we assume that one borrower represents one household.

3.3.1 Migration and Intergenerational Dependence

The Khmer Rouge regime was left behind by many historically horrible consequences as explained in the previous section. Many Cambodians were forced to leave their home country for just survival. As recorded by Pew Research Center⁴⁰ as shown in Figure 34, at least 120 thousand Cambodians were leaving to the US by 1990, 70 thousand to Thailand, and 70 thousand to France.⁴¹ The trend of migration has continued until these days; however, the reason of mobilizing has completely changed. By 2017, there were at least 1.06 million, who born in Cambodia and were living in other countries as emigrants.

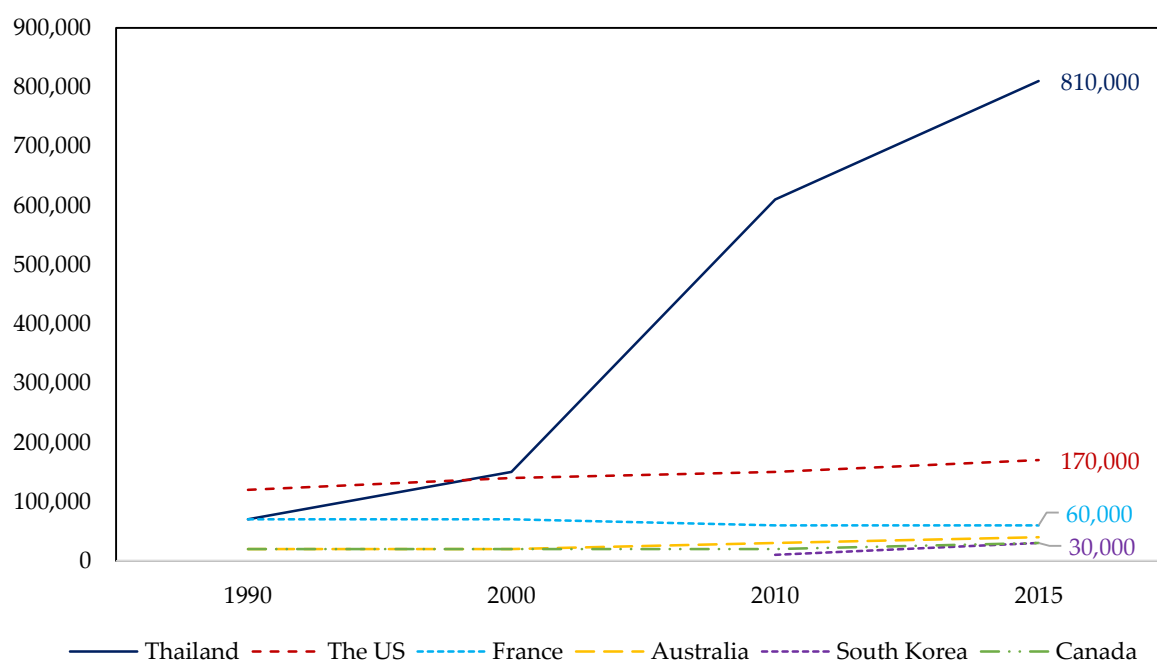
During last decade, many Cambodian people, mostly unskilled and low-skilled workers, were leaving to abroad. According to the report by the Open Institute, published in September 2016, the number of Cambodians, who have migrated to work

⁴⁰ See Appendix 7 for more detail.

⁴¹ According to the UN Population Division, "an international migrant is someone who has been living for one year or longer in a country other than the one in which he or she was born. This means that many foreign workers and international students are counted as migrants. For the purposes of this interactive feature, estimates of the number of unauthorized immigrants living in various countries also are included in the total counts. On the other hand, tourists, foreign-aid workers, temporary workers employed abroad for less than a year and overseas military personnel typically are not counted as migrants." For more information, please access to <https://www.pewglobal.org/interactives/international-migrants-by-country/>

in other countries (primarily Thailand), is widely estimated at more than 1 million (Phong, Barreras and Solá 2016). Moreover, according to the Ministry of Labour and Vocational Training of Cambodia (MLVTC), Cambodian migrants to only Thailand in December 2017 were estimated to be higher than 1.5 million (about 10 per cent of Cambodia total population). This does not include the informal migrants without the official documents. Korea is the number two and Malaysia is number three (Thmeythmey.com 2017).

FIGURE 34 Cambodian emigrants 1990-2015



SOURCE Pew Research Centre Global Attitude & Trends (2018)

Official Thai statistics show that more than 2 million documented migrant labourers work in Thailand, the vast majority of whom are Burmese, Cambodian and Lao. There are no official figures for those who work in Thailand without papers, but some activists claim that as many as 200,000 Cambodians may be working illegally - nearly the same as the number of people who have fled back to Cambodia in June 2014, according to Cambodian officials (Hodal 2014). It was a month after the Thai Army overthrew the country's democratically elected government in June 2014 - some 225,000 Cambodians fled Thailand fearing the new military junta was intent on

arresting illegal migrant workers (Narim 2015). Precisely, an unprecedented number of Cambodian migrant workers returned home to Cambodia from Thailand, prompted by fear of arrest and uncertainty about the tumultuous political situation in Thailand. The majority of them undocumented and travelling with families and young children, returned across the border to Cambodia (Dickson and Koenig 2016).

In the past, Cambodians left their home country because of war and other political reasons. However, for the present, it is rather for economic reasons. For instance, using the results from the International Organization for Migration (IOM) as shown in the Table 7, it suggests that the two most popular given reasons for leaving Cambodia were to: first, search for better job/income (m = 69 per cent, f = 62 per cent) and, second, no job/income in Cambodia (m = 66 per cent, f = 73 per cent). Being in financial debt was another key factor for migrating, especially for female migrants (m = 38 per cent, f = 43 per cent) indicating that they may be more prone to being in debt (Dickson and Koenig 2016, 14).

TABLE 7 Reason for leaving Cambodia (% within gender group) 2016

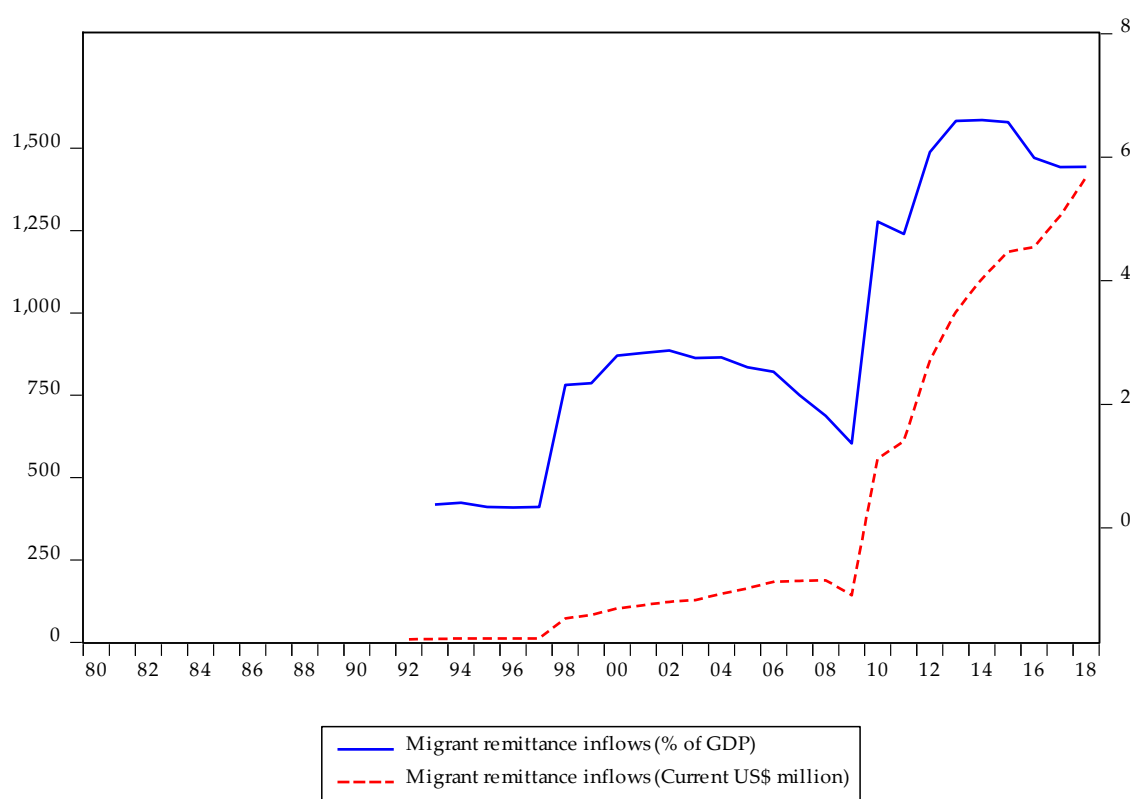
No.	REASON	MALE	FEMALE	ALL
1	Search for better job/better income	68.9%	62.0%	65.2%
2	No job/income in Cambodia	66.3%	73.2%	70.0%
3	Financial debts	37.8%	43.1%	40.6%
4	Loss of land	4.5%	3.4%	3.9%
5	Earn money for family (education/food/health care)	36.2%	27.9%	31.8%
6	Problems at home	6.7%	8.7%	7.8%
7	Forced/tricked to go	1.0%	0.6%	0.7%
8	Accompany family / friends	17.9%	13.0%	15.3%

SOURCE The IOM of Cambodia. It was taken from Dickson and Koenig (2016, 14)

NOTES The survey was conducted by the IOM in 2016. The overall sample totaled 667 Cambodian migrants who had returned from Thailand, including 312 (46.6%) male and 355 (53.2%) female migrants. The respondents were 16 to 60 years of age. Interviews were conducted by IOM staff and local university students hired and trained by IOM. Interviews were carried out across 10 provinces (Battambang, Siem Reap, Banteay Meanchey, Kampong Cham, Pursat, Prey Veng, Tbong Khmom, Kampong Thom, Takeo, and Kampot), 12 districts, 13 communes and 32 villages. Analysis was conducted to determine factors that contributed to migrants practicing safe migration (Dickson and Koenig 2016, 7).

Figure 35 shows the remittance inflows to Cambodia from 1980 to 2018. Cambodia's remittance payments have played a key role in contributing to Cambodian household's welfare during the last decades. With the rising number of Cambodian emigrants to Thailand, Korea and Malaysia in the 2010s, the size of remittance inflows to Cambodia has significantly increased, making it annually from around 2 or 3 per cent in 2010 to 6 or 7 per cent in 2018.

FIGURE 35 Personal remittances to Cambodia, received (% of GDP and current US\$) 1980-2018



SOURCE World Bank staff estimates based on IMF balance of payments data.

According to the National Bank of Cambodia (NBC), funds repatriated by Cambodian migrant workers continued to rise, totalling US\$ 1.4 billion by 2018 - an increase of 11 per cent compared to 2017. NBC's balance of payments, which record personal transfers by migrant workers to their households back home via financial institutions, showed that Thailand and South Korea were the two largest origins. They accounted for 68 per cent and 21.5 per cent respectively of total remittances. The

money Cambodian workers sent from Japan accounted for 3.3 per cent, while that from Malaysia was 2.5 per cent. The true size of cross-border remittance flows should be much higher as migrant workers - especially those in neighbouring Thailand - often send money back through informal channels (Kimsay 2019).

3.4 Age of Technology Revolution

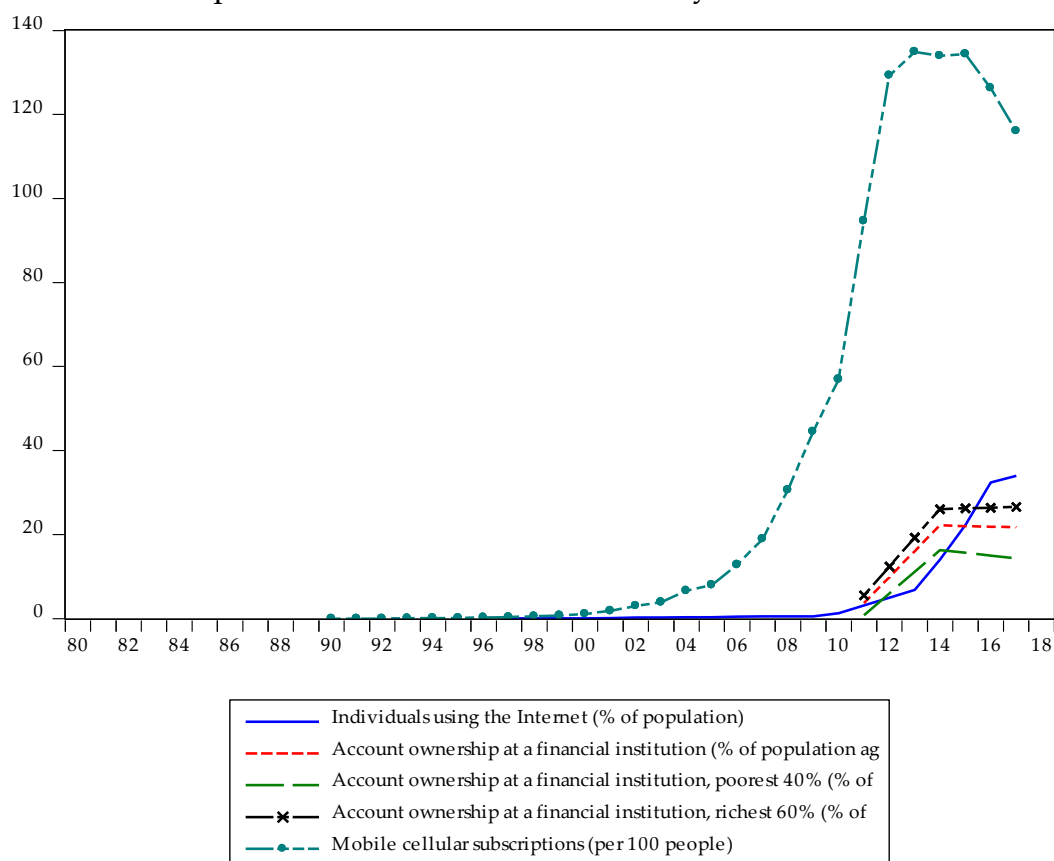
Technology has transformed indescribably in the last century. People can significantly travel, communicate and integrate themselves into the world. Through the TV, the mobile phone, the internet, and the social network, the people can access the new social life with cutting-edge technology. This has played an important role in changing how society worked. This fact is also happening in Cambodia.

Figure 36 shows the evolution of mobile cellular subscriptions (per 100 people) by Cambodian people, individuals using the internet (in percentage of population), and account ownership at a financial institution or with a mobile-money-service provider (in percentage of population ages 15+, among the poorest 40 per cent and the richest 60 per cent) from 1990 to 2018. In the early 1990s, there is less than a person among 100 Cambodian people, who have mobile cellular subscriptions. By 1997, there is only 0.006 per cent of the Cambodian population, who can individually access the internet. Presently, there are at least 116 mobile cellular subscriptions per 100 people and 34 per cent of the total population could access the internet in 2017. Social networks like Facebook become a part of people's everyday life. Facebook is the most popular platform in Cambodia and there are at least nearly 5 million active social media users. In the same way, YouTube is also sharing its existence during the last few years.

There is a new social trend of accessing mobile money in Cambodia. During the last few decades, traditional banking and MFIs systems in Cambodia have played a significant role in promoting access to financial products and services to the people

(Wyman 2017). Many Cambodians could access to loan or credit, as discussed in the previous section. However, other financial products and services, including saving, transaction, payment and insurance, could be only accessed by those who live in high-density regions and who have the middle and high-income background. This is because this region is where financial branches can expand.

FIGURE 36 Mobile phone, internet, and mobile money in Cambodia 1990-2017



SOURCE International Telecommunication Union, World Telecommunication/ICT Development Report and database, Demircuc-Kunt, et al. (2018), Global Financial Inclusion Database, World Bank.

During the last few years, it is shown that a significant increase in digital innovation has contributed substantially to the sector's development. For example, Wing in Cambodia, which is Cambodia's leading mobile banking service provider and was launched in 2009, processes presently a volume of transactions equivalent to about 50 per cent of the country's GDP by the use of a mobile money network consisting of some 4,000 digitally connected agents. In doing so, it has reduced money transfer fees by between 40 per cent and 80 per cent (Wyman 2017, 19). This mobile

payment provider simply allows people to send and receive money by paying cash in exchanging the code obtaining from a mobile phone. The recent data show that 33 per cent of the adult population received money through mobile money services in 2016 (Eric, 2014). As shown in [Figure 36](#), among the population with the age of 15+, by 2011, there is only 3.66 per cent, 0.82 per cent, and 5.55 per cent of Cambodian people, who respectively have an account ownership at a financial institution or with a mobile-money-service provider for all population, for the poorest 40 per cent and for the richest 60 per cent. However, the number increased to 21.68 per cent, 14.30 per cent and 26.57 per cent respectively. According to the ADB's report (Wyman 2017, 59), adopting digital financial services could develop economic activities in Cambodia and increase the GDP by about 6 per cent.

4 Linkage of Poverty, Inequality and Cambodia's Openness: Theatrical and Empirical Considerations

From the discussion in the previous sections, we may observe similarly the evidence in the historical dynamics that globalisation, poverty and inequality in Cambodia began improving at roughly the same time. All of these data establish that, in a statistical scene, poverty and inequality are certainly related to Cambodia's openness. The question is, what is the nature of this association? Statistically, the relationship can result from multiples reasons: (i) globalisation, through particularly trade openness, capital flows, financial development, migration and technology, causing poverty and inequality, (ii) other factors causing this relationship, and (iii) the combination of the two reasoning. Putting that idea in a simple framework, we can think of Cambodia's poverty, $pov_{Cambodia}$, and inequality, $gini_{Cambodia}$ are determined by Cambodia's openness, $Glob_{Cambodia}$ across time:

$$pov_{Cambodia*time} = \alpha * Glob_{Cambodia*time} + \varepsilon_{Cambodia*time} \quad (1)$$

$$gini_{Cambodia*time} = \beta * Glob_{Cambodia*time} + \mu_{Cambodia*time} \quad (2)$$

The discussion of the relationship between globalisation, poverty and inequality can then be conducted in terms of the slope coefficients (α and β), as well as the variances and covariances of the two error terms. The error terms here, $\varepsilon_{Cambodia}$ and $\mu_{Cambodia}$, include all other factors causing to variation of poverty and inequality, except the effect of globalisation (Weil 2015, 105). From a purely economic perspective, to estimate the equations (1) and (2), it is a matter of serious issue because many statistical and econometric issues are needed to be considered carefully. However, as this chapter is not a quantitative monograph, it does not take a stand on the precise magnitude of the effect of globalisation on poverty and inequality, or the value of the parameters, α and β , in the equations (1) and (2) respectively.

4.1 Preliminary Linkage of Globalisation on Poverty and Inequality

Does globalisation reduce and/or increase poverty and inequality across time in the developing countries or a typical country like Cambodia? Will the efforts to integrate into globalisation improve and/or deteriorate the people's welfare and promote the shared prosperity among all type of citizens?

The traditional HOS trade theory by Heckscher (1919), Ohlin (1933) and Samuelson (1953) emphasizes that trade between countries may result in citizens' better-off welfare among trading partners. In the simplest explanation, it suggests that the abundant factor should see an increase in its real income when a country opens up to trade. If the abundant factor in developing countries is unskilled labour, then this framework suggests that the poor (unskilled) in developing countries have the most to gain from trade (Harrison 2007, 10). Trade reforms in the developing countries are likely to provide more comparative advantage in producing unskilled export goods. In this context, if globalisation raises the prices of goods produced by the poor, for instance, agricultural products produced by the farmers, and if the poor can benefit from tariff reductions on the products they consume, promoting globalisation should consequently increase the poor's welfare and reduce inequality (Davis and Mishra 2007, Bhagwati and Srinivasan 2002, Krueger 1983). In extending the traditional HOS trade theory, the theory by William Easterly shows that there are possibly two opposite ways, from the analysis of factor endowment and productivity, to explain the theoretical association between globalisation and poverty. From the factor endowment analysis, if the developing economies are endowed with unskilled labours, promoting globalisation will cause a rise in capital flows to the developing economies and, consequently, the poor will be better off. However, from the factor productivity analysis, it suggests that there is no impact between globalisation and poverty and, in some way, globalisation could lead to rising poverty in the less competitive country because the capital flows will leave from the low productivity

countries to higher productivity countries (Easterly 2007). Emma Aisbett explains why the critics are so convinced that globalization is bad for the poor (Aisbett 2007).

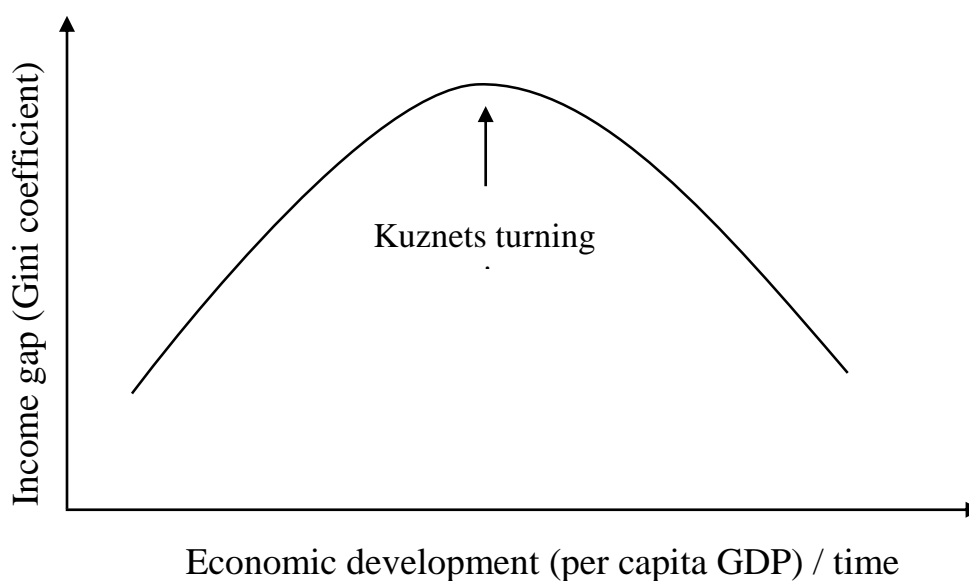
David Dollar and Aart Kraay used global dataset from the 1960s to 1990s to examine the empirical relationship between globalisation and poverty. Many stylized facts observing from this study suggest that, during that period, over half the developing countries is in the globalized forces. There is a large increase in trade, and significant decline in tariffs in those economies, which are catching up the rich countries. The increase in economic growth, benefiting largely from the globalisation, leads to relatively rising income of the poor. From this evidence, globalisation would result in faster economic growth and poverty reduction in the developing countries as the globalisation does not affect inequality among the countries (Dollar and Kraay 2004). This finding is in accord with the study between globalisation and absolute poverty by Andreas Bergh and Therese Nilsson. The study uses the World Bank's absolute poverty line as the percentage of the population in a country living on less than one dollar per day (PPP adjusted 1993) and KOF globalization index from 114 countries during 1983 and 2007. The finding suggests that information flows and more liberal trade restrictions robustly correlate with lower absolute poverty (Bergh and Nilsson 2014).

The other comprehensive survey from the international literature provides little evidence on the direct link between globalisation and poverty, and some have suggested that we can only review the indirect linkages (Ravallion 2006, Hertel and Winters 2005, Winters, McCulloch and McKay 2004, Goldberg and Pavcnik 2004, Chen and Ravallion 2001). For instance, the globalisation may affect poverty through prices, incomes and information flows (Bergh and Nilsson 2014). Pierre-Richard Agénor suggests the existence of a nonmonotonic and Laffer-type relationship between globalisation and poverty in the long run. At low levels, globalisation appears to hurt the poor; but beyond a certain threshold, it seems to reduce poverty, possibly because

it brings with it renewed impetus for reform. However, there are also many mechanisms in explaining this indirect relationship, including specialization, scale economies, competition, incentives for macro-economic stability and innovation (Agénor 2004).

In focusing on the effect of globalisation on inequality, we may rethink of the neoclassical HOS trade theory. The theory argues that trade openness would increase the wages of low-skilled workers in developing countries, where low-skilled jobs are abundant, and a decrease in the wages of high-skilled workers in advanced countries, where high-skilled jobs are abundant. According to Wolfgang F. Stolper and Paul A. Samuelson, in developing countries, in which low-skill factors are relatively abundant, this would cause a reduction in income inequality and whereas in advanced countries, characterized by high-skill factors, it would lead to rising income inequality (Stolper and Samuelson 1941). In this case, we may find a positive distributional effect of globalisation, which generates higher incomes in both advanced and developing countries, at least in absolute terms.

FIGURE 37 Kuznets hypothesis (1955)

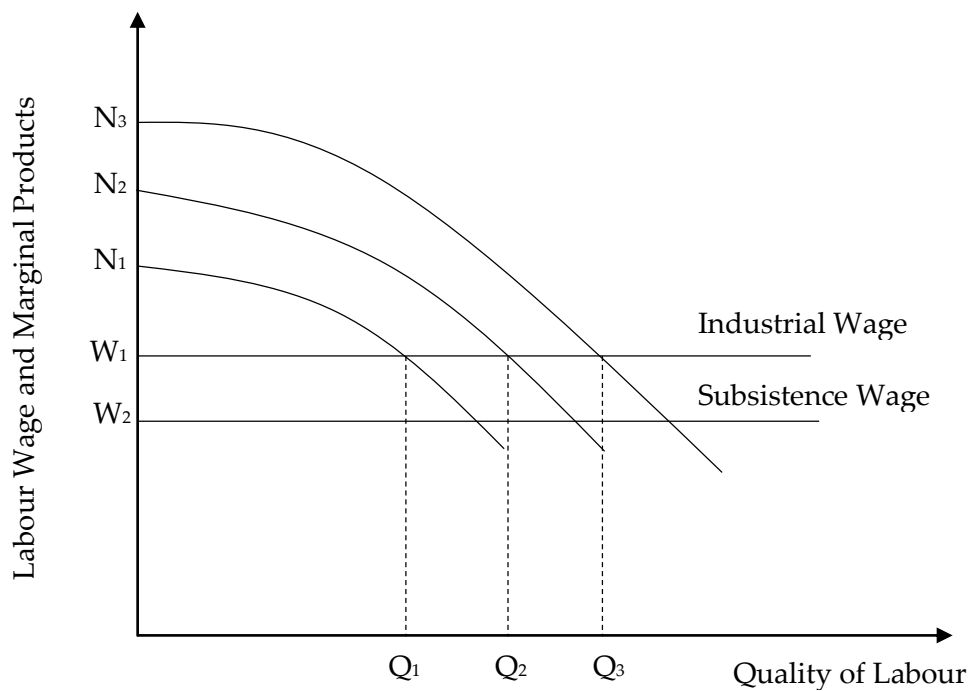


SOURCE Author's elaboration from the Kuznets curve (1955).

This promising view is in accord with Kuznets' hypothesis (Kuznets 1955), which explains that inequality might increase in initial phases of industrial development but will decline in the long term, once the process of industrialization is advanced (see Figure 37). Therefore, in the modern era of globalisation, even less-developed economies will become better off with more equal society in the long run (Barro 2000, Ravallion 2001, Lall, et al. 2007, Pavcnik 2017). From the empirical study in the 52 Asian and Western countries from 1988 to 2014 by Bertrand Blancheton and Dina Chhorn, higher sectoral export diversification increases inequality while higher manufacturing specialization decreases inequality in high-income Asian countries and EU member states. In this perspective, it suggests the importance of the implementation of industrial policy in order to develop basic manufactured specializations of the unskilled labours (Blancheton and Chhorn 2019, 191).

In the specific case of the developing economies, the Lewis two-sectors model seems also to be the potential economic theory to explain how globalisation may influence poverty and inequality. As shown in Figure 38, the Lewis model explains the growth of a developing economy in terms of a labour transition between two sectors, the capitalist sector and the subsistence sector (Lewis 1954). 'The Lewis model is built on the idea of a dual economy. Lewis argued that the central process of development consists of moving a large mass of underemployed workers, with low productivity out of a subsistence sector, where living standards are necessarily low, into a modern capitalist sector, where output per worker can be higher because it is fructified by capital. In this framework, growth consists, in its simplest form, of expanding the capitalist sector. This expansion requires an increase in savings, which can only come from the capitalist sector or from external sources. As capital flows into the economy, it is used to create jobs in the modern sector, which in turn can always be filled by workers from the subsistence sector. As these workers move, the savings rate of the economy rises, and this in turn leads to a virtuous circle that steadily raises the level of income per worker in the economy' (Gollin 2014, 72).

FIGURE 38 Lewis two-sectors model



SOURCE Author's elaboration from the Lewis two-sectors model (Lewis, 1954)

The following section discusses analytically the dynamic effect of globalisation on poverty and inequality across time with the empirical evidence from Cambodia and how it may verify with the theoretical literature as explained above.

4.1.1 Closed Economy from the Khmer Rouge Regime until the Late 1980s

'The collapse of the communist systems of East Europe since 1989 closed the debate: planned economies were without doubt less efficient in utilizing economic resources than market economies' (Moroney and Lovell 1997, 1084). From this international experience, there is no exception for Cambodia. Cambodia at that time was very poor; precisely, almost everyone was poor. As Cambodia remained the closed economy from the Khmer Rouge regime until the late 1980s, it is suggested therefore that there is almost no effect of globalized forces on Cambodia's poverty and inequality during this period.

4.1.2 Re-opening Economy from the Early 1990s

The transformation to the free-market economic system in the early 1990s has integrated Cambodia into the globalized forces with the rest of the world through trade and foreign direct investment; however, its scale remained very low. Since then, Cambodia had the opportunities to develop its economy. The poverty was about 50 per cent of the total population and inequality emerged itself with the Gini index of around 0.40. The rural population represents nearly 83 per cent of the total population.

During this period, the globalisation through the rising international trade and economic growth may have the impact, likely little or at least indirect impact, on poverty and income distribution. Those, who lived in the city or other urban area and involved in industry and service sectors, were likely to benefit from economic growth and leave poverty. In contrast, those, who lived in the rural area and involved in agricultural activities, were also those who left behind.

Like other countries' experiences (Yew 2013), it seems that the continued economic growth started in cities. The material standard of living has been wholly changed in the cities that began developing first, then high economic disparity has emerged between the city and rural citizens. Phnom Penh and Sihanoukville were the first places for economic development since these two regions have been the centre of business and trade. The contagion of economic growth spread to other parts of Cambodia, especially provinces near the sea, rivers and boundary; yet, some parts are still less affected.

Besides the international trade, capital flows seemed to have no impact on Cambodia's economy, poverty and inequality during this period. This is evidence from the Asian financial crisis in 1997, which only major Southeast Asian economies like Thailand, the Philippines, Malaysia, Singapore and Indonesia were affected the most by the crisis. Joining the ASEAN in 1999 opened Cambodia's new era.

4.1.3 Globalized Cambodia in the 21st Century

Joining the WTO in the early 21st century has remarkably changed Cambodia's economic destiny. Trade and FDI have outstandingly increased. Poverty has surprisingly reduced. Inequality has increased at the first stage, but reduced at the later stage, likely as the U-turn of economic development. How does globalisation have an influence on Cambodia's poverty and inequality in this period?

Comparing to the previous period, globalisation through international trade and foreign investment since the early 21st century seems to have more influence on Cambodia's poverty and income distribution. As explained in the Lewis two-sectors model, the fruits of globalisation and economic growth might generate a significant impact on income and labour employment of the industrial and service sectors in the city and urban regions, which provides at least indirect positive impact on the traditional sectors and those who live in the rural region. According to Robertson, et al. (2009, 116), 'globalization, defined as international trade and investment, in Cambodia seems to be primarily focused in the garment sector and, to a lesser degree, in the hotel sector. As globalization has advanced, employment in these sectors has increased while employment in the more traditional agriculture sector has contracted. Rising demand for workers caused by expanding export markets and FDI seems to have combined with international attention on the garment sector to generate relatively good working conditions as compared with other sectors in the economy. Relatively few accidents, and earnings that are up to 44 per cent higher than the average Cambodian wage (controlling for demographic characteristics), in particular, characterize the garment sector. Working conditions and wages seem to be better in the garment sector than in agriculture, suggesting that the movement of workers from agriculture to apparel might be improving overall working conditions in Cambodia.'

Look at the trend of Cambodia's total employment, we may observe that there is a remarkably rising employment in the industrial and service sectors. This leads to a lower share of agricultural employment and, consequently, wages in agricultural activities continue to increase. According to the report by the Emerging Markets Consulting in 2017, Cambodia has presently a working population of 10 million, 13 per cent of which are in Phnom Penh with a majority working as service and sale workers as well as factory occupations. Available sectorial data on employment is spotty at best, but some traditionally large sectors dominate, while some emerging sectors are growing fast: garments and footwear (400,000-500,000), tourism and hospitality (800,000 skilled workers by 2020), construction (200,000, and 50,000 in Phnom Penh), agriculture (subsistence agriculture to modern agribusiness), light manufacturing (20,000+ in Phnom Penh Special Economic Zone or the PPSEZ), and retail service (no estimate available, but thought to increase).⁴² By 2025, the travel and tourism sector alone is expected to account for 1,640,000 jobs directly, an increase of 4.6 per cent pa over the next ten years.⁴³

4.1.4 During the Global Financial Crises in 2007-2009

Unlike the situation during the Asian financial crisis in 1997, Cambodia's economy was hit hard by the global financial crisis 2007-2009. This is a piece of clear evidence showing that Cambodia has already deeply integrated into the globalised forces. According to the report by the Overseas Development Institute (ODI) London, 'given the low growth elasticity of poverty in Cambodia, all other things being equal, the direct and immediate effects of reduced growth on poverty are expected to be relatively less severe. However, a decline in growth of the magnitude most forecasters predict for the country is likely to have a more severe impact on poor and vulnerable

⁴² For more information, please see http://www.emergingmarkets.asia/consulting/wp-content/uploads/sites/2/2017/11/Chab-Dai_Member-Meeting-Presentation EMC v1.pdf

⁴³ Please see Appendix 8 and 9 about the international tourism, receipts (% of total exports) 1996-2017 and the direct contribution of travel and tourism to employment 2005-2015

groups. Since poverty in Cambodia, as in many other places, is heavily rural based (the poverty headcount was estimated at 35 per cent in rural areas compared with 0.8 per cent in Phnom Penh and 22 per cent in other urban areas) and that most rural activities are agriculture based, it is important to consider the effects of the crisis on the agriculture sector in Cambodia. Agriculture accounted for an estimated 28 per cent of GDP in 2007 and about 59 per cent of the population is also estimated to rely on this sector for their livelihood' (Jalilian, et al. 2009, 25). Despite its rich endowment of natural resources, especially minerals, oil and gas, the country still depends on a narrow growth base of just four sectors: garments and textiles, tourism, construction and agriculture. Agriculture apart, heavy reliance on foreign investment and markets makes these sectors vulnerable to external shocks, which have significant consequences for overall and sectoral economic growth and impact disproportionately on the employment and income of workers, who are mainly the poor (Socheth 2013, viii).

4.1.5 Era of Microfinance and Migration

The 2010s remakes a huge rise of the microfinance sector in Cambodia, which is heavily invested by foreign investors, and the immigration of Cambodian people in a foreign country. The size of Cambodia's microfinance sector is among the top in the world and the size of remittance inflows to Cambodia has increased to nearly 6 or 7 per cent of GDP, involving directly to around 2 million of emigrants.

Since its first introduction, the microfinance sector has been viewed as the major promoter to Cambodia's economic growth and poverty reduction. We may confirm this simply if we just look at the high growth rate of MFIs sector, linking to the rate of GDP growth and poverty reduction since the early 2000s. The positive effect of microfinance is supported by many studies. It is suggested that the microfinance sector had a central role in Cambodia's economy. Prior to GDP, it was found that the

microcredit allowed to improve households' living standards and decrease poverty in rural areas (Bylander 2015). Other recent studies showed that MFI microcredits help to expand the cultivated land area, boosting agricultural production, and rural livelihoods. It also increases in paddy income, expenditure on inputs of paddy production as well as allows women to benefit more from credit programme (World Bank, Eliste and Zorya 2015, Vathana, et al. 2017). The interesting notice is that the positive effects of microfinance are frequently found at sub-national levels, employing small sample analysis, such as in target villages or provinces where those areas are sometimes supported by the international development programs, or in reports, which identifying the direction of causality or addressing statistically the endogeneity are always the concern (Chhorn 2018).

At the national level, the findings of the current studies do not support the positive effect of the microfinance sector in Cambodia. Using the Cambodia Socio-Economic Survey (CSES) in 2014, the studies suggest that micro-credit in both sectors, formal and informal lending sectors, reduces household expenditure. The author holds the view that the negative effects are very likely attributable to the high-interest rate on both formal and informal microcredit and the household's use of microcredit for non-productive activities. The high-interest rates and non-productive use of microcredit are more likely to plunge borrowers into a vicious cycle of high-interest indebtedness, in particular when the earning are too low to cover the credit costs (Seng 2017, Seng 2018). The results corroborate the ideas of Batemen (2017), who suggested that microcredit, after the transformation into profit-oriented objectives rather poverty-reducing objective at the primary state, has contributed to frustrating and blocking Cambodia's post-war reconstruction and development objective while, not coincidentally, spectacularly enriching the narrow domestic, expatriate and foreign elite that now manage and own Cambodia's microcredit sector. This global leading expert of microfinance also linked the issue to over-indebtedness and landless of Cambodian households, which potentially threatens the stability of the entire

economy. For example, 'approximately 40 per cent of the rural population lives off of less than 0.5 hectares of agricultural land, an area too small to yield sufficient rice to meet the needs of the average rural household. Landlessness appears to be on the rise, a result of population pressure, land sales under duress (for example, health emergencies), and speculative land purchases (usually by Phnom Penh residents). About 13 per cent of the rural population was estimated to be landless in 1997, rising to 16 per cent in 1999 and to 20 per cent in 2004' (World Bank 2006, 47).

In consonance with the most recent data, the level of over-indebted households is getting more serious. The study of Seng (2017) also shows that Cambodia's debt-to-income ratio, which is an indicator of over-indebtedness at the macro level, has remarkably increased. The ratio went from approximately 32 per cent in 2005 to 92 per cent in 2011. From 2012 to 2014, the ratio grew at rates higher than 100 per cent (from 107 per cent to 162 per cent respectively), revealing that microfinance borrowers were more likely to already be over-indebted. There are also facts that they tend to borrow more money from multiple sources or sell their land, which they use only to pay for previous debts. The issues of over-indebtedness and landless are also suspected to correlate with mutual dependency within the family and migration. The family members need to depend on each other and sometimes decide to migrate in urban or abroad, just to earn money to pay back their high-interest borrowing. According to Dickson and Koenig (2016), one of the top 3 major reasons for male and female migrants to leave Cambodia is financial debt. Up to the present, according to the MLVTC in 2017, Cambodian migrants to only Thailand, Cambodia's neighbour country, is estimated to be higher than 1.5 million (more than 10 per cent of Cambodia total population). This does not include informal migrants.

The negative effects of microcredit at the national level may not be seen only by the earlier scholars, but also the RGC and the NBC, which have often appreciated market mechanism by following the weak regulatory frameworks. In early 2017, the

government, instructed directly by Cambodia's prime minister, required all MFIs and banks to inform their clients and the public by media outlets and mobile phone companies that: '*All microfinance institutions are private, not state-owned.*' One month later, the NBC announced a ceiling of 18 per cent interest rate on loan per month.

4.1.6 Future Ahead: the Social Disparity in the Age of Technology

In the future, from the international experiences, as explained in Yew (2013, 55), one of the possible sources of the social and economic concern in any country is the growing income and wealth gap between the city / other urban area and rural area. In the case of Cambodia, the city of Phnom Penh and other urban area are growing at least faster than the rural area because it begins with a much higher base. It is not believed that the rural area (including plains region, plateau/ mountain region and Tonle Sap region) can ever be as prosperous and advanced as the coastal, riverine province and the city. In the cities, the favourable environment attracts more business and investment. Bright students who want to do well aim to go the coast or to Phnom Penh for their university studies. There is a vicious circle, because the best professors and teachers don't want to go inland either. Therefore, it creates more jobs and offers higher welfare. The social and economic will be rising.

Inequality is indeed itself matter; however, the technological progress of nowadays has also exacerbated the social and economic concerns even if the statistics may somehow look better. The households, especially in rural areas, can see the people's lifestyle in the city and urban areas, and probably also in the neighbouring countries from their TV, the internet, smartphone along with their connection to the social media. In principle, they can see their position, then relatively compare their welfare with others and wish for the social, economic and political changes. It is different from the past as welfare is relatively concerned only with their past or their neighbours within the community.

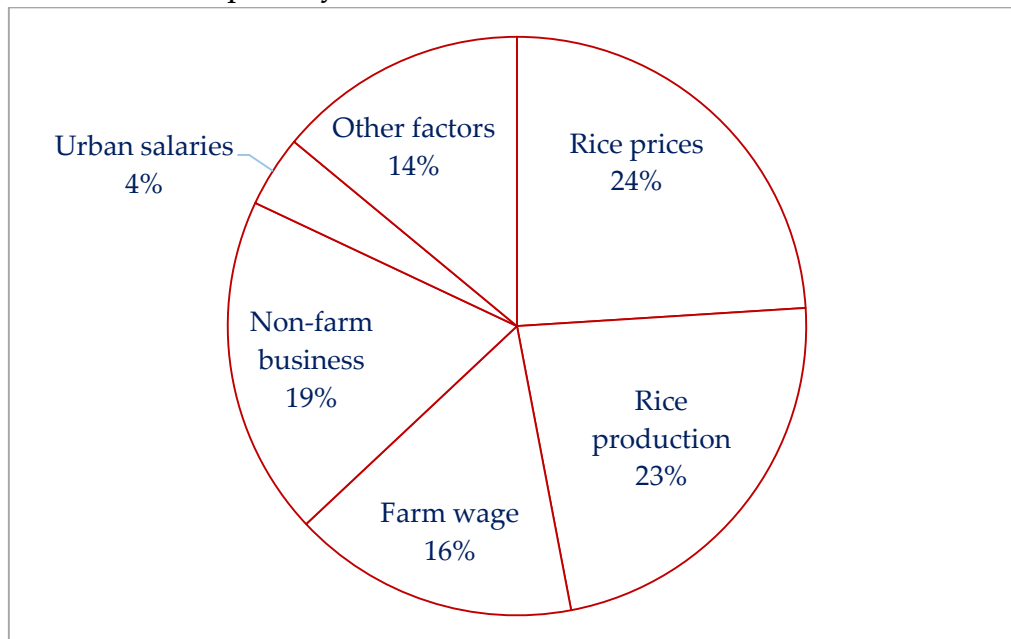
4.2 Considering the Additional Controlled Factors

The discussion from the previous sections suggests that Cambodia's openness alone is not enough to fully describe the historical dynamics of poverty and inequality in Cambodia. In statistical analysis, if its structural effects are not fully explained, then the observed correlation must result from the errors. The errors can be reduced once we add additional control variables into the equation (Weil 2015). Several variables, counting from the agricultural role and environmental impact to the governmental role and its governance performance, are included in our analysis.

4.2.1 Agricultural Role, Rice Development and Environmental Impact

Since the huge majority of Cambodian people lives in a rural area during the course of its long history, a big part of their sources of income has always been shared by the agricultural activities. According to the survey by the World Bank staffs, the household income from 2004 to 2011 was nearly 63 per cent of the agricultural activities. This includes rice prices (24 per cent), rice production (23 per cent) and farm wage (16 per cent), as shown in [Figure 39](#).

There are many studies, which have confirmed the positive effects of higher agricultural prices, especially rice production, in reducing poverty in developing countries or low-income countries. For instance, the following reports show that the rice sector dominates agriculture and food in Cambodia, Thailand, Vietnam and Laos, four of the five members in the GMS countries. The contribution was even higher in Cambodia, comparing to its neighbouring countries. Its further development offers many benefits in the short to medium run, including a reduction in extreme poverty, boosted shared prosperity, lower greenhouse gas emissions, job creation, especially in the rice processing and trade industries, and improved nutrition (Ivanic and Martin 2014, Zorya, et al. 2016).

FIGURE 39 Source of poverty reduction 2004-2011

SOURCE the World Bank staff estimates based on CSES.

NOTES It was taken from World Bank (2013), "Where Have All the Poor Gone? : Cambodia Poverty Assessment 2013".

Since the 1990s, Cambodia has been well-performed, comparing to its neighbouring countries like Vietnam, for its rice production and essential growth in rice exports. This contributed significantly to poverty reduction. The household income from the agricultural activities plus additional sources of income, including non-farm business and urban salaries, has provided more favourable circumstances, not only for overall poverty reduction but to allow the poor relatively grows faster than the better-off households. Consequently, we can observe the reduction in income inequality during this period. According to the findings from many sources (McKenney 2002, Sophal and Acharya 2002, Prom and Ballard 2005, World Bank 2006, World Bank, Ly and Aldaz-Carroll 2013, World Bank, Aldaz-Carroll and Ly 2014), most of Cambodia's rural population depends on one rice crop per year, fish and other aquatic resources, forest products, and wage labour. The 2004 CSES data indicate the income of the average rural household is comprised of crop cultivation (30 per cent); livestock (10 per cent); common property resources, especially fish and forest products (25 per cent); and wage labour, non-agricultural activities, other (35 per cent).

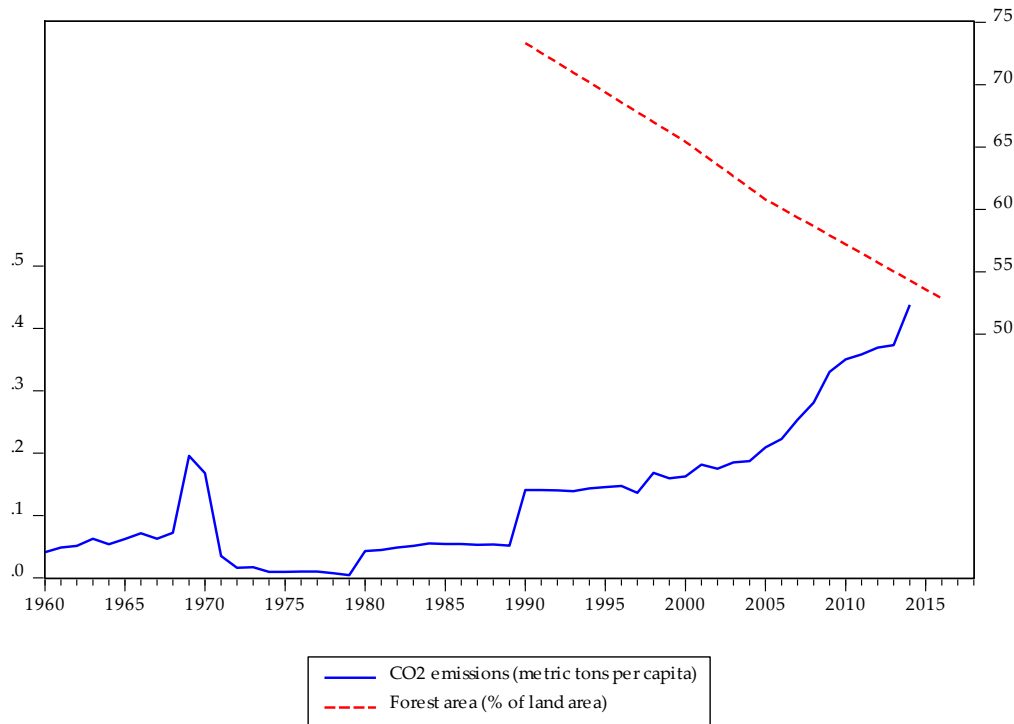
In Cambodia, the government has set one of its priority in promoting rice production and rice exports to the international market. Many reforms have consequently been done, even with many limitations, to deal with administrative constraints and building more irrigation system and infrastructures. 'Cambodia was ahead of Lao PDR and Myanmar in catching up with Thailand and Vietnam, triggered by strategic policy decisions in 2010 to liberalize trade, remove agricultural distortions, encourage FDI in rice mills, and encourage stronger ties between value chain players such as farmers and millers. This all helped Cambodia's rice sector to contribute handsomely to poverty reduction' (Zorya, et al. 2016, x).

According to the report by the Food and Agriculture Policy Decision Analysis (FAPDA) in 2014, 'agriculture contributed 37 percent to the GDP and employed about 67 percent of the workforce in 2012. Most Cambodian farmers are smallholders with less than two hectares per household. The country's agricultural resources consist primarily of 3.7 million hectares of cultivated land, of which 75 percent is devoted to rice, primary commodity and source of income for the majority of farmers and 25 percent to other food and industrial crops, primarily rubber. Freshwater and marine fisheries and aquatic resources provide employment to over three million people. Fish is also a major source of protein in the domestic diet' (FAPDA 2014, 1).

Up to now, agricultural sectors in Cambodia remain depending heavily on the traditional ways; therefore, favourable weather conditions would bring positive results. To give an example in recent years, 'improved weather conditions have underpinned agriculture sector expansion, especially rice production. Rice production grew by 5.7 per cent in 2016, reaching 9.8 million metric tons. Favourable weather conditions also extended during rainy season rice production in 2017. Contribution to growth by agriculture subsectors such as livestock and fisheries also improved last year. The agriculture sector remains an important sector for the economy although its share shrank to a quarter of GDP in 2016, down from 48 per cent two decades ago. The

sector provides 44 per cent of total employment or 53 per cent of rural employment' (World Bank 2017 Oct, 16).

FIGURE 40 Forest area and CO2 emission in Cambodia, 1960-2016



SOURCE Food and Agriculture Organization, electronic files and web site. Carbon Dioxide Information Analysis Center, Environmental Sciences Division, Oak Ridge National Laboratory, Tennessee, United States.

Beside agricultural activities, environmental factors also affect Cambodian household's daily life. Two major issues include the declining forest area and rising CO2 emissions in Cambodia since the 1990s, as shown in Figure 40. According to the empirical study of the correlation between environment⁴⁴ and poverty in Cambodia by the World Bank, the loss of forest cover, estimated at a rate of 70,000 to 100,000 ha per year, is one of the most alarming environmental trends in Cambodia. It is worth to mention that the country's forest, comprise more than 50 per cent of the country's territory, is a major source of capital for the Cambodian economy and an important livelihood resource for the poor. In addition, forests provide the poor non-timber

⁴⁴ Environment here refers to deforestation, fragile lands, indoor air pollution, lack of access to water, lack of access to sanitation, outdoor air pollution, and number of diarrhea cases (World Bank 2006, 3).

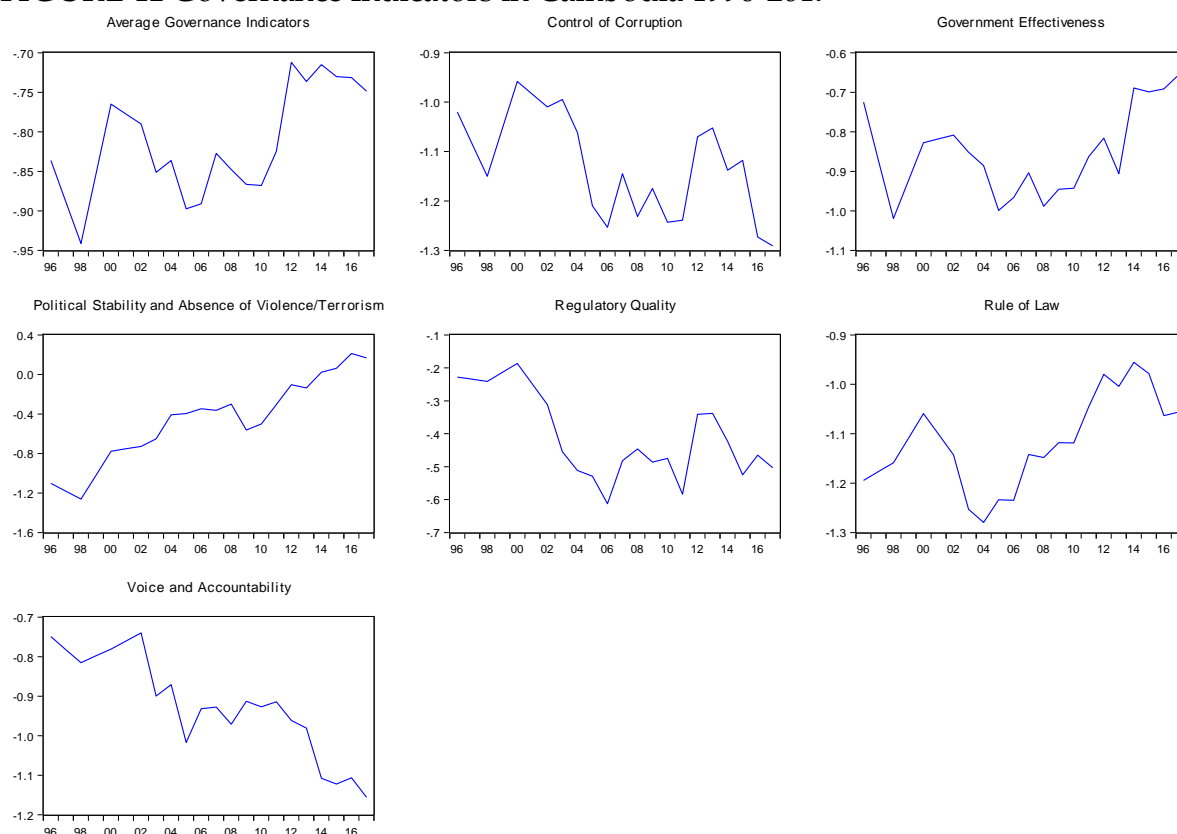
forest products (NTFPs) for subsistence and income generation. On the other hand, water resources have been threatened by human activities. Even though Cambodia is a rich country in water resources (Mekong and Tonle Sap Rivers, and Tonle Sap Lak are the most important), but they are decreasing by increasing demand and improper use such as industrial effluents, domestic sewage and solid waste. As a result, a declining water is one of the issues in many areas (World Bank 2006, 9-10).

4.2.2 Government Role and its Governance Performance

In spite of having the national election in 1993 and following the UN intervention to promote democracy, Cambodia has been known as a patronage state weak in administrative capacity but strong in coercive capacity (Un 2019).

Figure 41 reports the governance performance of Cambodia from 1996 to 2017, measured by the Worldwide Governance Indicators (WGI). Cambodia is in the group of countries with a very weak governance performance. Its average value remains weak and varies around -0.8 during the period of time. Looking at sub-indicators, the indicators like voice and accountability, government effectiveness, rule of law, and control of corruption have varied toward mean value. On the other hand, regulatory quality becomes worse. The score of political stability and absence of violence/terrorism become significantly improved. It is the only sub-indicator where its rising trend looks similar to the trend of economic growth and poverty reduction. How does governance performance affect poverty and inequality in Cambodia?

According to Juzhong, Emmanuel and Anneli (2010), we can associate the governance performance, measured as the institutional quality, to inequality in two different ways. Firstly, it is by political institutions and democracy. Secondly, it is by corruption.

FIGURE 41 Governance Indicators in Cambodia 1996-2017

SOURCE The WGI, Sept 21, 2018. The data of 1997, 1999, and 2001 were calculated as average value between two years around.

NOTES The WGI constructs aggregate indicators of six broad dimensions of governance: Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. The estimate of governance in standard normal units is ranging from approximately -2.5 (weak) to 2.5 (strong) governance performances.

On the one hand, in relation to political factors, it is suggested that more equal income distribution would be promoted in a democratic society with more political rights. When political rights to vote are extended to the majority of the population, the amount of redistribution is decided by the median voter and this determines directly or indirectly the rate of growth of the economy (F. Bourguignon 2004). However, it is failed to verify empirically in some cases, where the countries with the higher score of democracy are not necessarily to reduce inequality. It is subject to the fact that the political system alone can't explain enough to inequality. For example, despite having a lower score in democracy or restrictive political rights, income distribution in many countries, such as East European countries, the Republic of Korea, and Singapore, was

relatively equal as long as their societies function with special political ideology. Moreover, democracy is more likely to reduce inequality in countries with a parliamentary than a presidential (Juzhong, Emmanuel and Anneli 2010). The corruption, on the other hand, tends to increase income inequality for the reason that it would lead to tax evasion, less effective administration, lower progressive taxes, less effective public expenditure, or lower investment. The problem would potentially create political, economic and social systems that favour only the rich but hurt the poor (Pedauga, Pedauga and Delgado-Márquez 2017). In contrast, some argue that corruption can lead to lower inequality if the social benefit from corrupted activities is higher than social damage. The other recent study has found that corruption tends to be associated with lower inequality in less-developed countries due to the existence of the informal sector in many developing countries (Andres and Ramlogan-Dobson 2011).

In Cambodia, empirical verification may be explained by the analysis of more disaggregated degree. Nyblade & Reed (2008) has linked corruption to inequality in two contexts of political competition or voting: first, it is related to illegal acts for material gain, namely "looting", and second, it is related to illegal acts for electoral gain, namely "cheating". It is suggested that the first involves corrupted actions to gain personal benefits by the elites in the group of society, which would produce higher inequality. Traditionally, this action negatively affects the poor who depend on public expense. The second, however, involves buying votes by using, for instance, public budget to the mass of people. This tends to decrease inequality because at least the money goes the poor people. To verify this hypothesis empirically, Mathew YH Wong, in his study on 16 Asian and 18 Latin America countries from 1996 to 2009, found that corruption does indeed affect the distributive outcomes of government expenditure, but the effect is different. In Latin America countries where we found higher political competition, it may actually reduce inequality as it involves resource distribution and building of clientelistic linkages. However, in Asian countries, the

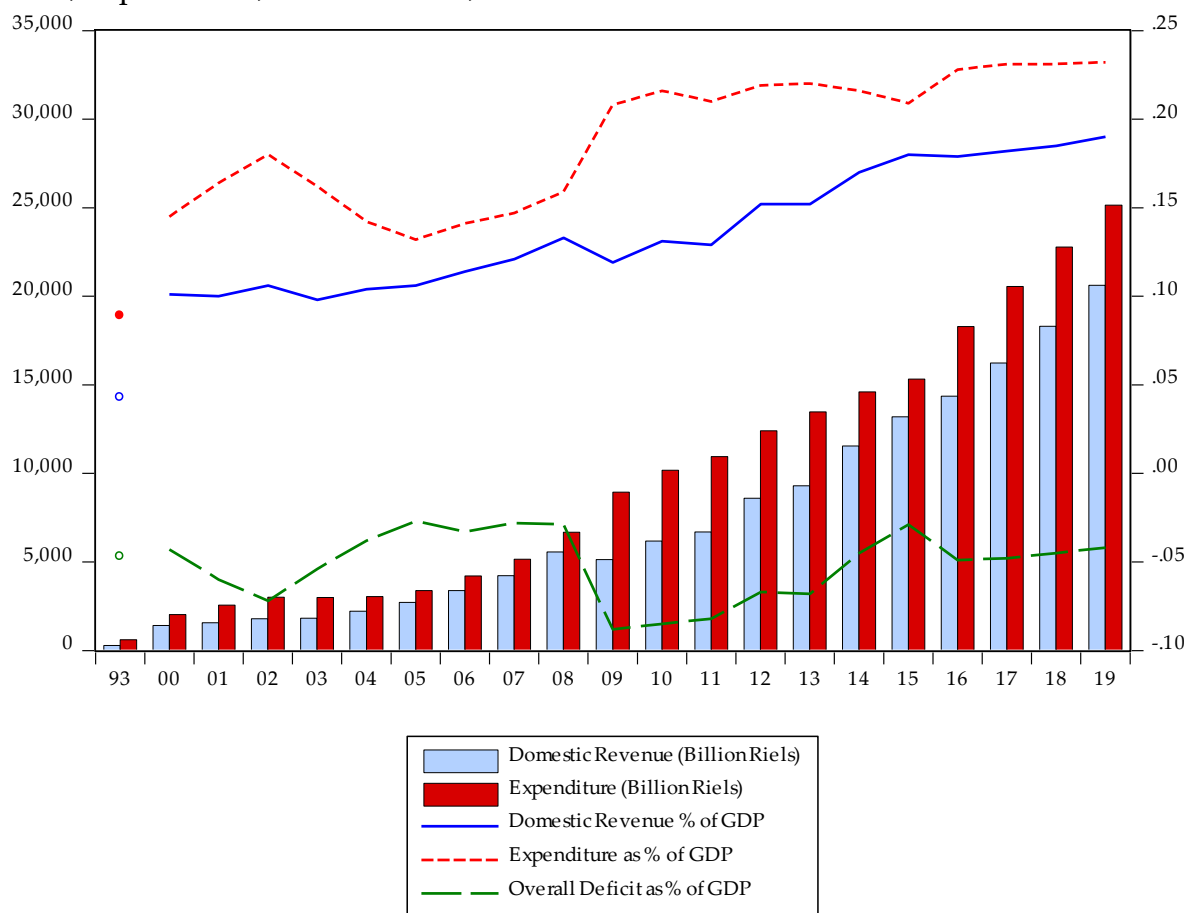
incentives for bureaucrats and politicians to abuse their power during the budgetary process suggests that corruption should concentrate public funds in the hands of elites, exacerbating inequality. It is in the form of looting (Wong 2017, 298). In this context, Cambodia is likely to be in this case, considering the fact that Cambodia's the corruption perceptions index in 2018 is ranking 161 of 180 countries and territories and its free and fair election is always the concern.⁴⁵

To maintain its coercive capacity, Cambodia's government, which has been ruled by one ruling party until now, has been trade-off with its inefficiency of administrative capacity or public finance. In theory, taxation and public spending for any government are considered as the major economic tools in dealing with poverty and redistribution policies. Public spending aims to improve the overall economic well-being of the whole population, especially the poor. With transfers and subsidies, it has, directly and indirectly, the positive impact on poverty reduction. The poor can directly raise their disposable income; they get indirectly better nutrition, health, and education. Improvements in health and education, as well as government investment in infrastructure, provided a favourable environment for the poor, allowing many of them to pull themselves out of poverty. To the contrary, there are also some pieces of evidence, which have proved that public spending might not access to poor households. The middle classes, particularly in urban areas more likely receive benefits from government health and education spending (Davoodi, Tiongson and Asawanuchit 2010, Castro-Leal, et al. 1999). The effect on income distribution depends on how the government targets specific population groups through social protection, education, health, etc. (Selowsky 1979, Younger 1999).

⁴⁵ For more information about Cambodia's the corruption perceptions index, please see <https://www.transparency.org/cpi2018>

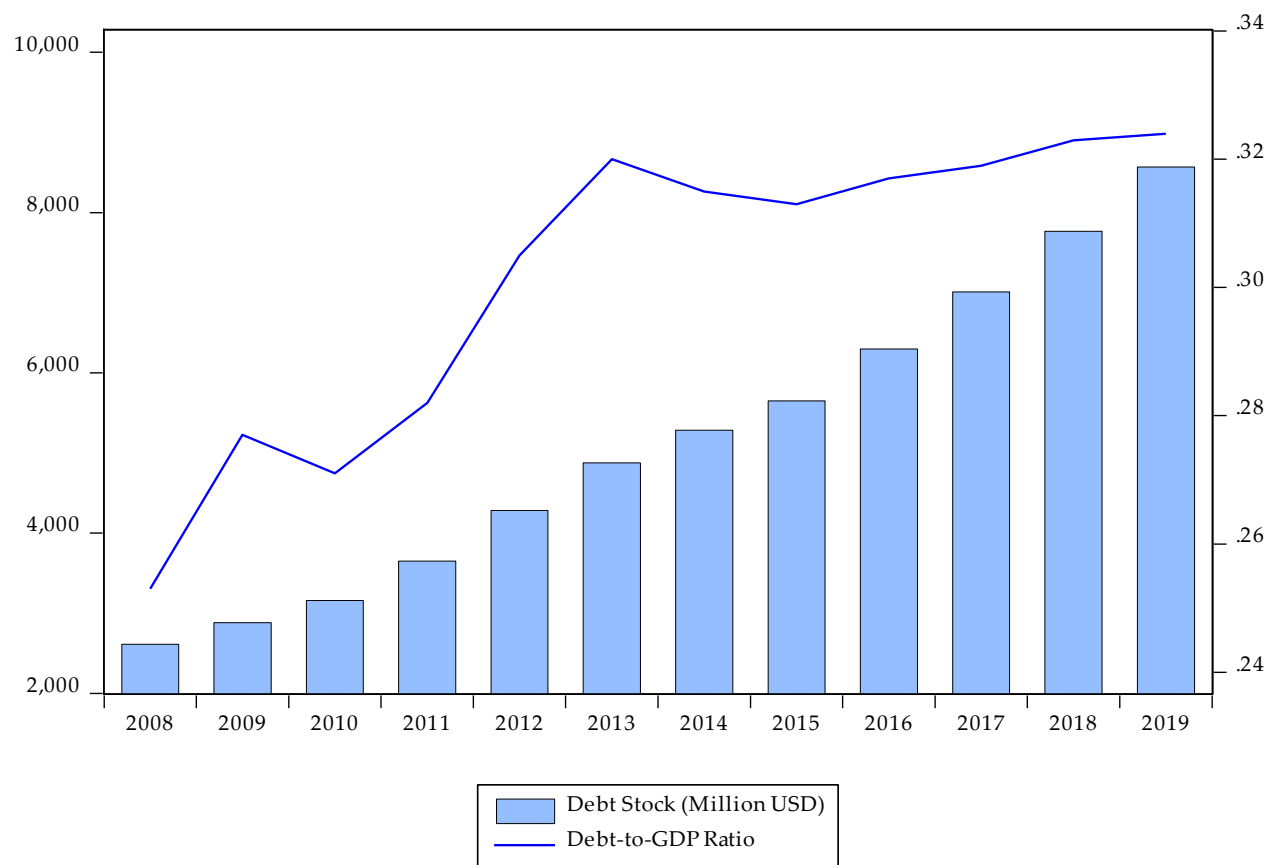
Figure 42 shows respectively Cambodia's public revenue, expenditure and its overall deficit from 1993 to nowadays. Since the 1990s, public revenue has slightly grown from 4.30 per cent of GDP in 1993 to 18.2 per cent of GDP in 2017, despite a slight decline between 2009 and 2011 after the 2008 global financial crisis. The report by the World Bank indicates that 'government revenue growth has moderated, resulting in an increase in the fiscal deficit' (World Bank 2014 April, 1). 'Fiscal consolidation continues with further improvements in revenue collection resulting from enhanced administration' (World Bank 2015, i). In 2018, the IMF named Cambodia as one among the five low-income and emerging market economies (Cambodia, Georgia, Guyana, Liberia, and Ukraine), which achieved some of the largest revenue gains between 2004 and 2015, thanks to successful reforms relating to introducing comprehensive tax administration reforms; management, governance, and human resources; establishment of large taxpayer offices; smart use of information management systems; more modern registration, filing, and management of payment obligations; and enhanced audit and verification program (Akitoby 2018). However, public expenditure has slightly increased as well since the 1990s, regardless of showing a weak performance between 2002 and 2009. Total expenditure was enclosed at 8.90 per cent of GDP in 1993, then increased to 23.1 per cent in 2017, thanks to continuing rapid wage bill increase, and big boosts for education as well as defence. In overall, since the 1990s, Cambodia's annual public expenditure has always been higher than public revenue, making relatively the rise in national debt. See Figure 43 for more information about Cambodia's debt stock and debt-to-GDP ratio from 2008-2015.

FIGURE 42 Public revenue, expenditure, overall deficit, 1993-2015



	1993	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016B L	2017p	2018p	2019p
Dom. Revenue (Billion Riels)	290	1,423	1,564	1,786	1,821	2,220	2,719	3,394	4,223	5,567	5,137	6,182	6,693	8,594	9,300	11,549	13,190	14,359	16,232	18,302	20,619
Expenditure (Billion Riels)	608	2,040	2,558	3,013	2,995	3,043	3,389	4,203	5,151	6,681	8,938	10,176	10,943	12,406	13,476	14,598	15,328	18,284	20,546	22,787	25,143
Domestic Revenue % of GDP	4.30%	10.10%	10.00%	10.60%	9.80%	10.40%	10.60%	11.40%	12.10%	13.30%	11.90%	13.10%	12.90%	15.20%	15.20%	17.00%	18.00%	17.90%	18.20%	18.50%	19.00%
Expenditure as % of GDP	8.90%	14.50%	16.40%	18.00%	16.20%	14%	13.20%	14.10%	14.70%	15.90%	20.80%	21.60%	21.00%	21.90%	22.00%	21.60%	20.90%	22.80%	23.10%	23.10%	23.20%
Overall Deficit as % of GDP	-4.70%	-0.043	-6%	-0.072	-0.054	-0.038	-0.027	-0.033	-2.80%	-0.029	-8.80%	-8.50%	-0.082	-6.70%	-6.80%	-4.50%	-2.90%	-0.049	-4.80%	-0.045	-4.20%

SOURCE Ministry of Economy and Finance, 2016

FIGURE 43 Debt stock and debt-to-GDP ratio, 2008-2015

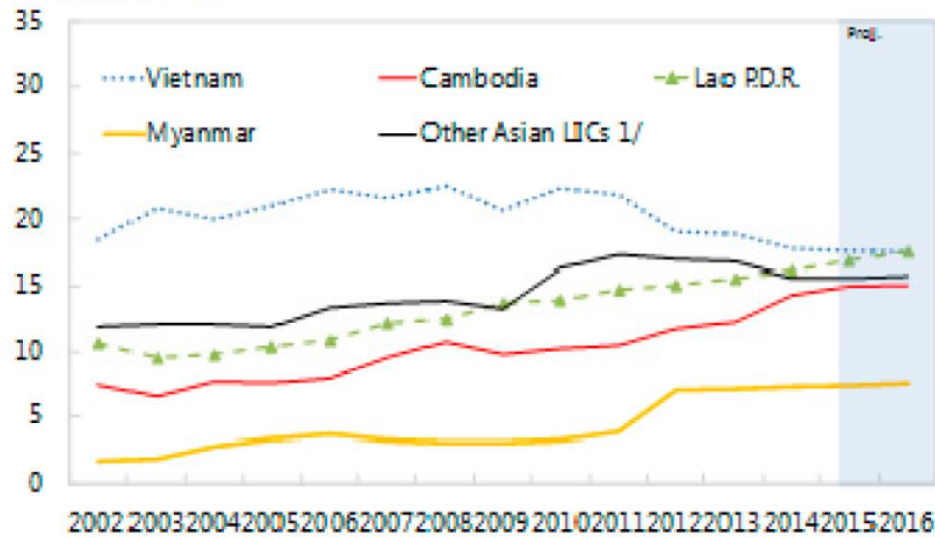
	2008	2009	2010	2011	2012	2013	2014	2015	2016e	2017p	2018p	2019p
Debt Stock (Million USD)	2,612	2,880	3,157	3,650	4,280	4,877	5,284	5,651	6,298	7,011	7,767	8,567
Debt-to-GDP Ratio	25.3%	27.7%	27.1%	28.2%	30.5%	32.0%	31.5%	31.3%	31.7%	31.9%	32.3%	32.4%

SOURCE Ministry of Economy and Finance, 2016

FIGURE 44 Tax collection and government capital expenditure Asian LICs 2007-2015

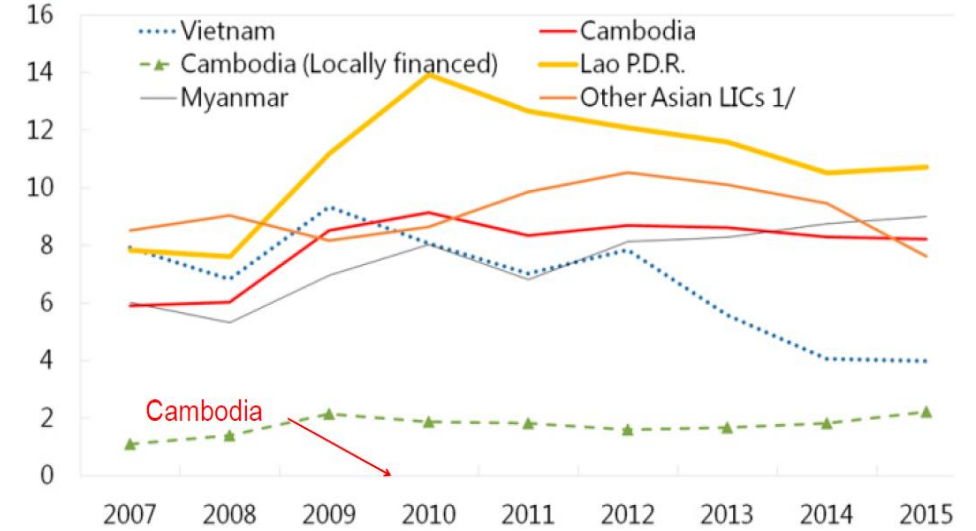
Tax Collection in Asian LICs

(In percent of GDP)



Government Capital Expenditure Asian LICs

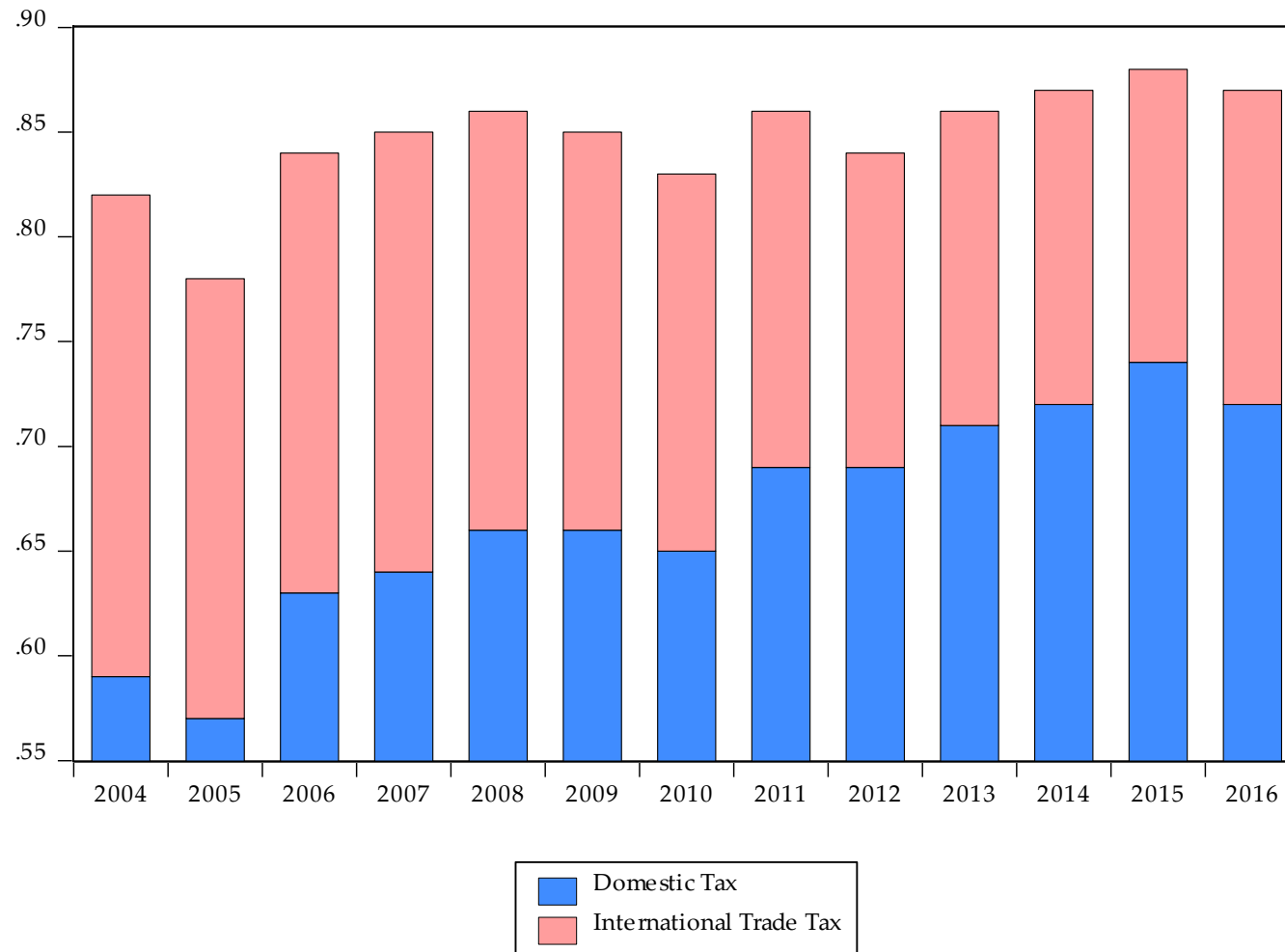
(In percent of GDP)



SOURCE Cambodian authorities; and IMF staff estimates.

NOTES 1/ Average of Bangladesh, Bhutan, Mongolia, and Nepal.

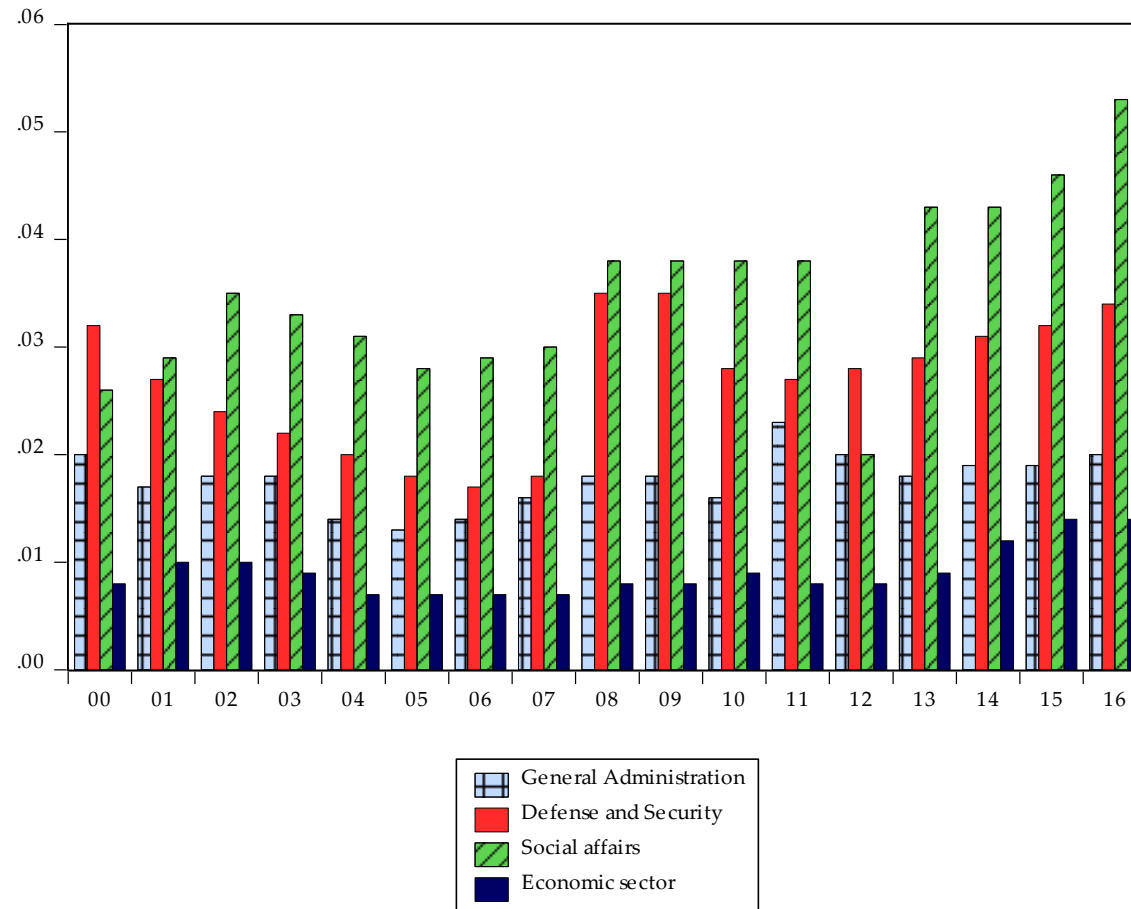
FIGURE 45 Domestic tax and international trade tax 2004-2015



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016BL
Domestic Tax	59%	57%	63%	64%	66%	66%	65%	69%	69%	71%	72%	74%	72%
International Trade Tax	23%	21%	21%	21%	20%	19%	18%	17%	15%	15%	15%	14%	15%

SOURCE Ministry of Economy and Finance, 2016

FIGURE 46 Social affairs 2000-2015



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016BL
General Administration	2.0%	1.7%	1.8%	1.8%	1.4%	1.3%	1.4%	1.6%	1.8%	1.8%	1.6%	2.3%	2.0%	1.8%	1.9%	1.9%	2.0%
Defence and Security	3.2%	2.7%	2.4%	2.2%	2.0%	1.8%	1.7%	1.8%	3.5%	3.5%	2.8%	2.7%	2.8%	2.9%	3.1%	3.2%	3.4%
Social affairs	2.6%	2.9%	3.5%	3.3%	3.1%	2.8%	2.9%	3.0%	3.8%	3.8%	3.8%	3.8%	2.0%	4.3%	4.3%	4.6%	5.3%
Economic sector	0.8%	1.0%	1.0%	0.9%	0.7%	0.7%	0.7%	0.7%	0.8%	0.8%	0.9%	0.8%	0.8%	0.9%	1.2%	1.4%	1.4%

SOURCE Ministry of Economy and Finance, 2016

Figures 44 to 46 show respectively tax collection and government capital expenditure in Asian low-income countries (LICs), Cambodia's domestic tax and international trade tax, and government spending on social affairs. Cambodia also like other 'typical developing economy collects just 15 to 20 per cent of GDP in taxes, compared with the 40 per cent collected by a typical advanced economy. The ability to collect taxes is central to a country's capacity to finance social services such as health and education, critical infrastructure such as electricity and roads, and other public goods. Considering the vast needs of poor countries, this low level of tax collection is putting economic development at risk' (Akitoby 2018, 19). Comparing to other Asian LICs, Cambodia's per capita tax collection and government expenditure are relatively low. The low size of governmental role along with the low capacity of government performance, 'the RGC has limiting capacity to provide the social protection although the government itself has recognised the critical role that social protection can play in reducing poverty, improving living standards and providing a better future for the country' (OECD 2017, 13).

5 Robustness Checks

In statistics, the famous term "*Lies, damned lies, and statistics*", which can be found in many well-known books (Best 2012, Huff and Geis 1993), alerts us to pay very strong attention with data and statistics we read or use. In the developing countries, the errors in the database are always a concern, and there is no exception for Cambodia. This section discusses the robustness checks on Cambodia's poverty, inequality and national wealth.

5.1 Poverty and its Vulnerability

From a long historical discussion in the previous sections, we are aware that poverty in Cambodia has gradually reduced, from when almost everyone was poor since the

Khmer Rouge regime to when one among two people was poor in the 1990s, and finally, to the present moment when only about one among ten people was poor. However, there are several points to be concerned with these statements.

Firstly, the poverty line we are discussing is the extreme poverty line, which we can use either the governmental or international line. Nevertheless, after leaving extreme poverty, where they have gone? The poor just leave slightly above the extreme poverty line and are very vulnerable to any shocks. 'There are still many households that are only just above the poverty line and have limited ability to absorb shocks, even small ones. Any negative shock reducing consumption per capita by Cambodian riel 2,000 (US\$0.50) would double the poverty rate' (Ly, Sanchez Martin, et al. 2019, 15). To give an example, 'in 2011 a small shock of CR 1,200 per day (US\$0.30 or the cost of two small water bottles from a street vendor in Phnom Penh) would cause Cambodia's poverty rate to double' (World Bank 2013, XVI). According to the 2014 CSES, 'an economic shock that reduced incomes uniformly by 20 per cent would have nearly doubled the national poverty rate in that year' (OECD 2017, 31). Therefore, Cambodia's gains are fragile. 'A large proportion of non-poor households are at risk of falling back into poverty. Imposing a vulnerability line at 1.5 times the level of the national poverty line shows that 55 per cent of households were either poor or vulnerable in 2014. As a consequence, a relatively small income shock could dramatically raise the poverty rate' (OECD 2017, 17). The frequent shocks, which many Cambodian households have faced, include family health shocks (children malnutrition, senior citizen health, family member with chronic diseases or terminal illnesses, etc.), job losses, inflation, food, fuel, and financial crises, and natural disasters (climate change, tropical storm in 2009, devastating floods of 2011 and 2013, etc.).

Secondly, 'due to high levels of informality, only a small proportion of the Cambodian population is covered by social insurance, leaving them extremely

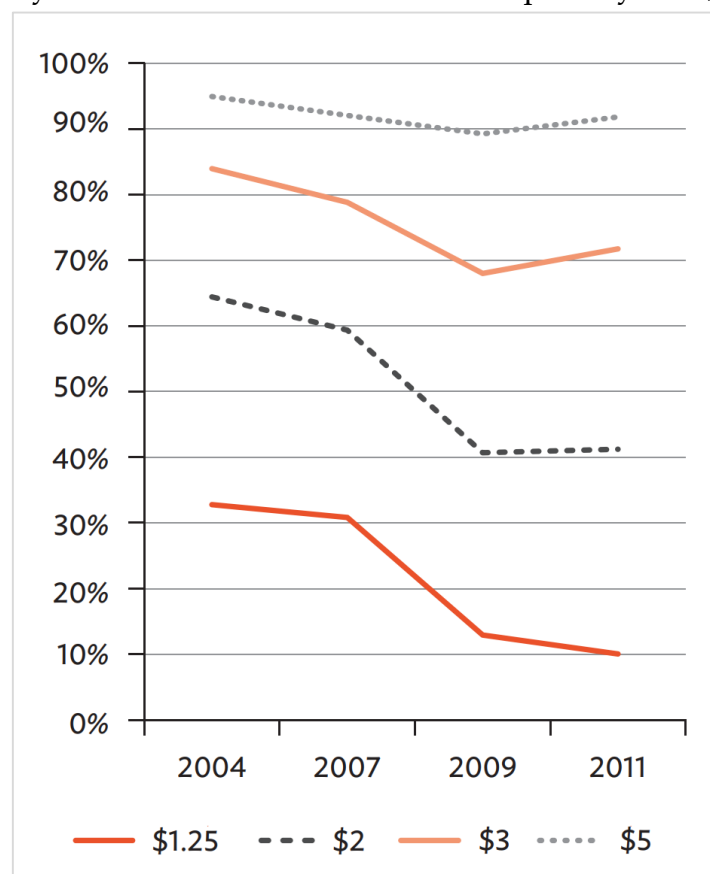
vulnerable to lifecycle shocks and economic downturns' (OECD 2017, 14). Debt is always, therefore, the choice of Cambodian households. According to the last update data by the Cambodia Microfinance Association, loan, provided by 76 MFIs, reaches US\$ 5,528.38 million and there are at least 1,952,976 borrowers. According to the ADB report, 'after the 2011 floods, 40 per cent of survey respondents reported taking new loans, most commonly to buy food. For poorer segments of the population, debt can easily lead to destitution. Poorer households are more likely to borrow from informal moneylenders, have a high ratio of outstanding debt to average annual per capita consumption, and borrow for unproductive purposes such as consumption, medical expenses, cultural and religious ceremonies, or to service existing debts. Evidence suggests that, much like remittances, survey respondents are likely to underreport debt levels. Taken together, this high and potentially underreported indebtedness and a significant share of unproductive loans suggest that vulnerability is more significant than existing poverty analyses recognize. Poverty measurement is based on household consumption. If a significant share of household consumption is financed by loans, the resulting poverty reduction might not be as robust and vulnerability could be more pronounced' (ADB 2014, xii).

Thirdly, it also matters to understand that many Cambodian people decided to leave abroad, the majority of them to Thailand. The number can reach 1.5 million people (Thmeythmey.com 2017). According to the IOM survey of 667 Cambodian migrants who had returned from Thailand in June 2014, financial debts are among the top 3 reasons for leaving Cambodia and they represent 40.6 per cent of respondents (Dickson and Koenig 2016, 14). Also, we have to be aware that the CSES surveyed only those who stay in the country. It is applied the same to the general population census of Cambodia. For example, the results of the 2019 general population census had not included approximately 1.23 million Cambodian migrants working abroad (Xinhua 2019). Let's imagine that if those million Cambodian emigrants, which the majority of them are poor, stay in Cambodia, and we include them in the survey, what would

happen? The poverty rate would be higher. If this assumption is empirically true, migration must also be another significant factor in explaining poverty reduction in Cambodia.

Finally, it also matters to look at other poverty lines, not just the extreme poverty line of US\$ 1.25 per person per day, expressed in 2005 PPP dollars. According to the [Figure 47](#), there is at least 41 per cent of Cambodian people in 2011, who live with less than US\$ 2 per day in PPP terms and at least 72 per cent, who live with less than US\$ 3 per day in PPP terms. This highlights the growing vulnerability of poverty, leaving from extreme poverty.

FIGURE 47 Poverty rates based on international PPP poverty lines, 2004-2011



SOURCE World Bank PovCalNet database.

NOTES It was taken from the ADB (2014, 8), Figure 5, "Cambodia: Country Poverty Analysis 2014".

5.2 Inequality and its Incomplete Picture

The other concern is related to inequality database. Firstly, although the Gini coefficient in overall has decreased, for example from 0.38 in 2004 to 0.30 in 2014, we need to be very cautious in interpreting these data as the Top income respondents are normally not included in the CSES. According to the ADB (2014, 9), 'despite a larger and more representative sample than used previously, the 2009 CSES measured average consumption in the richest quintile at just \$3.75 per person per day.' Secondly, according to World Bank (2013, XVI), 'the actual gap between the rich and the poor has increased in absolute terms. Because all of the inequality measures are relative, it is possible to reduce inequality - and at the same time, to increase the gap between the poor and the rich. This helps to explain why the perception of increased inequality - based on absolute differences between the rich and the poor - do not match with the reported decrease in inequality (based on relative changes). For example, having twice the income is not that much of a difference if one person has US\$ 10 and the other has US\$ 20; however, it is much more noticeable if one person has US\$ 100 and the other person has US\$ 200. The measure of relative inequality is the same in both scenarios. But in the first scenario, the difference is US\$ 10, while the second scenario is US\$ 100. This is why the measurement of inequality can decrease - even though the actual gap between the rich and the poor increases.'

In overall, while we cannot capture the Top income or better-off households, which might probably hold the big share of the national wealth and income, we presume, therefore, that it is not a completed picture to see Cambodia's inequality by using the current Gini coefficient by the World Bank or the RGC. In this case, the Top income indicators (% of national income), initiated by Thomas Piketty, is very helpful, but it is not available in Cambodia. Furthermore, there are also some studies, trying to associate wealth inequality and real estate/housing prices. For example, it suggests that the rise in wealth-to-income ratios is driven by rising housing prices, as well as

price changes in other financial assets, not home-ownership or national saving rates. In Cambodia, however, the housing prices increase for time to time (Fuller, Johnston and Regan 2019).

5.3 Economic Growth and its Growth Illusion

The term 'Growth Illusion' here is used to warn us that Cambodia's high economic growth does not necessarily mean that high economic growth (the wealth of nations) goes to the majority of the people or the poor. Thus, where does the money go?

In Cambodia, the GDP growth concentrates mostly in the urban area, where people involved in the industrial and service sectors. However, as discussed in the previous section, the majority of Cambodian people, at least 77.02 per cent in 2017 living in a rural area, importantly depend on agricultural sectors. Of course, the GDP indicator is indeed helpful, but it does not necessarily tell the whole story. 'While GDP is the most well-known, and most powerful economic indicator, it can't tell us everything we need to know about the health of countries and societies. In fact, it can't even tell us everything we need to know about economic performance. GDP does not reveal who is benefitting from growth, whether that growth is environmentally sustainable, how people feel about their lives, what factors contribute to an individual's or a country's success' (Stiglitz, Fitoussi and Durand 2018).

Look more deeply, foreign ownership represents a high percentage in Cambodia's economy and the homeland people just live the minimum wage. According to Chhair and Ung (2013, 21), with the database in 2011 by the National Institute of Statistics of Cambodia (NISC), 'the ownership structure of industrial establishments in Cambodia varies by size of establishment and sub-sector. The data reveals that disaggregates ownership by nationality for food, beverages and tobacco (FBT) and textile, wearing apparel and footwear (TWF). Almost all micro and small industrial establishments are owned by Cambodians while only 37 per cent of large

industrial establishments are. This is compared with 47 per cent owned by Chinese and 12.5 per cent owned by Korean and other Asian nationalities. Only 13.5 per cent of employees of micro establishments are under foreign ownership while 44.76 per cent of employment of large establishment are under foreign ownership. Cambodians own about 90 per cent of medium and large industrial establishments for FBT but only 41 per cent of TWF establishments which is dominated by Chinese (48 per cent). This suggests that Cambodian ownership remains strong in traditional sectors, but does not have enough vigor to jump into new industries. In the TWF sub-sector, FDI from China has contributed significantly to growth of the sector.⁴⁶ To give another example, the high GDP growth rate during the recent years is also fuelled by the construction boom and foreign investment, especially in Phnom Penh, Siem Reap and Battambang. However, the Chinese foreign investors own more than 90 per cent of Sihanoukville businesses. Sihanoukville is one of the top provinces contributing to Cambodia's economic growth. According to the report by the government, 'Chinese nationals own more than 90 per cent of businesses in Sihanoukville, ranging from hotels, casinos, restaurants to massage parlours, according to a report from Preah Sihanouk provincial authorities. The province is rapidly growing in all areas such as hotels, guesthouses, casinos, restaurants, and other businesses. There are currently 156 hotels and guesthouses in Preah Sihanouk province, of which 150 are Chinese-owned. There are 62 casinos, of which 48 are invested in by the Chinese. There are 41 karaoke clubs and 46 massage parlours owned by the Chinese as well. Of the total 436 restaurants in the province, 95 per cent are managed by Chinese nationals' (Pisei 2019).

⁴⁶ Please see Appendix 10 and 11, which show respectively the foreign ownership by size and industrial type 2011 and the ownership of medium and large industrial establishments in TWF and FTB by nationality.

6 Conclusion

This Chapter takes qualitative approaches, drawing data from multiple sources, to examine the historical dynamics of globalisation on poverty and inequality in Cambodia since the Khmer Rouge regime. More specifically, using both macro-economic levels and micro-household levels, we are interested in the question of whether the increasing degree of globalisation, through particularly international trade, capital flows, export diversification/specialisation, financial development, migration, and technological progress, is a good way to explain poverty and inequality in Cambodia across time. And, what is the role of other factors in explaining the relationship?

The findings, in short, suggests that globalisation, via the traditional channels of international trade and capital flows, affects poverty and inequality outcomes much less positive than we probably expect or in an indirect way in the history of Cambodia. The positive impact of Cambodia's openness can be found as a consequence of better-off households; yet, they represent mostly the households living in the capital city of Phnom Penh and other urban areas. Using Lewis (1954)'s two-sectors model, it explains the growth of Cambodia in term of a labour transition between two sectors, the capitalist sector (representing by industrial and service sectors) and the subsistence sector (representing by agricultural sectors). This transition explains an indirect positive impact of globalisation through the traditional channels on Cambodian households' welfare because it may increase wages of poor households, who involve in agricultural sectors.

The findings also suggest that there is a piece of similar evidence in the historical trend of poverty, inequality and Cambodia's openness since the Khmer Rouge regime. From 1979 to the late 1980s, Cambodia's poverty remained high and inequality level remained low. Cambodia yet has opened to rest of the world. During

the 1990s, Cambodia started reopening its economy to a few more countries through trade and FDI. However, its scale remains very low. The poverty remained over 50 per cent of the total population and inequality emerged itself with Gini index of around 0.40. It was only from the late 1990s or the early 2000s when Cambodia joined the ASEAN in 1999 and the WTO in 2003, trade and FDI has importantly increased. However, the trade is dominated by garment sectors, which involve directly to the minority of Cambodian workers. The late 2000 remakes that the poverty rate reduced unexpectedly. Cambodia has achieved a good performance in poverty reduction and shared prosperity. From the 2010s, Cambodia has opened to the world through new channels, not just by traditional trade or capital flows, but also microfinance and migration. Microfinance, mostly owned by foreign investors, is subjected to investigate as it is suggested to destruct the household's welfare; but, its negative effect is absorbed by international migration flows of Cambodians to abroad. The size of remittance inflows to Cambodia has increased to nearly 6 or 7 per cent of GDP, involving directly to around 2 million emigrants. As an alternative, technological openness through TV, the internet, smartphone, social media and e-banking, during last several years, demonstrated the highly emerging possibilities that households, especially in rural areas, evaluate their welfare relatively not only to their past and neighbours in one community but also to other urban citizens as well as other countries. Therefore, the legitimacy of social acceptance of inequality in the forecasting future would possibly be in question of social, economic and political instability. However, institutional quality of Cambodian government, except favourable political stability and absence of violence/terrorism, is always a concern.

Appendix Chapter 1

APPENDIX 1 Variable definitions and sources

Variable	Description	Sources
GDP per capita Maddison Data	Real GDP per capita in 2011US\$, multiple benchmarks (suitable for cross-country income comparisons)	Maddison Project Database (MPD) 2018
GDP per capita; PPP World Bank	GDP per capita based on purchasing power parity (PPP). PPP GDP is gross domestic product converted to international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GDP as the U.S. dollar has in the United States. GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current international dollars based on the 2011 ICP round.	World Bank, International Comparison Program database.
National income, PPP WID / Average, Macroeconomic variable	National income aims to measure the total income available to the residents of a given country. It is equal to the gross domestic product (the total value of goods and services produced on the territory of a given country during a given year), minus fixed capital used in production processes (e.g. replacement of obsolete machines or maintenance of roads) plus the net foreign income earned by residents in the rest of the world.// National income has many limitations. However it is the only income concept that has an internationally agreed definition (established by the UN System of National Accounts, see SNA 2008). So we use it as our reference concept (with tax havens correction). To be improved. The national economy - in the national accounts sense - includes all domestic sectors, i.e. all entities that are resident of a given country (in the sense of their economic activity), whether they belong to the private sector, the corporate sector, the government sector.	Cambodia – WID – World Inequality Database
GDP per capita, PPP WID / Average,	Net domestic product is the total value of the goods and services produced in a country, minus the value of the fixed capital used up in production (e.g. replacement of obsolete machines or maintenance of roads). The national economy - in the national accounts sense - includes all domestic sectors, i.e. all entities that are resident of a given country (in the sense of their	Cambodia – WID – World Inequality Database

Macroeconomic variable	economic activity), whether they belong to the private sector, the corporate sector, the government sector.	
Rural population (% of total population)	Rural population refers to people living in rural areas as defined by national statistical offices. It is calculated as the difference between total population and urban population.	World Bank staff estimates based on the UN Population Division's World Urbanization Prospects: 2018 Revision.
GDP growth World Bank	Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2010 U.S. dollars. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.	World Bank national accounts data, and OECD National Accounts data files.
GDP per capita growth World Bank	Annual percentage growth rate of GDP per capita based on constant local currency. Aggregates are based on constant 2010 U.S. dollars. GDP per capita is gross domestic product divided by midyear population. GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.	World Bank national accounts data, and OECD National Accounts data files.
Agriculture, forestry, and fishing, value added (% of GDP)	Agriculture corresponds to ISIC divisions 1-5 and includes forestry, hunting, and fishing, as well as cultivation of crops and livestock production. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3 or 4.	World Bank national accounts data, and OECD National Accounts data files.
Industry (including construction), value added (% of GDP)	Industry corresponds to ISIC divisions 10-45 and includes manufacturing (ISIC divisions 15-37). It comprises value added in mining, manufacturing (also reported as a separate subgroup), construction, electricity, water, and gas. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The	World Bank national accounts data, and OECD National Accounts data files.

	origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3 or 4.	
Services, value added (% of GDP)	Services correspond to ISIC divisions 50-99 and they include value added in wholesale and retail trade (including hotels and restaurants), transport, and government, financial, professional, and personal services such as education, health care, and real estate services. Also included are imputed bank service charges, import duties, and any statistical discrepancies noted by national compilers as well as discrepancies arising from rescaling. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The industrial origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3 or 4.	World Bank national accounts data, and OECD National Accounts data files.
Employment in agriculture (% of total employment)	Employment is defined as persons of working age who were engaged in any activity to produce goods or provide services for pay or profit, whether at work during the reference period or not at work due to temporary absence from a job, or to working-time arrangement. The agriculture sector consists of activities in agriculture, hunting, forestry and fishing, in accordance with division 1 (ISIC 2) or categories A-B (ISIC 3) or category A (ISIC 4).	International Labour Organization, ILOSTAT database. Data retrieved in April 2019.
Employment in industry (% of total employment)	Employment is defined as persons of working age who were engaged in any activity to produce goods or provide services for pay or profit, whether at work during the reference period or not at work due to temporary absence from a job, or to working-time arrangement. The industry sector consists of mining and quarrying, manufacturing, construction, and public utilities (electricity, gas, and water), in accordance with divisions 2-5 (ISIC 2) or categories C-F (ISIC 3) or categories B-F (ISIC 4).	International Labour Organization, ILOSTAT database. Data retrieved in April 2019.
Employment in services (% of total employment)	Employment is defined as persons of working age who were engaged in any activity to produce goods or provide services for pay or profit, whether at work during the reference period or not at work due to temporary absence from a job, or to working-time arrangement. The services sector consists of wholesale and retail trade and restaurants and hotels; transport, storage, and communications; financing, insurance, real estate, and business services; and community, social, and personal services, in accordance with divisions 6-9 (ISIC 2) or categories G-Q (ISIC 3) or categories G-U (ISIC 4).	International Labour Organization, ILOSTAT database. Data retrieved in April 2019.

Forest area (% of land area)	Forest area is land under natural or planted stands of trees of at least 5 meters in situ, whether productive or not, and excludes tree stands in agricultural production systems (for example, in fruit plantations and agroforestry systems) and trees in urban parks and gardens.	Food and Agriculture Organization, electronic files and web site.
Poverty headcount ratio at national poverty lines (% of population)	National poverty headcount ratio is the percentage of the population living below the national poverty lines. National estimates are based on population-weighted subgroup estimates from household surveys.	World Bank, Global Poverty Working Group. Data are compiled from official government sources or are computed by World Bank staff using national (i.e. country-specific) poverty lines.
GINI index (World Bank estimate)	Gini index measures the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. Thus a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality.	World Bank, Development Research Group. Data are based on primary household survey data obtained from government statistical agencies and World Bank country departments.
KOF Globalisation Index	Economic globalisation is composed of trade globalisation (de facto: trade in goods, trade in services, trade partner diversification, and de jure: Trade regulations, Trade taxes, Tariffs) and financial globalisation (de facto: foreign direct investment, portfolio investment, international debt, international reserves, international income payments, and de jure: investment restrictions, capital account openness 1, and capital account openness 2). Social globalisation consists of interpersonal globalisation (de facto: international voice traffic, transfers, international tourism, migration, and de jure: telephone subscriptions, freedom to visit, international airports), information globalisation (de facto: patent applications, international students, high technology exports, and de jure: television, internet user, press freedom, internet bandwidth) and cultural globalisation (de facto: trade in cultural goods, trademark applications, trade in personal services, McDonald's restaurant, IKEA stores, and de jure:	KOF Swiss Economic Institute. Access to https://kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index.html

Gender parity, Expenditure on education, and Civil freedom). Political globalisation consists of de facto: embassies, UN peace keeping missions, and international NGOs, and de jure: international organizations, international treaties, and number of partners in investment treaties).

External balance on goods and services (current US\$)	External balance on goods and services (formerly resource balance) equals exports of goods and services minus imports of goods and services (previously nonfactor services). Data are in current U.S. dollars.	World Bank national accounts data, and OECD National Accounts data files.
Exports of goods and services (current US\$)	Exports of goods and services represent the value of all goods and other market services provided to the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. They exclude compensation of employees and investment income (formerly called factor services) and transfer payments. Data are in current U.S. dollars.	World Bank national accounts data, and OECD National Accounts data files.
Imports of goods and services (current US\$)	Imports of goods and services represent the value of all goods and other market services received from the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. They exclude compensation of employees and investment income (formerly called factor services) and transfer payments. Data are in current U.S. dollars.	World Bank national accounts data, and OECD National Accounts data files.
External balance on goods and services (% of GDP)	External balance on goods and services (formerly resource balance) equals exports of goods and services minus imports of goods and services (previously nonfactor services).	World Bank national accounts data, and OECD National Accounts data files.
Trade (% of GDP)	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.	World Bank national accounts data, and OECD National Accounts data files.
Exports of goods and services (% of GDP)	Exports of goods and services represent the value of all goods and other market services provided to the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication,	World Bank national accounts data, and OECD National Accounts data files.

	construction, financial, information, business, personal, and government services. They exclude compensation of employees and investment income (formerly called factor services) and transfer payments.	
Imports of goods and services (% of GDP)	Imports of goods and services represent the value of all goods and other market services received from the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. They exclude compensation of employees and investment income (formerly called factor services) and transfer payments.	World Bank national accounts data, and OECD National Accounts data files.
Merchandise trade (% of GDP)	Merchandise trade as a share of GDP is the sum of merchandise exports and imports divided by the value of GDP, all in current U.S. dollars.	World Trade Organization, and World Bank GDP estimates.
Merchandise exports (current US\$)	Merchandise exports by the reporting economy are the total merchandise exports by the reporting economy to the rest of the world, as reported in the IMF's Direction of trade database. Data are in current US\$.	World Bank staff estimates based data from International Monetary Fund's Direction of Trade database.
Merchandise imports (current US\$)	Merchandise imports by the reporting economy are the total merchandise imports by the reporting economy from the rest of the world, as reported in the IMF's Direction of trade database. Data are in current U.S. dollars.	World Bank staff estimates based data from International Monetary Fund's Direction of Trade database.
Agricultural raw materials exports (% of merchandise exports)	Agricultural raw materials comprise SITC section 2 (crude materials except fuels) excluding divisions 22, 27 (crude fertilizers and minerals excluding coal, petroleum, and precious stones), and 28 (metalliferous ores and scrap).	World Bank staff estimates through the WITS platform from the Comtrade database maintained by the UN Statistics Division.
Individuals using the Internet (% of population)	Internet users are individuals who have used the Internet (from any location) in the last 3 months. The Internet can be used via a computer, mobile phone, personal digital assistant, games machine, digital TV etc.	International Telecommunication Union, World

		Telecommunication/ICT Development Report and database.
Account ownership at a financial institution (% of population ages 15+)	Account denotes the percentage of respondents who report having an account (by themselves or together with someone else) at a bank or another type of financial institution or report personally using a mobile money service in the past 12 months (% age 15+).	Demirguc-Kunt et al., 2018, Global Financial Inclusion Database, World Bank.
Account ownership at a financial institution or with a mobile-money-service provider, poorest 40% (% of population ages 15+)	Account denotes the percentage of respondents who report having an account (by themselves or together with someone else) at a bank or another type of financial institution or report personally using a mobile money service in the past 12 months (poorest 40%, share of population ages 15+).	Demirguc-Kunt et al., 2018, Global Financial Inclusion Database, World Bank.
Account ownership at a financial institution or with a mobile-money-service provider, richest 60% (% of population ages 15+)	Account denotes the percentage of respondents who report having an account (by themselves or together with someone else) at a bank or another type of financial institution or report personally using a mobile money service in the past 12 months (richest 60%, share of population ages 15+).	Demirguc-Kunt et al., 2018, Global Financial Inclusion Database, World Bank.

Mobile cellular subscriptions (per 100 people)	Mobile cellular telephone subscriptions are subscriptions to a public mobile telephone service that provide access to the PSTN using cellular technology. The indicator includes (and is split into) the number of postpaid subscriptions, and the number of active prepaid accounts (i.e. that have been used during the last three months). The indicator applies to all mobile cellular subscriptions that offer voice communications. It excludes subscriptions via data cards or USB modems, subscriptions to public mobile data services, private trunked mobile radio, telepoint, radio paging and telemetry services.	International Telecommunication Union, World Telecommunication/ICT Development Report and database.
International tourism, receipts (% of total exports)	International tourism receipts are expenditures by international inbound visitors, including payments to national carriers for international transport. These receipts include any other prepayment made for goods or services received in the destination country. They also may include receipts from same-day visitors, except when these are important enough to justify separate classification. For some countries they do not include receipts for passenger transport items. Their share in exports is calculated as a ratio to exports of goods and services, which comprise all transactions between residents of a country and the rest of the world involving a change of ownership from residents to nonresidents of general merchandise, goods sent for processing and repairs, nonmonetary gold, and services.	World Tourism Organization, Yearbook of Tourism Statistics, Compendium of Tourism Statistics and data files, and IMF and World Bank exports estimates.
Net official development assistance and official aid received (current US\$)	Net official development assistance (ODA) consists of disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies of the members of the Development Assistance Committee (DAC), by multilateral institutions, and by non-DAC countries to promote economic development and welfare in countries and territories in the DAC list of ODA recipients. It includes loans with a grant element of at least 25 percent (calculated at a rate of discount of 10 percent). Net official aid refers to aid flows (net of repayments) from official donors to countries and territories in part II of the DAC list of recipients: more advanced countries of Central and Eastern Europe, the countries of the former Soviet Union, and certain advanced developing countries and territories. Official aid is provided under terms and conditions similar to those for ODA. Part II of the DAC List was abolished in 2005. The collection of data on official aid and other resource flows to Part II countries ended with 2004 data. Data are in current U.S. dollars.	Development Assistance Committee of the Organisation for Economic Co-operation and Development, Geographical Distribution of Financial Flows to Developing Countries, Development Co-operation Report, and International Development Statistics database.
Net official development	Net official development assistance (ODA) consists of disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies of the	Development Assistance Committee of the

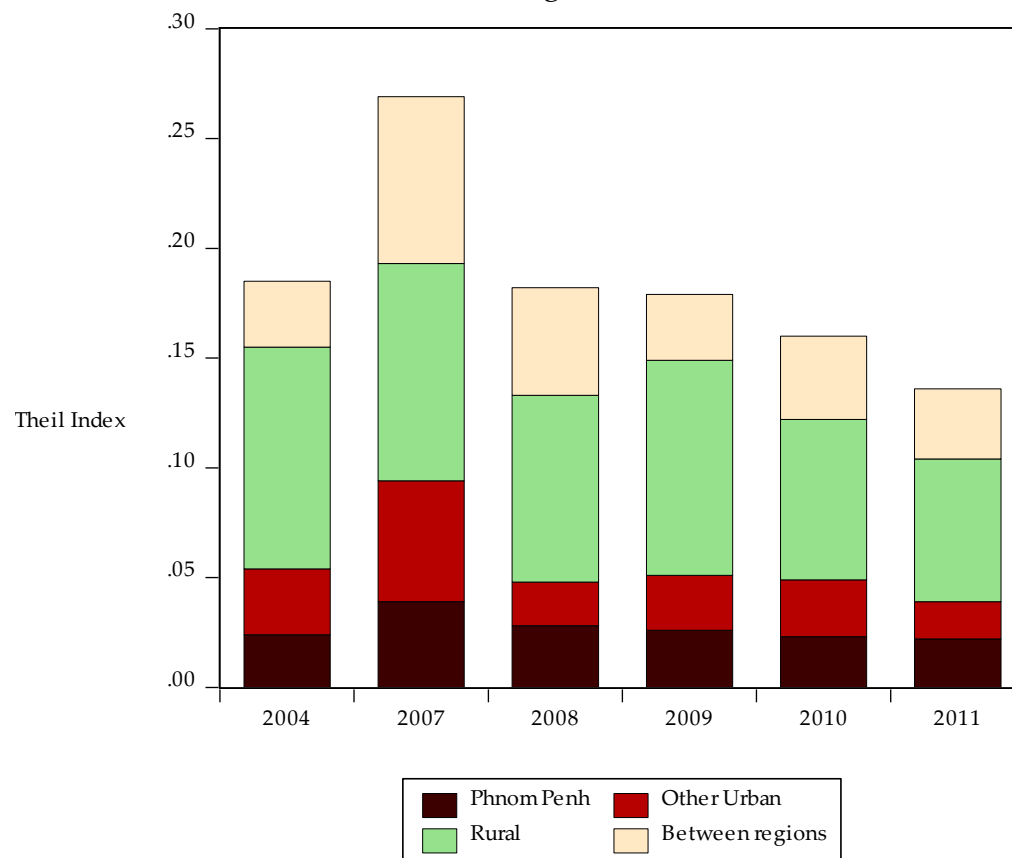
assistance received (current US\$)	members of the Development Assistance Committee (DAC), by multilateral institutions, and by non-DAC countries to promote economic development and welfare in countries and territories in the DAC list of ODA recipients. It includes loans with a grant element of at least 25 percent (calculated at a rate of discount of 10 percent). Data are in current U.S. dollars.	Organisation for Economic Co-operation and Development, Geographical Distribution of Financial Flows to Developing Countries, Development Co-operation Report, and International Development Statistics database.
Net ODA received (% of GNI)	Net official development assistance (ODA) consists of disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies of the members of the Development Assistance Committee (DAC), by multilateral institutions, and by non-DAC countries to promote economic development and welfare in countries and territories in the DAC list of ODA recipients. It includes loans with a grant element of at least 25 percent (calculated at a rate of discount of 10 percent).	Development Assistance Committee of the Organisation for Economic Co-operation and Development, Geographical Distribution of Financial Flows to Developing Countries, Development Co-operation Report, and International Development Statistics database
Net ODA received (% of central government expense)	Net official development assistance (ODA) consists of disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies of the members of the Development Assistance Committee (DAC), by multilateral institutions, and by non-DAC countries to promote economic development and welfare in countries and territories in the DAC list of ODA recipients. It includes loans with a grant element of at least 25 percent (calculated at a rate of discount of 10 percent).	Development Assistance Committee of the Organisation for Economic Co-operation and Development, Geographical Distribution of Financial Flows to Developing Countries, Development Co-operation Report, and

Gross national expenditure (% of GDP)	Gross national expenditure (formerly domestic absorption) is the sum of household final consumption expenditure (formerly private consumption), general government final consumption expenditure (formerly general government consumption), and gross capital formation (formerly gross domestic investment).	International Development Statistics database World Bank national accounts data, and OECD National Accounts data files.
WGI	The WGI, constructing aggregate indicators of six broad dimensions of governance: Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. The estimate of governance in standard normal units is ranging from approximately -2.5 (weak) to 2.5 (strong) governance performances	WGI via https://info.worldbank.org/governance/wgi/#home
CO2 emissions (metric tons per capita)	Carbon dioxide emissions are those stemming from the burning of fossil fuels and the manufacture of cement. They include carbon dioxide produced during consumption of solid, liquid, and gas fuels and gas flaring.	Carbon Dioxide Information Analysis Center, Environmental Sciences Division, Oak Ridge National Laboratory, Tennessee, United States.

SOURCE Authors' determination

NOTES Data from multiple sources

APPENDIX 2 Population, Theil index value and, Theil index change, Cambodia 2004-2011



	2004	2007	2008	2009	2010	2011
Between regions	0.03	0.076	0.049	0.03	0.038	0.032
Rural	0.101	0.099	0.085	0.098	0.073	0.065
Other Urban	0.03	0.055	0.02	0.025	0.026	0.017
Phnom Penh	0.024	0.039	0.028	0.026	0.023	0.022

SOURCE World Bank staff estimates based on CSES. It was taken from [World Bank 2013](#).

APPENDIX 3 Published and Revised Data on FDI Position by Sector (in US\$ million) 2010-2014

No.	Sector	Published Data					Revised Data				
		2010	2011	2012	2013	2014	2010	2011	2012	2013	2014
1	Agriculture	848	1,141	1,445	1,732	2,022	1,139	1,532	1,941	2,326	2,715
2	Mining and quarrying	90	109	131	150	167	103	126	151	173	193
3	Manufacturing	1,550	1,856	2,393	2,891	3,414	2,048	2,469	3,206	3,883	4,601
	Beverage	163	163	172	177	183	187	187	198	204	211
	Garment and footwear	1,117	1,415	1,919	2,361	2,850	1,548	1,961	2,659	3,273	3,950
	Packaging	57	64	89	134	150	66	74	103	154	173
	Petroleum	81	81	81	81	81	93	93	93	93	93
	Tobacco	40	40	40	40	48	46	46	46	46	55
	Wood processing	94	94	94	98	103	108	108	108	113	119
4	Financial activities	1,010	1,154	1,669	1,923	2,257	1,107	1,256	1,775	2,035	2,375
	Banks	947	1,067	1,505	1,701	1,936	947	1,067	1,505	1,701	1,936
	Microfinance institutions	63	87	164	222	321	63	87	164	222	321
	Non-Bank						96	101	106	112	117
5	Accommodation	719	834	960	1,072	1,212	1,239	1,449	1,680	1,883	2,114
6	Telecommunication	495	512	516	516	520	571	590	594	594	600
7	Construction	145	195	223	251	273	185	250	286	322	350
8	Electricity	733	1,108	1,432	1,770	1,908	845	1,277	1,651	2,040	2,199
9	Real estate	48	71	90	113	132	1,019	1,510	1,910	2,402	2,800
10	Others	524	555	641	882	1,119	604	639	739	1,016	1,290
	TOTAL	6,162	7,535	9,500	11,299	13,025	8,859	11,098	13,934	16,672	19,236

SOURCE Report on FDI Survey Result 2014, National Bank of Cambodia

APPENDIX 4 Published and Revised Data on FDI Position by Sector (in %) 2010-2014

No.	Sector	Published Data					Revised Data				
		2010	2011	2012	2013	2014	2010	2011	2012	2013	2014
1	Agriculture	13.8%	15.1%	15.2%	15.3%	15.5%	12.9%	13.8%	13.9%	14.0%	14.1%
2	Mining and quarrying	1.5%	1.4%	1.4%	1.3%	1.3%	1.2%	1.1%	1.1%	1.0%	1.0%
3	Manufacturing	25.2%	24.6%	25.2%	25.6%	26.2%	23.1%	22.2%	23.0%	23.3%	23.9%
	Beverage	2.6%	2.2%	1.8%	1.6%	1.4%	2.1%	1.7%	1.4%	1.2%	1.1%
	Garment and footwear	18.1%	18.8%	20.2%	20.9%	21.9%	17.5%	17.7%	19.1%	19.6%	20.5%
	Packaging	0.9%	0.8%	0.9%	1.2%	1.2%	0.7%	0.7%	0.7%	0.9%	0.9%
	Petroleum	1.3%	1.1%	0.9%	0.7%	0.6%	1.0%	0.8%	0.7%	0.6%	0.5%
	Tobacco	0.6%	0.5%	0.4%	0.4%	0.4%	0.5%	0.4%	0.3%	0.3%	0.3%
	Wood processing	1.5%	1.2%	1.0%	0.9%	0.8%	1.2%	1.0%	0.8%	0.7%	0.6%
4	Financial activities	16.4%	15.3%	17.6%	17.0%	17.3%	12.5%	11.3%	12.7%	12.2%	12.3%
	Banks	15.4%	14.2%	15.8%	15.1%	14.9%	10.7%	9.6%	10.8%	10.2%	10.1%
	Microfinance institutions	1.0%	1.2%	1.7%	2.0%	2.5%	0.7%	0.8%	1.2%	1.3%	1.7%
	Non-Bank						1.1%	0.9%	0.8%	0.7%	0.6%
5	Accommodation	11.7%	11.1%	10.1%	9.5%	9.3%	14.0%	13.1%	12.1%	11.3%	11.0%
6	Telecommunication	8.0%	6.8%	5.4%	4.6%	4.0%	6.4%	5.3%	4.3%	3.6%	3.1%
7	Construction	2.4%	2.6%	2.3%	2.2%	2.1%	2.1%	2.3%	2.1%	1.9%	1.8%
8	Electricity	11.9%	14.7%	15.1%	15.7%	14.6%	9.5%	11.5%	11.8%	12.2%	11.4%
9	Real estate	0.8%	0.9%	0.9%	1.0%	1.0%	11.5%	13.6%	13.7%	14.4%	14.6%
10	Others	8.5%	7.4%	6.7%	7.8%	8.6%	6.8%	5.8%	5.3%	6.1%	6.7%
	TOTAL	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

SOURCE Report on FDI Survey Result 2014, National Bank of Cambodia

APPENDIX 5 Published Data and Revised Data - FDI Stock by Country (in US\$ million) 2010-2014

	Published					Revised				
	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014
ASIA	5,001	6,224	7,818	9,460	10,918	7,355	9,355	11,814	14,221	16,431
ASEAN	1,875	2,168	2,611	3,007	3,383	2,259	2,630	3,229	3,687	4,160
Brunei				5	5				7	7
Indonesia	9	9	9	10	10	23	24	26	28	30
Malaysia	647	718	803	919	1,004	689	750	851	928	1,004
Philippines	2	2	2	2	2	3	3	3	3	3
Singapore	341	415	493	569	630	433	520	628	722	792
Thailand	394	405	434	474	525	531	573	643	723	810
Vietnam	483	619	869	1,028	1,207	580	760	1,078	1,275	1,514
Bangladesh				1	1			1	1	1
China	2,218	2,953	3,886	4,800	5,611	3,468	4,588	5,932	7,235	8,445
Mainland China	1,652	2,212	2,865	3,494	4,048	2,405	3,231	4,154	5,057	5,879
Hong Kong	152	214	345	455	592	581	739	998	1,215	1,472
Macau	1	1	1	1	1	2	2	2	2	2
Taiwan	414	526	675	850	970	480	617	780	962	1,092
India	14	15	23	24	28	14	16	28	29	33
Israel	2	2	2	6	6	4	4	4	9	9
Japan	86	128	151	329	454	174	251	314	543	707
Kazakhstan	34	36	40	36	54	36	38	43	37	55
South Korea	613	764	935	1,081	1,190	1,220	1,641	2,066	2,474	2,802
Kyrgyzstan	10	10	10	10	10	12	12	12	12	12
North Korea			10	15	19		6	12	17	22
Saudi Arabia	144	144	144	144	144	166	166	166	166	166
Sri Lanka	2	3	5	7	18	2	3	7	11	18
Uzbekistan	-	-	-	-	-	-	-	-	-	-
AFRICA		2	12	18	18		4	18	28	28
Mauritius		2	9	9	9		4	15	15	15
Republic of Seychelles			2	8	8			3	13	13

AUSTRALASIA	134	153	174	221	293	146	161	186	231	290
Australia	132	149	165	194	232	144	156	173	199	233
New Zealand	2	2	2	2	2	2	2	2	2	2
Samoa		2	8	26	58		3	11	31	55
EUROPE	485	523	623	814	978	715	810	997	1,133	1,292
European Union	464	500	600	673	825	612	676	845	969	1,117
Belgium	37	39	39	39	46	42	42	42	43	53
Cyprus	8	8	8	8	8	9	9	9	9	9
Denmark	5	12	19	26	32	10	20	30	40	50
France	126	142	163	183	208	145	161	190	212	231
Germany	14	4	4	5	18	14	4	6	8	18
Luxembourg	16	22	29	38	62	16	22	43	57	63
Ireland	6	6	7	8	13	6	6	10	12	13
Italy	-	-	-	-	4	-	-	-	-	6
Netherlands	78	85	106	113	132	87	94	125	134	143
Portugal	2	2	2	2	2	4	4	4	4	4
Spain	3	3	3	3	3	5	5	5	6	6
Sweden	3	3	3	3	3	4	4	4	4	4
United Kingdom	165	172	215	242	293	270	304	377	439	518
Norway	19	20	20	21	25	22	23	24	25	28
Russia				115	117	79	108	123	133	135
Switzerland	2	3	3	3	8	2	3	4	5	8
Turkey				2	3				2	3
SOUTH AND NORTH AMERICA	215	230	275	315	383	291	317	380	426	481
Argentina	1	1	1	1	1	2	2	2	2	2
Canada	47	47	53	46	51	66	67	76	70	78
United States	167	182	221	268	331	223	248	303	354	402
UNSPECIFIED	260	304	353	394	435	352	451	539	632	714
TOTAL	6,094	7,436	9,254	11,223	13,025	8,859	11,098	13,934	16,672	19,236

SOURCE Report on FDI Survey Result 2014, National Bank of Cambodia

APPENDIX 6 Published Data and Revised Data - FDI Stock by Country (in %) 2010-2014

	Published					Revised				
	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014
ASIA	82.1%	83.7%	84.5%	84.3%	83.8%	83.0%	84.3%	84.8%	85.3%	85.4%
ASEAN	30.8%	29.2%	28.2%	26.8%	26.0%	25.5%	23.7%	23.2%	22.1%	21.6%
Brunei				0.0%	0.0%				0.0%	0.0%
Indonesia	0.1%	0.1%	0.1%	0.1%	0.1%	0.3%	0.2%	0.2%	0.2%	0.2%
Malaysia	10.6%	9.7%	8.7%	8.2%	7.7%	7.8%	6.8%	6.1%	5.6%	5.2%
Philippines	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Singapore	5.6%	5.6%	5.3%	5.1%	4.8%	4.9%	4.7%	4.5%	4.3%	4.1%
Thailand	6.5%	5.4%	4.7%	4.2%	4.0%	6.0%	5.2%	4.6%	4.3%	4.2%
Vietnam	7.9%	8.3%	9.4%	9.2%	9.3%	6.5%	6.8%	7.7%	7.6%	7.9%
Bangladesh				0.0%	0.0%				0.0%	0.0%
China	36.4%	39.7%	42.0%	42.8%	43.1%	39.1%	41.3%	42.6%	43.4%	43.9%
Mainland China	27.1%	29.7%	31.0%	31.1%	31.1%	27.1%	29.1%	29.8%	30.3%	30.6%
Hong Kong	2.5%	2.9%	3.7%	4.1%	4.5%	6.6%	6.7%	7.2%	7.3%	7.7%
Macau	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Taiwan	6.8%	7.1%	7.3%	7.6%	7.4%	5.4%	5.6%	5.6%	5.8%	5.7%
India	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.1%	0.2%	0.2%	0.2%
Israel	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Japan	1.4%	1.7%	1.6%	2.9%	3.5%	2.0%	2.3%	2.3%	3.3%	3.7%
Kazakhstan	0.6%	0.5%	0.4%	0.3%	0.4%	0.4%	0.3%	0.3%	0.2%	0.3%
South Korea	10.1%	10.3%	10.1%	9.6%	9.1%	13.8%	14.8%	14.8%	14.8%	14.6%
Kyrgyzstan	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
North Korea			0.1%	0.1%	0.1%		0.1%	0.1%	0.1%	0.1%
Saudi Arabia	2.4%	1.9%	1.6%	1.3%	1.1%	1.9%	1.5%	1.2%	1.0%	0.9%
Sri Lanka	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.1%	0.1%	0.1%
Uzbekistan	-	-	-	-	-	-	-	-	-	-
AFRICA		0.0%	0.1%	0.2%	0.1%		0.0%	0.1%	0.2%	0.1%
Mauritius		0.0%	0.1%	0.1%	0.1%		0.0%	0.1%	0.1%	0.1%
Republic of Seychelles			0.0%	0.1%	0.1%			0.0%	0.1%	0.1%

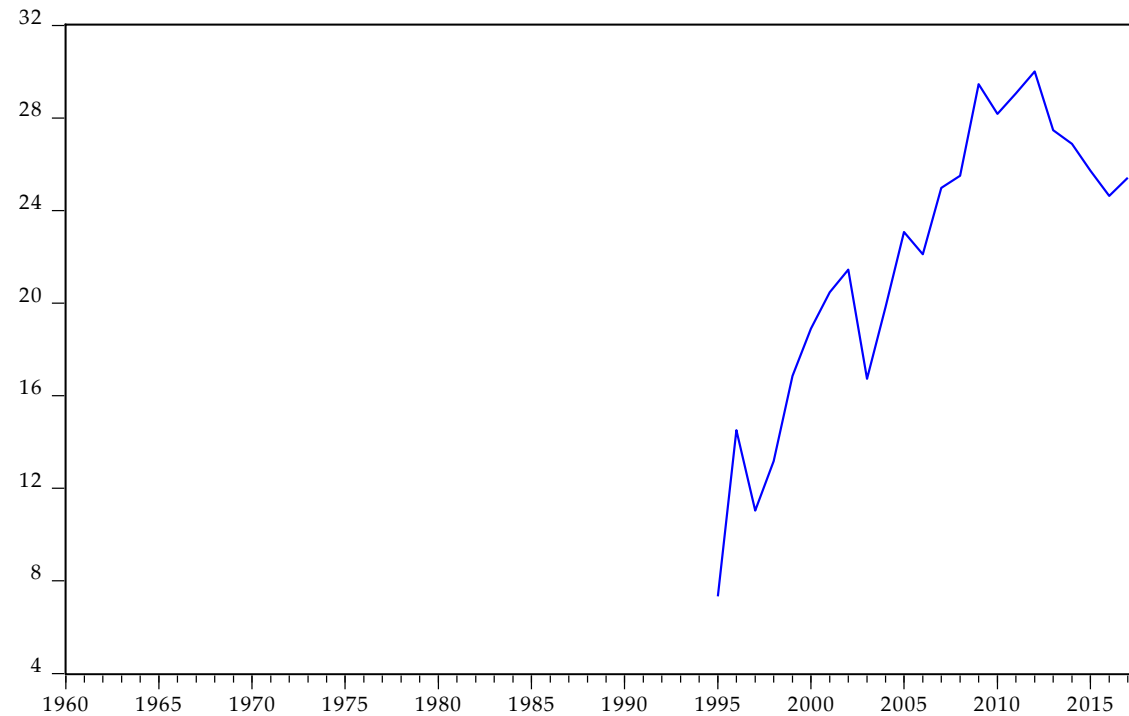
AUSTRALASIA	2.2%	2.1%	1.9%	2.0%	2.2%	1.6%	1.5%	1.3%	1.4%	1.5%
Australia	2.2%	2.0%	1.8%	1.7%	1.8%	1.6%	1.4%	1.2%	1.2%	1.2%
New Zealand	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Samoa	0.0%	0.0%	0.1%	0.2%	0.4%	0.0%	0.0%	0.1%	0.2%	0.3%
EUROPE	8.0%	7.0%	6.7%	7.3%	7.5%	8.1%	7.3%	7.2%	6.8%	6.7%
European Union	7.6%	6.7%	6.5%	6.0%	6.3%	6.9%	6.1%	6.1%	5.8%	5.8%
Belgium	0.6%	0.5%	0.4%	0.3%	0.4%	0.5%	0.4%	0.3%	0.3%	0.3%
Cyprus	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%
Denmark	0.1%	0.2%	0.2%	0.2%	0.2%	0.1%	0.2%	0.2%	0.2%	0.3%
France	2.1%	1.9%	1.8%	1.6%	1.6%	1.6%	1.5%	1.4%	1.3%	1.2%
Germany	0.2%	0.1%	0.0%	0.0%	0.1%	0.2%	0.0%	0.0%	0.0%	0.1%
Luxembourg	0.3%	0.3%	0.3%	0.3%	0.5%	0.2%	0.2%	0.3%	0.3%	0.3%
Ireland	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Italy	-	-	-	-	0.0%	-	-	-	-	0.0%
Netherlands	1.3%	1.1%	1.1%	1.0%	1.0%	1.0%	0.8%	0.9%	0.8%	0.7%
Portugal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Spain	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Sweden	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
United Kingdom	2.7%	2.3%	2.3%	2.2%	2.2%	3.0%	2.7%	2.7%	2.6%	2.7%
Norway	0.3%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.1%	0.1%
Russia				1.0%	0.9%	0.9%	1.0%	0.9%	0.8%	0.7%
Switzerland	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Turkey				0.0%	0.0%				0.0%	0.0%
SOUTH AND NORTH AMERICA	3.5%	3.1%	3.0%	2.8%	2.9%	3.3%	2.9%	2.7%	2.6%	2.5%
Argentina	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Canada	0.8%	0.6%	0.6%	0.4%	0.4%	0.7%	0.6%	0.5%	0.4%	0.4%
United States	2.7%	2.4%	2.4%	2.4%	2.5%	2.5%	2.2%	2.2%	2.1%	2.1%
UNSPECIFIED	4.3%	4.1%	3.8%	3.5%	3.3%	4.0%	4.1%	3.9%	3.8%	3.7%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

SOURCE Report on FDI Survey Result 2014, National Bank of Cambodia

APPENDIX 7 Cambodian emigrants 1990-2015

Top 10	Destination	1990	Destination	2000	Destination	2010	Destination	2015
1	The US	120,000	Thailand	150,000	Thailand	610,000	Thailand	810,000
2	Thailand	70,000	The US	140,000	The US	150,000	The US	170,000
3	France	70,000	France	70,000	France	60,000	France	60,000
4	Vietnam	20,000	Australia	20,000	Australia	30,000	Australia	40,000
5	Australia	20,000	Canada	20,000	Canada	20,000	South Korea	30,000
6	Canada	20,000	Vietnam	20,000	Bangladesh	20,000	Canada	30,000
7	Bangladesh	10,000	Bangladesh	10,000	Malaysia	10,000	Bangladesh	20,000
8	Philippines	<10,000	N. Zealand	<10,000	South Korea	10,000	Malaysia	10,000
9	N. Zealand	<10,000	Malaysia	<10,000	N. Zealand	<10,000	N. Zealand	<10,000
10	Germany	<10,000	N. Zealand	<10,000	Japan	<10,000	Japan	<10,000

SOURCE Pew Research Centre Global Attitude & Trends

APPENDIX 8 International tourism, receipts (% of total exports) 1996-2017

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Tourism (% exports)	7.33	14.51	11.04	13.17	16.85	18.90	20.47	21.44	16.74	19.83	23.07	22.10	24.98	25.50	29.46	28.17
Tourism (current mil. US\$)	71	117	99	129	240	345	429	509	441	673	929	1109	1169	1280	1463	1671

	2011	2012	2013	2014	2015	2016	2017
Tourism (% exports)	29.06	30.00	27.47	26.88	25.72	24.63	25.41
Tourism (current mil. US\$)	2258	2663	2895	3220	3418	3523	4023

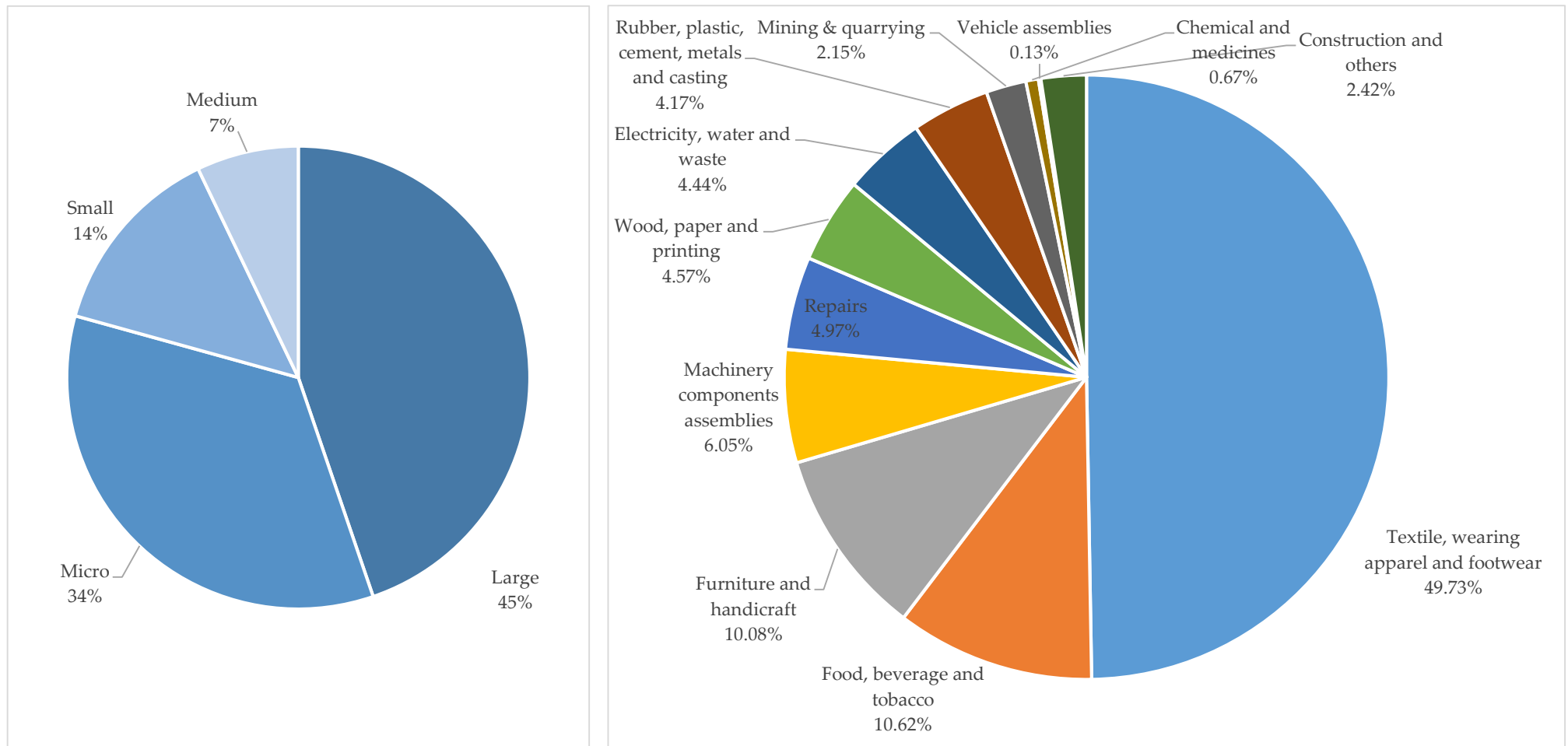
SOURCE the World Bank

APPENDIX 9 Direct contribution of travel and tourism to employment 2005-2015



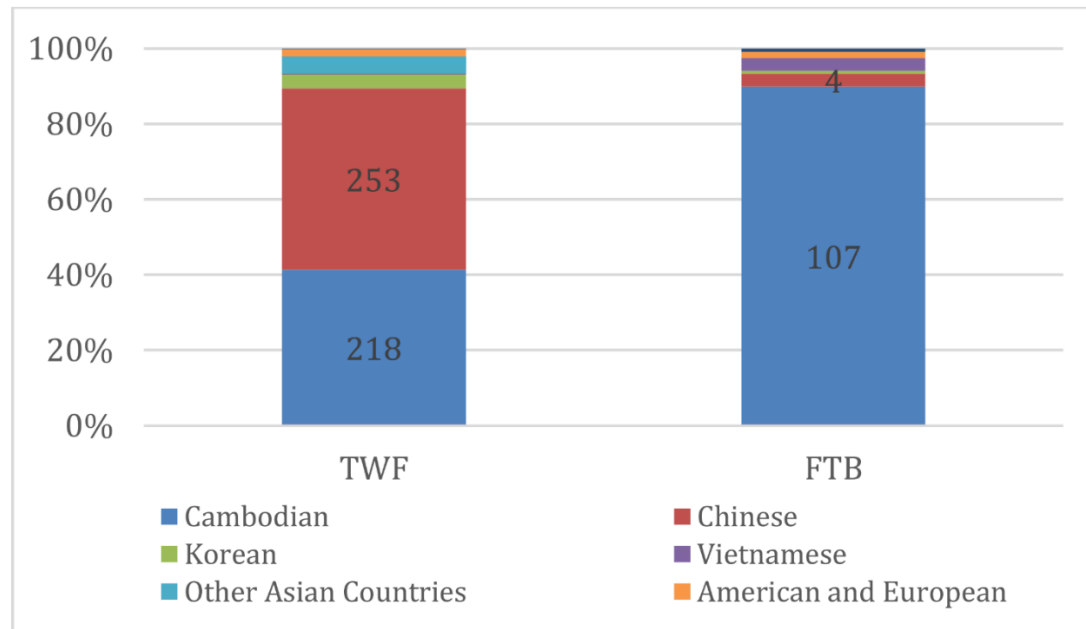
SOURCE The World Travel and Tourism Council. It was taken from <https://www.wttc.org/>.

APPENDIX 10 Foreign ownership by size and industrial type 2011



SOURCE It was taken from Chhair and Ung (2013)'s calculations based on EC2011 from NIS

APPENDIX 11 Ownership of medium and large industrial establishments in TWF and FTB by nationality



SOURCE It was taken from Chhair and Ung (2013)'s calculations based on EC2011 from NIS

CHAPTER 2

Microfinance Illusion, Poverty and Welfare in Cambodia

ABSTRACT The most recent studies at national level give emphasis to the failure of microfinance services in Cambodia since the bad practice is subordinate to the high interest rate, non-productive loan, over-indebtedness, landless and intergenerational migration. This paper examines the effect of microfinance, also putting weight on access to formal and productive loans, by using cross-sectional data in 2015 from 411 households in 48 districts of nine provinces in Cambodia. The households are beneficiaries of the Agriculture Cooperative (AC) community supported by the World Vision and the Australian Government. Applying the Wald test of exogeneity and the Newey's minimum chi-squared estimators with the two-step option, the binary choice model as well as bivariate and censoring model with addressing endogenous treatment effects are estimated. The findings suggest that access to microfinance services has insignificant effect on household's welfare, proxied by per capita economic assets and expenditure on child well-being, although it leads to promote poverty reduction and increase households' per capita income. However, these results must be interpreted with caution because the data are subject to specific sample selection.

KEYWORDS Microfinance illusion, poverty, welfare, Cambodia

JEL CLASSIFICATION G21, I3, O1

1 Introduction

It is not possible to comprehend the socioeconomic conditions of Cambodia today without talking about the impact of not only the Vietnam War, but also the country's nearly thirty years of concurrent internal conflicts and civil wars from 1970 to 1999. These historical phenomena were left by many horrible consequences such as the great loss of both public and private properties, forced workers, migration, imprisonment, and killings. It was estimated that there were at least two million of Cambodians who died, mostly due to execution, famine and sickness. It was until the year of 1999, when the military force using to challenge political opponents appeared to end the decades of internal conflicts and wars in the Kingdom (World Bank 2013). Up to the present, Cambodia has become one of the world's leaders in poverty reduction and shared prosperity. Cambodia sustained an average growth rate of 7.6% in 1994 to 2015, ranking sixth in the world, and has now achieved the status of lower middle-income economy. The poverty by far reduced from 53.2% in 2004 of the total population to 13.5% in 2014 (World Bank 2017).

To reach the poorest and the most vulnerable households, promoting access to microfinance⁴⁷ has been regarded as the positive and promising mechanism, after the period of post-war reconstruction and rehabilitation, in improving socio-economic environments in Cambodia. The microfinance sector got its start in Cambodia in the early 1990s. It was provided by non-for-profit microfinance institutions (MFIs), following the Grameen Bank model with the primary objective to reduce poverty and stimulate economic development. However, in the early 2000s, because of financial sustainability constraints, the MFIs has transformed its model to be commercialized

⁴⁷ According to Cambodia Microfinance Association, microfinance holders in Cambodia can be split into three major categories: first, microfinance holder who does the bigger loan or namely the SME (small and medium-sized enterprises) lending. The average size of the outstanding loan per client is over \$US 2000, second, microfinance holder who does small loan or group lending. This group of MFIs heavily lends in KHR (Cambodian currency) and small loan. The average size of the outstanding loan is normally less than \$US 500, third, the last type is the mix between the two above (hybrid) where they capture both small loans and SME loan.

(Bateman 2017). Over last two decades (1995 to 2017), the microfinance sectors in Cambodia have risen impressively. The number of MFIs borrowers has increased from 50,000 to more than 2 million Cambodians. It is two-third of Cambodian households if one person represents one household. This sector is serving by around 70 MFIs, which had a shared loan amount of \$US 3.1 billion, all-time high record in the Kingdom (CEIC Data 2018).

Being named as the Nation of Debtors by the Bloomberg (Philip 2018), Cambodia is presently ranked among the top five for MFIs penetration rates and accounts for 10% of the World's total investment in the microfinance sector. The sector is seen as a very profitable industry, which has been attractively by both local and foreign investors. The international NGOs, international private investors and DFIs between them own 87% of the shares of the largest 15 MFIs (excluding ACLEDA, which is a bank). The size of the microfinance industry has grown more than four-fold and nearly 40 fold in terms of portfolio, largely enabled by this inflow of foreign capital (Sanjay 2018).

Despite the widespread practice and rising microfinance sector, its effectiveness and cost-effectiveness are open questions whether it helps to reduce substantially poverty and increase welfare of Cambodian's households, considering its original objective for both in the short and long run. The existing literature in direct cases of Cambodia provides mixed inconclusive results. Some studies find positive effects of microfinance while others find negative or insignificant effects. The interesting notice is that the positive effects of microfinance are frequently found at sub-national levels, employing small sample analysis, such as in target villages or provinces where those areas are sometimes supported by the international development programs (see, for example, Vathana, et al. 2017), or in reports, which identifying the direction of causality or addressing statistically the endogeneity are always the concern. In contrast to these findings, however, the negative or

insignificant effects of microfinance are detected at national level. The failure of poverty-reducing promise is often linked to the issues of non-productive loans, over-indebtedness, landless and intergenerational migration (Bateman 2017).

This paper aims to investigate the effect of microfinance on poverty and welfare in Cambodia, using a dataset of 411 AC members from the socio-economic survey of the World Vision. The survey was conducted in 2015 under the Cambodia Sustainable Business Development (CSBD) program in nine provinces: Battambang, Kampong Chhnang, Kampong Speu, Kampong Thom, Kandal, Phnom Penh, Preah Vihear, Siem Reap and Takeo. These nine provinces cover more than 50% of the total population in Cambodia.

The central contribution of this paper is to provide other evidence into the existing literatures in Cambodia, where quantitative researches are still less explored, then to respond to the current situation, where we find rising concern on the bad practices of Cambodian microfinance sectors among practitioners, researchers and the publics. This paper complements the literature in three other ways. First, it uses the updated sample of AC members in nine provinces of Cambodia. Notably, since the sampling is related to only beneficiaries, who are involved in the development programs supported by the World Vision since 2012, these data must be therefore interpreted with high caution. Second, this paper takes into account simultaneously three indicators such as per capita income, economic assets and expenditure on child well-being to study how access to microfinance services affects the household's welfare. Third, it contributes to the literature by using two econometric approaches, both the binary choice model as well as bivariate and censoring model with continuous endogenous regressors, in order to evaluate the poverty-reducing effect and welfare-improving effects of microfinance.

The rest of the paper is organized as follows. Section 2 discusses the literature review on the effect of micro microfinance on poverty and welfare. Section 3 examines the study design, data description and descriptive statistics. Section 4 then describes the empirical methodology. Section 5 presents empirical results and discussions. Section 6 looks at the concluding remarks and policy recommendations.

2 Literature Review

For the last few decades, although the global poverty as well as regional or national poverty have been considerably reduced, the concern of poverty reduction, in the strict meaning, or households' welfare improvement, in the large meaning, has always been the matter of the top priority of any governments in less-developed countries and there is no exception for Cambodia.

The international literature on financial access and development has not yet identified a direct, unequivocal connection between household-level credit and improvements in poverty and inequality indicators (Amendola, et al. 2016). The empirical results are changed, due to the studying periods, the setting of data sources, and the context of each country's economic development. In the meanwhile, the results are also different in the context of applied methodologies. Many empirical studies use different methodologies such as cross-sectional data analysis, panel data model, and randomized controlled trials (Imai, Gaiha, et al. 2012). Theoretically, randomized controlled trials have been perceived as the gold standard because it has the power to deal with endogeneity issues (Gruber 2015). This methodology allows estimating the impact of access to microcredit by comparing outcomes among a random sample of individual borrowers to those of non-borrowers with similar socioeconomic characteristics during a period of observation (Karlan and Zinman 2010, Banerjee, et al. 2015). However, this technique also comes up with few limitations, considering the small sample size, plus short duration of evolution

programs, which it cannot potentially capture the full dynamism of the effects (Deaton and Cartwright 2018). It can be suggested consequently that there is no consensus.

Numerous studies have shown the positive effect of microfinance with the following logical reasoning. *First*, microfinance, which is almost known as microcredit with low interest rate, is a potential tool to encourage the existing and/or new business opportunities that can subsequently create employment, extra income, and individual monthly income for the communities as well as the poor (Karlan and Zinman 2010, Kaboski and Townsend 2012). These ideas are consistent with other studies founding microfinance as a major force in allowing households to spend on durable goods and/or productive assets⁴⁸ so that they can support their agricultural activities or fund their small non-farm investments (Kaboski and Townsend 2012, Banerjee, et al. 2015). To own all these goods and assets, they require a big amount of money; therefore, access to microfinance is their solution. According to Pitt and Khandker (1998), access to credit influences significantly economic incentives at the household level and improves their expenditures. However, the logic is applicable only if the borrowing is transacted with low interest. In another word, the rate of profit needs to be economically higher than the rate of interest of microcredit. *Second*, other several studies hold the view that microfinance may occasionally help to decrease household's financial constraints by funding their urgent needs or with unanticipated expenditures. This allows them to project their lives and avoid the problems of jobs with insecure wages (Bornstein 1997). It is commonly assumed that people's life might not go smoothly all the time, and few unpredictable accidents could be very vulnerable for them. For that reason, the urgent needs of microfinance could possibly survive them sometimes; then, this might push them to work harder to compensate the costs. According to Morduch (1998), the potential effect of microfinance is

⁴⁸ The goods and assets that are very practical for Cambodian households are as follows: house, water pump, hand tractor, bicycle, motorbike, TV, radio, battery (for power), cars, jeep, van, rice mill, threshing machine, harvest machine, boat, cattle/buffalo, etc.

positively associated with a decrease in vulnerability. The consumption-smoothing effect seems to be probably driven by income-smoothing. Other studies have suggested that the borrowing pattern is linked to raise expenditure level (Akotey and Adjasi 2016) and food consumption (Karlan and Zinman 2010, Kaboski and Townsend 2012) and certainly allows households to obtain basic payment, as well as access to small saving and basic insurance. It is reported that poor household would benefit from basic payments, savings, and insurance services; however, it is also highlighted that microcredit experiments draw a mixed picture about the benefits of microfinance projects, targeting specific population groups (World Bank 2014). From empirical evidence in rural Pakistan, the poverty-reducing effects were observed on a number of indicators, including expenditure on health care, clothing and household income, and on certain dwelling characteristics, such as water supply and the quality of roofing and walls (Ghalib, Malki and Imai 2015). *Third*, there is some evidence to suggest that microfinance has also been seen as the catalyst to empower women (Akotey and Adjasi 2016, Vathana, et al. 2017) and enhance capital investment (Kaboski and Townsend 2012). In developing countries, funding in education requires a big investment. Therefore, households could access to microfinance in order to fund their children's education and health as well as for seeking any new skills and vocational trainings, which promote human capital at the later stage. This idea is in accord with the recent study of Amendola, et al. (2016), which explains that an access to finance has a positive impact on investment in human capital in Mauritania. *Finally*, the joint results of microfinance promising as explained above will certainly lead to poverty reduction and welfare improvement (Honohan 2004, Burgess and Pande 2005, Demirgüç-Kunt, Klapper and Randall 2013, Mahjabeen 2008). This further supports the idea of lower income and wealth inequality within a society (Khandker and Faruqee 2003, Beck, Demirgüç-Kunt and Levine 2007, Mahjabeen 2008), which results in harmonized society and lower risk of social, economic, and political issues, due to a divided society.

In contrast to earlier findings, however, the negative or insignificant effect of microfinance has been detected in some contexts as promising failure in poverty reduction and welfare improvement. *First*, the reasoning may be due to the facts that households often access to loans with high interest rate and use for non-productive purposes (Coleman 1999), or even in productive purposes, but they invest in low-profit activities. From the supply and demand sides of microfinance, the easy loans, providing by MFIs or involving in new multiple loans from both formal and informal sources (money lender) to pay for previous loans, will lead almost certainly to heavy indebtedness or over-indebtedness (Bateman 2017). The study of identifying the causes of microfinance over-indebtedness can be found in Schicks (2013). *Second*, Garikipati (2008) finds that the microcredit may not empower the women concerned in rural India. The author explains that loans procured by women are often diverted into enhancing household's assets and incomes. This combines with woman's lack of co-ownership of family's productive assets. Additionally, the failure is probably related to an increase in child labour, migration of family members, and landless because households had to sell those assets to pay for their heavy debts. Maldonado and González-Vega (2008) find the negative effects of increased child-labour demand in case of microfinance organizations in Bolivia. *Finally*, the failure of microfinance sectors, on the one hand, would often not only decrease household's welfare, but also traps them in over indebtedness and poverty cycle. This logic confirms an argument that microfinance cannot lift poverty-stricken households out of the poverty traps nor it can enhance the vulnerable households, but it is very likely worsening welfare (Adams and Pischke 1992, Seng 2017). Some analyses fail to show a relationship between microfinance and household welfare and find that access to credit has a limited impact on per capita incomes, food security and on the nutritional status of credit program beneficiaries (Diagne and Zeller 2001). On the other hand, an increase in the number of non-performing loans because of reckless lending practices, which has given rise to over-indebtedness of an individual and household, could potentially

threaten to collapse the entire microcredit sector in Cambodia (Bateman 2017). With the evidence from Asia and Latin America, microfinance, reaching the core poor, is very limited (Weiss and Montgomery 2005).

To summarize, the survey of existing literature may support the hypothesis that the positive and promising of microfinance needs to go along with conditions, which households have to access to loan for the right purposes (productive loan), in the right sectors (earning from investment either farming or non-farming activities is required to be higher than interest payment) and from the right institutions with low interest rate. Or else, they are likely to risk their lives in over-indebtedness, landless, and migration. Into the bargain, in technical perspective, we mostly find the analysis of income indicator using to measure household's welfare. However, when households improve their welfare, it does not mean that they improve only their income, but possibly their asset and expenditure. The challenging of including all relevant key components of welfare indicators in order to reflect the whole global picture of the Cambodian households is the primitive objective of this chapter.

3 Study Design and Data

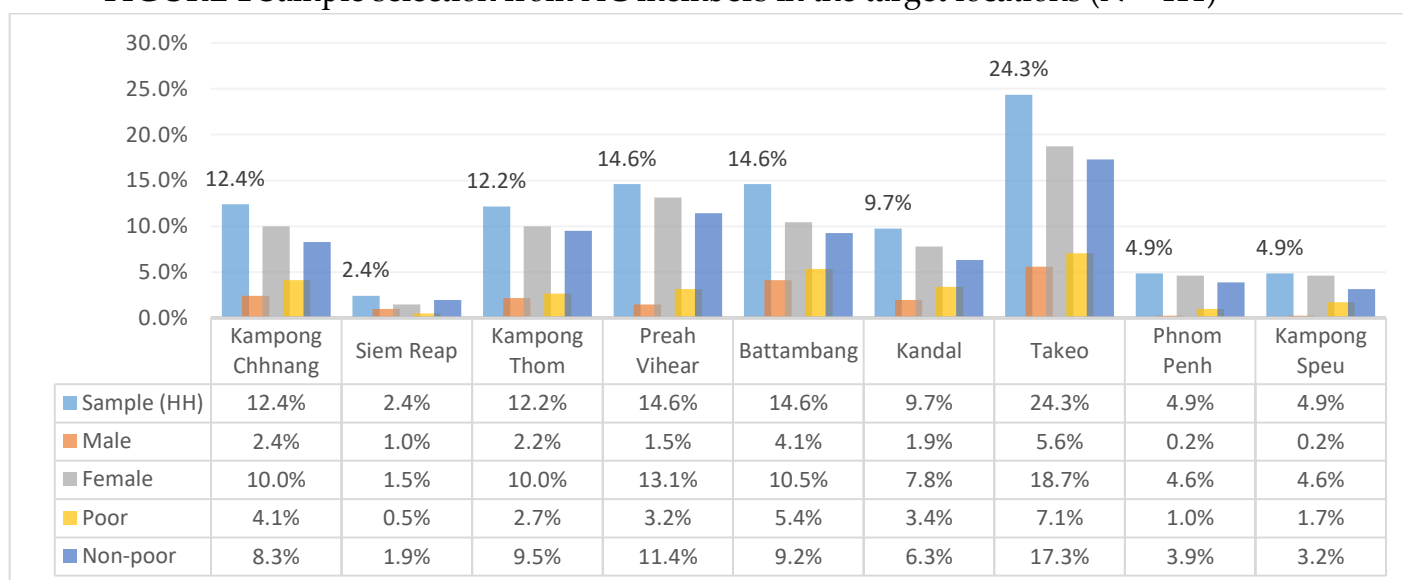
3.1 Details of Survey

Supported by the World Vision and the Australian Government, the CSBD program was initiated under the project period during 2012-2019. The project is expected to benefit directly 12,705 AC members, living across Cambodia, and focuses on the following activities such as (1) increasing capacity of ACs to self-manage and improve their own business and market access, (2) increasing saving behaviour among cooperative members, (3) increasing and expanding business models and practices of cooperatives, and (4) business skills of cooperatives are strengthened (World Vision 2016). Prior to running this CSBC program, the World Vision Cambodia has also

concentrated on other actions, including child rights and equity, development, disaster management, education and life skills, health, justice for children, resilience and livelihood, urban programming, vision fund as well as water and sanitation⁴⁹.

This cross-sectional economic survey research was undertaken in order to access the progress and the effectiveness of the CSBD program's implementation in Cambodia. The survey methodology was designed and executed by the independent consultants, engaged by the World Vision in 2015. The questionnaire was in English and Cambodian languages. The survey respondents came across 48 districts from the target nine provinces: Kampong Chhnang, Siem Reap, Kampong Thom, Preah Vihear, Battambang, Kandal, Takeo, Phnom Penh and Kampong Speu. In total, 411 households from the survey are employed in the analysis. In overall, the average members of the household are five members, of whom about 50% are female. About 29% of the surveyed households were in poor status. Figure 1 shows the sample selection of AC members in the target locations.

FIGURE 1 Sample selection from AC members in the target locations (N = 411)



SOURCE the CSBD project beneficiary list (World Vision Cambodia, 2015)

⁴⁹ For more detail, please go through <https://www.wvi.org/cambodia>

To determine the sample selection, which could be used to draw a representative conclusion for the 12,705 beneficiaries of AC community, the researchers applied the clustered random sample method rather the simple randomly selection, due to the limited timeframe and resources. The survey adopted a two-stage sampling methods to select the locations and respondents for the household interviews: (i) the first stage was the random selection of clusters (AC) and (ii) the second stage was random selection of households within those clusters (AC).

3.2 Data and Definition of the Variables

This section starts with a description of variables along with the rational why it is selected and how it is measured. The dependent variables include poverty and welfare indicators. To measure poverty, we use the poor status that is identified by the Royal Government of Cambodia (RGC). The poverty line is equal to the cost of a basic food basket plus an allowance for a minimum amount of non-food goods and services (housing, clothes, personal goods, entertainment, and so forth). The basic food basket composition is drawn from the information provided in the dairy section of the household survey and reported by the poorest 5-25 % of households. The total food quantities are the necessary amount to provide the minimum average caloric requirement of 2,200 Kcal per day per person. Households with per capita daily consumption below the poverty line were classified as poor and non-poor otherwise (World Bank 2013, 7-8).

In addition, we use welfare indicators: the logarithm of per capita household income (monthly in Cambodian riels unit), economic assets (in hectare unit), and expenditures on child education and child health (in Cambodian riels during the last 12 months). First, per capita incomes are measured by the average net monthly income of households by livelihood activities. The households generate incomes from three livelihood activities: (1) income from on-farm, including rice crop, upland crop,

vegetable, poultry raising and pig raising, (2) income from off-farm, including fishing selling, daily or occasional wage, monthly wage/salary work, self-employment, sale of land/other assets, remittances, and pension, and (3) income from other sources, including dividend in AC, interest from saving in AC and interest from saving outside of AC saving group. Second, per capita economic assets are measured by all types of assets, owned by household, including total production land, non-production land, housing land and other land. Third, per capita expenditures on child well-being are measured by expenses on the child's education (including materials, school fee, extra class, etc.) and child's health (including cost of treatment, medical check, medicine, treatment services at the private clinic, treatment services at HC/public, health care facilities). Due to the unavailability of data, we use expenditure on child wellbeing instead of data on household's overall expenditure. However, the idea goes along with the fact that those two variables are theoretically associated and paralleled with each other.

The rational of choosing these indicators is corresponding to the study of Amendola, et al. (2016), which employs consumption as the primary indicator of household welfare⁵⁰. Paul Glewwe, Gillette Hall, Ralitzia Dimova, and François-Charles Wolff use the logarithm of per capita expenditures as a stylized measure of living standards and the variance of per capita expenditures as a related measure of inequality in living standards. The authors argue that a comprehensive understanding of household welfare requires an analysis of both income and consumption patterns (Glewwe and Hall 1998, Dimova and Wolff 2008). These studies are in line with the thesis of Deaton (2013), which suggests that the term "welfare" refers to all of the things that are good for a person, that make for a good life. It is explained that welfare

⁵⁰ Amendola et al. (2016) views consumption rather than income as the primary indicator of household welfare and considering the role of resilience. Their analysis considers the following welfare indicators: (1) consumption of household production, particularly agricultural produce; (2) total spending on nondurable goods, excluding food and education; (3) food spending; (4) education spending; and (5) a dummy variable representing household poverty status.

includes material wellbeing, such as income and wealth; physical and psychological well-being, represented by health and happiness; and education and the ability to participate in civil society through democracy and the rule of law. This significantly emphasizes that using only income or consumption alone is not enough for capturing the full picture of welfare.

For treatment variables, this paper employs the borrowing indicators to measure the role of microfinance. Three different definitions of access to microfinance services are used: (1) whether a household is a client of any microfinances from any sources, (2) whether a household has taken loans from formal microfinance institutions and (3) whether a household has taken loans for any productive purposes. The indebtedness variable is measured to represent the number of loans taken out by the household in the target regions during the last 3 years. The role of access to formal loans, providing from saving group in the AC, MFIs and banks, is also considered. Yet, the informal loan sources are from private loan provider, relatives, saving group outside AC, which is normally characterized by high interest rate. In addition, access to productive loans is linked to the following purposes: agriculture inputs and small scale business, leading to an increase in production, for example, buying inputs for agriculture or investment in non-farm business. In contrast, the non-productive loans are for the following purposes: daily food, child health, child education, household materials, social event, health for land, charge for migration, and others. According to Imai, Arun and Annim (2010), the definition of microfinance is used to observe with the effect of simply accessing microfinance on poverty. Moreover, Claessens (2005) and Johnson and Nino-Zarazua (2011) define access to finance as a dummy variable, taking the value of 1 if the household head either has a bank account, or has used the credit facility of a formal financial institution.

Last but not least, we also include the multidimensional indicators, which have impact theoretically and empirically from the existing literature, on the independent

variables. These variables include: (1) household characteristics (age, sex, marital status, highest level of education that household head has completed in years of schooling, and address of household head), (2) household member details (household size, average age of members, dependency ratio as ratio of household members under ages of 15 years or over 60 years to total members, percentage of migrant members in both internal and international, and percentage of members who generate income permanently), (3) role of gender decision in family (involving in decision of family affairs such as decision of spending the major part of the family income, purchasing agricultural input, selling agricultural input and speaking in public) and (4) AC membership (duration of being a member, and the opportunities of getting vocational training or business training from AC group⁵¹).

3.3 Descriptive Statistics

Table 1 and 2 highlight the descriptive statistics of the variables in the sampling, classified by household's poor status and borrowing characteristic.

Poverty and Welfare

As shown in Table 1, the households in the sampling generate respectively monthly average income per family member about 210.08 Cambodian thousand riels (\$US 51.52), or 235.98 Cambodian thousand riels (\$US 57.88) for non-poor households and 146.52 Cambodian thousand riels (\$US 35.94) for poor households. The major source of their income is from off-farm activities. It represents over 65%, while on-farm income represents one-third, and less than one percent from other activities. The poor households generate nearly 85% from off-farm activities and over 60% for non-poor households (see Appendix 6). This indicates that off-farm activities play a greater role

⁵¹ The vocational skills and practice trainings include weaving, handmade craft, food processing, grow the mushroom and others. The business trainings include the entrepreneur / business concept, market assessment, customer relation and others. The programs were trained by the World Vision, the AC, government agencies or relevant governmental department, institution or school, neighbour or relative and others.

since households cannot depend only on agricultural activities, which they can generate only small earning.

TABLE 1 Household's characteristics by poor status (N = 411)

Variables	Total		Non-Poor		Poor		Difference
	Mean	SD	Mean	SD	Mean	SD	Mean
Dependent							
Per capita net incomes	210.08	(312.01)	235.98	(20.51)	146.52	(15.74)	89.46***
On-farm income	72.11	(258.61)	93.07	(17.42)	20.70	(9.27)	72.37***
Off-farm income	136.69	(185.28)	141.60	(11.57)	124.64	(13.83)	16.96
Income from other sources	1.28	(4.07)	1.32	(0.25)	1.18	(0.30)	0.14
Per capita economic assets	0.474	(0.653)	0.579	(0.039)	0.216	(0.048)	0.363***
Total production land	0.368	(0.550)	0.462	(0.036)	0.137	(0.022)	0.325***
Non-production land	0.065	(0.263)	0.070	(0.012)	0.052	(0.034)	0.018
Housing land and other land	0.041	(0.146)	0.047	(0.010)	0.027	(0.005)	0.020
Per capita expenditures on child	174.11	(236.65)	192.54	(15.47)	128.88	(12.75)	63.66**
Child education	118.43	(185.71)	132.39	(12.21)	84.18	(9.54)	48.20**
Child healthcare	55.68	(131.26)	60.16	(8.65)	44.70	(7.01)	15.46
Treatment							
Credit	81.3%	(0.391)	80.5%	(0.023)	83.2%	(0.034)	-0.027
Account at banks	9.2%	(0.290)	11.6%	(0.019)	3.4%	(0.017)	0.083***
Number of loans	1.635	(1.205)	1.620	(0.070)	1.672	(0.113)	-0.052
Loan Amount	5,307.87	(9,823.76)	6,300.08	(657.06)	2,873.20	(366.89)	3,426.88***
Loan sources							
Formal loan	4,731.69	(8,239.46)	5,596.65	(545.47)	2,609.25	(357.82)	2,987.40***
Informal loan	576.18	(5,511.01)	703.42	(380.49)	263.95	(97.95)	439.48
Purposes of loans							
Productive loan	2,555.51	(8,072.94)	3,120.73	(547.70)	1,168.58	(254.48)	1,952.16**
Non-productive loan	2,752.36	(5,775.56)	3,179.34	(382.38)	1,704.62	(275.87)	1,474.72
Interest rate							
Formal loan	2.537	(0.543)	2.482	(0.038)	2.668	(0.339)	-0.186***
Informal loan	2.653	(2.752)	2.307	(0.054)	3.311	(0.527)	-1.005

SOURCE Author's own calculation

NOTE Per capita net incomes (monthly in Cambodian thousand riels); per capita economic assets (in hectare); per capita expenditures on child (yearly in Cambodian thousand riels); loan (during last three years in Cambodian thousand riels); \$US 1 = KHR 4,077.30 (US Dollars (USD) to Cambodian riels (KHR) exchange rate for December 31, 2015)

*** significant at 1% level, ** significant at 5% level, * significant at 10% level

Data in parentheses indicates standard errors

Next, in term of economic assets, total production land represents around 80% for non-poor households and two-third for poor households. Finally, in term of expenditure on child wellbeing, the households spend annually in average per family member around 174.11 Cambodian thousand riels (\$US 43.70), 192.54 Cambodian thousand riels (\$US 47) and 128.88 Cambodian thousand riels (\$US 32) for non-poor and poor households respectively. Both poor and non-poor households spend around two-third of total spending on child's education. The present results are significant that they value very much on education of their next generation.

Microfinance

Access to microfinance is quite common in Cambodia. As displayed in Table 1, two among ten households of the surveyed households have access to at least one loan from multiple sources during the last three years. Around 9% of households has bank accounts, 3% of poor households and 12% of non-poor households. The average loan size during the last three year is estimated approximately 5,307.87 Cambodian thousand riels (\$US 1,295) while it is reduced to 2,873.20 Cambodian thousand riels (\$US 701) for the poor households. Almost all loans are taken from formal institutions with the lower interest rate, where MFIs or banks are the most common sources of loans; it represents around 90%. The interest rate is significantly correlated to loan size and the sources of loans; higher interest rates are charged for the lower amount of the loan size. Informal loans, given by private money lenders, are commonly charged with the higher interest rate. In addition, the non-poor households use loans for both productive and non-productive, nearly at the same percentage. However, loans are used for higher percentage in non-productive purpose for the poor households. The finding explains a high need of loans for households to improve their livelihood situation as well as emergency needs.

TABLE 2 Household's characteristics by microfinance status (N = 411)

Variables	Without access to microfinance		With access to microfinance		Difference In Mean
	Mean	SD	Mean	SD	
Dependent variable					
Poor status	0.2597	(0.0501)	0.2964	(0.0250)	-0.0367
Per capita net incomes	196.85	(28.55)	213.13	(17.77)	-16.28
Per capita economic assets	0.341	(0.042)	0.504	(0.038)	-0.1629**
Per capita expenditures on child	149.41	(20.30)	179.80	(13.57)	-30.39
Household characteristics					
Age of household head	50.620	(1.640)	46.710	(0.690)	3.92**
Sex of household head	0.221	(0.048)	0.251	(0.238)	-0.031
Marital status of household head	0.753	(0.049)	0.790	(0.022)	-0.037
Education level of household head	5.455	(0.408)	4.841	(0.184)	0.613
Battambang	0.078	(0.031)	0.162	(0.020)	-0.084*
Kampong Chhnang	0.156	(0.042)	0.117	(0.018)	0.039
Kampong Speu	0.039	(0.022)	0.051	(0.012)	-0.012
Kampong Thom	0.143	(0.040)	0.117	(0.018)	0.026
Kandal	0.169	(0.043)	0.081	(0.015)	0.088**
Phnom Penh	0.026	(0.018)	0.054	(0.012)	-0.028
Preah Vihear	0.117	(0.037)	0.153	(0.020)	-0.036
Siem Reap	-	-	0.030	(0.009)	-0.030
Takeo	0.273	(0.051)	0.237	(0.023)	0.036
Household member details					
Household size	4.558	(0.185)	5.084	(0.101)	-0.525**
% of dependency ratio	0.427	(0.028)	0.340	(0.012)	0.0867***
% of migrant members	0.087	(0.021)	0.106	(0.010)	-0.020
Average years of members' education	5.249	(0.265)	4.930	(0.120)	0.319
% of mb generat. income permanently	0.553	(0.027)	0.540	(0.012)	0.016
Gender decision in family					
Female involving in family decision	0.854	(0.025)	0.835	(0.013)	0.0193
AC membership					
Years of AC group membership	1.952	(0.138)	2.090	(0.073)	-0.134
Access to trainings	0.074	(0.025)	0.093	(0.012)	-0.019

SOURCE Author's own calculation

NOTE Per capita net incomes (monthly in Cambodian thousand riels); per capita economic assets (in hectare); per capita expenditures on child (yearly in Cambodian thousand riels); \$US 1 = KHR 4,077.30 (US Dollars (USD) to Cambodian riels (KHR) exchange rate for December 31, 2015)

*** significant at 1% level, ** significant at 5% level, * significant at 10% level

Data in parentheses indicates standard errors

Table 2 emphasizes the descriptive statistics of households, categorized by microfinance characteristics. The households with access to microfinance or formal loans are at a higher percentage of being poor, not the case of productive loan. In overall, there is no significant difference between the descriptive statistics of each

variable for the households with access to microfinance and for those without, except in a few cases. For example, there are higher proportions of households' per capita economic asset, households who are living in Battambang province, and household size among those receiving microfinance. On the other hand, the proportion of age of household head and percentage of dependency ratios are significantly greater among those without receiving microfinance.

4 Methodology

This study applies the binary choice model, specifically *probit* model, to examine the effect of access to microfinance, formal loans and productive loans on poverty as well as welfare indicators. The welfare indicators are proxied by households' per capita incomes, economic assets and expenditures on child well-being. Then, it uses bivariate and censoring model, specifically *tobit* model, to investigate the effects of the amount of access to microfinance, formal loan and productive loan on poverty and welfare. In order to get unbiased and consistent results, this study also addresses the issues of endogenous treatment effects.

4.1 Binary Choice Model with Endogenous Treatment Effects

This study aims to test the hypothesis that access to microfinance services reduces poverty and promotes the household's welfare. With the same logic, this study applies the same empirical strategy to the cases of formal and productive loans. Therefore, the model is constructed only with the variable of access to microfinance. The empirical strategies can be therefore explained as the simple following steps. First, the poverty function is built, estimated by the binary variable of access to microfinance and other controlled variables. Second, access to microfinance is estimated by *probit* model to measure the effect of explanatory variables. Finally, the *probit* model with continuous endogenous regressors is applied.

The determinants of poverty reducing effects can be structured as the following linear regression model:

$$poverty_i = \beta X_i + \alpha MF_i + \varepsilon_i \quad (1)$$

$$MF_i^* = \gamma X_i + \eta_i \quad (2)$$

And

$$MF_i^* = 1 \text{ if } MF_i = \gamma X_i + \eta_i > 0$$

$$MF_i^* = 0 \text{ Otherwise}$$

For the equation (1), $i = 1$ to 411, $poverty_i$ is the poverty indicator. X_i , which is a $1 \times x$ vector of exogenous variables, measures the matrix of controlled variables of the i household, which is assumed to have, theoretically and empirically, impact on poverty reduction. These variables include: household characteristics, household member details, gender decision in family and AC membership. MF_i , which is a $1 \times p$ vector of endogenous variables, is the treatment variable, proxied by access to microfinance. β and α represent, respectively, the coefficient of controlled variables and treatment variables of access to microfinance. γ_i is a vector of related coefficients. Finally, η_i is assumed to be normally distributed ($\eta_i \sim N(0, \sigma)$) and ε_i is an error term, following the normal distribution $\varepsilon_i \sim (0, \sigma)$.

Since MF_i^* depends on a complex of household characteristics, MF_i^* is binary dependent variable that is qualitative in nature, taken one of only two possible values, representing “access to microfinance”, coding 1 and “without access to microfinance”, coding 0. X_i is a vector of explanatory variables. To estimate the econometric model in the question (2), the traditional linear regression, linear probability model (LPM), cannot be used, since the LPM is heteroscedastic, where the variance of η_i depends on X_i . Therefore, the estimations by the ordinary least squares (OLS) could lead to bias results. This problem could be solved by using *Probit* regression, which is nonlinear

regression models, particularly designed for binary depend variables. Because a regression with a binary dependent variable MF_i^* models, the probability is that $MF_i^* = 1$. Thus, it makes sense to adopt a nonlinear formulation that forces the predicted values to be between 0 and 1 (Stock and Watson 1993, Stock and Watson 2012). In this model, *probit* regression applied the standard normal cumulative probability distribution function (c.d.f.'s). It is then assumed that the probability of the choice depends on covariates through a function Φ as follows: $\Pr(MF_i^* = 1 | X) = \Phi(\gamma'X_i)$ and $\Pr(MF_i^* = 0 | X_i) = 1 - \Phi(\gamma'X_i)$.

From the equations (1), with the cross-sectional data set, we could compare the difference between households' welfare among those receiving microfinance and those without. The positive effect of access to microfinance can be statistically obtained if household's welfare with access to microfinance is higher than those without. However, these results are appropriate only if the samples of the survey households are randomly selected and the other statistical issues are addressed cautiously. Those issues include the sample selection bias and the treatment endogeneity effects (Heckman 1979). The sample selection bias may be due to a number of factors, including (1) self-selection, where the households themselves decide whether to participate in microfinance programmes, which depends on observable and unobservable households characteristics, and (2) endogenous program placement, where those who implement microfinance program select (a group of) households with specific characteristics, for example, high poverty rates or reasonably good credit records depending on the programme specification (Imai, Arun and Annim 2010). Moreover, the treatment endogeneity may be caused by (1) unobserved area-level fixed effects that influence both demand for credit and household income and consumption, such as local prices, infrastructure quality, cultural norms, environmental conditions and natural-disaster risks, and (2) unmeasured household characteristics that affect both demand for credit and

household income and consumption, such as the health, ability, and fecundity of household members, as well as preference heterogeneity (Amendola, et al. 2016). In a simpler way, if, for instance, households are wealthier, their expenditures would be higher, regardless of whether they use microcredit. Furthermore, the household heads' entrepreneurial skills and motivation for expanding existing income-generating activities or investing in new activities with higher profit can stimulate both the uptake of microcredit and household income levels, the more likely increasing household expenditure. In this case, these unobserved factors would, if not account for, lead to biased and inconsistent estimates of the effects of microcredit (Seng 2017).

As our household data are subject to the specific sampling, it means the survey applied the clustered random samples rather the simple randomly selection. We therefore address only the treatment endogeneity effects with the instrumental variables. Rationally, the orthogonality of instruments to the error term requires that they be uncorrelated with omitted variables so that, when we are interested in the effect of MF_i on $poverty_i$, and Z_i is an instrument, then Z_i can only affect $Poverty_i$ through its effect on MF_i , and not through any other mechanism (Deaton 2019). In this paper, our instrumental variables include: formal bank account, provincial total population⁵² and provincial poverty rate⁵³. Chang and Mishra (2008) and Seng (2017) use national identify card, which is required to access to formal loan, as the instrument. On the other hand, Amendola, et al. (2016) addresses the endogeneity concern by using the instrument, relating to the average value of the households' distance from the vital infrastructure and facilities, including water sources, primary and secondary school, government offices, transportation services, healthcare facilities, mobile phone and internet services.

⁵² The database is taken from the report of the National Institute of Statistics and Ministry of Planning (2013, 17)

⁵³ The database is taken from the ADB (2014, 32)

Therefore, we can transform the *probit* model with continuous endogenous regressors, applying with stata comment *ivprobit*, as follows:

$$poverty_i^* = \beta X_i + \alpha MF_i + \varepsilon_i \quad (3)$$

$$MF_i = \gamma X_i + \xi Z_i + \eta_i$$

Where, Z_i is $1 \times z$ vector of additional instruments, formal bank account, provincial total population, and provincial poverty rate. By the assumption, $(\varepsilon_i, \eta_i) \sim N(0, \sigma)$, where σ_{11} is normalized to one to identify the model. ξ is matrix of parameters. (ε_i, η_i) is independent and identically distributed multivariate for all i . The equation $poverty_i$ is observed then:

$$Poverty_i = \begin{cases} 0 & poverty_i^* < 0 \\ 1 & poverty_i^* \geq 0 \end{cases} \quad (4)$$

For the equation (3), the Wald test of the exogeneity of the instrumented variables is applied. If the test statistic is not significant, there is not sufficient information in the sample to reject the null that there is no endogeneity. Then a regular *probit* regression may be appropriate. The point estimates from *ivprobit* are consistent, though those from *probit* are likely to have smaller standard errors (StataCorp 2013). Finally, the minimum chi-squared estimator with the two-step estimators of Newey (1987) will be computed for the endogenous *probit* model.

4.2 Bivariate and Censoring Model with Endogenous Treatment

Effects

This paper, in the next stage, estimates the effect of amount of access to microfinance on the poverty reduction, proxied by the natural logarithm of the dependent variable Wf . In this case, the observed Wf data are considered as censored data, which the limit values are available. It is when the value of the dependent variable is replaced by some threshold value if its true value crosses the threshold. For instance, the net

income data are often top-corded, meaning that if an individual's net income is higher than some value (let's say, at least \$US 0 per day), it will be then observed only Wf_i equal or higher than 0 instead of the true income because some households might generate net negative income because of the debt. To estimate censored data, the traditional model of OLS would produce biased and inconsistent results for the major reason that it fails to deal with qualitative difference between limit (zero) observations and non-limit (continuous) observations. According to the literature, the bivariate and censoring model, specifically the *tobit* model, a contraction between Jame TObin and proBIT model, is therefore considered as the alternative reliable estimated method. The model can be structured as follows:

$$Wf_i = \beta'X_i + \alpha MF_i + \varepsilon_i \quad (5)$$

$$MF_i = \gamma X_i + \xi Z_i + \eta_i$$

And

$$Wf_i = 0 \quad \text{if } I_i \leq 0 \quad \text{with } Wf_i^* = \beta'X_i + \alpha MF_i + \varepsilon_i$$

$$Wf_i = Wf_i^* \quad \text{if } I_i > 0$$

$$\varepsilon_i \rightarrow N(0, \sigma^2)$$

Where, $i = 1$ to 411, Wf_i is the dependent variable. X_i , which is a $1 \times x$ vector of exogenous variable, is vector of controlled variables. MF_i , which is $1 \times p$ vector of endogenous variables, is vector of treatment variables. Z_i is $1 \times z$ vector of additional instruments including formal bank account, provincial total population, and provincial poverty rate. β' and α are coefficient. γ and ξ are matrices of parameters. ε_i is error term, which is assumed to be normally distributed. (ε_i, η_i) is independent and identically distributed multivariate for all i . In this model, the dependent variable Wf_i is assumed to be related as linear regression to the variables of X_i and MF_i .

With the same logical reasoning as the *probit* model, the *tobit* model also faces endogeneity problems. To deal with these issues, the *tobit* model with continuous endogenous regressors is applied using stata comment, *ivtobit*. The equation Wf_i is observed then:

$$Wf_i = \begin{cases} a & Wf_i^* < a \\ Wf_i^* & a \leq Wf_i^* \leq b \\ b & Wf_i^* \geq b \end{cases} \quad (6)$$

For the overall assumption, the Wald test of the exogeneity of the instrumented variables, and the Newey's (1987) minimum chi-squared estimator with the twostep option will be applied with the same logic in the probit model (StataCorp, 2013; Newey, 1987).

5 Results and Discussions

The following sections report detailed regression results of the *probit* regression and the *tobit* regression with addressing the endogenous treatment effects. The findings will be explained in three parts: (1) determinants of access to microfinance services, (2) the effect of access and its amount to microfinance services on poverty reduction $poverty_i$, and (3) the effect of the amount of access to microfinance services on household's welfare Wf_i .

5.1 Determinants of Microfinance Services

Table 3 provides the results of the *probit* regression, indicating the significant determinants, which predict the microfinance services, including access to microfinance, access to formal loans, and access to productive loans. Almost all explanatory variables have the same direction in explaining the variables of interest, including access to microfinance as well as access to formal and productive loans, but only few variables have a statistically significant relationship. The household head

with older age is more likely to access microfinance services; yet, its trend is in non-linear positive effect since the coefficient of age square is negative. The likelihood of access to microfinance services is found to be driven by the household with female and married head, having higher number of migrant members as well as having longer membership, and getting many training in vocational skills and business in the AC community.

TABLE 3 Determinants of access to microfinance services

Dependent variables	Access to Microfinance		Access to Formal loan		Access to Productive loan	
	Coef.	SE	Coef.	SE	Coef.	SE
Explanatory variables						
Household characteristics						
Age of household head	0.005	(0.046)	0.031	(0.043)	0.091**	(0.041)
Age square of household head	0.000	(0.000)	0.000	(0.000)	-0.001**	(0.000)
Sex of household head	0.423	(0.367)	0.285	(0.275)	0.326	(0.265)
Marital status of household head	0.423	(0.366)	0.574**	(0.289)	0.335	(0.285)
Education level of household head	-0.023	(0.027)	-0.037	(0.025)	0.003	(0.024)
Household member details						
% of dependency ratio	-1.393***	(0.453)	-1.306***	(0.428)	-0.725*	(0.398)
% of migrant members	0.466	(0.482)	-0.306	(0.411)	0.358	(0.384)
Average years of members' education	-0.080*	(0.043)	-0.080*	(0.042)	-0.091**	(0.041)
% of mb generat. income permanently	-0.532	(0.373)	-0.484	(0.354)	-0.153	(0.323)
Gender decision in family						
Female involving in family decision	-0.455	(0.316)	-0.332	(0.288)	-0.391	(0.278)
AC membership						
Years as AC member	0.010	(0.055)	0.041	(0.051)	0.025	(0.050)
Access to voc. and business training	0.108	(0.364)	-0.093	(0.327)	-0.172	(0.296)
Constant	2.204*	(1.293)	1.019	(1.150)	-1.234	(1.120)
Number of observation	402		402		402	
Wald chi2	24.21		31.06		24.36	
Prob > chi2	0.0190		0.0019		0.0182	
Pseudo R2	0.0686		0.0635		0.0435	

SOURCE Author's own calculation

NOTE *** p<0.01, **p<0.05, and * p<0.1

Data in parentheses indicates standard errors

This result may be explained by the fact that microfinance programs are highly accessible for targeting women. The households, who have involved frequently in activities of AC community, tend to access more to microfinance services. The

households with a higher percentage of dependency member, whose ages are under 15 and over 60 years old, are statistically less likely to access to microfinance services. The access to microfinance services is also less likely for the households, having a higher education level of household head and members, having more members who generate income permanently, and having a higher female role in decision of family affairs such as spending, buying, selling, and speaking in public as representative of the family.

Briefly, only few variables are the significant determinants of access to microfinance services. The households, having a higher percentage of dependency ratios and average years of member's education, determine statistically less likelihood to access to microfinance services as long as married household head and older household head are likely to access to formal and productive loans respectively.

In the next stage, this paper will investigate and discuss the effect to access to microfinance services and its amount on poverty and welfare indicators. It is worth noting that the positive value of dependent variable would be explained by higher poverty (since the poverty indicator is measured as 1 for the poor and 0 otherwise) and higher welfare (measured by the logarithm value of per capita net income (monthly in Cambodian thousand riels), per capita (in hectares) and per capita expenditure on a child's well-being (yearly in Cambodian thousand riels)).

5.2 Effect of Microfinance Services on Poverty

Table 4 shows the regression results, using access to microfinance services and its amount as dependent variables. With robust estimates, we find that there is no statistically significant impact of access to microfinance, formal and productive loans on poverty. Moreover, when we estimate with its amount, the results turn to be statistically significant at 1%, meaning microfinance, formal loans and productive loans reduce poverty. With these results alone, we may not reach any concrete

conclusion. For a more critical investigation, we will estimate the results by adding controlled variables and analysing with instrumental variables.

TABLE 4 Impact of access to microfinance services and its amount on poverty (with robust estimates)

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Access to microfinance	0.1094 (0.170)					
Microfinance amount		-0.191*** (0.047)				
Access to formal loans			0.0661 (0.146)			
Formal loans amount				-0.211*** (0.052)		
Access to productive loans					-0.1523 (0.131)	
Productive loans amount						-0.172*** (0.058)
Constant	-0.644*** (0.154)	2.271*** (0.696)	-0.602*** (0.124)	2.583*** (0.782)	-0.483*** (0.090)	1.835** (0.835)
Number of observation	411	334	411	294	411	198
Wald chi2	0.41	16.47	0.20	16.21	1.34	8.83
Prob > chi2	0.5210	0.0000	0.6509	0.0001	0.2466	0.0030
Pseudo R2	0.0008	0.0351	0.0004	0.0392	0.0027	0.0331

SOURCE Author's own calculation

NOTE *** p<0.01, **p<0.05, and * p<0.1

Data in parentheses indicates standard errors.

Table 5 reports the results, computing from *probit* regression model on the impact of the amount of microfinance services on poverty. At the bottom of the table, the results of the Wald test of exogeneity are reported. However, it is found that the test statistic is not significant; therefore, there is not sufficient information in the sample to reject the null that there is no endogeneity. Consequently, the results of a regular probit regression can be used, which may be appropriate and consistent because the results are likely to have smaller standard errors (StataCorp 2013). The results turn to reduce the poverty rate when it is estimated by the amount of microfinance services or include other controlled variables as well as addressing

formal bank account, provincial total population, and provincial poverty rate as the instrumental variable. The household with higher access to microfinance services in all aspects (access to microfinance, formal loans and productive loans) is less likely to be poor. The households, having higher educated members, higher percentage of members who permanently generate income, and higher female role in decision of family affairs, are less likely to be in a poor family. As the member of AC group, getting more vocational skills and business training, the households are more likely not to be poor. Nonetheless, they are more likely to be poor if the duration of their membership is longer. The possible explanation for this might be due to the fact that the longer they are in AC membership, it means the longer they were already in the disadvantageous situation in the earlier stage; therefore, the longer they can receive many training programmes.

5.3 Effect of Microfinance Services on Welfare

Tables 6-8 shows the results, computing from *tobit* regression model on the effect of the amount of microfinance services on welfare indicators. The samplings for regression are restricted only to households, who have access to microfinance services. At the bottom of the tables, the results of the Wald test of exogeneity are also reported. The significant statistical tests are obtained only for the per capita economic assets as the dependent variable. Therefore, for other dependent variables, the results of a regular *tobit* regression will be used. In overall, the results reveal that access to microfinance services in every aspect, including both formal and productive loans, has statistically insignificant impacts on per capita economic assets and expenditure on child wellbeing when we control all the relevant socio-economic characteristics. However, access to microfinance services, statistically, promotes households' per capita income. The further comprehensive explanations are as follows:

TABLE 5 Impact of microfinance amount on Poverty

Explanatory variables	Microfinance amount		Formal loan amount				Productive loan amount					
	probit		IV - probit		probit		IV - probit		probit		IV - probit	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Treatment variables												
Microfinance services amount	-0.179***	(0.053)	-2.825	(3.242)	-0.207***	(0.061)	-1.632	(1.451)	-0.168***	(0.062)	-0.312	(0.590)
Household characteristics												
Age of household head	0.063	(0.050)	0.073	(0.126)	0.029	(0.052)	0.017	(0.092)	0.136*	(0.076)	0.150*	(0.081)
Age square of household head	-0.001	(0.001)	-0.001	(0.001)	0.000	(0.001)	0.000	(0.001)	-0.002*	(0.001)	-0.002*	(0.001)
Sex of household head	0.341	(0.293)	1.530	(1.640)	0.339	(0.306)	1.190	(1.013)	0.355	(0.395)	0.525	(0.565)
Marital status of household head	-0.079	(0.319)	2.830	(3.658)	-0.008	(0.336)	1.337	(1.484)	-0.246	(0.423)	-0.023	(0.782)
Education level of household head	0.030	(0.031)	-0.081	(0.152)	0.028	(0.033)	0.018	(0.053)	0.071	(0.043)	0.076	(0.057)
Household member details												
% of dependency ratio	0.545	(0.552)	0.844	(1.383)	0.389	(0.603)	0.722	(1.024)	0.562	(0.785)	0.642	(0.904)
% of migrant members	0.862*	(0.478)	1.015	(1.143)	1.205**	(0.522)	1.483*	(0.898)	1.470**	(0.624)	1.592*	(0.817)
Average years of members' education	-0.186***	(0.054)	0.127	(0.412)	-0.188***	(0.059)	-0.034	(0.183)	-0.182**	(0.075)	-0.130	(0.153)
% of mb generat. income permanently	-0.621	(0.477)	-0.520	(1.092)	-0.775	(0.523)	-0.296	(0.920)	-0.492	(0.617)	-0.584	(0.630)
Gender decision in family												
Female involving in family decision	-0.830**	(0.321)	-0.974	(0.840)	-0.810**	(0.344)	-0.588	(0.631)	-0.694	(0.423)	-0.859*	(0.512)
AC membership												
Years as AC member	0.093*	(0.054)	0.471	(0.496)	0.076	(0.056)	0.261	(0.218)	0.049	(0.070)	0.063	(0.139)
Access to voc. and business training	-0.647	(0.429)	-1.424	(1.293)	-0.582	(0.472)	-1.073	(0.821)	-0.129	(0.536)	-0.142	(0.562)
Constant	1.899	(1.616)	36.74	(42.92)	3.134*	(1.716)	22.12	(19.52)	-0.115	(2.434)	1.373	(7.501)
Number of observation	328		328		288		288		194		180	
Wald chi2	50.53		10.04		42.30		17.85		27.06		20.42	
Prob > chi2	0.0000		0.6904		0.0001		0.1634		0.0122		0.0852	
Pseudo R2	0.1501				0.1525				0.1341			
Wald test of exogeneity												
<i>chi2</i> (1)			2.35				1.98				0.03	
<i>Prob > chi2</i>			0.1253				0.1595				0.8739	

SOURCE Author's own calculation

NOTE *** p<0.01, **p<0.05, and * p<0.1

IV – probit: Probit model with continuous endogenous regressors; Data in parentheses indicates standard errors

TABLE 6 Impact of microfinance amount on per capita Income

Explanatory variables	Microfinance amount		Formal loan amount		Productive loan amount							
	tobit		IV - tobit		tobit		IV - tobit					
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE				
Treatment variables												
Microfinance services amount	0.146***	(0.046)	0.185	(0.956)	0.132***	(0.048)	0.053	(0.666)	0.159***	(0.059)	-0.242	(0.531)
Household characteristics												
Age of household head	-0.044	(0.035)	-0.043	(0.046)	-0.042	(0.037)	-0.043	(0.044)	-0.003	(0.051)	-0.016	(0.069)
Age square of household head	0.001	(0.000)	0.001	(0.000)	0.001	(0.000)	0.001	(0.000)	0.000	(0.001)	0.000	(0.001)
Sex of household head	0.417**	(0.191)	0.396	(0.601)	0.436**	(0.192)	0.483	(0.467)	0.597**	(0.273)	0.688*	(0.390)
Marital status of household head	0.500**	(0.228)	0.454	(1.184)	0.475*	(0.243)	0.550	(0.694)	0.957***	(0.313)	1.281**	(0.588)
Education level of household head	0.030	(0.024)	0.032	(0.049)	0.041*	(0.023)	0.040	(0.026)	-0.002	(0.033)	-0.031	(0.053)
Household member details												
% of dependency ratio	-0.318	(0.450)	-0.319	(0.438)	-0.183	(0.504)	-0.163	(0.508)	0.602	(0.622)	0.809	(0.781)
% of migrant members	0.420	(0.344)	0.418	(0.377)	0.309	(0.371)	0.311	(0.436)	0.052	(0.466)	0.302	(0.680)
Average years of members' education	0.137***	(0.042)	0.133	(0.117)	0.143***	(0.046)	0.151*	(0.082)	0.190***	(0.064)	0.266**	(0.122)
% of mb generat. income permanently	0.578	(0.350)	0.579*	(0.349)	0.606	(0.388)	0.632	(0.436)	1.157**	(0.470)	1.246**	(0.564)
Gender decision in family												
Female involving in family decision	-0.139	(0.246)	-0.139	(0.262)	0.011	(0.264)	0.020	(0.292)	-0.129	(0.350)	-0.215	(0.424)
AC membership												
Years as AC member	0.156**	(0.051)	0.150	(0.149)	0.156***	(0.053)	0.166*	(0.100)	0.191***	(0.069)	0.269**	(0.124)
Access to voc. and business training	0.341	(0.226)	0.344	(0.300)	0.416*	(0.237)	0.392	(0.374)	0.559*	(0.286)	0.686	(0.477)
Constant	8.473***	(1.090)	7.952	(13.10)	8.460***	(1.135)	9.524	(9.009)	6.073***	(1.611)	11.55	(7.513)
/sigma	1.104	(0.059)			1.107	(0.065)			1.145	(0.079)		
Number of observation	316		316		278		278		186		186	
Wald chi2	6.89		90.69		5.72		78.29		4.59		51.53	
Prob > chi2	0.0000		0.000		0.0000		0.000		0.0000		0.000	
Pseudo R2	0.0835				0.0809				0.0942			
Wald test of exogeneity												
<i>chi2(1)</i>			0.000				0.010				0.72	
<i>Prob > chi2</i>			0.9683				0.9049				0.3973	

SOURCE Author's own calculation

NOTE *** p<0.01, **p<0.05, and * p<0.1

IV - tobit: Tobit model with continuous endogenous regressors; Data in parentheses indicates standard errors

TABLE 7 Impact of microfinance amount on per capita Economic Assets

Explanatory variables	Microfinance amount		Formal loan amount				Productive loan amount					
	tobit		IV - tobit		tobit		IV - tobit		tobit		IV - tobit	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Treatment variables												
Microfinance services amount	0.171***	(0.061)	-4.757	(5.267)	0.133*	(0.069)	-3.564	(2.681)	0.273***	(0.077)	4.445	(4.817)
Household characteristics												
Age of household head	-0.087*	(0.052)	-0.041	(0.272)	-0.051	(0.058)	-0.065	(0.211)	-0.053	(0.071)	0.016	(0.354)
Age square of household head	0.001*	(0.001)	0.0002	(0.003)	0.001	(0.001)	0.0003	(0.002)	0.001	(0.001)	0.001	(0.004)
Sex of household head	-0.358	(0.311)	1.450	(2.576)	-0.300	(0.315)	1.450	(1.788)	-0.348	(0.469)	-1.197	(2.200)
Marital status of household head	-0.111	(0.339)	5.200	(5.968)	-0.246	(0.353)	3.052	(2.757)	0.179	(0.507)	-3.324	(4.550)
Education level of household head	0.018	(0.031)	-0.209	(0.290)	0.027	(0.032)	-0.019	(0.127)	0.000	(0.044)	0.288	(0.384)
Household member details												
% of dependency ratio	-1.314**	(0.506)	-1.209	(2.856)	-1.160**	(0.567)	-1.067	(2.268)	-0.506	(0.775)	-2.848	(4.557)
% of migrant members	-0.496	(0.458)	-0.929	(2.461)	-0.347	(0.519)	-0.689	(2.017)	-0.762	(0.608)	-3.208	(4.009)
Average years of members' education	-0.028	(0.047)	0.582	(0.706)	-0.033	(0.050)	0.413	(0.385)	0.023	(0.067)	-0.847	(1.060)
% of mb generat. income permanently	0.440	(0.426)	0.081	(2.378)	0.554	(0.469)	1.223	(1.908)	0.562	(0.624)	-0.057	(2.869)
Gender decision in family												
Female involving in family decision	1.886	(0.417)	0.846	(2.104)	1.792***	(0.465)	1.357	(1.432)	1.222***	(0.502)	2.970	(2.927)
AC membership												
Years as AC member	0.085	(0.054)	0.732	(0.759)	0.105*	(0.055)	0.511	(0.375)	0.113*	(0.057)	-0.709	(1.009)
Access to voc. and business training	-0.615	(0.460)	-1.473	(2.165)	-0.867	(0.539)	-0.951	(1.585)	-0.958	(0.719)	-2.366	(2.883)
Constant	5.889	(1.619)	71.72	(70.77)	5.765***	(1.780)	56.50	(37.25)	3.435	(2.524)	-52.65	(65.52)
/sigma	1.390	(0.073)			1.416	(0.080)			1.397	(0.105)		
Number of observation	312		312		272		272		185		185	
Wald chi2	6.33		3.11		4.69		5.64		3.77		2.16	
Prob > chi2	0.0000		0.9975		0.0000		0.9584		0.0000		0.9997	
Pseudo R2	0.0575				0.0526				0.0572			
Wald test of exogeneity												
<i>chi2(1)</i>			26.88				30.12				18.22	
<i>Prob > chi2</i>			0.000				0.000				0.000	

SOURCE Author's own calculation

NOTE *** p<0.01, **p<0.05, and * p<0.1

IV - tobit: Tobit model with continuous endogenous regressors; Data in parentheses indicates standard errors

TABLE 8 Impact of microfinance amount on per capita Expenditure on Child Well-being

Explanatory variables	Microfinance amount		Formal loan amount				Productive loan amount					
	tobit		IV - tobit		tobit		IV - tobit		tobit		IV - tobit	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Treatment variables												
Microfinance services amount	0.060	(0.046)	0.249	(0.477)	0.052	(0.051)	0.149	(0.373)	0.077	(0.056)	0.121	(0.296)
Household characteristics												
Age of household head	0.080*	(0.042)	0.097*	(0.059)	0.075*	(0.044)	0.082*	(0.049)	0.155*	(0.059)	0.157***	(0.056)
Age square of household head	-0.001**	(0.000)	-0.001*	(0.001)	-0.001*	(0.000)	-0.001*	(0.001)	-0.002***	(0.001)	-0.002***	(0.001)
Sex of household head	-0.383	(0.258)	-0.577	(0.551)	-0.384	(0.262)	-0.487	(0.469)	-0.329	(0.365)	-0.380	(0.464)
Marital status of household head	-0.110	(0.282)	-0.439	(0.878)	-0.039	(0.281)	-0.167	(0.570)	0.227	(0.405)	0.143	(0.672)
Education level of household head	-0.045*	(0.023)	-0.042*	(0.025)	-0.048**	(0.024)	-0.050*	(0.026)	-0.027	(0.029)	-0.025	(0.030)
Household member details												
% of dependency ratio	1.482***	(0.422)	1.628***	(0.596)	1.525***	(0.459)	1.554***	(0.516)	1.325**	(0.526)	1.289*	(0.678)
% of migrant members	-0.777	(0.547)	-0.824**	(0.405)	-0.337	(0.394)	-0.405	(0.497)	-0.488	(0.438)	-0.533	(0.563)
Average years of members' education	0.238***	(0.042)	0.227***	(0.051)	0.222***	(0.043)	0.217***	(0.049)	0.189***	(0.050)	0.181**	(0.072)
% of mb generat. income permanently	-0.500	(0.410)	-0.555	(0.424)	-0.496	(0.442)	-0.529	(0.439)	0.120	(0.458)	0.079	(0.586)
Gender decision in family												
Female involving in family decision	-0.144	(0.252)	-0.195	(0.290)	-0.174	(0.272)	-0.214	(0.311)	-0.047	(0.320)	-0.055	(0.342)
AC membership												
Years as AC member	0.102***	(0.038)	0.075	(0.082)	0.107***	(0.039)	0.094	(0.066)	0.115**	(0.045)	0.105	(0.084)
Access to voc. and business training	0.367	(0.295)	0.365	(0.290)	0.369	(0.316)	0.397	(0.317)	0.043	(0.448)	0.020	(0.399)
Constant	8.222***	(1.252)	5.459	(7.070)	8.505***	(1.318)	7.116	(5.468)	5.770***	(1.565)	5.259	(3.831)
/sigma	0.930	(0.052)			0.941	(0.055)			0.906	(0.061)		
Number of observation	256		256		229		229		152		152	
Wald chi2	4.83		64.27		3.95		51.44		4.30		43.74	
Prob > chi2	0.0000		0.000		0.0000		0.000		0.0000		0.000	
Pseudo R2	0.0838				0.0719				0.0898			
Wald test of exogeneity												
<i>chi2(1)</i>			0.17				0.07				0.02	
<i>Prob > chi2</i>			0.6789				0.7913				0.8827	

SOURCE Author's own calculation

NOTE *** p<0.01, **p<0.05, and * p<0.1

IV - tobit: Tobit model with continuous endogenous regressors; Data in parentheses indicates standard errors

First, on the question of a household's per capita monthly income as shown in Table 6, the positive effects are driven by the households having female and married head as well as having higher educated members and higher percentage of members, who could generate income permanently. The finding also shows that longer membership in AC group and joining more vocational skills and business training programmes allow households to promote significantly their higher monthly income. The rest of the controlled variables reveal the insignificant statistical relationship.

Second, on the question of a household's per capita economic assets as shown in Table 7, measured by the average size of household's land, the positive effects in promoting the assets are statistically due to the fact that households have a higher female role in decision of family affairs. The households, who have a stronger role of women in family, seem to have higher economic assets. The negative effect is caused by having higher number of dependency members. However, there is an insignificant effect of all explanatory variables as long as the results were estimated with instrumental variable approach.

Finally, on the question of per capita expenditure on child well-being as shown in Table 8, households with higher age tend to spend significantly more on child well-being; yet, the coefficient of age square is positive, which explains the non-linear negative effect. The lower expenditures are statistically due to the fact that household head has lower years in school. Moreover, the expenditures are seemed to increase highly by households with longer membership in AC group and households whose percentage of the dependency ratios and migrant members are higher.

To summarize the key findings, although there is statistically insignificant impact of microfinance services on per capita economic assets and expenditure on child well-being, we find that access to microfinance services reduces poverty and promotes per capita income of Cambodian households, who have involved in the

international development project under the Australian Government Aid and the World Vision. In this development community, the households could participate in many practical vocational skills and business training programmes as well as access to financial supports to improve their livelihoods and living standards such as management of the cooperatives, farm business practices and their access to markets.

According to World Vision report (2016), the AC cooperatives have supported to enhance their business skills, farming knowledge and negotiating power. The project aims to help farmers to increase their productivity, diversify their agribusinesses, thus increasing income to give their families, especially their children, a better quality of life. Furthermore, each cooperative establishes a social welfare fund to support the most vulnerable members of the community, and all community members can seek small low-interest loans from the cooperatives.

Lastly, it is also found that all attending primary school, secondary school, high school and higher education are associated with better welfare index of all dimensions (income, assets, and expenditures). This reflects clearly that higher rate of literacy generates upper household's living standard. The role of women in involving in any decisions of the family affairs plays positively significant role in promoting household's welfare. This is revealed traditionally in Cambodian society that women has been seen as a major person to manage family finances. It is because they could manage more effectively comparing to men, who normally focus only on working and earning income.

6 Conclusion

This chapter investigates the effect of microfinance services in three dimensions (access to microfinance, access to formal loans as well as access to productive loans) on poverty and welfare. The welfare indicators are proxied by per capita income,

economic assets and expenditures on child well-being. For empirical investigation, this chapter applies two major econometric specifications, both binary choice model as well as bivariate and censoring model, along with addressing the endogenous treatment effects. This chapter uses the cross-sectional data from the Cambodian household survey in 2015. The survey is carried out by the World Vision under CBSD programs in 48 districts of nine provinces in Cambodia: Battambang, Kampong Chhnang, Kampong Speu, Kampong Thom, Kandal, Phnom Penh, Preah Vihear, Siem Reap and Takeo.

The findings show that, at sub-national level of the surveyed households, receiving access to microfinance services, including both formal and productive loans, reduces poverty and promotes the household's welfare, proxied by per capita monthly income, but there is no significant effect on per capita economic assets and expenditure on child well-being. However, at national level, it reveals that there are more relevant studies, in regard to the existing literature, emphasizing the failure of microfinance, which is subject to the high interest rate, non-productive loan, over-indebtedness, landless and intergenerational migrations. Based on the empirical findings and the survey of existing literature, several policy implications are suggested as follows:

First, receiving microfinance by Cambodian households, who are beneficiaries of any international development programs, has been often seen to promote household's welfare and reduce poverty. Practically, the households generally have opportunities to involve in many useful vocational skills and business training series, consulting services and access to financial services such as saving, basic insurance, as well as borrowing with a lower interest rate. In Cambodian society, there is one traditional proverb, *"Give them fish, you feed them a day; teach them to fish, and you feed them for a whole life."* It is suggested, therefore, to (1) spread these good practices to nationwide so that many more Cambodian people in other provinces could benefit

from it, (2) increase the longer period of implementation, and (3) train key people such as head or management team of villages, communes or communities so that those positive viruses could lead effectively their villages, communes and communities even after the end of the project implementation.

Second, despite receiving financial access and other consulting services from the World Vision, the results also show that the households have access to microfinance services at high percentage for non-productive purposes. The non-productive loan on average is higher than 50% for all households and reaches nearly 60% for the poor households. At the national level, this non-productive practice has also drawn high attention from the World Bank (World Bank 2013) and the ADB (2014) that households could potentially use financial services in ineffective ways, especially if we consider for long-term perspective. Therefore, it is required to have better regulation and financial assessment on the good practices of the productive loans from both public authorities and private MFIs respectively.

Third, based on the most recent observation, there is high distress over the bad practices or the failure of the microfinance sector in the Kingdom. The introduction of interest gaps 18% to the MFIs by Cambodian authorities, regulated by the NBC in 2017, has been widely discussed; then, alternative solutions could be also considered. Actually, the idea of interest gap 18% per year was introduced with the major objective to limit too much profit, generating by the MFIs, which was seen to give huge benefits to only top CEOs, and foreign investors with the expense of Cambodian households' welfare, who had to bear with high interest rate. This tool is also expected to reduce the number of easy loans to the households. According to the results in this paper, the average households have to pay the yearly interest rate of 30.44% for the formal loans and 31.84% for the informal loans. The average poor households will have to pay the higher rate, 32.02% for the formal loans, and 39.73% for the informal loans. Therefore, this regulation would mean a lot to reduce interest payment for the households.

However, it has been extensively debated as it is not the right treatment for the heart of disease and it can potentially provide negative effects. So, what is the heart of disease? And, what can be the alternative solutions? According to many leading experts, the over-indebtedness, irresponsible borrowing or lending, multi-borrowing, overstretched MFIs capacity, and a loss of lending discipline are the heart of the problems. Yet, the regulation had made the loan cheaper and irresponsible borrowers would want to borrow more. In addition, for short term, this regulation will also lead the new MFIs to die because they can generate lower profit or losses if their operating cost is too high. Therefore, the alternative solutions to deal with the over-indebtedness and irresponsible borrowing/lending should be related to (1) limit to debt/income ratio, for instance, borrower cannot borrow more than one-third of their income for consumer loans, and (2) increase the MFIs's capital requirement so that small MFIs can consolidate and improve their efficiency, which can help to reduce irresponsible lending since too much competition when there are too many MFIs often leads to irresponsible lending.

Fourth, the informal money lenders or private loan providers, which are out of the system and charge very high interest rate, seem to be so active in Cambodia. In this survey, the average informal loan was charged by over 5% per month, and it reached sometimes over 10% per month. This leads households to easily multiply their loans and trap in over-indebtedness. Although this informal credit is estimated to represent only 5% to 10%, comparing to formal ones, making 60% to 70% in Cambodia's microfinance sector, it is required to highly regulate from the public authorities. For instance, the government might announce not to be responsible for any failed loans if lenders decide to provide this kind of loans to the poor households.

Fifth, the disagreement on the key problematic on how microfinance sectors should be regulated in Cambodia is perhaps due to the fact that it is lacking of the complete statistical database. This leads easily to the misunderstanding of the real

issues. Unlike the CSES, which has been conducted annually since 2007 in order to collect data from the households and individuals in Cambodia on different areas relating to poverty, there are no this type of survey for the microfinance sector although Cambodia's banking and financial sector is equal to 150% of Cambodia's annual GDP in 2017. For the medium and long term perspective, we should consider conducting the Cambodia Microfinance and Households Survey (CMHS) at national level to observe the dynamism of the microfinance sector in Cambodia. According to many leading experts, the core idea can be focused on the following perspectives: trend of number of borrowers, especially the small borrowers, trend of average loan size, big loan, and small loan, dynamics of commissions and additional fees charged by the MFIs, consolidation and exits of the MFIs, trend of non-performance loan, trend of repayment and sources of payment, growth of pawnshops and other informal lenders, trend of land ownership, trend of migrant members, etc. This survey should be done by independent researchers to obtain the reliable results.

Sixth, promoting household's financial literacy is a key challenging policy for long-term perspective. According to the Global Financial Literacy Survey of the Standard and Poor's (2013), only 18% of Cambodian households have financial knowledge in managing their income effectively. Currently, in Cambodia, financial education is done by the MFIs themselves to the households because they are the only institutions, which have both human and financial resources. Even though we don't have any monitoring and evaluation system to evaluate the effectiveness of this policy, it is believed that it is not an effective mechanism because the MFIs might not want to increase household's financial literacy if it converts to lower number of loan access. For that reason, the other relevant stakeholders, primarily the public authorities like the NBC, must be the one who is responsible for this. Since 2016, the NBC has initiated one educational campaign, called "*Let's Talk Money.*" Yet, there is concern over the limit number of the public who can access to. The other idea that maybe strange but it

can be applicable in Cambodia is to cooperate with the Ministry of Education, Youth and Sport. Every year, there are over 100,000 high school students who have to take a national examination of the baccalaureate. If this financial education series are included in standard school curriculums at every level of Cambodian education system, they would spread the positive viruses to their family. It is like we educate the people in understanding "*HIV and AIDS.*" The higher financial literacy it is, the higher the chance the household can use the microfinance services effectively; therefore, and irresponsible borrowing would be reduced.

Finally, in order to fund the financial budget for the projects of the CMHS and financial education campaigns, it is suggested to use, for example, 0.1% of tax on profit from MFIs. To do that, we will have the financial sustainability because it will be ended only if there is no more profit for the MFIs or the end of this sector.

Despite many significant results provided in this chapter, there is abundant room for further progress. First, it is related to our sample selection. Taking into account the limited timeframe and resources, the researchers applied the clustered random samples rather the simple randomly selection. In this survey, there is consequently only 29% of the poor households against 71% of non-poor households. As explained in the empirical methodology session, there is a high concern over the statistical problems of sample selection bias and endogenous treatment effects. Second, to estimate the effect of microfinance services on poverty and welfare, this paper uses only access to credit as the determinant variable, by neglecting other indicators such as payments, money transfers, saving, and insurance. The introduction of those variables would provide further insight. Third, the analysis is drawn from one time period in 2015, which cannot capture the dynamics of the effect. Therefore, to develop a full picture of the problematic, additional studies will be needed.

Appendix Chapter 2

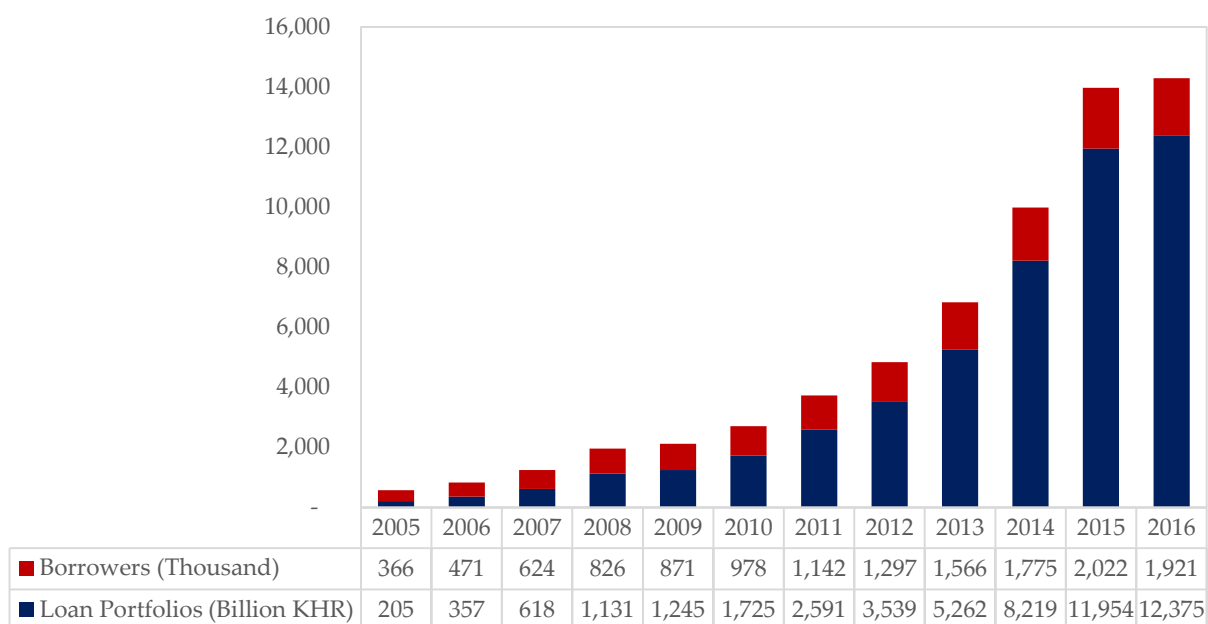
APPENDIX 1 Definition of variables

Variable	Definition
Dependent	
<i>poor status</i>	1 poor and 0 otherwise. The poor status is identified by the RGC.
<i>per capita welfare</i>	<p>Per capita welfare is a matrix of household's per capita income, economic assets, and expenditure on child's well-being. First, per capita income (in Cambodian riels) is measured by average net income per month of household by livelihood activities. The households generate income from three livelihood activities: (1) income from on-farm including rice crop, upland crop, vegetable, poultry raising and pig raising, (2) income from off-farm including fishing selling, daily or occasional wage, monthly wage/salary work, self-employment, sale of land/other assets, remittances, or pension, and (3) income from other sources including dividend in AC, interest from saving in AC or interest from saving outside of AC saving group.</p> <p>Second, per capita economic asset (in hectare) is measured by all types of assets, owned by household, including total production land, non-production land, housing land and other land.</p> <p>Third, per capita expenditure on child's well-being (in Cambodian riels during the last 12 months) is measured by expenses on child's education (including materials, school fee, extra class, etc) and child's health (including cost of treatment, medical check, medicine, treatment services at private clinic, treatment services at HC/public, health care facilities).</p>
Treatment	
<i>loan access</i>	1 if the households have outstanding loans for the last 3 years and 0 otherwise.
<i>bank account</i>	1 if the households have account in bank and 0 otherwise
<i>loan number</i>	Number of loans taken by the households for the last 3 years
<i>loan amount</i>	Total amount of outstanding loans for the last 3 years.
<i>official loan access</i>	1 if the households access to formal outstanding loans providing from saving group in AC, MFIs and banks for the last 3 years and 0 otherwise.
<i>official loan amount</i>	Total amount of formal outstanding loans for the last 3 years. The informal loans include loans from private loan provider, relatives and saving group outside AC.
<i>productive loan access</i>	1 if the households access to productive outstanding loans for the following purposes (agriculture inputs and small scale business) for the last 3 years and 0 otherwise. The non-productive loans include loans for daily food, child health, child education, household materials, social event, health for adult, purchase land, charge for migration, repay the loan, construct dwelling, marry children, give to relatives, etc.
<i>productive loan amount</i>	Total amount of productive outstanding loans for the last 3 years.

Controls

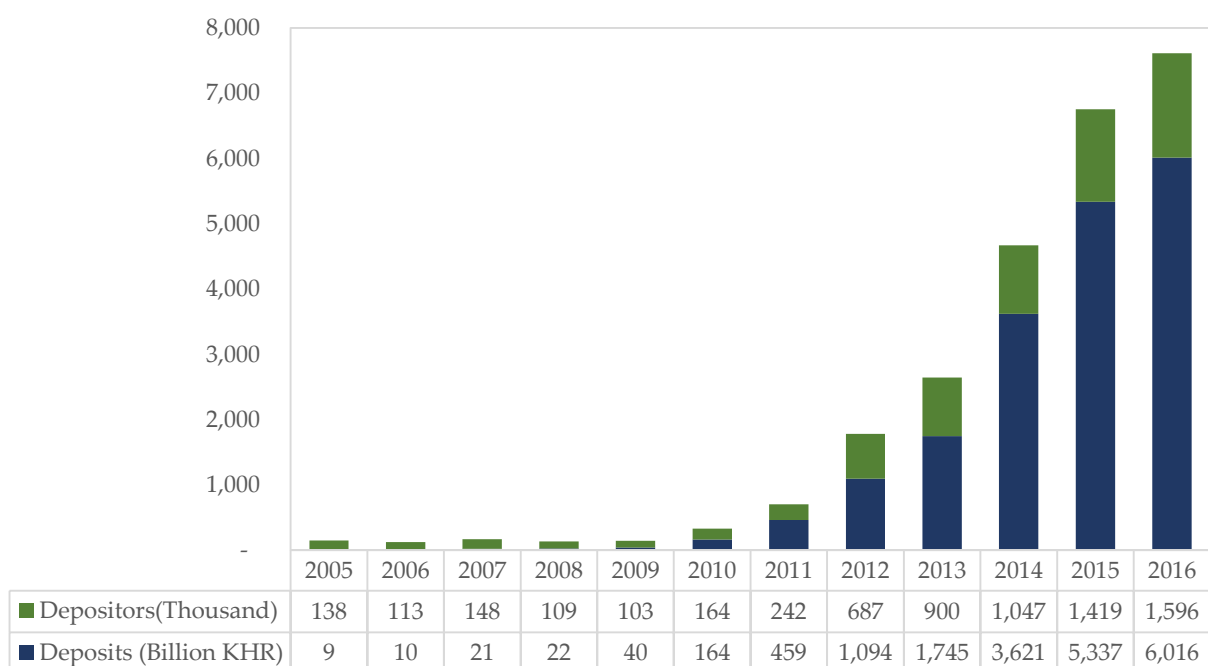
Household characteristics	
<i>age</i>	Age of household head
<i>age square</i>	Age square of household head in years
<i>sex of household head</i>	Female = 1 and otherwise = 0
<i>marital status of household head</i>	Married = 1 and otherwise = 0
<i>education level of household head</i>	Highest level of education that household head has completed (in years of schooling)
<i>address of household head</i>	Reported data of household residence is divided into nine groups of provinces (dummy variable): Battambang, Kampong Chhnang, Kampong Speu, Kampong Thom, Kandal, Phnom Penh, Preah Vihear, Siem Reap and Takeo
Household member details	
<i>household size</i>	Number of household's members
<i>dependency ratio</i>	Dependency ratio (ratio of household members under ages of 15 years or over 60 years to total members)
<i>% of migrant members</i>	Percentage of migrant members (both internal and international)
<i>% of permanently income</i>	Percentage of members who generate income permanently
Gender decision in family	
<i>female role in decision of family affairs</i>	Percentage of female role in decision of family affairs such as income spending, purchasing agricultural input, selling agricultural input and speaking in public.
AC membership	
<i>duration of member</i>	Duration of AC group membership (in year)
<i>access to vocational and business training</i>	Percentage of households in access to vocational skills and business trainings. The vocational skill and practices training include weaving, handmade craft, food processing, grow mushroom, and others. The business training include entrepreneur / business concept, market assessment, customer relation and others. The programs were trained by the World Vision, Cooperative Agriculture, government agencies or relevant governmental department, institution or school, neighbour or relative and others.
Province characteristics	
<i>provincial total population</i>	Number of population in the province as of survey date. The database is taken from the report of the National Institute of Statistics and the Ministry of Planning of Cambodia (2013, page 17)
<i>provincial poverty rate</i>	Percentage of poor people in the province. The database is taken from ADB (2014, page 32)

SOURCE Author's own elaboration

APPENDIX 2 Borrowers (thousand) and loan portfolio (billion KHR) 2005-2016

SOURCE Cambodia Microfinance Association

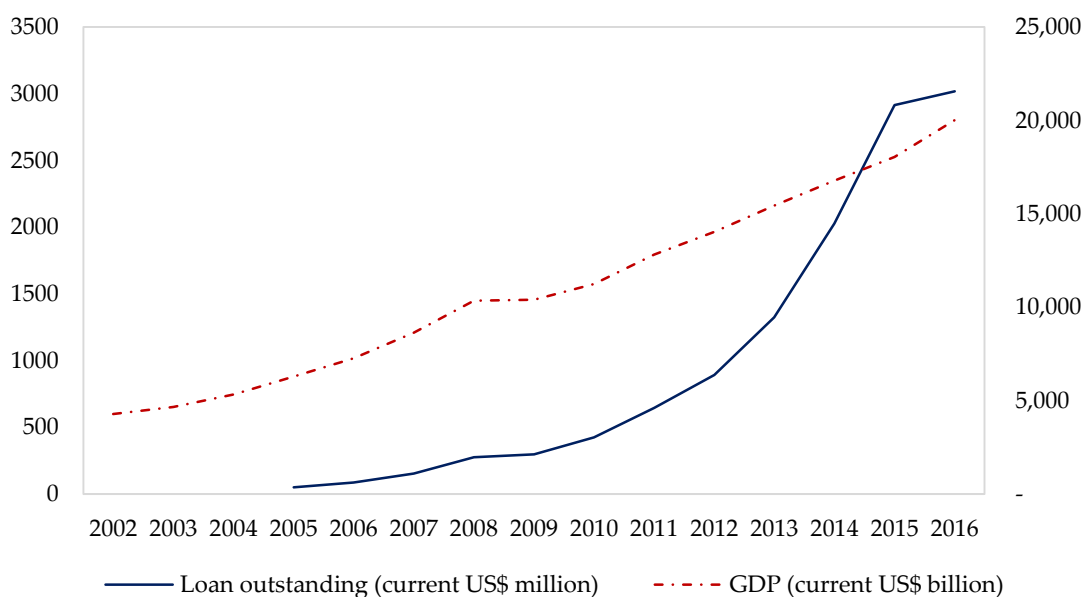
NOTES \$US 1 = KHR 4,077.30 (US Dollars (USD) to Cambodian Riels (KHR) exchange rate for December 31, 2015)

APPENDIX 3 Depositors (thousand) and deposits (billion KHR) 2005-2016

SOURCE Cambodia Microfinance Association

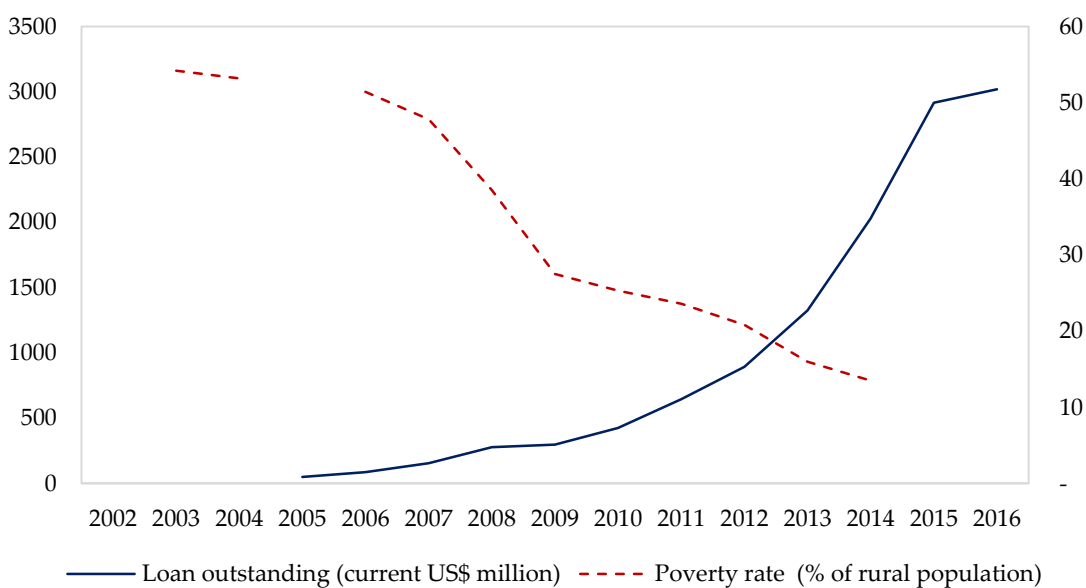
NOTES \$US 1 = KHR 4,077.30 (US Dollars (USD) to Cambodian Riels (KHR) exchange rate for December 31, 2015)

APPENDIX 4 Microcredit growth and GDP in Cambodia 2002-2016



SOURCE Author's computation from CMA (2017) and the World Bank (2017)

APPENDIX 5 Microcredit growth and poverty in Cambodia 2002-2016



SOURCE Author's computation from CMA (2017) and the World Bank (2017)

APPENDIX 6 Household's characteristics in percentage by poor status (N = 411)

Variables	Total	Non-Poor	Poor
Dependent			
Per capita net income (monthly in riels)	210,080.6	235,983.4	146,520.7
<i>On-farm income</i>	34.33%	39.44%	14.13%
<i>Off-farm income</i>	65.06%	60.00%	85.07%
<i>Income from other sources</i>	0.61%	0.56%	0.81%
Per capita economic assets (in hectare)	0.474	0.579	0.216
<i>Total production land</i>	77.65%	79.81%	63.40%
<i>Non-production land</i>	13.64%	12.09%	23.91%
<i>Housing land and other land</i>	8.71%	8.10%	12.69%
Per capita expenditure on child's well-being (yearly in riels)	174,110.1	192,542.4	128,881.3
<i>Expenditure on child education</i>	68.02%	68.76%	65.32%
<i>Expenditure on child healthcare</i>	31.98%	31.24%	34.68%
Treatment			
Loan Amount (last 3 years in riels)	5,307,865.0	6,300,075.0	2,873,197.0
Loan sources			
<i>Formal loan</i>	89.14%	88.83%	90.81%
<i>Informal loan</i>	10.86%	11.17%	9.19%
Purposes of loans			
<i>Productive loan</i>	48.15%	49.53%	40.67%
<i>Non-productive loan</i>	51.85%	50.47%	59.33%

SOURCE Author's own calculation

NOTES \$US 1 = KHR 4,077.30 (US Dollars (USD) to Cambodian Riels (KHR) exchange rate for December 31, 2015)

APPENDIX 7 Household's characteristics by access to formal loan (N = 411)

Variables	Without access to formal loan		With access to formal loan		Difference
	Mean	SE	Mean	SE	In Mean
Dependent variable					
<i>Poor status</i>	0.274	(0.041)	0.296	(0.027)	-0.022
<i>Per capita net income</i>	175,129.1	(20,315.6)	223,989.9	(19,899.9)	-48,860.8
<i>Per capita economic assets</i>	0.322	(0.033)	0.534	(0.043)	-0.212
<i>Per capita expenditure on child's well-being</i>	136,124.1	(15,334.5)	189,227.0	(15,058.5)	-53,103.0
Household characteristics					
<i>Age of household head</i>	49.803	(1.310)	46.500	(0.726)	3.303**
<i>Sext of household head</i>	0.274	(0.041)	0.235	(0.025)	0.039
<i>Marital status of household head</i>	0.718	(0.042)	0.810	(0.023)	-0.092
<i>Education level of household head</i>	5.393	(0.328)	4.782	(0.194)	0.611
<i>Battambang</i>	0.077	(0.025)	0.173	(0.022)	-0.097**
<i>Kampong Chhnang</i>	0.214	(0.038)	0.088	(0.017)	0.125***
<i>Kampong Speu</i>	0.034	(0.017)	0.054	(0.013)	-0.020
<i>Kampong Thom</i>	0.145	(0.327)	0.112	(0.018)	0.033
<i>Kandal</i>	0.145	(0.033)	0.078	(0.016)	0.067**
<i>Phnom Penh</i>	0.025	(0.014)	0.058	(0.014)	-0.032
<i>Preah Vihear</i>	0.077	(0.025)	0.173	(0.022)	-0.097**
<i>Siem Reap</i>	-	-	0.034	(0.011)	-0.034**
<i>Takeo</i>	0.282	(0.042)	0.228	(0.025)	0.054
Household member details					
<i>Household size</i>	4.573	(0.149)	5.150	(0.109)	-0.577***
<i>% of dependency ratio</i>	0.404	(0.023)	0.337	(0.013)	0.067***
<i>% of migrant members</i>	0.113	(0.019)	0.098	(0.010)	0.015
<i>Average years of members' education</i>	5.283	(0.212)	4.873	(0.127)	0.410*
<i>% of mb generat. income permanently</i>	0.551	(0.023)	0.535	(0.013)	0.018
Gender decision in Family					
<i>Female involving in decision of family affairs</i>	0.844	(0.021)	0.836	(0.014)	0.008
AC membership					
<i>Years of AC group membership</i>	1.927	(0.102)	2.114	(0.081)	-0.187
<i>Access to business & vocational skill trainings</i>	0.088	(0.022)	0.090	(0.013)	-0.003

SOURCE Author's own calculation**NOTES** Data in parentheses indicates standard errors

*** significant at 1% level, ** significant at 5% level, * significant at 10% level

\$US 1 = KHR 4,077.30 (US Dollars (USD) to Cambodian Riels (KHR) exchange rate for December 31, 2015)

APPENDIX 8 Household's characteristics by access to productive loan (N=411)

Variables	Without access to productive loan		With access to productive loan		Difference
	Mean	SE	Mean	SE	In Mean
Dependent variable					
<i>Poor status</i>	0.315	(0.032)	0.263	(0.031)	0.052
<i>Per capita net income</i>	193,846.0	(15,528.7)	227,545.1	(27,223.6)	-33,699.1
<i>Per capita economic assets</i>	0.356	(0.027)	0.600	(0.059)	-0.244***
<i>Per capita expenditure on child's well-being</i>	165,255.5	(16,057.2)	183,635.6	(17,008.1)	-18,380.14
Household characteristics					
<i>Age of household head</i>	48.371	(0.964)	46.439	(0.836)	1.931
<i>Sext of household head</i>	0.244	(0.030)	0.247	(0.031)	-0.003
<i>Marital status of household head</i>	0.765	(0.029)	0.803	(0.028)	-0.038
<i>Education level of household head</i>	5.136	(0.244)	4.763	(0.229)	0.374
<i>Battambang</i>	0.103	(0.021)	0.192	(0.028)	-0.089**
<i>Kampong Chhnang</i>	0.127	(0.023)	0.121	(0.023)	0.006
<i>Kampong Speu</i>	0.047	(0.015)	0.051	(0.016)	-0.004
<i>Kampong Thom</i>	0.113	(0.022)	0.131	(0.024)	-0.019
<i>Kandal</i>	0.127	(0.023)	0.066	(0.018)	0.061**
<i>Phnom Penh</i>	0.051	(0.015)	0.045	(0.015)	0.006
<i>Preah Vihear</i>	0.169	(0.026)	0.121	(0.023)	0.048
<i>Siem Reap</i>	0.028	(0.011)	0.020	(0.010)	0.008
<i>Takeo</i>	0.235	(0.029)	0.253	(0.031)	-0.018
Household member details					
<i>Household size</i>	4.887	(0.118)	5.091	(0.135)	-0.204
<i>% of dependency ratio</i>	0.380	(0.016)	0.331	(0.015)	0.049**
<i>% of migrant members</i>	0.094	(0.013)	0.112	(0.013)	-0.017
<i>Average years of members' education</i>	5.146	(0.159)	4.821	(0.149)	0.325
<i>% of mb generat. income permanently</i>	0.541	(0.016)	0.538	(0.016)	0.004
Gender decision in Family					
<i>Female involving in decision of family affairs</i>	0.845	(0.016)	0.831	(0.017)	0.014
AC membership					
<i>Years of AC group membership</i>	2.010	(0.083)	2.116	(0.100)	-0.106
<i>Access to business & vocational skill trainings</i>	0.094	(0.016)	0.085	(0.016)	0.007

SOURCE Author's own calculation

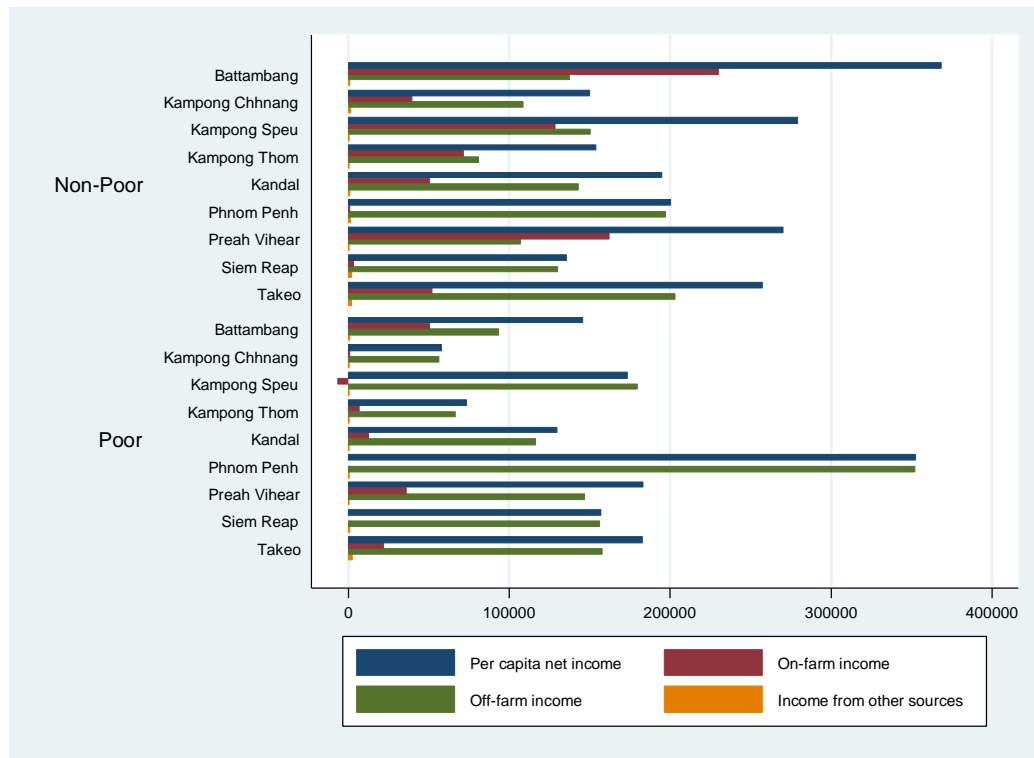
NOTES Data in parentheses indicates standard errors

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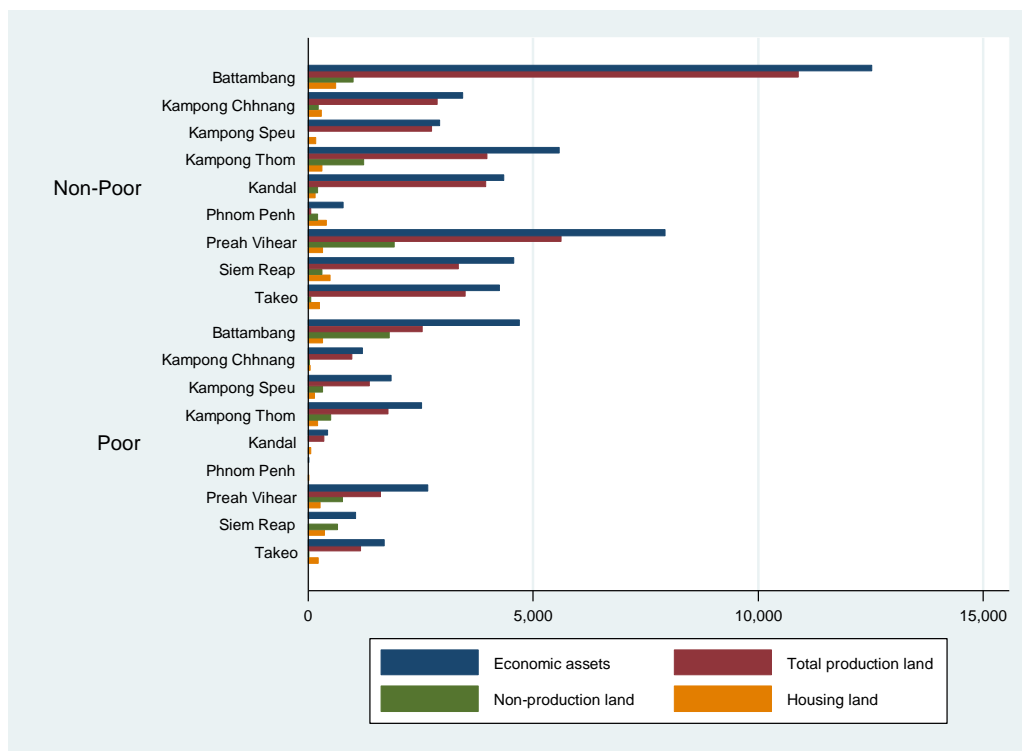
APPENDIX 9 Household's characteristics by province (in riels) (N=411)

1) Per capita monthly income by province (in riels) (N=411)



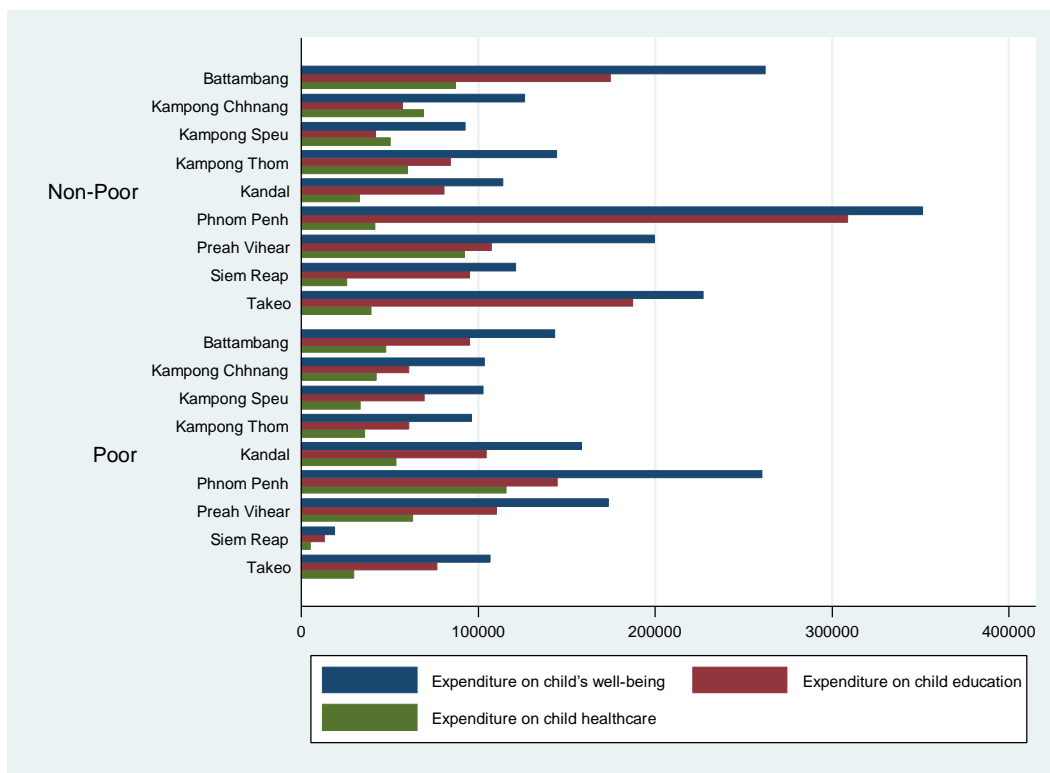
SOURCE Author's own calculation

2) Per capita economic assets by province (in m2) (N=411)



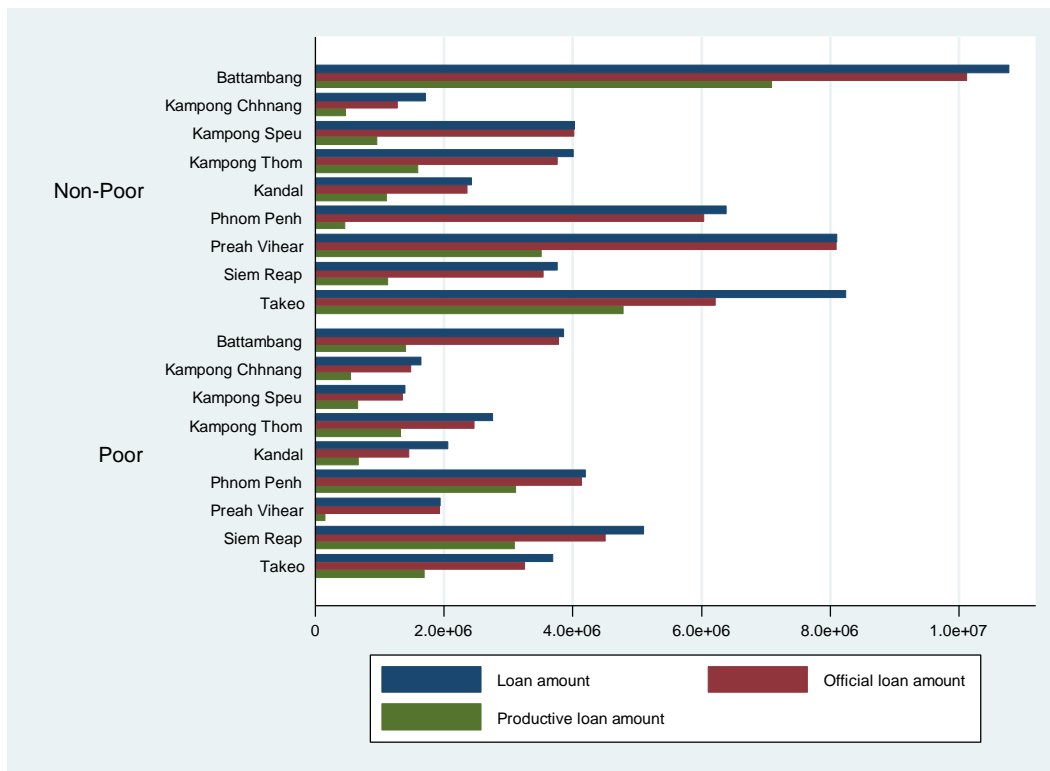
SOURCE Author's own calculation

3) Per capita expenditure on child's wellbeing by province (N=411)



SOURCE Author's own calculation

4) Household's access to microfinance services by province (N=411)



SOURCE Author's own calculation

CHAPTER 3**Export Diversification, Specialization and Inequality:
Evidence from Asian and Western Countries**

ABSTRACT This chapter examines the dynamic effect of globalisation at the disaggregated level of sectoral export diversification and manufacturing specialization on income inequality using a panel data set of 52 Asian and Western countries from 1988 to 2014. The chapter uses dynamic panel data models applying the System Generalized Method of Moments (GMM) estimations that provide more accurate and better results than those obtained with static panel data models. The results suggest that there is no statistically significant relationship between manufacturing specialization and inequality while sectoral export diversification has been the driving force of inequality. For sub-groups of countries, higher sectoral export diversification increases inequality and higher manufacturing specialization decreases inequality in high-income Asian countries and European Union (EU) member states. Moreover, the study finds insignificant effects in low-income Asian countries and Anglo-Saxon countries.

KEYWORDS Export diversification; specialization; income inequality; dynamic panel data model

JEL CLASSIFICATIONS C23, D30, D63, F02, F10, F15

1 Introduction

The effect of globalisation on income inequality is one of today's most crucial issues (Stiglitz 2012, Deaton 2013, Krugman 2013, Piketty 2016, Blancheton 2017, Blancheton 2018) and therefore the legitimacy of globalisation is in question. Based on the existing literature, the study focuses principally on traditional macro-economic variables of globalisation at the very first level of aggregation, including trade openness, financial openness, international migration, technological globalisation, etc. (Lall, et al. 2007, Ezcurra and Rodríguez-Pose 2013, Asteriou, Dimelis and Moudatsou 2014). The distributional effect of globalisation at a more disaggregated level has been less thoroughly explored. Recent empirical papers establish the impact of different dimensions of trade on poverty and inequality (Mahadevan, Nugroho and Amir 2017, Pavcnik 2017, Santos-Paulino 2017). For instance, Nguyen Viet (2015) shows that trade facilitation (number of documents, time for exports and imports) is strongly correlated with poverty and inequality. Countries with more improvement in trade facilitation are more likely to have lower poverty and inequality. According to Franco and Gerussi (2013) on a sample of 17 Transition Countries over the period 1990–2006, trade may affect income distribution and when trade occurs with developed countries, it seems to influence inequality by the channel of educational system.

In the modern era of globalisation, besides a variety of factors, from an economy's factor endowments, geography, institutions, and social capital, to its historical trajectories, changes in technology, and returns to capital in explaining inequality (Hartmann, et al. 2017), sectoral level export diversification becomes an interest of investigation because the impact of trade openness as a whole cannot be verified empirically in many aspects. The standard trade theory suggested as an economy concentrated in low- skilled labour (high-skilled labour and capital) intensive products, the countries would experience lower (higher) income inequality. However, the post-colonial economies specializing in agricultural products and the

advanced European economies specializing in sophisticated products have experienced higher inequality and more equal society respectively (Innis 1970, Haber 1997, Acemoglu and Robinson 2012, Hidalgo 2015, Hartmann, et al. 2017). Interestingly, in the economy advancing in high innovative and technological products and services like that of the United States of America, the high level of inequality has become serious matter of discussion (Stiglitz 2012, Deaton 2013, Yew 2013, Piketty 2013, Krugman 2014).

Considering Asian countries have been playing a greater role in world production in the manufactured goods, technology and service sectors (Krugman, Obstfeld and Melitz 2012) and high potential effects of international trade, the aim of the paper is to analyse the impact of exports diversification and national specialization on income inequality in a large sample of Asian and Western countries. It uses a panel data set of 52 Asian and Western countries from 1988 to 2014 and applies the Arellano and Bond (1991) and Arellano and Bover (1995) / Blundell and Bond (1998) System Generalized Method of Moments (GMM) estimators.

This study distinguishes itself from the existing literature from several points of view. First, it focuses on the effect of sectoral export diversification and manufacturing specialization on income inequality and not only on traditional macro-economic variables of globalisation, which have been extensively covered in the literature as indicated above. Secondly, it concentrates both on Asian countries – the world's greatest emerging economies –, and Western countries – the world's greatest economies (Mahbubani 2014, 123–126)⁵⁴, on which the empirical evidence in this context have been less explored. It is important to focus on this matter because these two giant regions are of course the most powerful global centres of population,

⁵⁴ The expression “Asian countries, namely the world's greatest emerging economies and Western countries, namely the world's greatest economies” can be found in the Financial Times's book of the year 2014: “*The Great Convergence: Asia, the west, and the Logic of One World*” by Kishore Mahbubani. The author is listed as one of the top 100 global thinkers in 2005, 2010 and 2011 in Foreign Policy and one of Prospect Magazine's top 50 world thinkers in 2014.

economics, politics and international affairs. In terms of size, there are only 52 Asian and Western countries in the sample, but they represent 64.56% of the global population, 77.32% of global GDP, 71.32% of global exports and 74.74% of global imports. Estimating an overall average, these countries represent 72.15% of global share (please see more detail in [Appendix 4](#) and [5](#)). The other interesting fact is that, in the 21st century, the centre of gravity of the world economy has shifted decisively from the Atlantic to the Pacific Ocean, which is today the arena of the greatest trade network in the world (Quah 2011, Yew 2013, Mahbubani 2014). Therefore, everything that happens in these two regions will attract very strong public attention. Thirdly, this study tries to identify separate effects to account for heterogeneity between countries and, lastly, to measure the influence of each factor on variations in income inequality among countries and over time. To be more precise, we estimated the effects on four groups of countries, including high-income Asian countries, low-income Asian countries, EU member states and Anglo-Saxon countries. In overall terms, the last two groups show less heterogeneity than their Asian counterparts.

The empirical findings emphasize the fact that trade openness, foreign direct investment (FDI), manufacturing specialization, and high-technology exports have no statistically significant impact on income inequality. Moreover, sectoral export diversification has been the driving force behind inequality. At the level of sub-groups of countries, trade openness decreases inequality in EU member states but increases it in low-income Asian countries. Higher sectoral export diversification increases inequality while higher manufacturing specialization decreases inequality in high-income Asian countries and EU member states. Moreover, the study finds that the impact of high-technology exports on inequality is insignificant for all sub-groups of countries. In this perspective, policy implications concern the implementation of industrial policy in order to develop basic manufactured specializations (unskilled labour).

The chapter is structured as follows. After the introduction, Section 2 presents a brief survey of the theoretical and empirical literature on the link between globalisation and income inequality. Section 3 explains data sources and preliminary evidence from descriptive and inferential statistics. Section 4 introduces the econometric methodology and discusses the limits of empirical analysis. Section 5 gives details of empirical results and discussions. The final section provides the main conclusion as well as discussing policy implications and suggesting some new lines for further research.

2 Review of Related Literature

The fundamental economic theory, explaining the effect of globalisation on income inequality through trade openness, can be found in the neoclassical trade theory proposed by Eli Filip Heckscher, Bertil Ohlin, and Paul A. Samuelson, known as North-South HOS theory with the hypothesis of two countries, two goods and two factors of production. The theory argues that trade openness would result in an increase in the wages of low-skilled workers in developing countries, where low-skilled jobs are abundant, and a decrease in the wages of high-skilled workers in advanced countries, where high-skilled jobs are abundant (Heckscher 1919, Ohlin 1933, Samuelson 1953). According to Stolper and Samuelson (1941), in developing countries, in which low-skill factors are relatively abundant, this would cause a reduction in income inequality and whereas in advanced countries, characterized by high-skill factors, it would lead to rising income inequality.

From a survey of theoretical literature related to the effect of globalisation at the highest level of aggregation on inequality, there is still an unresolved debate among three schools of thought, which is informative but inconclusive. Moreover, the empirical results change, depending on the period studied and the context of each country's economic development.

The first school of thought suggests a positive distributional effect of globalisation, which generates higher incomes in both advanced and developing countries, at least in absolute terms. This promising view is in accord with Kuznets' hypothesis (Kuznets 1955), which explains that inequality might increase in initial phases of industrial development, but will decline in the long term, once the process of industrialization is advanced. Therefore, in modern era of globalisation, even less-developed economies will become better off with more equal society in the long run (Barro 2000, Ravallion 2001, Lall, et al. 2007, Pavcnik 2017).

The second school of thought explains, on the contrary, a negative distributional effect of globalisation on inequality. The principal idea argues that the benefits of globalisation are not distributed equally among the people within a country even though globalisation might increase overall income. According to (Lundberg and Squire 2003), there are clear losers and winners, not only in relative terms but probably even in absolute terms. Moreover, widening income inequality within a country and the fact that the benefits of globalisation fail to reach the poorest will raise social, economic and political challenges and, at the same time, will result in many economic growth problems, since the potential benefits cannot be maximized (see Lall et al. 2007).

The last school of thought emphasizes a neutral distributional effect of globalisation on inequality. We could find either statistically insignificant relationship or a negative relationship between globalisation and income inequality (Dollar and Kraay 2002, Milanovic 2005, Lall, et al. 2007, Babones and Vonada 2009). This particular issue has been the subject of empirical evidence of an increase in the skill premium between skilled and unskilled workers in many developing countries (Goldberg and Pavcnik 2007).

However, considering the stylized facts on globalisation and inequality over the last decades, the traditional theories are unable to provide the explanation of the effects, where we found rising inequality in developing countries and lower or stable inequality trends in advanced countries, especially in European countries. New extensions to the theories have emerged in order to explain this paradox. According to literature, there are at least four major approaches contributing to the analysis.

The first model has been developed to extend the traditional North-South HOS model by fundamentally correcting the restricted assumptions (Agell and Lundborg 1995, Davis 1998, Albert and Meckle 2001, Kreickemeier and Nelson 2006, Chusseau and Hellier 2012). The second model tries to explain the effect of globalisation on inequality by assessing technological and institutional changes (Krugman and Lawrence 1994, Krugman 1994). The third model analyses the effect of FDI, multinational enterprises (MNEs) and international outsourcing in explaining inequality in both advanced and developing countries (Chusseau and Hellier 2012). The fourth model has been developed to explain the effect of openness when firms are heterogeneous. This model is called heterogeneous firms and New New Trade Theory (Melitz and Redding 2015).

In addition to this background, it is worth examining in detail the distributional effects of globalisation through sectoral export diversification / specialization at the disaggregated level and how control factors contribute to income inequality.

2.1 Key Determinants through which Sectoral Export Diversification / Specialization Affects Income Inequality

The relationship between economic development and income inequality was investigated by Kuznets in 1955, which emerged as the famous theory of the “Kuznets’ curve”. The theory suggested that as a country’s economy develops, market mechanisms would increase income inequality at the first stage then decrease at the

later stage. Decades later, Jean Imbs and Wacziarg, Romain proposed a U-shaped pattern studying the evolution of sectoral concentration in relation to the level of per capita income. The authors found that countries first diversify, in the sense that economic activity is spread more equally across sectors, but there exists, relatively late in the development process, a point at which they start specializing again (Imbs and Wacziarg 2003). Putting together the ideas of Kuznets' curve and Imbs & Wacziarg's curve,⁵⁵ we might presume that, at the early stage of economic development, a country whose economy has experienced higher export diversification would generate rising income inequality; then, higher sectoral export concentration would result in lower income inequality in the long term. Although Kuznets' curve has been failed to confirm empirically in some cases of countries, there is a strong possibility that sectoral export diversification / specialization is among the determinants of income inequality besides a variety of factors.

For instance, many papers such as those of Innis (1970), Haber (1997), Acemoglu and Robinson (2012), and Hartmann, et al. (2017) have shown that the post-colonial economies like Brazil and Mexico that concentrated its sectoral export in a small amount of agricultural or mineral products, including sugar, gold, and also coffee, are likely to have higher inequality of income, wealth, human capital as well as political power. Hidalgo (2015) and Hartmann, et al. (2017), otherwise, showed that the economies specializing in sophisticated products, such as medical imaging devices or electronic components might become more equal in term of income, wealth and the inclusiveness of that economy's institutions.

Beside trade openness, financial liberalization through FDI also plays a significant role in explaining inequality. Cornia (2011) shows that foreign investment in labour- intensive manufacturing sectors (such as textile, shoes, apparel, food processing, furniture, toys, beverages, simple assembly operations, motor vehicle

⁵⁵ Please see [Appendix 3](#) for detail of Kuznets' hypothesis (1955) and Imbs & Wacziarg's hypothesis (2003).

construction, etc.), and services (such as trade, restaurants, hotels, and so on) leads to reduce income inequality in low-wage and labour-abundant countries by accelerating capital accumulation, raising demand, and offering higher wages for low-skilled jobs. On the other hand, foreign investment in skilled-labour services (such as utilities, finance, telecommunications, transport, business services, etc.) and capital-intensive industries (such as chemicals, metallurgy, machinery, etc.) is expected to increase the wages of skilled workers to high levels, consequently increasing income inequality (Avarmaa, Hazak and Männasoo 2013).

Additionally, in modern era of the fourth industrial revolution, we also observed the rise of the advanced economies like the United States of America, which specialize in high innovative and talent products and services. In American society today, people are not interested in hanging on to old-type jobs which can be done by China, India and Eastern Europe. They saw their future in a world where wealth was generated not by making widgets or cars, but by brain power, imagination, artistry, knowledge, and intellectual property (Yew 2013). However, at the same time, we also found a great inequality within today's American society where the rise of the Top incomes has been particularly striking. This fact is well documented by many notable thinkers like Stiglitz (2012), Deaton (2013), Piketty (2013), Krugman (2013) and Krugman (2014).

Prior to the earlier findings, the most recent thesis of Hartmann, et al. (2017) studied the connection between economic complexity⁵⁶ and income inequality over 150 countries during 1963–2008. The authors uses many prominent index such as the Economic Complexity Index (Hidalgo and Hausmann 2009) and the Herfindahl–Hirschman Index (Hirschman 1945, Herfindahl 1950) to measure a variety of measures

⁵⁶ The authors used term “Economic complexity” to measure the sophistication of a country's productive structure by combining information on the diversity of a country (the number of products it exports), and the ubiquity of its products (the number of countries that export that product). This followed the model of Hidalgo and Hausmann (2009).

of productive structures. By computing multivariate regression analysis, the authors suggested that, over time, countries that experience increases in economic complexity are more likely to experience decreases in their level of income inequality.

To summarize, traditional theories of globalisation provide too straightforward an explanation while the new extensions present additional challenges for empirical investigation. For the survey of empirical studies, we found mostly analysis and discussion of macro-economic variables at a very high level of aggregation through trade openness, financial openness, etc. despite the fact that the disaggregated levels of trade and FDI in both advanced and developing countries contain not only low and high quality but also medium quality. These variables, along with other control vectors, such as technological progress, technological transfers and political and economic changes should have been estimated empirically.

3 Data and Preliminary Evidence

The data sources used in this paper were collected primarily from the World Bank Development Indicators (WDI), the Organization for Economic Cooperation and Development (OECD) National Accounts data, the International Monetary Fund (IMF), the International Financial Statistics and Balance of Payments databases (IFSBDP), the International Debt Statistics (IDS), the UN – National Bureau of Economic Research (NBER) dataset, the COMTRADE bilateral trade flow data, the World Integrated Trade Solution database (WITS), the International Comparison Program database (ICPD), Government Finance Statistics Yearbooks, and other available sources. [Appendix 1](#) indicates descriptively all the variables used in our analysis along with brief definitions and the data sources. The estimation uses a dataset of only 52 countries⁵⁷ (16 countries from the East Asia & Pacific region, 7

⁵⁷ Please see more detail in [Appendix 2](#), which shows list of countries.

countries from South Asia, 2 countries from North America, and 27 countries from Europe) or 22 Asian countries and 30 Western countries between 1988 and 2014.

As shown in detail in [Appendix 5](#), the Western countries are still the largest contributors to the world economy in absolute terms, however, Asian countries' overall contribution is increasing relative to the West's.

3.1 The Structure of Inequality and Globalisation over the Last Few Decades

Without looking in depth at real databases, it might be thought that the advanced countries like the EU member states and Anglo-Saxon countries, known as the most liberal economies, would be characterized by much higher degrees of trade openness and FDI and especially by higher levels of sector-specific export specialization in manufacturing and high-technology sectors and, consequently higher levels of inequality as predicted by traditional international trade theories. However, the trends in the economic variables over the last few decades might cause surprise.

Inequality

We used the Gini coefficient to measure income inequality as the dependent variable. It measures the degree to which the distribution of income expenditure among individuals or households in the economy differs from a perfectly equal distribution. It takes the value from 0, which represents perfect equality, to 100 implying perfect inequality (World Bank estimates). All Gini coefficients are collected from the development research group of the World Bank, based on primary household survey data obtained from government statistical agencies and World Bank country departments.

In contrast to the predictions of traditional theories, the stylized facts show that the profile within and between Western and Asian countries are quite different. For

OECD economies, the Anglo-Saxon countries experienced deeper and earlier increases in income inequality. The Scandinavian countries (Finland, Sweden and Denmark) have also undergone an increase in income inequality but at a very low rate. Moreover, continental European countries have not experienced any significant increase in inequality and, at the same time, in some countries like France, inequality is decreasing. For Asian economies, on the other hand, inequality is very different, based on the degree of economic development of each country such as the Asian dragons, the four Asian tigers (Thailand, Malaysia, Indonesia and the Philippines), the other Association of Southeast Asian Nations (ASEAN) countries, China, India, etc.). Yet, in general, these countries have experienced higher inequality than the OECD countries.

The lowest value of the Gini coefficient is 19.4 and the highest value is 63.26, with an average value of around 35.7 from 1988–2014 (please see [Appendix 6](#) for details). The Gini coefficient does indeed vary noticeably between sub-groups of countries. For high-income Asian countries, the lowest value is 24.5 and the highest is 49.15 with the average value around 39.99. Based on the results shown in [Appendix 7](#), we also observed high disparity in inequality between countries. The lowest value of the Gini coefficient of the low-income Asian countries is around 27, and the highest value is 63.26, with an average value of 36.5. The Gini coefficient of EU member states and Anglo-Saxon countries ranges from 19.4 to 39.5 and from 31.15 to 41.75 respectively. Among these sub-groups of countries, EU member states score the lowest level of minimum, maximum and average Gini coefficient.

The results shown in [Appendix 8](#) indicate the trends over the last few decades. In general, inequality tended to increase slightly between 1988 and 2014 in all groups of countries. On average, the high-income Asian countries have a greater degree of income inequality while the EU member states are the most equal societies. For low-income Asian countries and Anglo-Saxon countries, the Gini coefficient tends to be

similar to the average value for all 52 countries. From this result, we might possibly suspect that EU member states, characterized by welfare states, happen to manage inequality better than Anglo-Saxon countries. High-income countries such as Japan, followed by the four Asian dragons, the four Asian tigers, then China, etc., which are in the process of actively opening up to the forces of globalisation, have experienced higher levels of income inequality.

Globalisation

In order to measure traditional macro-economic variables of globalisation, we used trade openness (measured as the sum of exports and imports of goods and services as a percentage of GDP) and foreign direct investment (measured as a percentage of GDP).

Based on an empirical survey of many recent papers, since the beginning of the modern era of globalisation the world economy has experienced the forces of globalisation rapidly and in different ways. It is characterized by several types of progress, such as: (a) an increase in the number of developing countries joining the global single market, (b) an increasing contribution from developing countries to world production and exports in manufacturing sectors, (c) the fact that developed countries no longer produce and export goods and services relying on unskilled labour, (d) high mobility of FDI and financial capital, and (e) a significant increase in MNEs and technological transfers to less developed countries.

As shown in [Appendix 8](#), high-income Asian countries' economies have been the most open to trade since 1988. On average, trade openness is more than 130% of GDP. Of course, the biggest free trade agreements are no longer with Western countries, but with other Asian countries. They include agreements between the ASEAN countries and a number of other nations, including China, Japan, South Korea, etc. The Trans-Pacific Partnership (TPP) trade initiative is expected to be the

world's largest trade agreement as it represents roughly 40% of global GDP and one-third of world trade (Granville 2017). However, this trade deal was cancelled in the first week of the US president Donald Trump's administration.

3.2 Focus on Export Diversification and Manufacturing Specialization

To analyse the effect of globalisation on income inequality at a disaggregated level, we proposed two indicators: sectoral export diversification (measured by the export diversification index) and manufacturing specialization (measured by the Balassa revealed comparative advantage index of manufactured goods).

Sectoral Export Diversification

Export diversification is measured by the Theil index, calculated by the IMF. The data cover 187 countries from 1962–2010. In our database, the data come from the UN–NBER dataset, which harmonizes COMTRADE bilateral trade flow data at the 4- digit Standard International Trade Classification (SITC) Rev. 1 level. Based on the results in [Appendix 6](#), the lowest value is 1.14 while the highest value is 5.37, and the average value is 2.51 for the period from 1988 to 2010.

The export diversification index differs for the different sub-groups of countries. We observed that the higher the level of economic development, the lower a country's export diversification. In other words, richer countries tend to concentrate on producing exports. The pattern of the relationship between sectoral export specialization and GDP per capita can be described as a "U-shaped curve" (Blancheton, Becuwe and Meissner 2018). That is why we observed that advanced countries, both EU member states and Anglo-Saxon countries, have, on average, a lower export diversification index of 1.91 and 1.93 respectively. In the same way, lower-income Asian countries have, on average, higher export diversification indexes. Looking in greater depth, we also observed that the disparity between individual

countries is far bigger among Asian countries than Western countries (please see [Appendix 7](#) for details).

Manufacturing Specialization

We used the Balassa revealed comparative advantage index of manufactured goods, taken from WITS, to measure manufacturing specialization.⁵⁸ It covers every country in the world from 1988 to 2014. The rationale for choosing this index is that it parallels Dingel's (2016) theoretical and empirical work on the determinants of quality specialization, which employs micro-data on US manufacturing sectors and factor inputs to quantify the roles of the two mechanisms in quality specialization in US cities (Dingel 2016).

The results of the estimation detailed in [Appendix 6](#) show that the lowest value of the index is 0.03 while the highest value is 1.47, and its average value is 0.95 for the period 1988 to 2010. Looking at different country profiles, we observed that high-income Asian countries have the highest value of the specialization index, followed by EU member states whose index is greater than 1. However, we also found the lowest minimum value in high-income Asian countries. Notably, the Anglo-Saxon countries have the lowest index. Based on standard deviation (see [Appendix 7](#)), there is higher disparity in the datasets for Asian countries and Anglo-Saxon countries than in that for EU member states.

Since 1988, although there has been a very different profile for each sub-group of countries, the index has varied between 0.8 and 1.1 and it seems to have been moving towards a stable position since the 1990s. The value of the index has remained above the average for the 52 countries only in the high-income Asian countries and

⁵⁸ According to the WITS, the manufacturing sector is only one among ten other sectors, measured by the Balassa revealed comparative advantage index, including food, fuel, ores and metals, textiles, machinery and transport equipment, raw materials, intermediate goods, consumer goods, capital goods and chemicals.

EU member states. In contrast, the Anglo-Saxon countries continue to have the lowest index among all the groups of countries.

4 Methodology

4.1 Specification Function: Globalisation and Income Inequality

The theoretical basis explaining the effect of globalisation on income inequality is unclear. Moreover, the effects at the disaggregated level of sectoral export diversification and manufacturing specialization should be studied empirically. Therefore, this paper conducts panel estimations of the effects on these variables. Ideally, the panel estimations should allow us to take into consideration both unobserved time-invariant and individual-invariant factors.

With a panel dataset of small time-series dimensions ($T = 26$ years) and large cross-sectional dimensions ($N = 52$ countries), this study applies the system GMM estimators to obtain efficiency and consistency. The econometric model is structured as follows (Greene 2012):

$$gini_{it} = \alpha + \vartheta gini_{it-1} + \beta TGlob_{it} + \rho DGlob_{it} + \phi W_{it} + \sum_{T=1}^T \phi_T y_{t-T} + u_i + \varepsilon_{it} \quad (1)$$

$$\text{for } i = 1, 2, \dots, N \text{ and } t = 1, 2, \dots, T$$

Where,

- i and t represent country and time respectively while α represents the intercept.
- $gini_{it}$ refers to the Gini coefficient of country i in year t . As the Gini coefficient is normally influenced by its value in the previous year, we used $gini_{it-1}$ as one of the explanatory variables.

- $TGlob_{it}$ is a matrix of traditional macro-economic variables of globalisation – trade openness (% of GDP), and FDI (% of GDP) of country i in year t .
- $DGlob_{it}$ is a matrix of the components of globalisation variables at the disaggregated level – sectoral export diversification, measured by the export diversification index, and manufacturing specialization, measured by the Balassa revealed comparative advantage index of manufactured goods for country i in year t .
- W_{it} is the set of control variables which are considered to have an impact on income inequality, such as high-technology exports (% of manufactured exports), GDP per capita (PPP, current international \$US), population growth (% annual), and public spending (% of GDP) of country i in year t
- The terms ϕ_T , u_i , and ε_{it} are respectively “time effects”, “country effects” and “error term”. ϕ_T is parameter coefficient of the time dummy effect, taking a binary variable, 1 for determined period and 0 otherwise. ε_{it} is assumed to be normally distributed $N(0,1)$.
- ϑ, β, ρ and \emptyset are parameters of coefficients that estimate and test the impact of globalisation on income inequality.

Considering the additional control variables, we included the following variables: technological development, GDP per capita, population growth and public expenditure. There are certainly other variables that might have an impact on income inequality but we have limited ourselves to the above-mentioned variables.

Role of technology, measured by high-technology exports (as a percentage of manufactured exports): One of the influential factors on income inequality is the role of technology in explaining trade development. According to Nancy Birdsall, technological changes favour those with higher skills and exacerbates the ‘skills gap’. This could adversely affect the distribution of income in both developing and

advanced economies by reducing the demand for lower-skill activities and increasing the premium of higher-skill activities (Birdsall 2005). If this is empirically true, it will result in higher income inequality. However, the positive effect of education could transform low-skilled workers into high-skilled workers in the long term, thus resulting in lower income inequality.

Role of income, measured by GDP per capita, PPP (current international \$US): The general effect of GDP per capita on income inequality is explained by the well-known inverted 'U' hypothesis developed by (Kuznets 1955). Based on the explanation in the previous section, an increase in GDP per capita will increase overall economic welfare and income disparity. Following the process of economic development, inequality will increase during the first stage and after it arrives at the peak, inequality will decrease. However, according to Piketty (2013), the magical Kuznets curve theory was formulated in large part for the wrong reasons, and its empirical underpinnings were extremely fragile. The sharp reduction in income inequality that we observe in almost all the rich countries between 1914 and 1945 was due above all to the world wars and the violent economic and political shocks they entailed (especially for people with large fortunes). It had little to do with the tranquil process of intersectoral mobility described by Kuznets. The authors, moreover, argued that the inequality may continue to increase even later stage of economic development.

Role of population growth, measured by the annual percentage growth in population: Income inequality can shift because of changes affecting labour supply and labour demand (Asteriou, Dimelis and Moudatsou 2014). In addition, changes in population affect changes in labour supply and demand, which affect wages on the labour market. An increase in population is expected to increase income inequality if the unemployment rate increases.

Role of government size, measured by public spending (as a percentage of GDP): In any government, public spending is considered as a major economic tool in dealing with redistribution policies. Public spending is cash payment for the operating activities of the government in providing goods and services. It includes employees' wages and salaries, interest and subsidies, grants, social benefits, and other expenses such as rent and dividends, public investment in infrastructure, health and education, environmental protection, etc. (World Bank estimates). In general, the aim of public spending is to improve the overall economic well-being of a whole population, especially the poor. According to Selowsky (1979) and Younger (1999), the effect on income distribution depends on how the government targets specific population groups through social protection, education, health, etc.

In this section, we will survey the most commonly used techniques of static panel data models (Pooled OLS model, fixed effects "FE" model, and random effects "RE" model) and dynamic panel data models (Difference and System GMM models) and explain why we have finally chosen to apply the System GMM estimators with Stata-comment "xtbaond2".

4.2 From static to dynamic panel data models

The fundamental advantage of a panel dataset over a cross section is that it allows the researcher greater flexibility in modelling differences in behaviour between individuals (Greene 2012, 345). In this paper, consider a linear regression model studying the effect of globalisation on income inequality in 52 countries ($i = 1, 2, \dots, N$), which is observed annually for 26 years ($t = 1, 2, \dots, T$):

$$gini_{it} = \alpha + Glob'_{it}\beta + Z'_i\gamma + u_i + \varepsilon_{it} \quad (2)$$

Where $gini_{it}$ is the dependent variable representing the Gini coefficient of country i in year t ; α is the intercept; $Glob'_{it}$ is a matrix of time-varying explanatory variables representing globalisation; Z'_i is matrix of time-invariant explanatory variables, where

Z_i contains a set of observable individual or group-specific variables, such as geographical factors, race, etc., all of which are taken to be constant over time; u_i is unobserved specific effects; and, ε_{it} is an error term.

To estimate equation (2), the classic Pooled OLS model can be used to obtain a consistent and efficient estimation only if there is no violation of certain basic assumptions of regression analysis such as linearity, exogeneity of the explanatory variables, homoscedasticity and non-autocorrelation. However, since the individual specific effects u_i are omitted variables and potentially correlated with other explanatory variables $Glob'_{it}$, the Pooled OLS models of α , β , and γ are biased and inconsistent.

Beside the Pooled OLS model, another estimation is proposed, the FE model. Considering equation (2) again, we suppose that the parameter u_i captures the fixed effects that are different between countries but constant over time. Thus, we obtain a new equation as follows:

$$gini_{it} = \alpha_i + Glob'_{it}\beta + Z'_i\gamma + u_i + \varepsilon_{it} \quad (3)$$

For the FE model, we assume that the omitted effects u_i can be correlated with the explanatory variables. In the general form, we obtain: $E[u_i|Glob_{it}] \neq 0$. In order to eliminate unobserved heterogeneity, the FE model fixes the country i and takes an average over time. By taking the difference between periods of time, we obtain:

$$(gini_{it} - \overline{gini}_i) = \alpha_i + (Glob_{it} - \overline{Glob}_i)' \beta + Z'_i\gamma + u_i + (\varepsilon_{it} - \bar{\varepsilon}_i) \quad (4)$$

$$\text{Then, } gini_{it} = \overline{Glob}_{it}' \beta + \varepsilon_{it} \quad (5)$$

With equation (5), we might apply the OLS estimation when N is small; in contrast, the Least Square Dummy Variable (LSDV) estimation is more appropriate when the number of countries tends to infinity as $N \rightarrow \infty$ (Greene 2012). The coefficient of the FE model with corresponding covariance matrix is given by:

$$\beta_{FE} = (\sum_t^T \sum_i^N (Glob_{it} - \overline{Glob}_i)(Glob_{it} - \overline{Glob}_i)')^{-1} \sum_t^T \sum_i^N (Glob_{it} - \overline{Glob}_i)(gini_{it} - \overline{gini}_i)' \quad (6)$$

$$\text{for } \mu_i = \overline{gini}_i - \overline{Glob}'_i \widehat{\beta}_{FE}$$

Although the FE model is unbiased, consistent and efficient since it can control for the omitted time-invariant variables, it is consequently impossible to investigate the effect of those variables that might have an influence on dependent variables. To overcome this problem, the RE model is proposed. The rationale of this estimator is that the individual effects are strictly uncorrelated with the explanatory variables. It allows researchers to include time-invariant variables in their analysis. In the RE model with the assumption $(\overline{Glob}'_i u_i) = 0$, we obtain the following econometric model:

$$gini_{it} = a_i + \overline{Glob}'_{it} \beta + Z'_i \gamma + v_{it} \quad (7)$$

$$\text{Where } v_{it} = u_i + \varepsilon_{it}; \varepsilon_{it} \sim \text{iid}^{59} (0, \sigma^2)$$

Since ε_{it} is an individual specific random error and the errors are correlated, it is necessary to use the Generalized Least Square (GLS) estimator, which is the parameter coefficient of RE. Thus, we obtain the coefficient β_{GLS} as follows:

$$\begin{aligned} \beta_{GLS} = & (\sum_t^T \sum_i^N (\overline{Glob}_{it} - \overline{Glob}_i) (\overline{Glob}_{it} - \overline{Glob}_i)' + \varphi T \sum_i^N (\overline{Glob}_{it} - \overline{Glob}_i) (\overline{Glob}_{it} - \\ & \overline{Glob}_i)')^{-1} (\sum_t^T \sum_i^N (\overline{Glob}_{it} - \overline{Glob}_i) (gini_{it} - \overline{gini}_i)' + \\ & \varphi T \sum_i^N (\overline{Glob}_{it} - \overline{Glob}_i) (gini_{it} - \overline{gini}_i)') \end{aligned} \quad (8)$$

To choose an appropriate estimator between the FE and RE models, we can use the *Hausman test*. The idea of the *Hausman test* is simple. It tests H_0 , explaining that \overline{Glob}_{it} and u_i are uncorrelated. The hypothesis is derived as follows:

- H_0 is the RE model, say: $Cov(\overline{Glob}'_{it}, u_i) = 0$
- H_1 is the FE model, say: $Cov(\overline{Glob}'_{it}, u_i) \neq 0$

⁵⁹ iid: independent and identically distributed

β_{RE} is consistent and efficient under the null hypothesis that H_0 is not H_1 and β_{FE} is consistent and efficient under both H_0 and H_1 . The t – statistic for testing indifference between the two estimators is denoted as follows:

$$t = \frac{\beta_{FE} - \beta_{RE}}{[\overline{var}(\beta_{FE}) - \overline{var}(\beta_{RE})]^{1/2}} = \frac{\beta_{FE} - \beta_{RE}}{[se(\beta_{FE})^2 - se(\beta_{RE})^2]^{1/2}} \quad (9)$$

We expect to find that: $\overline{var}(\beta_{FE}) - \overline{var}(\beta_{RE}) > 0$ (10)

Because the *Hausman test* is: $cov(\beta_{FE}, \beta_{RE}) = var(\beta_{RE})$ (11)

To deal with equation (1), according to Roodman (2009, 86), there are several major problems which cannot be eliminated by using static panel data models⁶⁰. First, it is related to endogenous problems, meaning there is dual causality between the explanatory variables $Glob'_{it}$ and the dependent variable $gini_{it}$, and explanatory variables $Glob'_{it}$ that are not strictly exogenous, meaning they are correlated with past and possibly current occurrences of the error. Second, it is related to the fixed individual effects, meaning that country effects u_i may be correlated with the explanatory variables $Glob'_{it}$. The country effects are contained in the unobserved country-specific effects v_{it} , which is also an error term ε_{it} . Third, it is related to autocorrelation, meaning that one left-hand-side variable $gini_{it}$ is dynamic, depending on its own past occurrences. Finally, it is related to the “small T, large N” panels, meaning few time periods and many individuals. In order to overcome all these potential problems, this paper uses the System GMM models developed by Manuel Arellano and Stephen Bond in 1991, Manuel Arellano and Olympia Bover in 1995, and Richard Blundell and Stephen Bond in 1998 (Arellano and Bond 1991, Arellano and Bover 1995, Blundell and Bond 1998). The strategies are as follows:

⁶⁰ It is well established in econometric literature that the static panel estimations (Pooled Ordinary Least Squares “OLS” model, fixed effects “FE” model, and random effects “RE” model) are not appropriate for dynamic panel data. Therefore, only dynamic panel data estimations (Difference and System GMM models) are discussed in this paper.

To eliminate the first problem, instead of using Two-Stage Least Squares (2SLS) Regression Analysis, this paper uses the difference GMM model by adding lagged levels of the endogenous determinants of explanatory variables. This results in endogenous predetermined variables that are not, therefore, correlated with the error term. The dynamic panel data model with the predetermined and strictly exogenous factors whereas the parameter coefficient of dynamic regressor is derived from the dynamic fixed effects (FE) model as follows:

$$\vartheta_{FE} = \frac{\sum_t^T \sum_i^N (gini_{it} - \overline{gini}_i)(gini_{it} - \overline{gini}_{it-1})}{\sum_t^T \sum_i^N (gini_{it} - \overline{gini}_{it-1})^2}, \quad (2)$$

$$\overline{gini}_i = T^{-1} \sum_i gini_{it} \quad (3)$$

$$\overline{gini}_{it-1} = T^{-1} \sum_i gini_{it-1} \quad (4)$$

For the GMM model with exogenous and predetermined factors:

- For strictly exogenous variables:

$$E[Glob_{is}, \varepsilon_{it}] = 0 \text{ for all } s \text{ and } t$$

- For predetermined variables (not strictly exogenous):

$$E[Glob_{is}, \varepsilon_{it}] = 0 \text{ for all } s \leq t \text{ and}$$

$$E[Glob_{i,t-j}, \varepsilon_{it}] = 0 \text{ if } j = 1, \dots, t - 1$$

Moreover, to deal with the second problem (“country effects” and “time effects”), the difference GMM uses first-difference to remove both “constant terms” and “individual effects” because the equation no longer considers changes in time or country.

$$\Delta gini_{it} = \Delta \alpha + \vartheta * \Delta gini_{it-1} + \beta * \Delta TGlob_{it} + \rho * \Delta DGlob_{it} + \phi * \Delta W_{it} + \sum_{T=1}^T \phi_T * \Delta y_{t-T} + \Delta v_{it} \quad (5)$$

$$\text{Where, } \Delta v_{it} = \Delta u_i + \Delta \varepsilon_{it} \quad (6)$$

or

$$v_{it} - v_{i,t-1} = (u_i - u_i) + (\varepsilon_{it} - \varepsilon_{i,t-1}) = \varepsilon_{it} - \varepsilon_{i,t-1} \quad (7)$$

With this method, we could also remove the third problem (serial correlation) because the first-differenced lagged dependent variable is dependent on its past level. Rationally, the choice of the Arellano-Bond model is optimal because this method is designed for small-T and large-N panels. The final problem is thus eliminated.

It is important to note that two types of GMM model have been frequently used. Firstly, the First-Difference GMM model, developed by Arellano and Bond (1991), uses first-differenced equations with suitable lagged levels as instruments. Secondly, the System GMM model, developed by Arellano and Bover (1995), and Blundel and Bond (1998), uses levels with lagged first difference as instruments. According to Roodman (2009), the System GMM model helps to increase efficiency with a panel data set containing a large number of countries because it allows more instruments to be used than Difference GMM models.

For our model, we also applied two diagnostic statistical tests (the Sargan test of over-identifying restrictions to test the validity of instrument variables and the Arellano-Bond test of autocorrelation). The Sargan test has a null hypothesis of " H_0 : the instruments employed are valid" while the Arellano-Bond test has a null hypothesis of " H_0 : no second autocorrelation". We rejected the null hypothesis if $p - Value$ is smaller than 5%. Therefore, the higher $p - Value$, the better the overall model.

4.3 Robustness Checks and Sample Restriction

To deal with missing values, especially in the Gini coefficient, we used linear interpolation between the available years.

We also checked the specification errors, which are potentially related to (a) choosing incorrect explanatory variables $Glob'_{it-}$, (b) existing omitted variables, and (c) the presence of multicollinearity (Studenmund 2014). In order to deal with these issues, we used the following strategies. First, to make sure that our explanatory

variables are correctly chosen, we applied four criteria which those variables are required to respect: theoretical foundation, t-test, adjusted R2 and bias. Next, to deal with the problem of omitted variables where we might forget to include one of the relevant explanatory variables, we decided to include some observable control variables W_{it} , which are theoretically correlated to the dependent variable $gini_{it}$. Lastly, there might be another potential problem related to multicollinearity. This is related to the fact that the explanatory variable is a linear function of no other explanatory variables (Studenmund 2014). In order to detect this problem, we performed a simple correlation coefficient analysis. If there is high correlation coefficient between the explanatory variables, we would drop the explanatory variable that is less correlated with our dependent variable. However, as shown in [Appendix 10](#), we did not find any high correlation coefficients.

Last, but not least, we also considered the heterogeneity issue, where the effect of globalisation might be different depending on the country's profile. For that reason, the analysis was also performed on sub-groups of both Asian and Western countries. We identified four groups of countries: high-income Asian countries, low-income Asian countries, EU member states and other Western Anglo-Saxon countries.

4.4 Analysis of Sub-groups of Countries – Asia and the west⁶¹

The classification of Asian countries is based on the World Bank estimation of gross national income (GNI) per capita for the previous year. We divided our sample into two groups: high-income Asian countries with a per capita income greater than USD 4,125 and the remaining Asian countries with per capita income lower than USD 4,125. The high-income Asian countries group includes China, Japan, South Korea,

⁶¹ Mahbubani (2014) defines the term “the West” as referring to the following countries: EU member states, the United States of America as well as the Anglo-Saxon states of Australia, Canada, and New Zealand because of western cultural, economic and political parallels and “the Asian” countries refers to every country located in Asia.

Malaysia, the Maldives, Singapore and Thailand. The low-income Asian countries group includes Bangladesh, Bhutan, Cambodia, India, Indonesia, the Lao PDR, the Federated States of Micronesia, Mongolia, Nepal, Pakistan, the Philippines, Sri Lanka, Timor-Leste, Tonga and Vietnam.

We divided Western countries into two groups: EU member states and Anglo-Saxon countries. The EU member states group includes Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden. The Anglo-Saxon countries group includes the United States of America, the United Kingdom, Canada, Australia and New Zealand.

5 Empirical Results and Discussion

Table 1 reports detailed regression results of dynamic panel data models from a panel data set of 52 Asian and Western countries during the period 1988 to 2014. The estimation will be explained in three parts: the effect of traditional macroeconomic variables of globalisation; the effect of sectoral export diversification and manufacturing specialization, and the effect of high-technology exports on income inequality.

The advanced estimations of dynamic panel data models provide accurate outcomes by considering the robustness of the overall model, based on statistical tests and the significance level of the regressors. Since the study contains a large number of countries, resulting in a large number of observations, we decided to choose the estimated results of the one-step System GMM estimation in Model 1 and 2 in Table 1 to represent the best model. We also reported two statistical tests: the Sargan test of over-identifying restriction and the Arellano-Bond test for autocorrelation. At the

bottom of the table, we obtained satisfactory results. The model therefore suggests that the identified restrictions are valid.

TABLE 1 Econometric regression results – System GMM models

<i>Dependent Variable: Gini Coefficient</i>				
Detailed econometric results for dynamic panel-data models				
	System GMM models		System GMM models	
	One Step		Two Steps	
	Model 1	Model 2	Model 3	Model 4
Lagged income inequality variable				
Lagged Gini Index	0.9285*** (0.0192)	0.89151*** (0.01687)	0.9224*** (0.0204)	0.67502*** (0.1930)
Traditional macro-economic variables of globalisation				
Trade openness (% of GDP)	-0.0005 (0.0016)		0.00051 (0.00114)	
<i>Asian – high income countries</i>		-0.00320 (0.00366)		0.00721 (0.0204)
<i>Asian – low income countries</i>		0.00935** (0.00402)		-0.0156 (0.0545)
<i>West – EU members</i>		-0.01158*** (0.00368)		-0.02905* (0.0152)
<i>West – Anglo-Saxons countries</i>		-0.00777 (0.01537)		0.1498 (0.3428)
Foreign direct investment (% of GDP)	-0.0190 (0.0118)		-0.02314*** (0.0055)	
<i>Asian – high income countries</i>		0.06580 (0.04899)		0.1267 (0.1198)
<i>Asian – low income countries</i>		-0.0092 (0.0445)		0.2004 (0.2042)
<i>West – EU members</i>		-0.0117 (0.01005)		-0.0024 (0.0119)
<i>West – Anglo-Saxons countries</i>		-0.0514 (0.0702)		-0.2478 (0.2507)
Sectoral export diversification and manufacturing specialization variables				
Export diversification index	0.3313** (0.1458)		0.3285*** (0.1074)	
<i>Asian – high income countries</i>		3.2925*** (1.1413)		11.360 (12.344)
<i>Asian – low income countries</i>		-0.1786 (0.1376)		2.1478 (4.6674)
<i>West – EU members</i>		0.7087*** (0.2519)		-3.4569* (1.9274)
<i>West – Anglo-Saxons countries</i>		0.0156 (0.4126)		-7.0762 (11.059)
Manufacturing specialization	0.13279 (0.32884)		0.27017 (0.7566)	
<i>Asian – high income countries</i>		-4.8071*** (1.4459)		-28.454 (19.058)

<i>Asian – low income countries</i>	0.5889 (0.4086)		-1.7129 (7.4166)
<i>West – EU members</i>	-0.9293** (0.4545)		2.3118 (4.5333)
<i>West – Anglo-Saxons countries</i>	0.0245 (1.1874)		22.9972 (21.0696)
High-technology exports variables			
High-tech. exports (% of manufactures)	0.00610 (0.0078)		0.0021 (0.0051)
<i>Asian – high income countries</i>	-0.0516 (0.0354)		-0.2292 (0.1624)
<i>Asian – low income countries</i>	0.0088 (0.0062)		0.1539 (0.2134)
<i>West – EU members</i>	0.01684 (0.0155)		0.247** (0.1019)
<i>West – Anglo-Saxons countries</i>	0.02329 (0.0481)		0.0346 (0.1668)
Control variables			
GDP per capita	6.8768** (3.3918)	8.6005** (3.5755)	16.9539*** (5.42296)
GDP per capita squared	-0.80667* (0.41477)	-0.9696** (0.4404)	-2.0581*** (0.68238)
Population growth	-0.0891 (0.09072)	-0.2233** (0.0936)	-0.08235** (0.0401)
Public spending (% of GDP)	-0.00753 (0.00522)	-0.01066* (0.0063)	-0.0100*** (0.00347)
Constants	-12.6524* (7.26899)	-14.6156** (7.3545)	-32.613*** (11.081)
Number of observations	542	542	542
Number of instruments	243	477	243
Number of groups	43	43	43
Sargan test of overid. restrictions (<i>p-value</i>)	244.44 (0.275)	453.28 (0.461)	244.44 (0.275)
Arellano-Bond test of autocorrelation (<i>p-value</i>)	1.03 (0.302)	0.78 (0.435)	0.92 (0.356)

SOURCE Authors' estimation

NOTE *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$

Data in parentheses indicates standard errors

Data from 1988 to 2014 in 52 Asian and Western countries

Asian – high income countries: China, Japan, Korea, Rep., Malaysia, Maldives, Singapore and Thailand

Asian – low income countries: Bangladesh, Bhutan, Cambodia, India, Indonesia, Lao PDR, Micronesia, Fed. Sts., Mongolia, Nepal, Pakistan, Philippines, Sri Lanka, Timor-Leste, Tonga and Vietnam

West – EU members: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden

West- Anglo-Saxons countries: United States of America, United Kingdom, Canada and Australia

From the estimated results, we obtained statistically expected sign and direction of the coefficients of almost all controlled variables. The results predicted by

Kuznet's inverted 'U' hypothesis, are verified. The GDP per capita does increase income inequality during the first stage of economic development but decreases it in the long term. This result confirms the fact that there is a rising number of people joining the global middle class, thanks to an increase in the living standards of Asian people, especially in China and India, which together account for 36.41% of global population. According to Mahbubani (2014, 23), the global middle class is defined as 'those households with daily expenditures between US\$ 10 and US\$ 100 per person in PPP terms. This excludes those who are considered poor in the poorest advanced countries and rich in the richest advanced countries'. Because high demographic growth has enabled strong economic growth, especially in Asian countries, an increase in population does not lead to an increase in income inequality.

Similarly, higher public spending does decrease income inequality, which is consistent with the explanation in the literature. Furthermore, there is no statistically significant impact of trade openness, FDI, manufacturing specialization or high-technology exports on income inequality if we computed the estimation for all 52 countries. In the same way, sectoral export diversification is the significant reason for inequality. To see the impact of these variables on income inequality at the level of sub-groups of countries, we will look at the following results:

5.1 Distributional Effect of Traditional Macro-economic Globalisation

There is no significant impact of trade openness on inequality in high-income Asian countries or Anglo-Saxon countries. However, more globalized forces, acting through trade openness, significantly increase income inequality in low-income Asian countries and decrease income inequality in EU member states. With the estimated results, a one percentage point rise in trade openness increases income inequality by 0.0093 percentage points in low-income Asian countries and decreases it by 0.01158 percentage points in EU member states.

According to Chusseau and Hellier (2012), the positive association of trade openness on income inequality in developing countries could have several causes, such as an increase in FDI and MNEs allowing faster technological transfers from advanced economies to developing economies and high demands for skilled labour.

Numerous articles in the literature emphasize a positive link between trade openness and income inequality in developing countries. The skilled-wage premium, i.e. the income gap between skilled and unskilled workers, is widening in Chile due to trade liberalization (Beyer, Rojas and Vergara 1999). The positive and significant effect of the trade openness ratio is discovered on income inequality based on between-country data (Barro 2000). The significant positive relationship between import penetration and the skilled-wage premium is also found in Argentina during the 1990s (Galiani and Sanguinetti 2003). Other study used disaggregated data for 50 industries and show that the skilled-wage premium decreased during the period of trade liberalization in Brazil (Gonzaga, Filho and Terra 2006). Goldberg and Pavcnik (2007) found that the impact of trade openness on inequality is the same in developing countries as it is varied in term of differences in trade patterns before and after liberalization

On the other hand, effective social protection and redistribution policies might be a major reason why globalized forces are transformed to decrease income inequality in EU member states. According to Stiglitz (2012), inequality is largely a result of policies. France and Norway are examples of OECD countries that have managed by and large to resist the trend of increasing inequality. European countries with public health care systems succeed much better in achieving equality of health outcomes than economic outcomes.

In the case of FDI, there is no significant impact in any of the country sub-groups. As explained in the section on related literature, the small or insignificant

impact of FDI might be due to skill-biased technological progress, institutional changes, the rising size of emerging countries, and the role of MNEs. To investigate more deeply, we will analyse the results of the effect of sectoral export diversification and manufacturing specialization.

5.2 Distributional Effect of the Export Diversification and Specialization Index

The export diversification index has a positive impact on income inequality. This means that a higher level of sectoral export diversification leads to a higher level of income inequality. Since there are many sub-sectors in global exports in each country, we will look in detail at whether a country specializing in manufacturing sectors generates positive or negative income inequality. The estimated results show that the higher the level of manufacturing specialization in a country, the higher the likely level of income inequality in that country.

It is also interesting to compare the influence of the export diversification index and the Balassa revealed comparative advantage index of manufactured goods among sub- groups of countries. The estimated results report that an increase of one percentage point in export diversification increases income inequality by 3.29 percentage points in high- income Asian countries and 0.708 percentage points in EU member states. At the same time, a one-percentage point rise in manufacturing specialization decreases income inequality by 4.807 percentage points in high-income Asian countries and 0.929 percentage points in EU member states. However, we did not obtain statistically significant impacts in low-income countries or Anglo-Saxon countries.

The unexpected sign of the Balassa revealed comparative advantage index of manufactured goods should be a significant reason for further research to determine the effect of a higher level of disaggregation of manufacturing specialization to avoid

endogenous problems of high-skilled and low-skilled labour factors in this indicator. Currently, there are 22 sub-categories of manufacturing specialization. Since each sector has different degrees of labour skill, capital and technology requirements, their impacts might be different.⁶²

5.3 Distributional Effect of High-technology Exports

Table 1 also reports the estimated marginal impact of high-technology exports on income inequality. Surprisingly, we did not find any statistically significant impact of this variable, even in the case of sub-groups of countries. One of the possible reasons might be from skill-biased technological progress (Krugman and Lawrence 1994, P. R. Krugman 1994, Männasoo and Meriküll 2014). Although we could not capture statistically significant coefficients, we did obtain the expected sign, except for high-income Asian countries. It shows that a higher level of high-technology exports increases income inequality. On average, an increase in technological change increases income inequality (Lall, et al. 2007). According to (Brown and Campbell 2002), investment in new technology in one country, for instance in Information and Communication Technologies (ICT), modifies the demand from lower-skilled workers to more highly-skilled workers. The ICT might consequently increase income inequality in that country. The effect of technological changes on income distribution

⁶² According to the World Trade Organization (2016), there are 22 sub-categories of the Balassa revealed comparative advantage index of manufactured goods. These include: 15 - Manufacture of food products and beverages; 16 - Manufacture of tobacco products; 17 - Manufacture of textiles; 18 - Manufacture of wearing apparel; dressing and dyeing of fur; 19 - Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear; 20 - Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials; 21 - Manufacture of paper and paper products; 22 - Publishing, printing and reproduction of recorded media; 23 - Manufacture of coke, refined petroleum products and nuclear fuel; 24 - Manufacture of chemicals and chemical products; 25 - Manufacture of rubber and plastics products; 26 - Manufacture of other non-metallic mineral products; 27 - Manufacture of basic metals; 28 - Manufacture of fabricated metal products, except machinery and equipment; 29 - Manufacture of machinery and equipment n.e.c.; 30 - Manufacture of office, accounting and computing machinery; 31 - Manufacture of electrical machinery and apparatus n.e.c.; 32 - Manufacture of radio, television and communication equipment and apparatus; 33 - Manufacture of medical, precision and optical instruments, watches and clocks; 34 - Manufacture of motor vehicles, trailers and semi-trailers; 35 - Manufacture of other transport equipment; 36 - Manufacture of furniture; manufacturing n.e.c.; and 37 - Recycling.

might vary from one group of countries to another. In developing countries, technology is a major driving factor while it might have a lower impact in advanced countries. According to Chu (2010) and Jones and Williams (2000), promoting investment in Research and Development (R&D) and patent protection is also a major factor in increasing income inequality since it results in an increase in the return on assets for top earners. To enhance shared prosperity generated from globalisation, it is recommended that education be promoted because this economic level could allow a greater proportion of the population to be engaged in high-skilled sectors. In developing countries, the fact that a large proportion of the population has moved from the agricultural sector to the industrial sector is expected to reduce income inequality as low-income citizens could increase their overall income.

6 Conclusion

This paper investigates the dynamic effect of sectoral export diversification (measured by the export diversification index) and manufacturing specialization (measured by the Balassa revealed comparative advantage index of manufactured goods) on income inequality (measured by the Gini coefficient) with a panel data set including 52 Asian and Western countries for the period from 1988 to 2014. The analysis is also performed on subgroups of countries: high-income Asian countries, low-income Asian countries, EU member states and Anglo-Saxon countries. The empirical analysis uses dynamic panel data system GMM models. By taking into account two statistical tests, the Sargan test of overidentification of restrictions of instruments and the Arellano-Bond test of auto-correlation, the Arellano and Bond (1991) and Arellano and Bover (1995)/Blundell and Bond (1998) linear GMM estimators provide accurate results.

In overall terms, the results suggest insignificant distributional effects of trade openness, FDI, manufacturing specialization and high-technology exports as percentage of manufactured exports on income inequality in 52 Asian and Western

countries whereas sectoral export diversification has been the motivating factor leading to higher inequality. When sub-groups of countries are analysed, sectoral export diversification increases inequality, but manufacturing specialization decreases inequality in both high-income Asian countries and EU member states. In the same way, there is no statistically significant effect of high-technology exports on inequality in any sub-group of countries. In this perspective, policy implications concern the implementation of industrial policy in order to develop basic manufactured specializations “unskilled labour” (Blancheton and Bécuwe 2018).

For the policy implications, in the most advanced economies, i.e. Western countries, there is a rising belief that globalizing forces are not all good; people, not only ordinary citizens but also policy makers, think that life was better in the old days and that the fruits of globalisation might go only to top earners and the rest of the world (Gray 2017, Willige 2017).⁶³ Negative feelings about globalisation and international cooperation among many low- and middle-class citizens might be one of the major reasons that led to the political shocks⁶⁴ of Brexit and Trump in 2016. At the same time, we also observed various social trends occurring in Western countries over the last few decades, such as stagnant wages, an overall decline in social mobility, a loss of sense of togetherness and a growing mentality of ‘us against them’ (Yong 2017), and, consequently, there are endless debates about the rise of the Top 0.01% or Top 0.1% or Top 1% (Piketty, Stiglitz, Krugman, Deaton & Oxfam since the 2010s). However, based on the results of empirical investigation in this paper, we found that the effect of globalisation does not increase within-country income inequality in Western countries but decreases it, especially in EU member states. In other words, the effect of globalisation should not be a major cause for concern in relation to inequality in Western countries. Therefore, we might suspect that the political upsets

⁶³ For more detail, please see [Appendix 11](#), which describes a survey of citizen’s attitudes towards globalisation.

⁶⁴ It is worth noting that not everyone has seen Brexit and Trump as political shocks or upsets, but here we have decided to take into consideration only leading views from top public intellectuals who have agreed on the use of this term, such as Piketty, Stiglitz, Krugman, Deaton and Kishore.

of globalisation might also be related to the rest of the world. In this case, because citizens' welfare is evaluated relatively not only within their country but also in comparison with the rest of the world, the west needs to come up with a new domestic and global social contract. In order to compete in the global single market where we found a higher degree of competitiveness from emerging economies such as China, India, and Indonesia, de-globalisation is not a better choice. It might have disastrous consequences for the world and maybe higher negative impacts for advanced Western countries.

Leading Asian commentators, on the one hand, have viewed globalisation as a positive mechanism in promoting economic growth, reducing poverty, and increasing living standards among both the low and middle classes, along with the belief that globalizing forces will allow those emerging economies to catch up with advanced countries. This is what is predicted by the growth theory of Nobel Prize winner Robert Solow (Solow 1956), and the great economic historian, Angus Maddison. On the other hand, there is concern that the fruits of globalisation are not distributed equally, in particular, the benefits might not reach the poorest in each country. This might result in widening income inequality both within and between countries, which would in turn be a major challenge for economic, social and political progress. For example, just looking at one group of countries, there is huge inequality among the members of the ASEAN. The GDP per capita of Singapore is nearly 37 times higher than the average GDP per capita of the CLMV (Cambodia, Laos, Myanmar and Vietnam) countries.⁶⁵ This has also required Asian countries to rethink their model of social and economic development that used to focus mainly on economic growth alone, ignoring the majority of people who are still vulnerable due to living in poverty.

There remain many crucial questions for further research. First, the Gini coefficient is always the first choice when measuring income inequality; however, if

⁶⁵ Author's estimation based on the World Bank database in 2014.

the study wishes to expand to more developing countries, like those in Asia, the large number of missing values becomes of greater concern. Although we could deal with this problem by using reliable statistical methods, it might still produce results that are unrepresentative of reality. That is why we might consider using the World Wealth and Income Database (WID.world), first developed by (Piketty and Zucman 2013, 2014), which is currently available in many more countries. Second, while using the Balassa revealed comparative advantage index of manufactured goods, we have not taken a closer look at 22 sub-categories, especially in quality- and high-technology-intensive sectors. Studying a high level of aggregation of this indicator may possibly give more fragile results. Third, we could not find any statistically significant coefficients for Anglo-Saxon countries. We suspected that this is because the database contains a small number of observations. Fourth, we might consider comparing the effects in South American countries, whose level of economic development is parallel to that of the Asian economies. Last, but not least, sectoral export specialization in agricultural and service sectors in developing countries should be taken into consideration since agricultural sectors play a significant role in many developing countries in Asia and service sectors are increasing in significance.

Appendix Chapter 3

APPENDIX 1 Variable Definitions and Sources

Variable	Description	Sources
Gini coefficient	We use “Gini coefficient” to measure income inequality. Gini index measures the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. Thus a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality (World Bank definition, 2017).	World Bank, Development Research Group. Data are based on primary household survey data obtained from government statistical agencies and World Bank country departments.
Openness to trade (% of GDP)	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product (World Bank definition, 2017).	World Bank national accounts data, and OECD National Accounts data files.
Foreign direct investment (% of GDP)	Foreign direct investment, net inflows (% of GDP). Foreign direct investment are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors, and is divided by GDP (World Bank definition, 2017).	International Monetary Fund, International Financial Statistics and Balance of Payments databases, World Bank, International Debt Statistics, and World Bank and OECD GDP estimates.
Export diversification index	The product export diversification index is measured by Theil index, calculated by IMF staff under an IMF-DFID research collaboration. The data is covering 187 countries from 1962-2010. The data is from the UN-NBER dataset, which harmonizes COMTRADE bilateral trade flow data at the 4-digit SITC (Rev. 1) level.	International Monetary Fund, UN-NBER dataset, and COMTRADE bilateral trade flow data.
Revealed Comparative Advantage Balassa Index in Manufactures	The data is gotten from World Bank, calculated by World Integrated Trade Solution staff, using Revealed Comparative Advantage Balassa Index in Manufactures product sectors among the 10 others sectors (food, fuel, ores and metals, textiles, machinery and transport equipment, raw materials, intermediate goods, consumer goods, capital goods and chemicals). It is covering all countries in the World from 1988 to 2014.	World Integrated Trade Solution (WITS), and World Bank.
High-technology exports (% of	High-technology exports are products with high R&D intensity, such as in aerospace, computers,	World Bank, UN, and Comtrade database

manufactured exports)	pharmaceuticals, scientific instruments, and electrical machinery (World Bank definition, 2017).	through the WITS platform.
GDP per capita, PPP (current international \$)	GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars (World Bank definition, 2017).	World Bank, International Comparison Program database.
Population growth (annual %)	GDP per capita based on purchasing power parity (PPP). PPP GDP is gross domestic product converted to international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GDP as the U.S. dollar has in the United States. GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current international dollars based on the 2011 ICP round. (World Bank definition, 2017).	Derived from total population. Population source: (1) UN Population Division. World Population Prospects, (2) UN Statistical Division. Population and Vital Statistics Report (various years), (3) Census reports and other statistical
Public spending (% of GDP)	Expense is cash payments for operating activities of the government in providing goods and services. It includes compensation of employees (such as wages and salaries), interest and subsidies, grants, social benefits, and other expenses such as rent and dividends (World Bank definition, 2017).	International Monetary Fund, Government Finance Statistics Yearbook and data files, and World Bank and OECD GDP estimates.
Country group	By income classification (time-variant variables): high- and low-income countries By geographical classification (time-invariants variables): Asian countries and Western countries.	World Bank

SOURCE Authors' determination

NOTES Data from 1988 to 2014 in 52 Asian and Western countries

APPENDIX 2 List of Countries

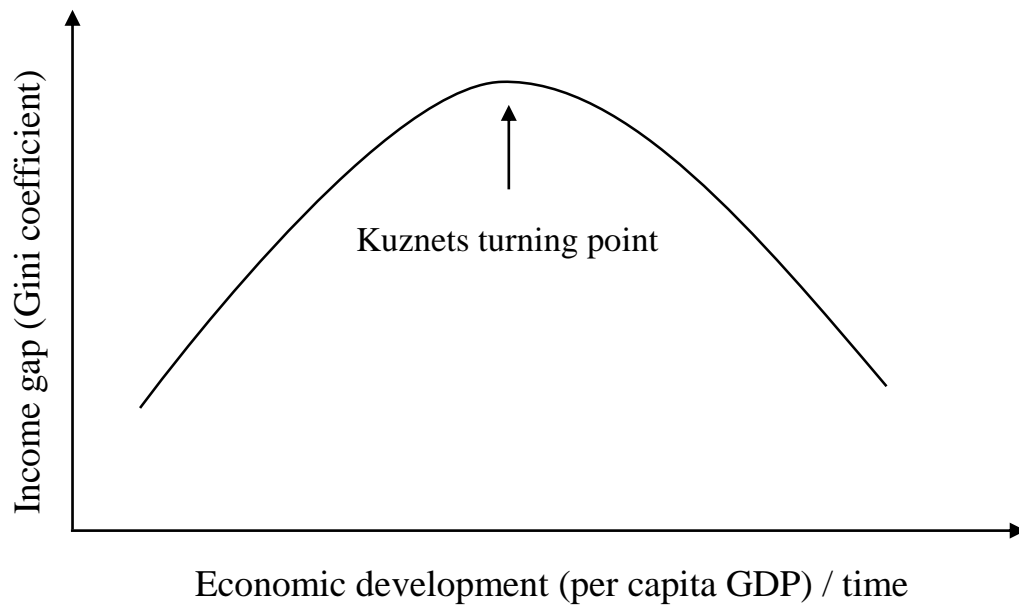
Country group	Sub-groups of countries	Name of countries
Asian countries	Asian – high income countries	China, Japan, Korea, Rep., Malaysia, Maldives, Singapore and Thailand
	Asian – low-income countries	Bangladesh, Bhutan, Cambodia, India, Indonesia, Lao PDR, Micronesia, Fed. Sts., Mongolia, Nepal, Pakistan, Philippines, Sri Lanka, Timor-Leste, Tonga and Vietnam
Western countries	West - EU members	Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden
	West – Anglo-Saxons countries	United States of America, United Kingdom, Canada and Australia

SOURCE Author's determination

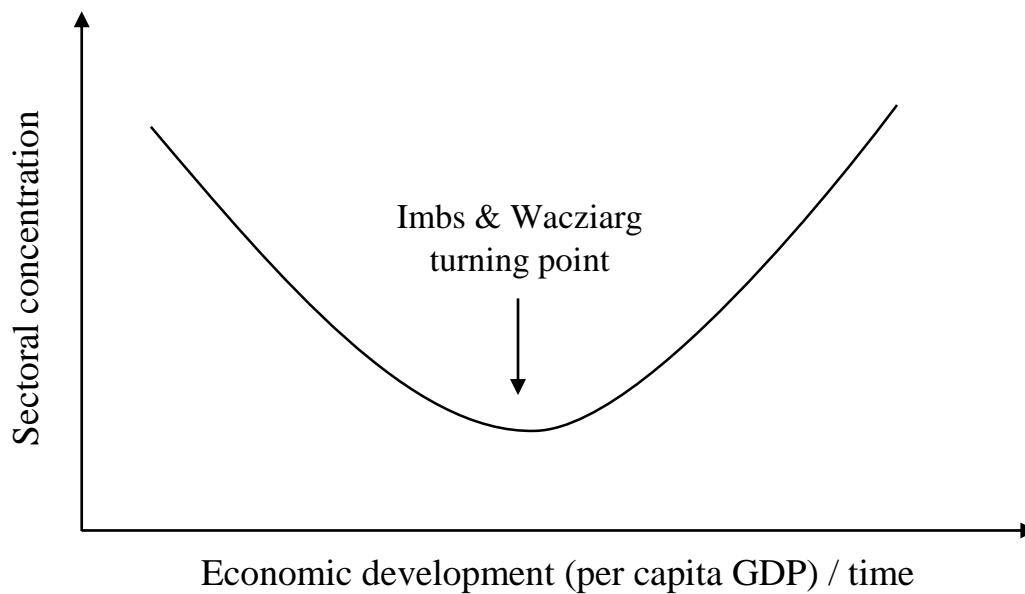
NOTES Data from 1988 to 2014 in 52 Asian and Western countries

APPENDIX 3 Kuznets hypothesis (1955) and Imbs & Wacziarg hypothesis (2003)

1) Kuznets hypothesis (1955)



2) Imbs & Wacziarg hypothesis (2003)



APPENDIX 4 The 52 Asian and Western countries (UN member states) in 2014

1) The 52 Asian and Western countries and their global shares

Country Name	POP. (in million)	% of global share	GDP. (in \$ billion)	% of global share	EX. (in \$ billion)	% of global share	IM. (in \$ billion)	% of global share	Average (% of global share)
<i>Asian – high-income countries</i>									
China	1 364.3	18.77 %	10 482.4	13.29 %	2 342.3	12.25 %	1959.2	10.27 %	13.64 %
Japan	127.3	1.75 %	4 848.7	6.15 %	690.2	3.61 %	812.2	4.26 %	3.94 %
Korea, Rep.	50.8	0.70 %	1 411.3	1.79 %	572.7	2.99 %	525.5	2.75 %	2.06 %
Malaysia	30.2	0.42 %	338.1	0.43 %	233.9	1.22 %	208.9	1.09 %	0.79 %
Singapore	5.5	0.08 %	308.1	0.39 %	409.3	2.14 %	366.2	1.92 %	1.13 %
Thailand	68.4	0.94 %	406.5	0.52 %	227.5	1.19 %	227.7	1.19 %	0.96 %
Maldives	0.4	0.006 %	3.1	0.003 %	0.3	0.002 %	2.0	0.01 %	0.01 %
<i>Asian – low-income countries</i>									
Micronesia	0.1	0.001 %	0.3	0.0004 %	0.03	0.0002 %	0.2	0.001 %	0.001 %
Indonesia	255.1	3.51 %	890.8	1.13 %	176.3	0.92 %	178.2	0.93 %	1.62 %
Cambodia	15.3	0.21 %	16.8	0.02 %	6.8	0.04 %	11.9	0.06 %	0.08 %
Lao PDR	6.6	0.09 %	13.3	0.02 %	2.7	0.01 %	4.3	0.02 %	0.04 %
Mongolia	2.9	0.04 %	12.2	0.02 %	5.8	0.03 %	5.2	0.03 %	0.03 %
Philippines	100.1	1.38 %	284.6	0.36 %	62.1	0.3 %	67.7	0.35 %	0.60 %
Timor-Leste	1.2	0.02 %	1.4	0.002 %	0.02	0.00008 %	0.9	0.005 %	0.006 %
Tonga	0.1	0.001 %	0.4	0.0006 %	0.02	0.0001 %	0.2	0.001 %	0.00 %
Vietnam	90.7	1.25 %	186.2	0.24 %	150.2	0.79 %	147.8	0.78 %	0.76 %
Bangladesh	159.4	2.19 %	172.9	0.22 %	30.4	0.16 %	42.3	0.22 %	0.70 %
Bhutan	0.8	0.01 %	1.95	0.002 %	0.6	0.003 %	0.9	0.005 %	0.005 %
India	1 293.9	17.79 %	2 035.4	2.58 %	322.7	1.69 %	462.9	2.43 %	6.12 %
Sri Lanka	21.0	0.29 %	79.4	0.10 %	11.3	0.06 %	19.4	0.10 %	0.14 %
Nepal	28.3	0.39 %	20.0	0.03 %	0.9	0.005 %	7.6	0.04 %	0.115 %
Pakistan	185.5	2.55 %	244.4	0.31 %	24.7	0.13 %	47.4	0.25 %	0.81 %
<i>West - EU members</i>									
Austria	8.5	0.12 %	438.4	0.56 %	178.2	0.93 %	182.0	0.95 %	0.64 %
Belgium	11.2	0.15 %	531.8	0.67 %	472.3	2.47 %	454.6	2.38 %	1.42 %
Bulgaria	7.2	0.10 %	56.7	0.07 %	29.3	0.15 %	34.7	0.18 %	0.13 %
Croatia	4.2	0.06 %	57.1	0.07 %	13.9	0.07 %	22.8	0.12 %	0.08 %
Cyprus	1.2	0.02 %	23.3	0.03 %	1.8	0.01 %	6.8	0.04 %	0.02 %
Czech Republic	10.5	0.14 %	207.8	0.26 %	175.1	0.92 %	154.34	0.81 %	0.53 %
Denmark	5.6	0.08 %	352.3	0.45 %	111.5	0.58 %	99.6	0.52 %	0.41 %
Estonia	1.3	0.02 %	26.2	0.03 %	16.1	0.08 %	18.3	0.10 %	0.06 %
Finland	5.5	0.08 %	272.6	0.35 %	74.4	0.39 %	76.7	0.40 %	0.30 %
France	66.3	0.91 %	2 849.3	3.61 %	580.5	3.04 %	676.6	3.55 %	2.78 %
Germany	81.0	1.11 %	3 879.3	4.92 %	1 494.6	7.82 %	1 207.0	6.33 %	5.04 %
Greece	10.9	0.15 %	236.1	0.30 %	36.03	0.19 %	64.2	0.34 %	0.24 %
Hungary	9.9	0.14 %	139.3	0.18 %	110.6	0.58 %	104.9	0.55 %	0.36 %

Ireland	4.6	0.06 %	256.3	0.32 %	121.9	0.64 %	80.7	0.42 %	0.36 %
Italy	60.8	0.84 %	2151.7	2.73 %	529.9	2.77 %	474.2	2.49 %	2.21 %
Latvia	2.99	0.03 %	31.4	0.04 %	14.6	0.08 %	17.6	0.09 %	0.06 %
Lithuania	2.93	0.04 %	48.5	0.06 %	32.4	0.17 %	34.4	0.18 %	0.11 %
Luxembourg	0.56	0.01 %	66.3	0.08 %	19.2	0.10 %	26.7	0.14 %	0.08 %
Netherlands	16.9	0.23 %	879.6	1.12 %	672.7	3.52 %	589.4	3.09 %	1.99 %
Poland	38.01	0.52 %	545.2	0.69 %	220.2	1.15 %	223.7	1.17 %	0.88 %
Portugal	10.4	0.14 %	229.6	0.29 %	63.8	0.33 %	78.4	0.41 %	0.29 %
Romania	19.9	0.27 %	199.5	0.25 %	69.7	0.36 %	77.8	0.41 %	0.32 %
Slovak Republic	5.4	0.07 %	100.8	0.13 %	86.5	0.45 %	81.9	0.43 %	0.27 %
Slovenia	2.06	0.03 %	49.5	0.06 %	35.9	0.19 %	33.9	0.18 %	0.11 %
Spain	46.5	0.64 %	1 375.9	1.74 %	324.5	1.70 %	358.9	1.88 %	1.49 %
Sweden	9.7	0.13 %	573.8	0.73 %	164.6	0.86 %	162.3	0.85 %	0.64 %
West – Anglo-Saxons countries									
Australia	23.5	0.32 %	1 459.6	1.85 %	241.2	1.26 %	236.9	1.24 %	1.17 %
United Kingdom	64.6	0.89 %	2 998.8	3.80 %	505.2	2.64 %	690.5	3.62 %	2.74 %
Canada	35.5	0.49 %	1 792.9	2.27 %	476.3	2.49 %	480.0	2.52 %	1.94 %
United States	318.6	4.38 %	17 393.1	22.05 %	1 620.5	8.47 %	2 412.5	12.64 %	11.89 %
Global share	7 268.99	64.56 %	78 870.1	77.32 %	19 122.6	71.98 %	19 080.3	74.74 %	72.2 %

SOURCE Author's estimation

NOTES Data in 2014 in 52 Asian and Western countries

POP. = Population, total – (in million);

GDP = GDP (current US\$) - (in \$ billion);

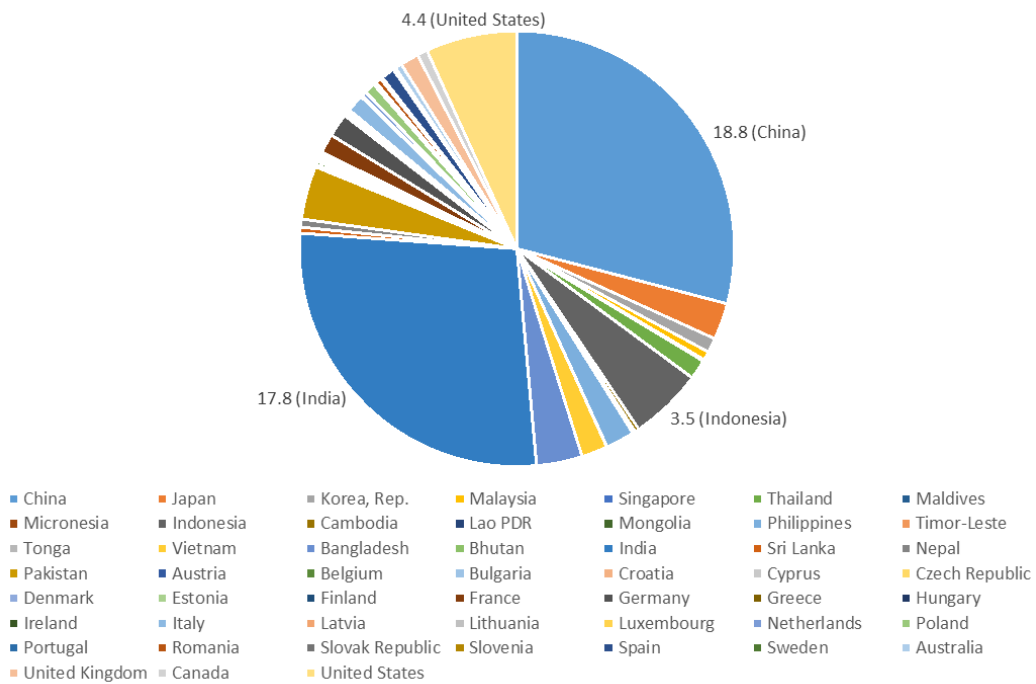
EX = Merchandise exports (current US\$) - (in \$ billion);

IM = Merchandise imports (current US\$) - (in \$ billion);

Average (% of global share) is calculated as average value of population, GDP, merchandise exports and merchandise imports.

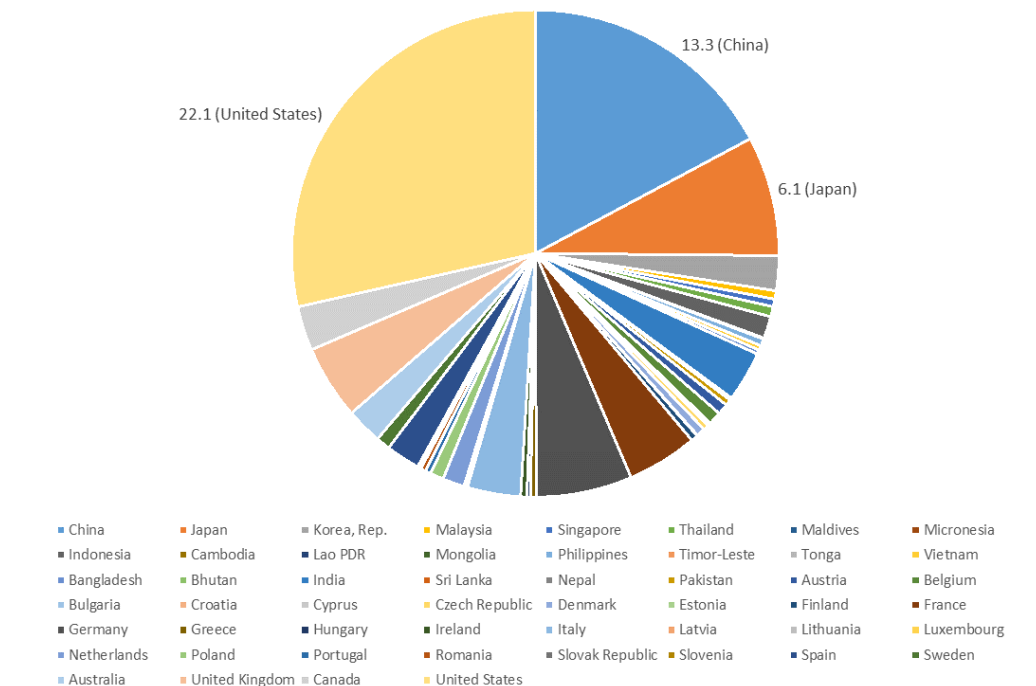
2) Graphic of 52 Asian and Western countries (as global share) in 2014

Population, total (as % of World Population) in 2014



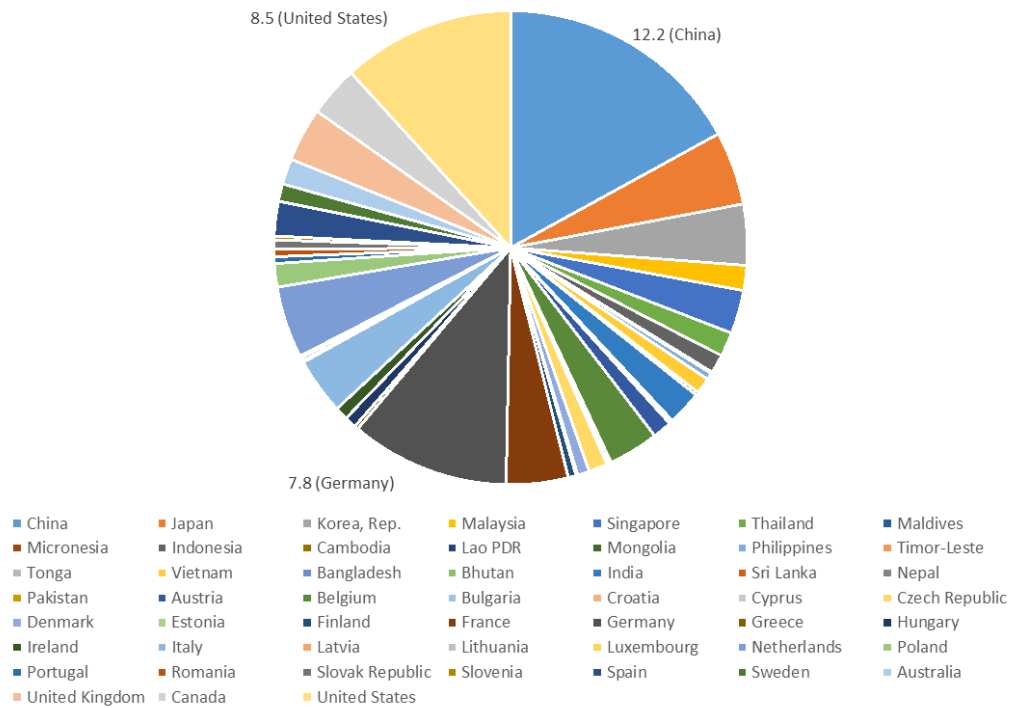
SOURCE Author's estimation

GDP (current US\$) (as % of World GDP) in 2014



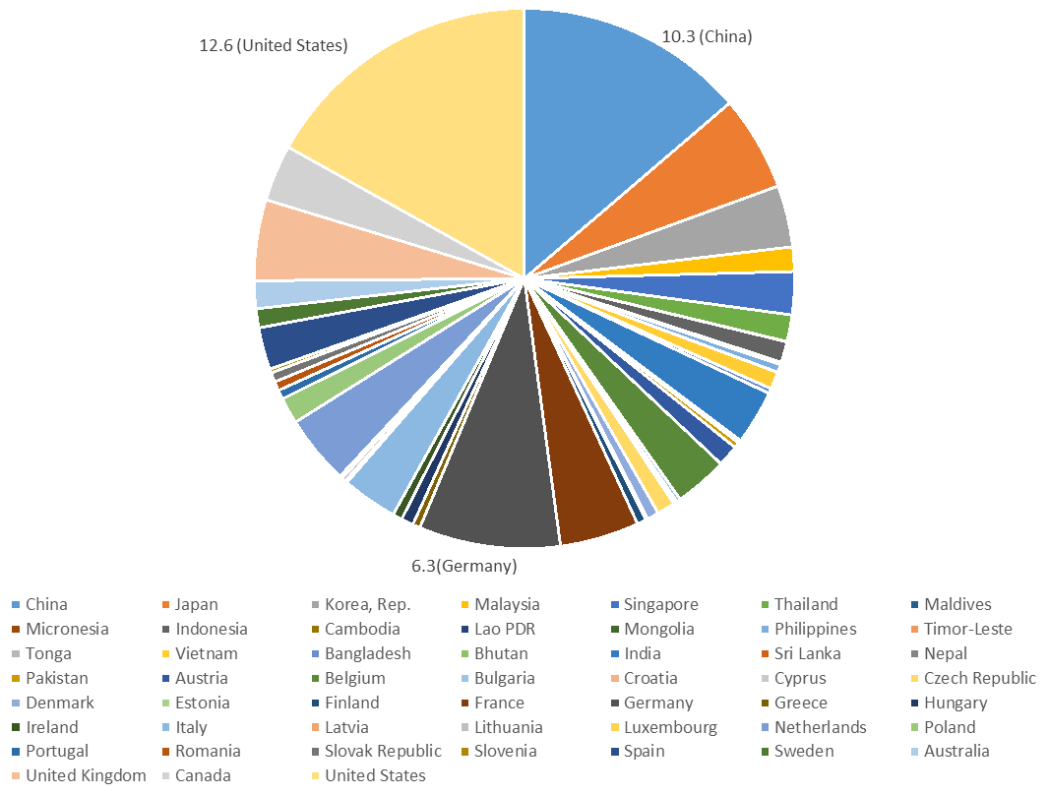
SOURCE Author's estimation

Merchandise exports (current US\$) (as % of World Merchandise exports) in 2014



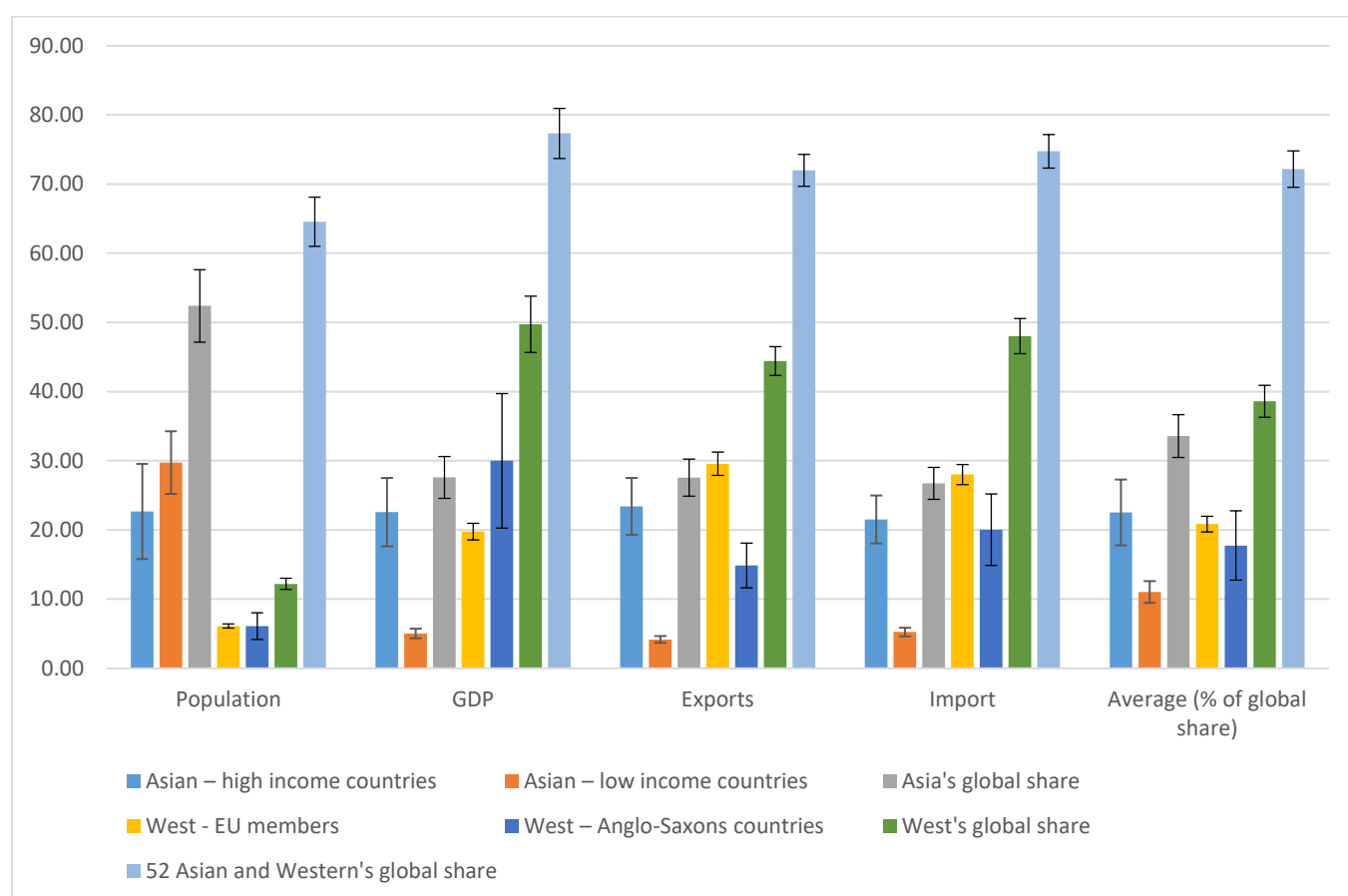
SOURCE Author's estimation

Merchandise imports (current US\$) (as % of World Merchandise imports) in 2014



SOURCE Author's estimation

APPENDIX 5 Percentage of global share by sub-regions of countries in 2014



Region	POP.	GDP	Exports	Imports	Average (% of global share)
Asian – high income countries	22.66 %	22.57 %	23.41 %	21.50 %	22.53 %
Asian – low income countries	29.73 %	5.02 %	4.15 %	5.22 %	11.03 %
<i>Asia's global share</i>	52.38 %	27.59 %	27.56 %	26.72 %	33.56 %
West - EU members	6.10 %	19.75 %	29.55 %	28.00 %	20.85 %
West – Anglo-Saxons countries	6.08 %	29.98 %	14.87 %	20.02 %	17.74 %
<i>West's global share</i>	12.18 %	49.73 %	44.42 %	48.02 %	38.59 %
52 Asian and Western countries' global share	64.56 %	77.32 %	71.98 %	74.74 %	72.15 %

SOURCE Author's estimation

NOTES Data in 2014 in 52 Asian and Western countries;

POP.: Population, total – (in million);

GDP: GDP (current US\$) - (in \$ billion);

EX: Merchandise exports (current US\$) - (in \$ billion);

IM: Merchandise imports (current US\$) - (in \$ billion);

Average (% of global share) is calculated as average value of population, GDP, merchandise exports and merchandise imports.

APPENDIX 6 Descriptive statistics (average from 1988 to 2014)

1) Income inequality

Variables	Obs.	Mean	SD	Min	Max
Gini coefficient (N = 52)	895	35.67	4.75	19.40	63.26
<i>Asian – high income countries</i>	137	39.99	6.72	24.50	49.15
<i>Asian – low income countries</i>	283	36.62	4.97	27.00	63.26
<i>West – EU members</i>	401	30.18	3.96	19.40	39.50
<i>West - Anglo-Saxons countries</i>	74	35.87	3.34	31.15	41.75

2) Traditional macro-economic variables of globalisation

Variables	Obs.	Mean	SD	Min	Max
Openness to trade (% of GDP) (N = 52)	1,314	87.19	53.00	13.26	439.66
<i>Asian – high income countries</i>	189	134.18	108.85	15.92	439.66
<i>Asian – low income countries</i>	361	71.67	35.04	13.26	201.80
<i>West – EU members</i>	656	97.76	51.61	33.98	374.15
<i>West - Anglo-Saxons countries</i>	108	45.13	16.50	19.01	82.86
Foreign direct investment (% of GDP) (N = 52)	1,290	3.75	7.01	-58.98	255.42
<i>Asian – high income countries</i>	189	4.51	5.48	-0.05	26.52
<i>Asian – low income countries</i>	373	2.23	4.49	-32.35	43.91
<i>West – EU members</i>	620	5.66	15.90	-58.98	255.42
<i>West - Anglo-Saxons countries</i>	108	2.61	2.15	-3.62	10.07

3) Sectoral export diversification and manufacturing specialization variables

Variables	Obs.	Mean	SD	Min	Max
Export diversification index (N = 52)	1,062	2.44	0.61	1.14	5.37
<i>Asian – high income countries</i>	161	2.66	0.90	1.74	5.37
<i>Asian – low income countries</i>	276	3.39	0.80	1.81	4.85
<i>West – EU members</i>	533	1.85	0.40	1.14	3.33
<i>West - Anglo-Saxons countries</i>	92	1.84	0.34	1.37	2.99
Manufacturing specialization (N = 52)	1,107	0.95	0.31	0.03	1.47
<i>Asian – high income countries</i>	175	1.08	0.31	0.05	1.47
<i>Asian – low income countries</i>	249	0.89	0.39	0.03	1.46
<i>West – EU members</i>	584	1.03	0.18	0.50	1.34
<i>West - Anglo-Saxons countries</i>	99	0.78	0.34	0.15	1.16

4) High technology exports variables

Variables	Obs.	Mean	SD	Min	Max
High-tec exports as % of manufac. (N = 52)	1,134	18.44	11.96	0.00	74.99
<i>Asian – high income countries</i>	156	32.79	13.70	6.44	62.79
<i>Asian – low income countries</i>	245	8.99	17.46	0.00	74.99
<i>West – EU members</i>	626	12.04	8.72	0.40	47.84
<i>West - Anglo-Saxons countries</i>	107	19.95	7.96	7.07	34.26

5) Control variables

Variables	Obs.	Mean	SD	Min	Max
GDP per capita (current \$) (N = 52)	1,248	20,080	10,551	707	99,732
<i>Asian – high income countries</i>	164	20,295	16,806	986	83,798
<i>Asian – low income countries</i>	362	3,327	2,088	707	12,012
<i>West – EU members</i>	622	24,533	13,711	4,494	99,732
<i>West - Anglo-Saxons countries</i>	100	32,163	9,598	16,739	54,539
Population growth (annual %) (N = 52)	1,404	1.04	0.83	-5.81	5.32
<i>Asian – high income countries</i>	189	1.39	1.15	-1.47	5.32
<i>Asian – low income countries</i>	405	1.58	0.91	-1.76	4.94
<i>West – EU members</i>	702	0.20	0.84	-5.81	3.73
<i>West - Anglo-Saxons countries</i>	108	0.98	0.40	0.22	2.06
Public spending as % of GDP (N = 52)	1,129	24.04	7.72	0.62	78.19
<i>Asian – high income countries</i>	151	17.18	4.32	10.81	32.39
<i>Asian – low income countries</i>	243	17.47	8.00	7.59	78.19
<i>West – EU members</i>	629	35.66	11.42	0.62	63.15
<i>West - Anglo-Saxons countries</i>	106	25.85	7.12	16.70	43.48

SOURCE Author's estimation

NOTES Data in 2014 in 52 Asian and Western countries

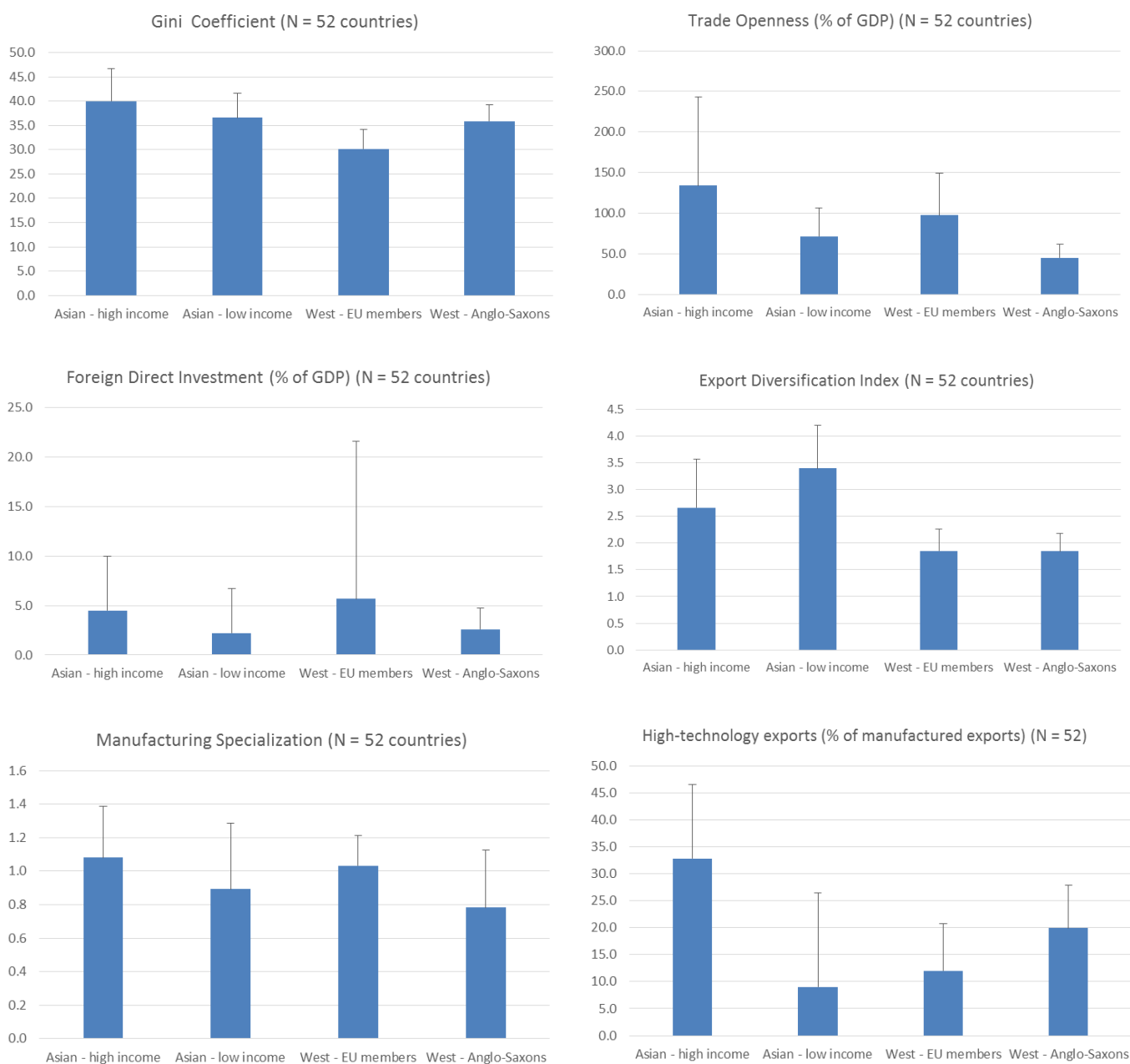
Asian – high income countries: China, Japan, Korea, Rep., Malaysia, Maldives, Singapore and Thailand

Asian – low income countries: Bangladesh, Bhutan, Cambodia, India, Indonesia, Lao PDR, Micronesia, Fed. Sts., Mongolia, Nepal, Pakistan, Philippines, Sri Lanka, Timor-Leste, Tonga and Vietnam

West – EU members: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden

West- Anglo-Saxons countries: United States of America, United Kingdom, Canada and Australia

APPENDIX 7 Disparity in data analysis (average from 1988 to 2014)



SOURCE Author's estimation

NOTES Data from 1988 to 2014 in 52 Asian and Western countries

Asian – high income countries: China, Japan, Korea, Rep., Malaysia, Maldives, Singapore and Thailand

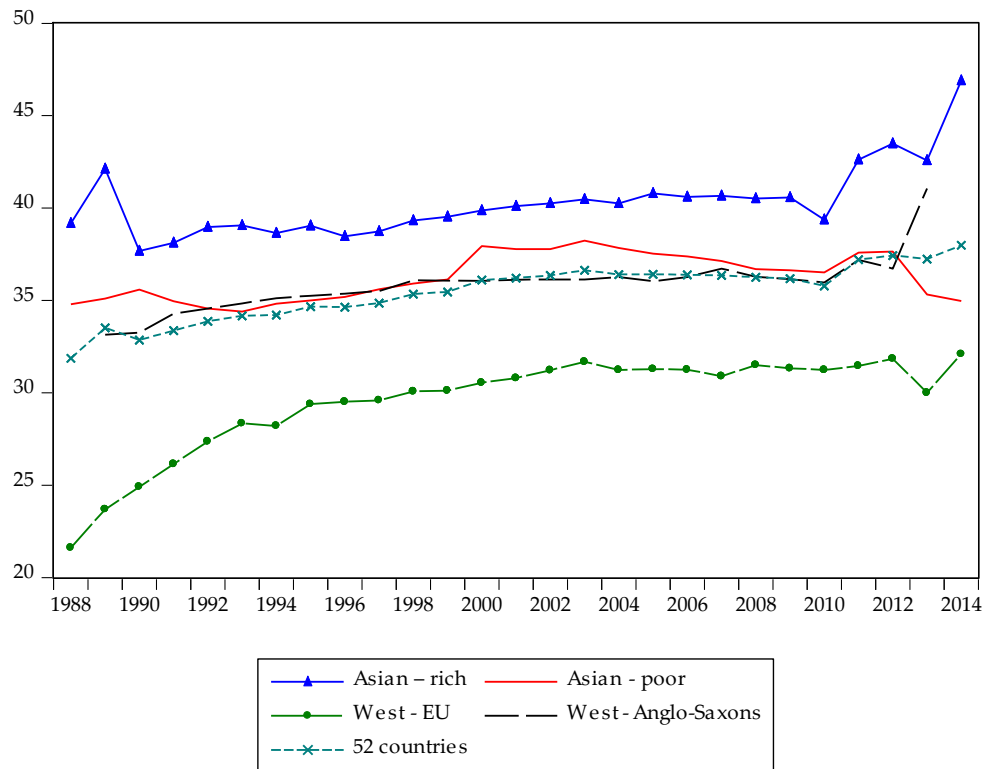
Asian – low income countries: Bangladesh, Bhutan, Cambodia, India, Indonesia, Lao PDR, Micronesia, Fed. Sts., Mongolia, Nepal, Pakistan, Philippines, Sri Lanka, Timor-Leste, Tonga and Vietnam

West – EU members: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden

West- Anglo-Saxons countries: United States of America, United Kingdom, Canada and Australia

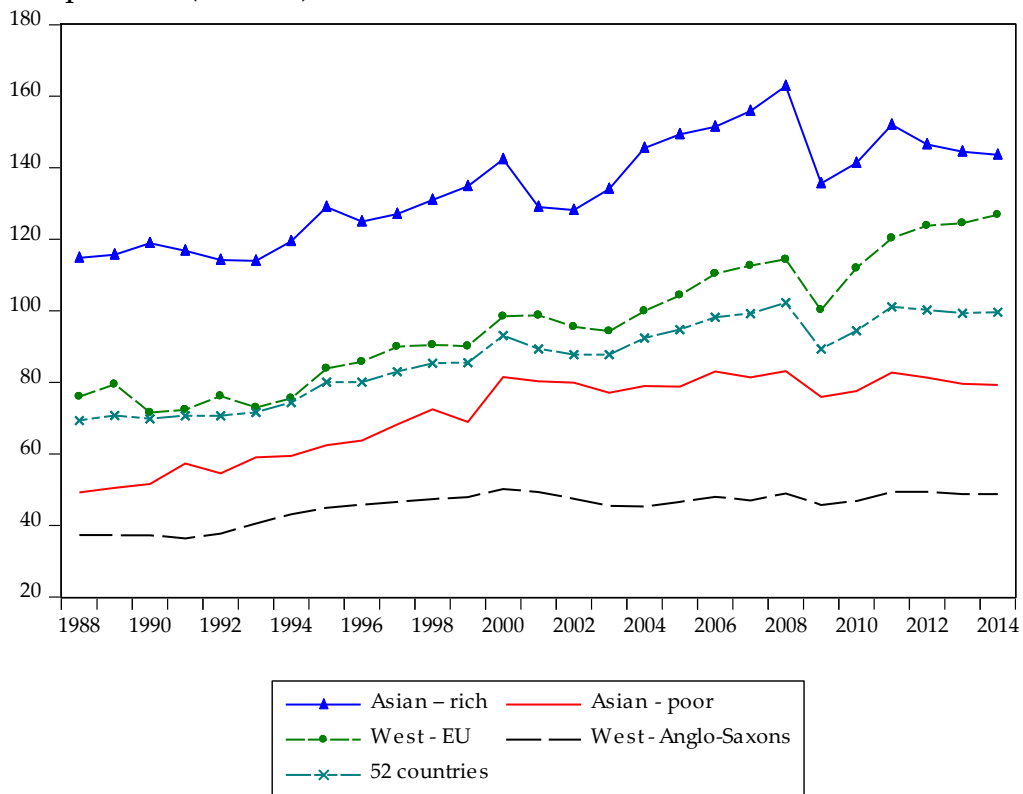
APPENDIX 8 Trends of economic variables from 1988 to 2014

1) Gini coefficient



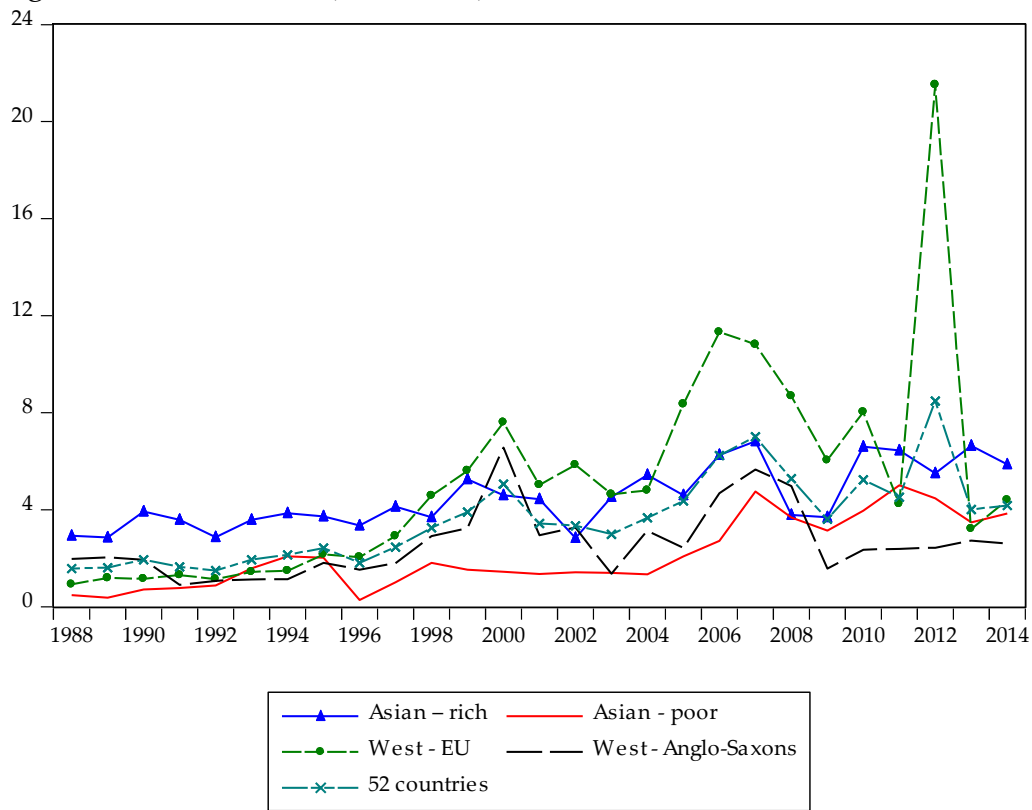
SOURCE Author's estimation

2) Trade Openness (% GDP)



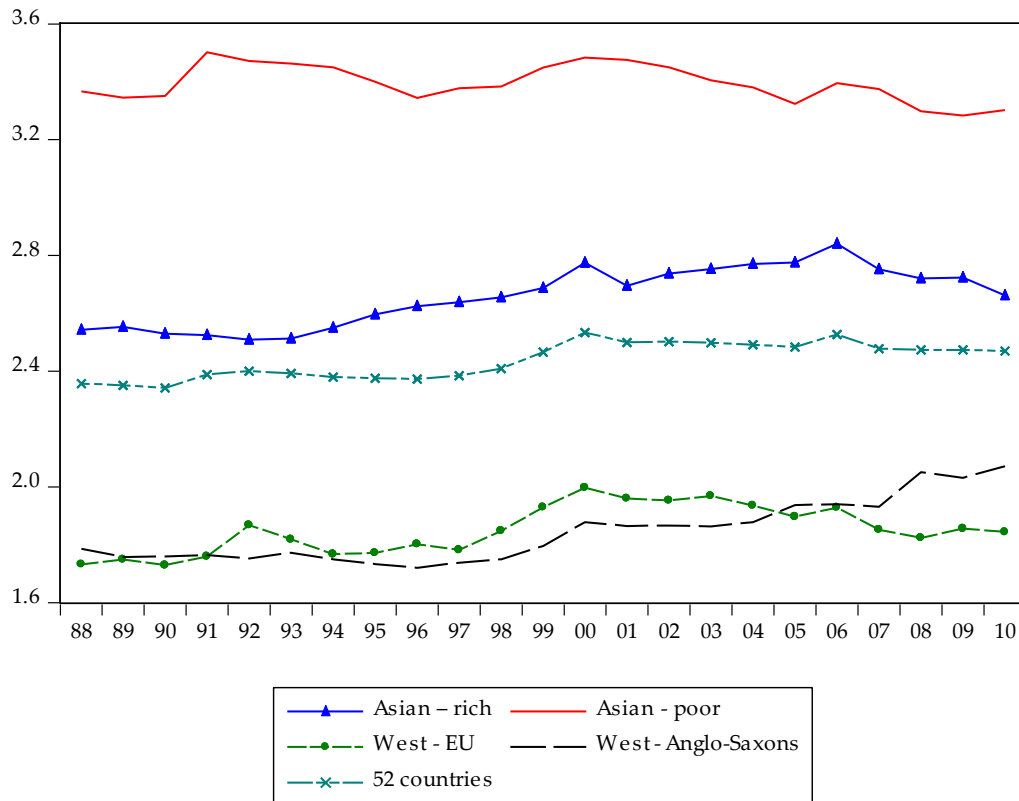
SOURCE Author's estimation

3) Foreign direct investment (% of GDP)



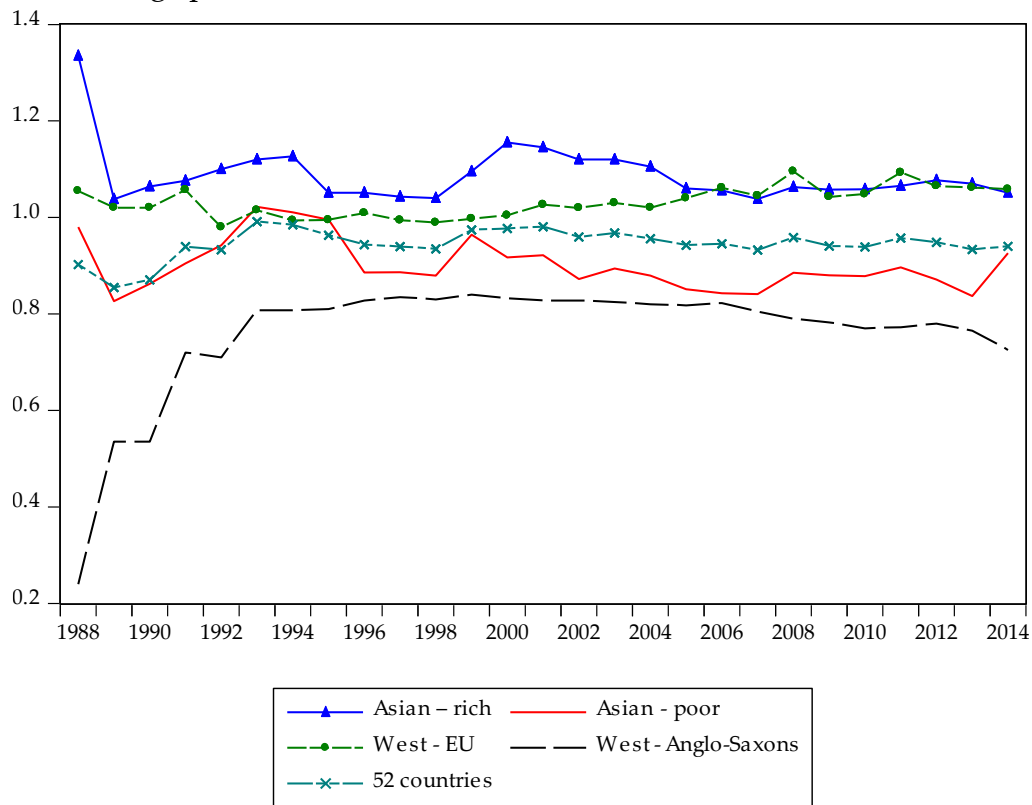
SOURCE Author's estimation

4) Export diversification index



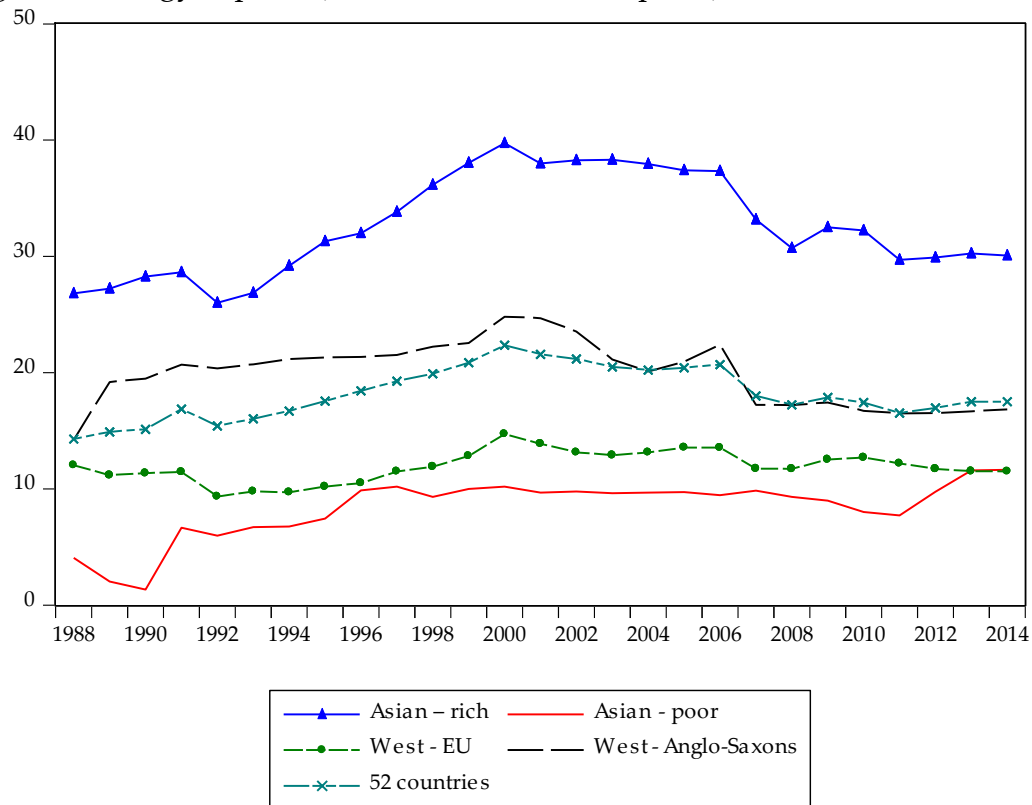
SOURCE Author's estimation

5) Manufacturing specialization



SOURCE Author's estimation

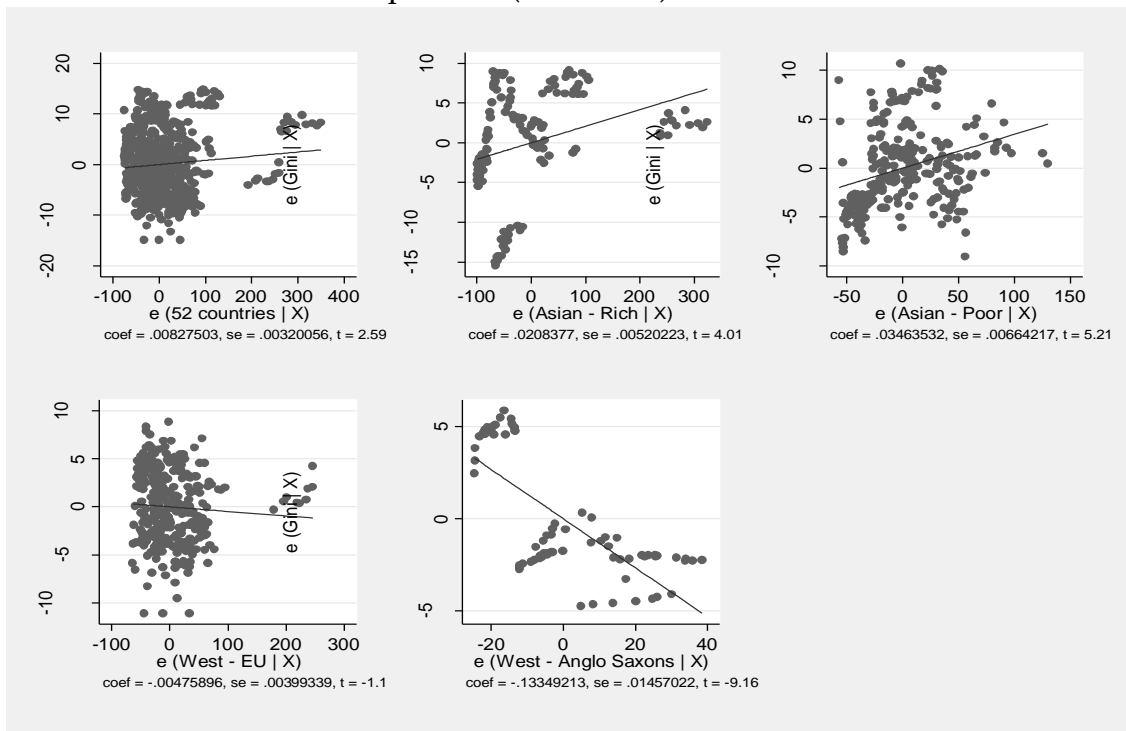
6) High-technology exports (% of manufactured exports)



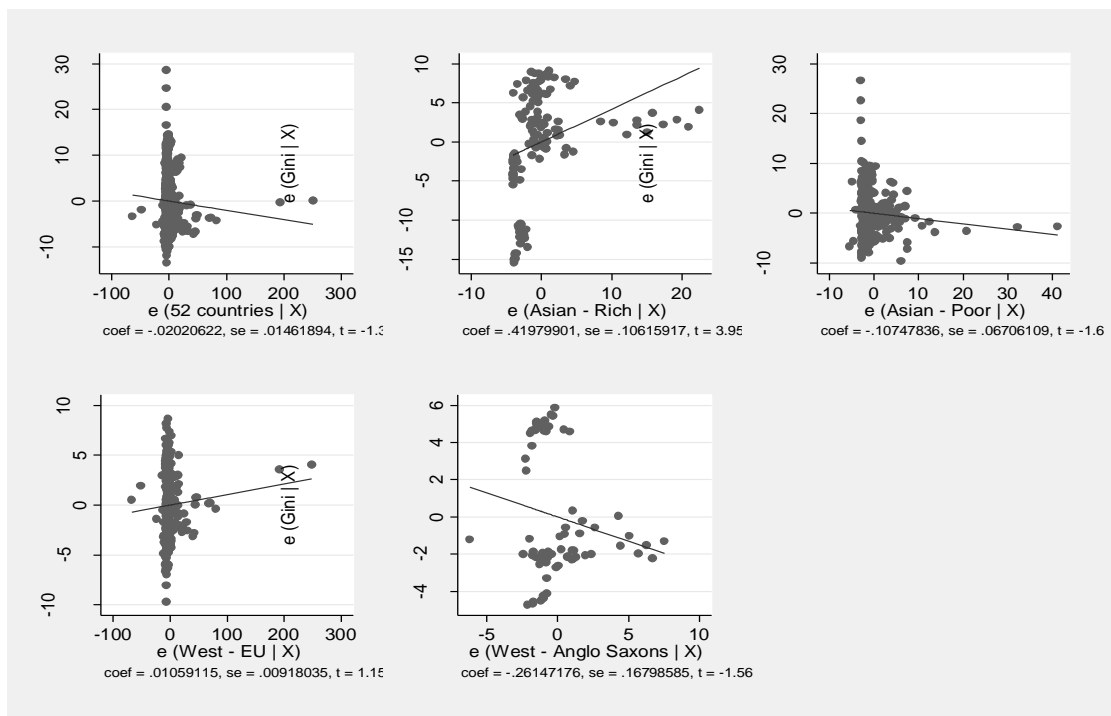
SOURCE Author's estimation

APPENDIX 9 Correlation between independent variables and inequality (1988 to 2014)

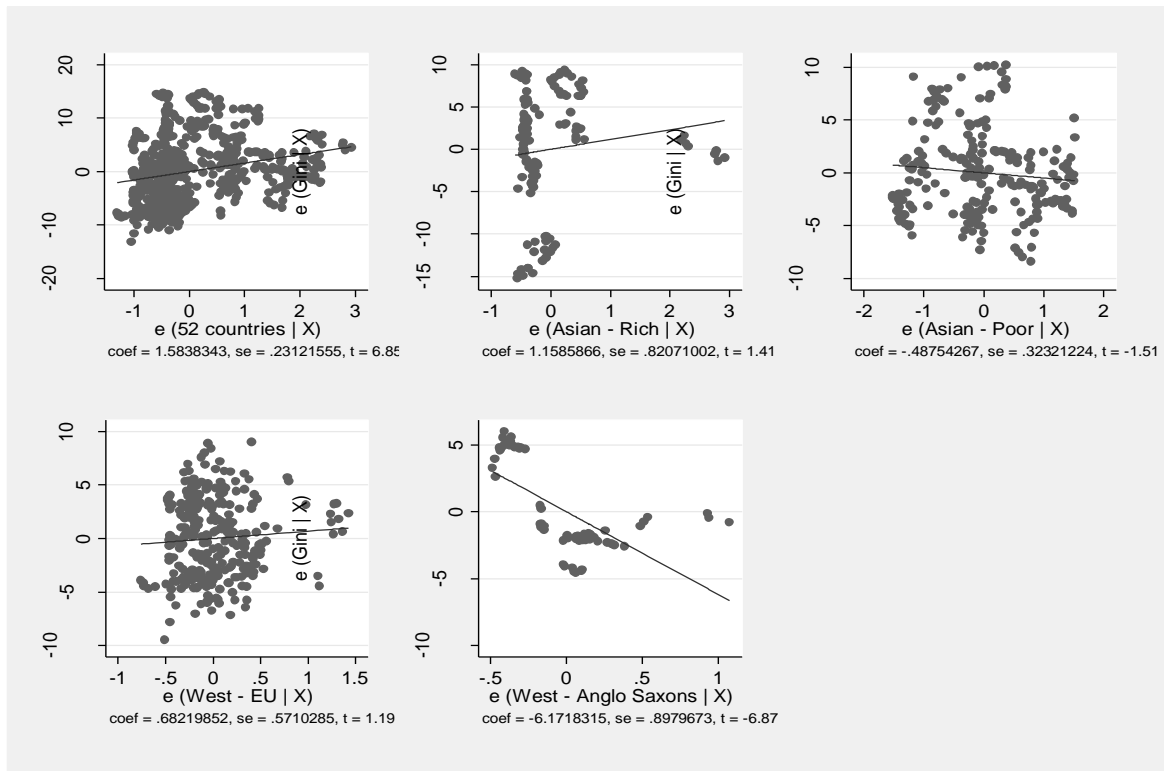
1) Gini coefficient and trade openness (% of GDP)



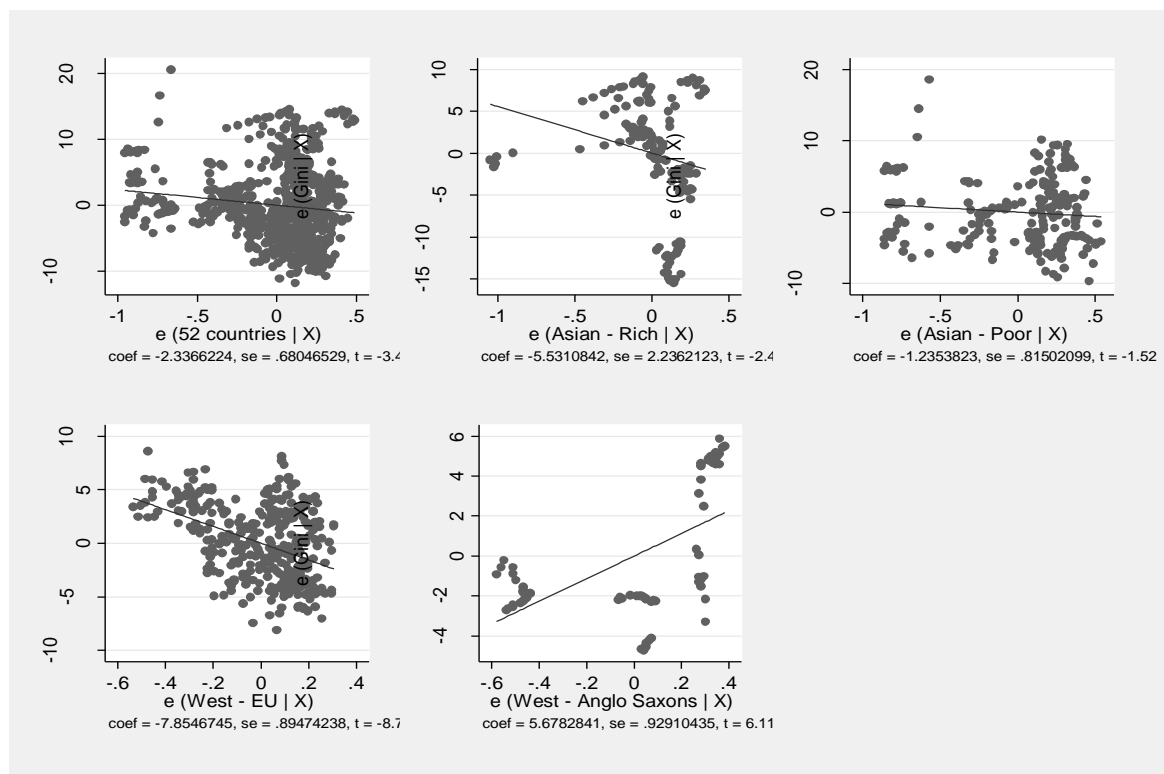
2) Gini coefficient and foreign direct investment (% of GDP)



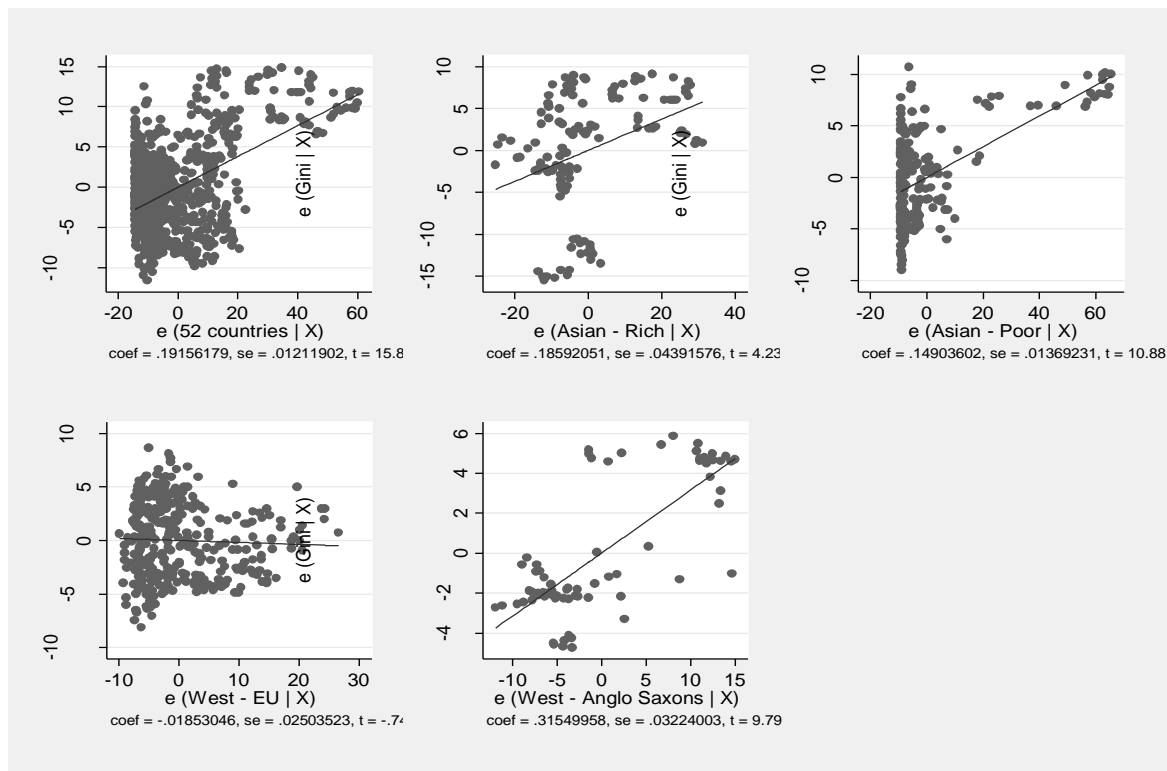
3) Gini coefficient and export diversification index



4) Gini coefficient and manufacturing specialization



5) Gini coefficient and high technology exports (% of manufactured exports)



SOURCE Author's estimation

NOTES Data from 1988 to 2014 in 52 Asian and Western countries

Asian – high income countries: China, Japan, Korea, Rep., Malaysia, Maldives, Singapore and Thailand

Asian – low income countries: Bangladesh, Bhutan, Cambodia, India, Indonesia, Lao PDR, Micronesia, Fed. Sts., Mongolia, Nepal, Pakistan, Philippines, Sri Lanka, Timor-Leste, Tonga and Vietnam

West – EU members: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden

West- Anglo-Saxons countries: United States of America, United Kingdom, Canada and Australia

APPENDIX 10 Pairwise correlations of variables (1988 to 2014)

	GINI	TRADE	FDI	DIV.	SPEC.	HIG. T.	GDP	POP.	SPEN.
GINI	1.0000								
(Sig. 1%)									
Nb. of Obs.	895								
TRADE	0.0888*	1.0000							
(Sig. 1%)	(0.0099)								
Nb. of Obs.	843	1314							
FDI	-0.0474	0.3549*	1.0000						
(Sig. 1%)	(0.1673)	(0.0000)							
Nb. of Obs.	849	1271	1290						
DIV.	0.2461*	0.1678*	-0.0017	1.0000					
(Sig. 1%)	(0.0000)	(0.0000)	(0.9567)						
Nb. of Obs.	730	1035	1019	1062					
SPEC.	-0.1228*	0.0190	-0.0329	-0.1752*	1.0000				
(Sig. 1%)	(0.0006)	(0.5315)	(0.2767)	(0.0000)					
Nb. of Obs.	772	1089	1095	862	1107				
HIG. T.	0.4947*	0.3880*	0.0837*	0.0008	0.1635*	1.0000			
(Sig. 1%)	(0.0000)	(0.0000)	(0.0051)	(0.9799)	(0.0000)				
Nb. of Obs.	773	1123	1117	909	1061	1134			
GDP	-0.2229*	0.3021*	0.1874*	-0.6391*	0.1202*	0.3053*	1.0000		
(Sig. 1%)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0000)			
Nb. of Obs.	844	1223	1211	950	1070	1079	1248		
POP.	0.3180*	0.1782*	0.0487	0.5516*	-0.0334	0.2374*	-0.3184*	1.0000	
(Sig. 1%)	(0.0000)	(0.0000)	(0.0802)	(0.0000)	(0.2665)	(0.0000)	(0.0000)		
Nb. of Obs.	895	1314	1290	1062	1107	1134	1248	1404	
SPEN.	-0.3907*	-0.0352*	0.0769	-0.4158*	0.0193	-0.1187*	0.4248*	-0.2640*	1.0000
(Sig. 1%)	(0.0000)	(0.2387)	(0.0106)	(0.0000)	(0.5410)	(0.0001)	(0.0000)	(0.0000)	
Nb. of Obs.	726	1120	1104	880	1010	1040	1068	1129	1129

SOURCE Author's estimation

NOTES

TRADE = Openness to trade (% of GDP)

FDI = Foreign direct investment (% of GDP)

DIV. = Export diversification index

SPEC. = Revealed comparative Balassa Index in manufactures

HIG. T. = High-technology exports (% of manufactures)

GDP = GDP per capita, PPP (current international \$)

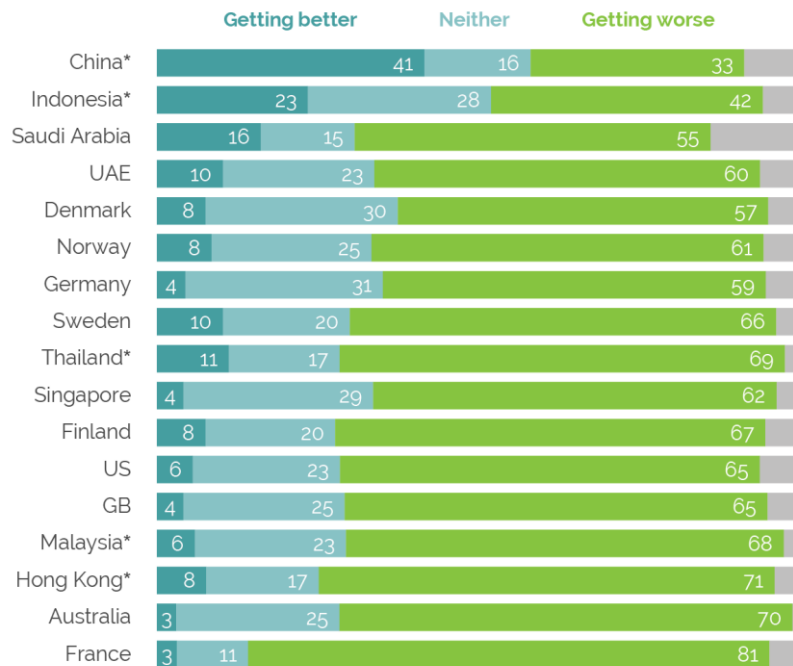
POP. = Population growth (annual %)

SPEN. = Public spending (% of GDP)

Data from 1988 to 2014 in 52 Asian and Western countries

APPENDIX 11 Fear of globalisation?

1) Global attitudes towards globalizing forces



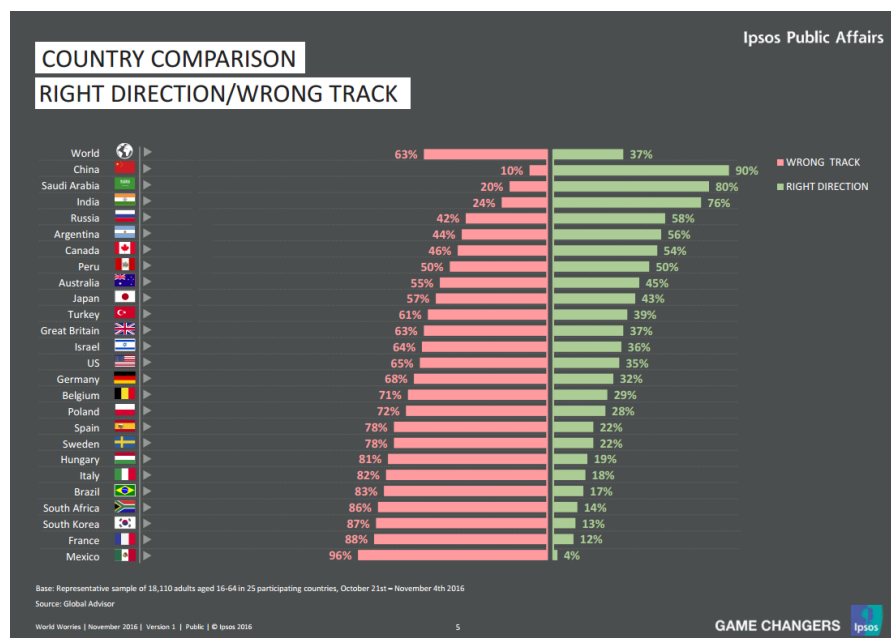
*Weighted to be representative of online population

YouGov | yougov.com

November - December 2015

SOURCE The World Economic Forum (2017)

2) Ipsos/Mori's 'What Worries the World' survey



SOURCE Global Advisor (2016)

APPENDIX 12 Econometric regression results of static panel data models

*Dependent Variable: Gini Coefficient***Detailed econometric results for static panel-data models**

	Pooled OLS Models		Fixed-effects Models		Random-effects Models	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Traditional macro-economic variables of globalization						
Trade openness (% of GDP)	0.0018 (0.004)		-0.004 (0.007)		0.0014 (0.006)	
<i>Asian – high income countries</i>		-0.0026 (0.01)		0.007 (0.013)		0.006 (0.009)
<i>Asian – low income countries</i>		0.0343*** (0.0107)		0.022 (0.016)		0.0196 (0.0131)
<i>West – EU members</i>		-0.0379*** (0.0087)		-0.012 (0.0097)		-0.0075 (0.0089)
<i>West – Anglo-Saxons countries</i>		-0.1199*** (0.0410)		0.033 (0.049)		-0.0119 (0.041)
Foreign direct investment (% of GDP)	-0.0692** (0.0269)		0.0019 (0.015)		-0.004 (0.0148)	
<i>Asian – high income countries</i>		-0.1649 (0.1313)		0.0081 (0.0738)		-0.017 (0.0755)
<i>Asian – low income countries</i>		0.0193 (0.1195)		0.191** (0.078)		0.1658** (0.0766)
<i>West – EU members</i>		0.0187 (0.0248)		-0.003 (0.0148)		-0.0056 (0.0151)
<i>West – Anglo-Saxons countries</i>		0.0582 (0.1884)		-0.017 (0.111)		0.0244 (0.113)
Sectoral export diversification and manufacturing specialization variables						
Export diversification index	0.1919 (0.3088)		-0.116 (0.472)		0.485 (0.415)	
<i>Asian – high income countries</i>		21.975*** (2.9190)		4.372** (2.159)		9.043*** (1.79)
<i>Asian – low income countries</i>		-1.3137*** (0.3647)		-0.4731 (0.9295)		-0.803 (0.546)
<i>West – EU members</i>		2.6816*** (0.6021)		-0.3501 (0.711)		-0.098 (0.665)
<i>West – Anglo-Saxons countries</i>		0.3817 (1.0924)		-0.396 (1.533)		-0.5129 (1.012)
Manufacturing specialization	-3.9691*** (0.7023)		-3.2293** (1.3832)		-2.74** (1.21)	
<i>Asian – high income countries</i>		-33.802*** (3.5851)		-21.38*** (4.219)		-14.7*** (2.75)
<i>Asian – low income countries</i>		2.6654** (1.0710)		1.502 (2.0154)		1.638 (1.45)
<i>West – EU members</i>		-7.2794*** (1.0348)		-4.714** (2.357)		-5.69*** (1.745)
<i>West – Anglo-Saxons countries</i>		3.4567 (3.1642)		-4.132 (7.774)		-0.512 (3.102)
High-technology exports variables						
High-technology exports (% of manufactures)	0.2010*** (0.0148)		0.0558** (0.023)		0.068*** (0.021)	

<i>Asian – high income countries</i>	-0.2762*** (0.0943)			-0.089 (0.0561)		-0.1239** (0.056)
<i>Asian – low income countries</i>	0.1216*** (0.0156)			-0.0024 (0.0545)		0.077** (0.035)
<i>West – EU members</i>	0.0141 (0.03654)			0.1299*** (0.0351)		0.097*** (0.033)
<i>West – Anglo-Saxons countries</i>	0.0488 (0.1280)			0.0261 (0.0726)		0.018 (0.073)

Control variables

GDP per capita	-23.860** (9.614)	-5.2664 (9.397)	-16.432** (7.837)	-23.31** (9.053)	-15.06* (7.74)	-19.42** (8.599)
GDP per capita squared	2.6888** (1.189)	1.009 (1.156)	2.604*** (0.978)	3.422*** (1.144)	2.272** (0.962)	2.86*** (1.08)
Population growth	0.1401 (0.2468)	-0.7690*** (0.2382)	-2.643336 (0.176)	-0.413** (0.182)	-0.202 (0.176)	-0.292* (0.174)
Public spending (% of GDP)	-0.0764*** (0.0157)	-0.0399** (.01620)	-0.043* (0.0235)	-0.023 (0.0247)	-0.072*** (0.021)	-0.0433** (0.022)
Constants	88.351*** (19.6138)	41.782** (19.200)	61.17*** (15.92)	77.07*** (18.36)	59.17*** (15.77)	68.57*** (17.44)
Number of observations	563	563	563	563	563	563
Number of groups	-	-	43	43	43	43
Adj R-squared	0.4299	0.6217	0.0224	0.0017	0.1838	0.5134
Diagnostic test				first case		second case
Fix over random				fix		fix
<i>Prob.</i>				59.30 (0.0000)		135.88 (0.0000)
Random over fix				random		random
<i>Prob.</i>				-59.30 (.)		-135.88 (.)
Concluding remark				Rejected the null hypothesis as p –Value is showed 0.0000 (rejected at 1% level of significant). Thus, it is Good or its coefficients are asymptotic.		Rejected the null hypothesis as p –Value is showed 0.0000 (rejected at 1% level of significant). Thus, it is Good or its coefficients are asymptotic.

SOURCE Author's estimation

NOTES *** p<0.01, **p<0.05, and * p<0.1

Data in parentheses indicates standard errors.

Data from 1988 to 2015 in 52 Asian and Western countries

Asian – high income countries: China, Japan, Korea, Rep., Malaysia, Maldives, Singapore and Thailand

Asian – low income countries: Bangladesh, Bhutan, Cambodia, India, Indonesia, Lao PDR, Micronesia, Fed. Sts., Mongolia, Nepal, Pakistan, Philippines, Sri Lanka, Timor-Leste, Tonga and Vietnam

West – EU members: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden

West- Anglo-Saxons countries: United States of America, United Kingdom, Canada and Australia

APPENDIX 13 Econometric regression results – Difference GMM Models

*Dependent Variable: Gini Coefficient***Detailed econometric results for dynamic panel-data models**

	Difference GMM models One Step		Difference GMM models Two Steps	
	Model 7	Model 8	Model 9	Model 10
Lagged income inequality variable				
Lagged Gini Index	0.6806*** (0.0724)	0.6363*** (0.0398)	0.69094*** (0.05086)	0.30167* (0.15067)
Traditional macro-economic variables of globalization				
Trade openness (% of GDP)	0.0013 (0.0084)		0.00419 (0.0033)	
<i>Asian – high income countries</i>		0.0046 (0.0084)		-0.0456* (0.02549)
<i>Asian – low income countries</i>		0.0195 (0.0136)		0.0275 (0.0271)
<i>West – EU members</i>		-0.00129 (0.0090)		-0.0018 (0.01287)
<i>West – Anglo-Saxons countries</i>		0.0279 (0.03601)		0.22454 (0.22697)
Foreign direct investment (% of GDP)	-0.0238* (0.0138)		-0.01754 (0.01115)	
<i>Asian – high income countries</i>		0.0597 (0.04695)		-0.13551 (0.17924)
<i>Asian – low income countries</i>		0.0635 (0.0559)		-0.01349 (0.09041)
<i>West – EU members</i>		-0.0158 (0.0126)		-0.0047 (0.0097)
<i>West – Anglo-Saxons countries</i>		-0.0535 (0.0715)		-0.1576 (0.26797)
Sectoral export diversification and manufacturing specialization variables				
Export diversification index	-0.6281 (0.8455)		-1.21151*** (0.3754)	
<i>Asian – high income countries</i>		2.0170 (1.4115)		34.982** (14.4626)
<i>Asian – low income countries</i>		-0.6459 (0.6758)		7.84296* (4.09745)
<i>West – EU members</i>		0.1447 (0.7959)		0.07003 (1.4719)
<i>West – Anglo-Saxons countries</i>		-0.2746 (1.0172)		11.1871 (13.0477)
Manufacturing specialization	1.1273 (1.8558)		1.20901* (0.6324)	
<i>Asian – high income countries</i>		-9.7487*** (2.8953)		-72.0898** (29.1975)

<i>Asian – low income countries</i>	0.90898 (1.6741)		-15.2675* (8.3381)	
<i>West – EU members</i>	0.5831 (2.6812)		1.02150 (3.7485)	
<i>West – Anglo-Saxons countries</i>	-2.7424 (5.3359)		101.465** (48.1912)	
High-technology exports variables				
High-technology exports (% of manufactures)	0.01665 (0.0283)		0.01283 (0.00854)	
<i>Asian – high income countries</i>		-0.0469 (0.03667)		-0.5152** (0.2036)
<i>Asian – low income countries</i>		-0.05243 (0.0380)		-0.0089 (0.1348)
<i>West – EU members</i>		0.01353 (0.0455)		-0.016298 (0.07544)
<i>West – Anglo-Saxons countries</i>		0.0155 (0.0466)		-0.53898*** (0.1984)
Control variables				
GDP per capita	-1.8634 (10.1865)	-8.2187 (7.2228)	-0.2661 (9.7537)	55.044 (35.066)
GDP per capita squared	0.36268 (1.2761)	1.1688 (0.9033)	0.12748 (1.2168)	-6.3476 (4.214)
Population growth	-0.2983** (0.1369)	-0.2751** (0.1289)	-0.3285*** (0.04827)	-0.2096 (0.3346)
Public spending (% of GDP)	-0.0385 (0.0245)	-0.04074** (0.0205)	-0.0421*** (0.00672)	-0.0159 (0.0177)
Number of observations	499	499	499	499
Number of Instruments	122	332	122	332
Number of groups	43	43	43	43
<i>Sargan test of overid. restrictions</i>	101.05	302.79	101.05	302.79
<i>(p-Value)</i>	(0.762)	(0.557)	(0.762)	(0.557)
<i>Arellano-Bond test of autocorrelation</i>	1.09	1.24	1.07	0.46
<i>(p-Value)</i>	(0.278)	(0.216)	(0.286)	(0.647)

SOURCE Author's estimation

NOTES *** p<0.01, **p<0.05, and * p<0.1

Data in parentheses indicates standard errors.

Data from 1988 to 2015 in 52 Asian and Western countries

Asian – high income countries: China, Japan, Korea, Rep., Malaysia, Maldives, Singapore and Thailand

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CHAPTER 4

Financial Development, Poverty and Human Development in the Fintech age: a Regional Analysis of the Southeast Asian States

ABSTRACT This paper examines the effect of financial development in the Fintech age, measured by broad money, domestic credit and mobile money, on poverty and human development in the Southeast Asian economies. Using unbalanced longitudinal dataset (1990-2017), the findings suggest that broad money and domestic credit contribute to poverty reduction and promote human development. The role of mobile money is seen to have statistically positive impact only if we analyse with human development. Additionally, when we take a closer look at the different stage of economic, political and institutional development in this region, we found that the positive effect of broad money and domestic credit is mostly found only in the less developed and less democratic countries. The mobile money, on the other hand, is found to statistically promote the human development in both groups of countries, but there is no statistical relationship for poverty analysis. To avoid the endogeneity bias driven by the fact that the variables in the analysis are not exogenous, the paper uses the instrumental variables and two-stage least squares for panel-data estimations, taking from economic literature on the role of financial development in developing countries. In doing so along with many additional statistical tests, the results confirm the robustness in the analysis.

KEYWORDS Financial development, Fintech, poverty, human development

JEL CLASSIFICATION F3, D6, I3, O4

1 Introduction

The Sustainable Development Goals (SDG) by 2030 of the United Nations (UN) were aimed to leave no one behind, along with achieving a better and more sustainable future for all (UN 2019). We, counting from a community to a country or the region to the whole World, are facing many global challenges, especially those related to reducing poverty and promoting human development. To achieve these ambitious goals, it is without doubt the matter for all states in every corner around the globe. Therefore, searching root causes in achieving the SDG in sub-regional context is always significant, and there is no exception for the Southeast Asian countries.

Along with many priorities, promoting financial development and financial technology is one of the most major policies to accomplish the promise. Precisely, by the World Bank⁶⁶, 'financial development reduces poverty and inequality by broadening access to finance to the poor and vulnerable groups, facilitating risk management by reducing their vulnerability to shocks, and increasing investment and productivity that result in higher income generation.' Alternatively, the development of financial technology or digital finance revolution, through for instance the introduction of mobile money, alone contributes directly to 13 of the 17 SDGs by, for example, providing financial services to individuals and small businesses that would otherwise be financially excluded; enabling access to electricity, water and sanitation (e.g. via mobile pay-as-you-go solutions); by facilitating access to low-cost remittances; by providing means for parents to pay school fees; and by facilitating cash transfers during emergencies (Ramos and Steiner 2019).

Economic theory provides a wide range of explanations for a potential impact of financial development and financial technology on poverty and human development. Theories identifying the positive effects are often associated with

⁶⁶ About the Financial development, see the World Bank (2019).

theories through economic growth, job creation, investment, and optimal allocation of capital. There is evidence suggesting that 'financial sector development plays a huge role in economic development. It promotes economic growth through capital accumulation and technological progress by increasing the savings rate, mobilizing and pooling savings, producing information about investment, facilitating and encouraging the inflows of foreign capital, as well as optimizing the allocation of capital' (World Bank 2019). These results are in accord with recent studies indicating that financial development reduces poverty and inequality along with promoting human development because it may help the poor and the most vulnerable by accessing to finance, promoting their business or investment, and reducing uncertainty in case if they face any economic shocks (Demirgüç-Kunt, Klapper and Randall 2013, Uddin, et al. 2014, Kiendrebeogo and Minea 2016, Rewilak 2017). Financial sector development is also found to promoting the SMEs, increasing job creations and ameliorating labour productivity in emerging economies (Karlan and Zinman 2010, Bekaert, Harvey and Lundblad 2011, Kaboski and Townsend 2012, Banerjee, et al. 2015). Hongbin Cai and Treisman Daniel explain how competition for capital discipline governments in the context of decentralization, globalisation, and public policy (Cai and Daniel 2005). However, finance is good for the poor but it depends where they live (Rewilak 2013) and how they relationally use it (Chhorn 2018).

The existing literature emphasizes the positive effect of financial technology in many different ways. The technological progress is expected not only to extend financial products and services to excluded households living in rural area, but also to involve in innovating a new wide range of financial products and services including savings, transactions, payment and insurance (Kangni and Mihasonirina 2011, Shem, Teresa and Maureen 2017, Peterson 2018). In many cases, financial technologies such as 'mobile money' open up novel and exciting possibilities for democratizing

monetary and financial inclusion. The poor do not always behave as technologies anticipate, but actively reshape monetary spaces through innovations such as informal money transfer mechanisms (Daniela and Sally 2017, Atika 2018). Digital finance and financial inclusion have several benefits to financial services users, digital finance providers, governments and the economy such as increasing access to finance among poor individuals, reducing the cost of financial intermediation for banks and FinTech providers, and increasing aggregate expenditure for governments (Vighneswara 2014, Peterson 2018). According to other studies, mobile banking, through which customers can access their bank accounts, pay bills, or deposit and withdraw funds (Dolan 2009). Mobile technology may help engender inclusive development, reduce inequality, increase income, facilitate cooperation and information sharing among others (Joshua, Mohammed and Haruna 2018). This is because mobile phones reduce information search cost and enable villagers to have access to the weather, market and price information, all of which enable production and productivity.

Several theories depict, however, the adverse effect that financial development and financial technology negatively affect the economy through instability, sharing crisis, transmission of political risk or rising inequality. The rise of financial development within a country may also indicate that the country has opened up to the rest of the world, through for example cross-border capital flows. This can be a source of economic instability, a magnifier of distortions, and international risk sharing, especially those from advanced countries to developing countries (Cole and Obstfeld 1991, Wei 2018). The developing countries were affected hardly during the global financial crisis in 2009 can be empirical evidence in this case. Alternatively, financial development may boost economic growth at the first stage of economic development, but also leave rising inequality, i.e. the fruits of economic growth might go only to the top income and those living in the urban area, mainly in the developing

countries. Inequality adversely affects economic growth in the latter stage. The relationship on how income distribution affects poverty can be found in the poverty-growth-inequality (PGI) triangle of Bourguignon (2004). This outcome is consistent with empirical studies in the US, and Europe by Kennedy, et al. (2017). Therefore, the economic distortion may hurt the poor and human development in the long run.

Other aspect in studying the effect of financial development on poverty and human development is to consider other factors in explaining this relationship. It is suggested that the effects of financial development depend on the level of development, productivity, domestic savings, and the quality of institutions (Broner and Ventura 2016). The countries, which are more corrupted and have weaker public governance, are likely to be systematically less attractive to FDI, less favourable for equity investment from international institutional investors (mutual funds, pension funds, and hedge funds), and have more external debt (Gelos and Wei 2005, Tong and Wei 2011). If the domestic financial system is less efficient and distorted, receiving finance from the outside can simply lead to misallocation of resources. In this regard, the countries, especially from the developing world, cannot benefit from financial development if they have the key challenges, including distortions in the domestic labour market or weakness in domestic governance institutions (Eichengreen and Leblang 2003, Ju and Wei 2010).

Considering therefore the implication of financial development and financial technology on poverty and human development, we address the following questions from an empirical perspective. The goal of this paper is to improve our understanding of this association and its implications on Southeast Asian countries:

- *First, how financial development and financial technology affects poverty and human development in the Southeast Asian countries?*
- *Second, what are the political and institutional factors that shape financial development and financial technology, considering a vast difference political system in Southeast Asian countries?*

This chapter contributes to the literature in at least many ways. First, we introduce financial technology, measured by the development of mobile money, through a macroeconomic viewpoint in the analysis. Second, it focuses on the Southeast Asian countries, which relatively heterogeneous sample, over two decades from 1990 to 2017. Third, it establishes the extent to which financial development and financial technology drive poverty and human development in the region, using instrumental variables panel data estimations that include numerous control variables.

The next section starts with the discussion of stylized facts in the Southeast Asian countries. Section 3 explores the empirical methodology with the construction of our measure, regression model and robustness. Section 4 discusses results. Section 5 overviews the robustness checks. The last section provides concluding remarks.

2 Stylized Facts of the Southeast Asian Nations

The Southeast Asian region is home of the ten independent countries: Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam. In 1967, the regional community, namely the Association of Southeast Asian Nations (ASEAN), was originated by five founding members, and, as of 1995, other five members joined the community, making ten member states in total. With more than 630 million people, the ASEAN is the World's fourth largest market behind China, India and the EU. Their combined economies are of USD 2.555 trillion in nominal term, the World's fifth largest economies behind the USA, the EU, China and Japan.⁶⁷ The region is seen as the second most successful community beside the EU and geographically regarded as the heart of the World's 21st century (Mahbubani and Sng 2017). That is the reason why we might see countless economic and political meetings in this region between the global superpowers

⁶⁷ World Bank database in 2016.

including the EU, the USA, China, Japan or India. Asian leading scholar Sir Kishore Mahbubani, one of the tops 100 global thinkers by *Foreign Policy* in 2005, 2010 and 2011 and one of tops 50 world thinkers by *Prospect Magazine* in 2014, stated that whenever the global superpowers cannot find where to talk or what occasion to meet each other, the Southeast Asia is the most strategic or the last resort place for them. To give the most recent example, Singapore and Vietnam were chosen respectively to host the 2018 and 2019 North Korea–United States Summits. It is somehow argued that whenever this region prospers, it would be greater for the global cooperation and economic development.

In this study, we include only eighth Southeast Asian countries: Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Thailand, and Vietnam. Brunei Darussalam and Singapore are not included because these two countries are the richest states in the region and have respectively GDP (PPP) per capita⁶⁸ of USD 81,612 and USD 98,255. This income level is comparable to those of the first world; therefore, it is nonsense to examine the poverty of these two countries. This section focuses on the descriptive dynamics of poverty, human development, financial development and financial innovation.

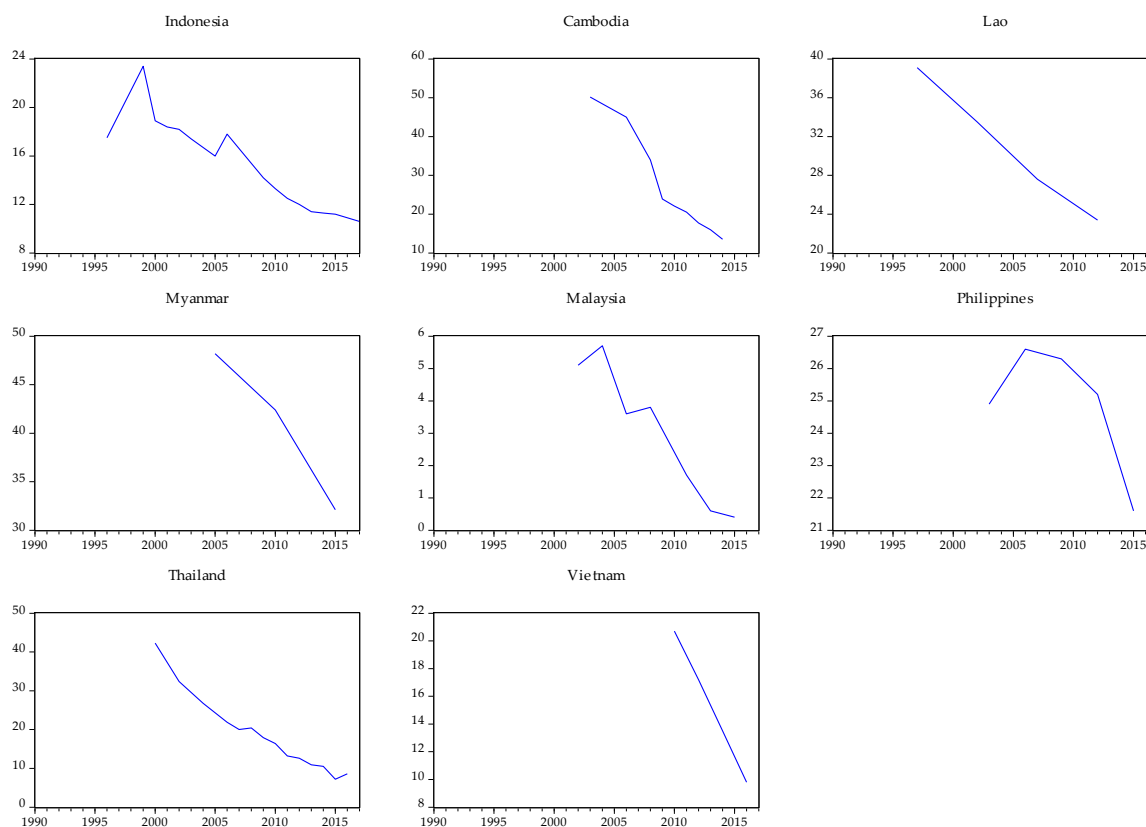
2.1 Poverty and Human Development

Figures 1 and 2 show that the extreme poverty in Southeast Asia has significantly reduced while the human development index has dramatically improved during last three decades. Two groups of countries should be notified in the region, considering the analysis of poverty and human development. The five founding members of ASEAN are always the most developed nations in term of per capita GDP and human

⁶⁸ According to the International Monetary Fund's World Economic Outlook Database, October 2018.

development. However, the CLMV countries, including Cambodia, Lao PDR, Myanmar and Vietnam, are the poorest nations.

FIGURE 1 Poverty headcount ratio at national poverty lines (% of population) 1990-2017



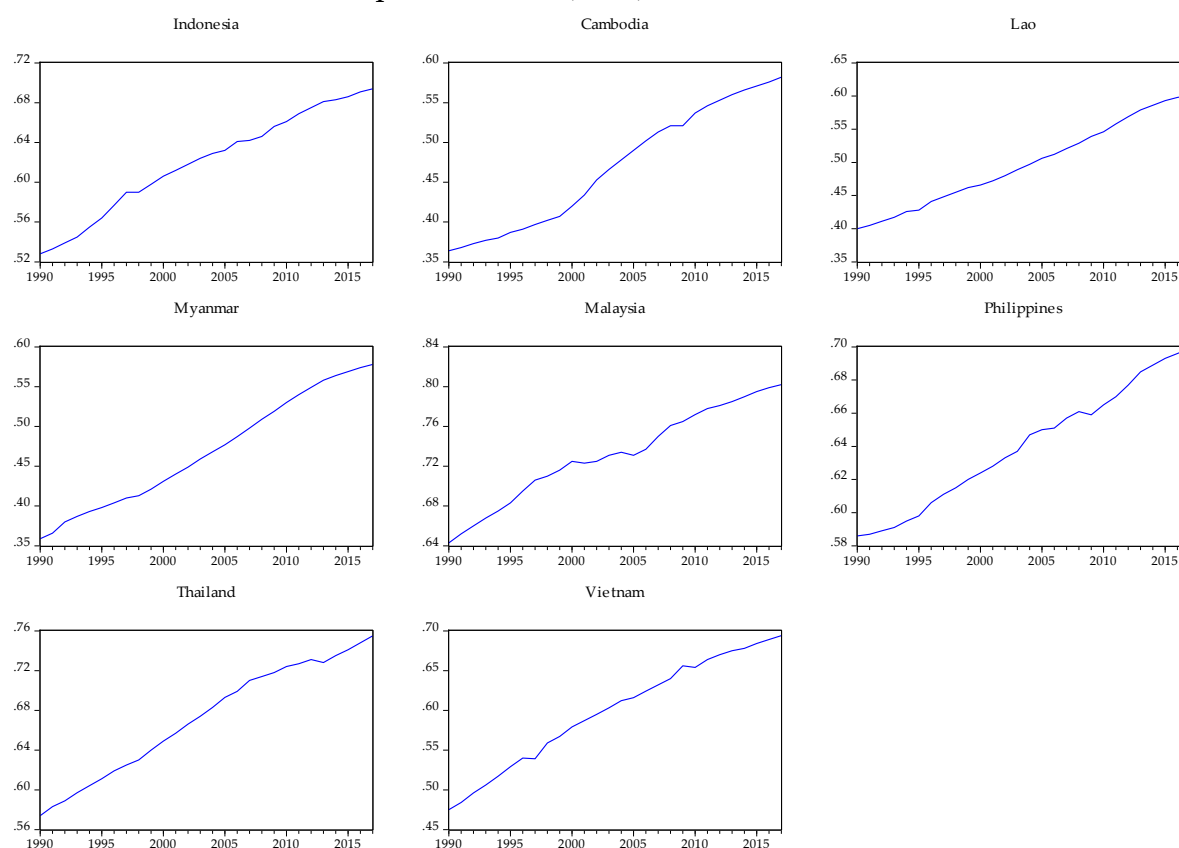
SOURCE Author's estimation with the World Bank database

NOTES National poverty headcount ratio is the percentage of the population living below the national poverty lines. National estimates are based on population-weighted subgroup estimates from household surveys.

In 1990, around half the population in Sub-Saharan Africa and in Asia were living on less than US\$1.25 purchase power parity (PPP) per day. In 2015, the rate has been reduced to well below 20% in Asia while in Sub-Saharan Africa, it remains relatively high at around 40% (ASEAN Secretariat 2017). As shown in Figure 1, since the early 2000s, poverty rate in Southeast Asian countries have decreased dramatically, except the Philippines where the poverty has varied around 20% of total population. With the lowest rate, Malaysia's poverty is around 5% in early 2000s and decreased to 0.4% in 2015. Myanmar, with population of more than 50 million, is the home of poverty. Its poverty rate is presently 30% of total population, i.e. the highest

rate among other member countries. According to the UN (2017), poverty reduction is highest in the priority list and a major goal in development plans of most countries in this sub-region.

FIGURE 2 Human Development Index (HDI) 1990-2017



SOURCE Author's estimation with database from the UN Development Programme (UNDP) Human Development Reports

NOTES HDI is a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and have a decent standard of living. The HDI is the geometric mean of normalized indices for each of the three dimensions. The health dimension is assessed by life expectancy at birth, the education dimension is measured by mean of years of schooling for adults aged 25 years, and more and expected years of schooling for children of school entering age. The standard of living dimension is measured by gross national income per capita. The HDI uses the logarithm of income, to reflect the diminishing importance of income with increasing GNI. The HDI simplifies and captures only part of what human development entails. It does not reflect on inequalities, poverty, human security, empowerment, etc.

The Millennium Development Goals (MDG) by 2015 aimed to halve the global poverty (Besley and Burgess 2003). However, the SDG by 2030 aimed to have no poverty. The SDG 2030 agenda is that: 'This Agenda is a plan of action for people, planet and prosperity. It also seeks to strengthen universal peace in larger freedom. We recognize that eradicating poverty in all its forms and dimensions, including

extreme poverty, is the greatest global challenge and an indispensable requirement for sustainable development.⁶⁹

The HDI has increased almost in a linear trend in every country since the 1990s. Countries with higher national income have a relatively higher score of the HDI. In the Southeast Asian countries, Vietnam's HDI, despite being classified in the CLMV countries, is ranking among the more developed countries, including Malaysia, Thailand, the Philippines and Indonesia.

2.2 Financial Development and Financial Crises

Figures 3 and 4 report dynamic trend of financial development variables, measured by broad money (% of GDP) and domestic credit provided by the financial sectors (% of GDP), in the Southeast Asian countries from 1990 to 2017. During this particular period of time, this region experienced two major financial crises, including the Asian financial crisis in 1997 and the global financial crisis from 2007 to 2009.

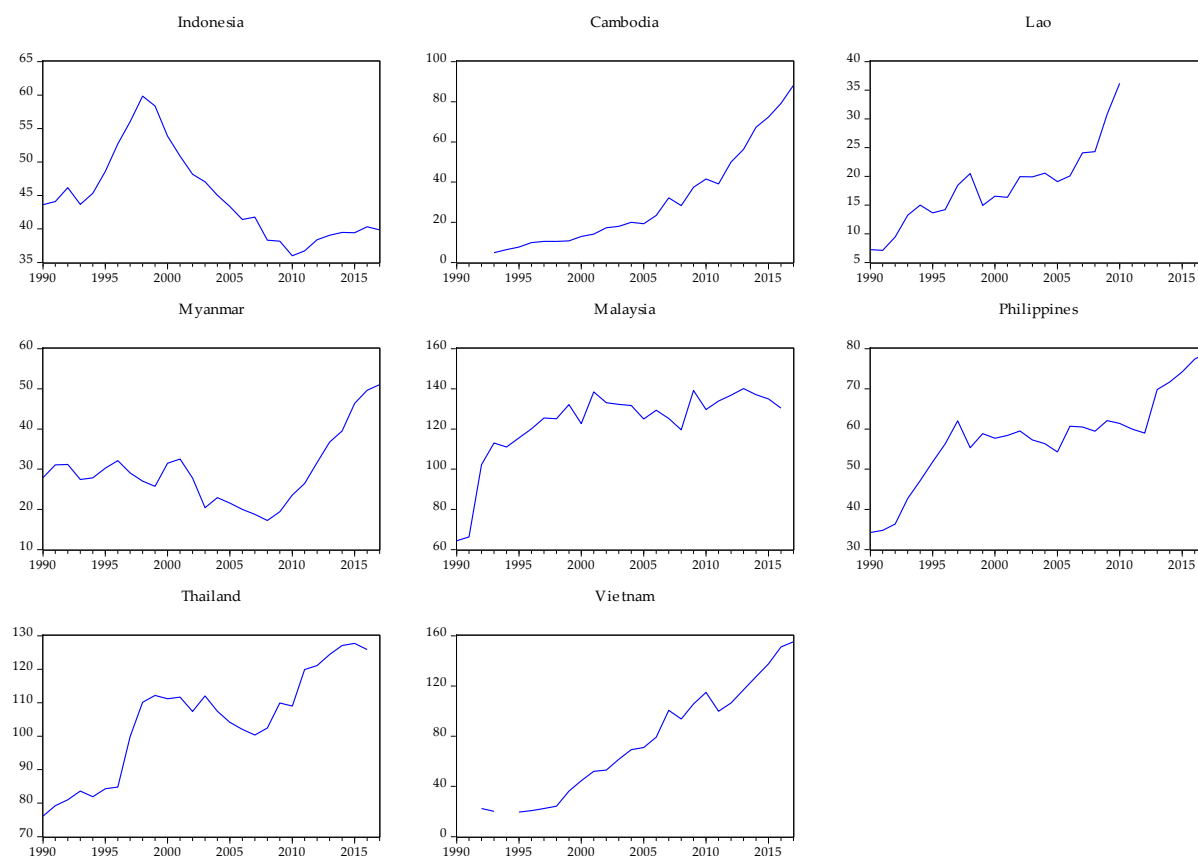
We can observe an overall rising trend of broad money (% of GDP) in almost all countries, except Indonesia where its trend has moved around 45%. Vietnam's broad money (% of GDP) has increased impressively, from one of smallest share in early 1990s to be one of the highest percentages among top groups, including Malaysia and Thailand. Cambodia and the Philippines are in the group, whose rate is in higher average, above Myanmar, Indonesia and Laos.

The domestic credit (% of GDP) in Vietnam also shows impressive rising trends. This country starts from one of the lowest domestic credits to one of the highest as a percentage of GDP in the Southeast Asian countries. In overall, we can separate the sampling into two groups of countries: group with the higher percentage (Thailand, Malaysia, and Vietnam) and group with the lower percentage (the rest of

⁶⁹ About Transforming our World: The 2030 Agenda for Sustainable Development, see UN (2015).

countries). Thailand, Malaysia and Vietnam are moving toward the same group with its share of GDP is very high, moving around/toward 150% of GDP. Other countries have varied below 100% and some around 50%.

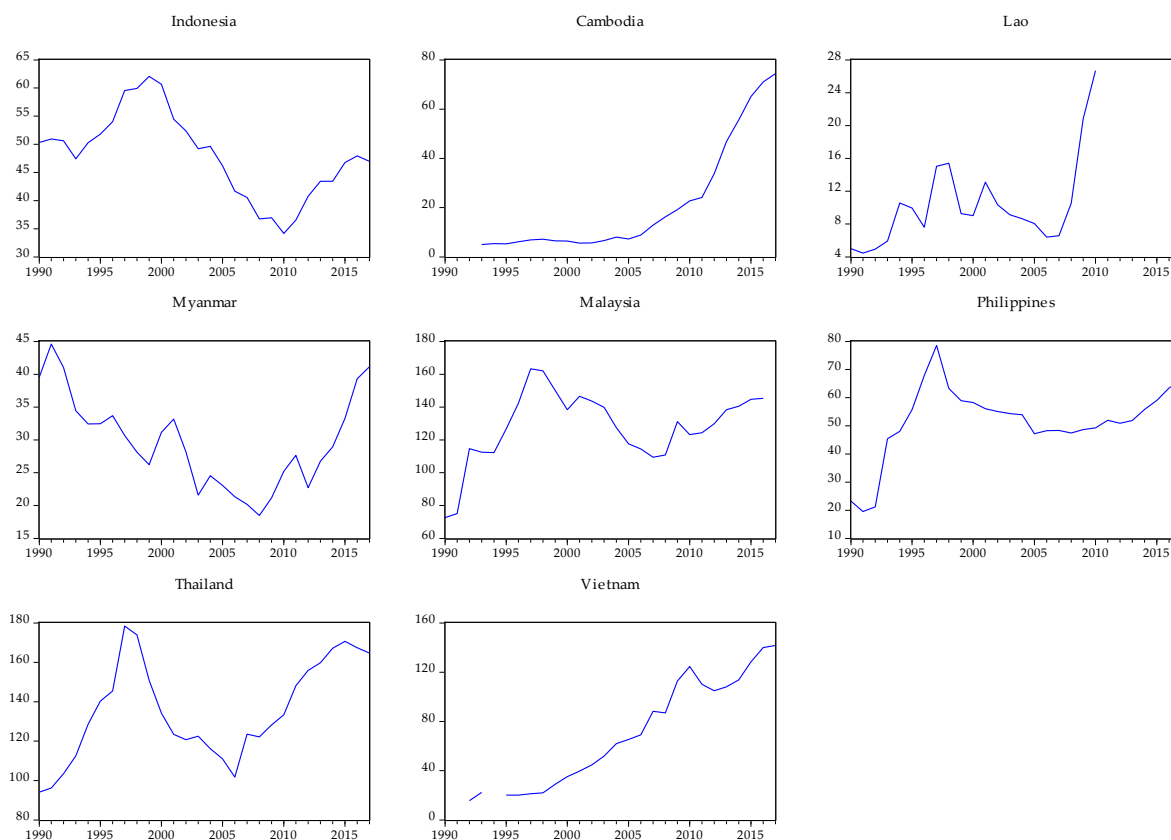
FIGURE 3 Broad money (% of GDP) of the Southeast Asian nations



SOURCE Author's estimation with database from International Monetary Fund, International Financial Statistics and data files, and World Bank and OECD GDP estimates.

NOTES IDN Broad money (IFS line 35L..ZK) is the sum of currency outside banks; demand deposits other than those of the central government; the time, savings, and foreign currency deposits of resident sectors other than the central government; bank and traveler's checks; and other securities such as certificates of deposit and commercial paper.

FIGURE 4 Domestic credit provided by financial sector (% of GDP) of the Southeast Asian nations



SOURCE Author's estimation with the World Bank database

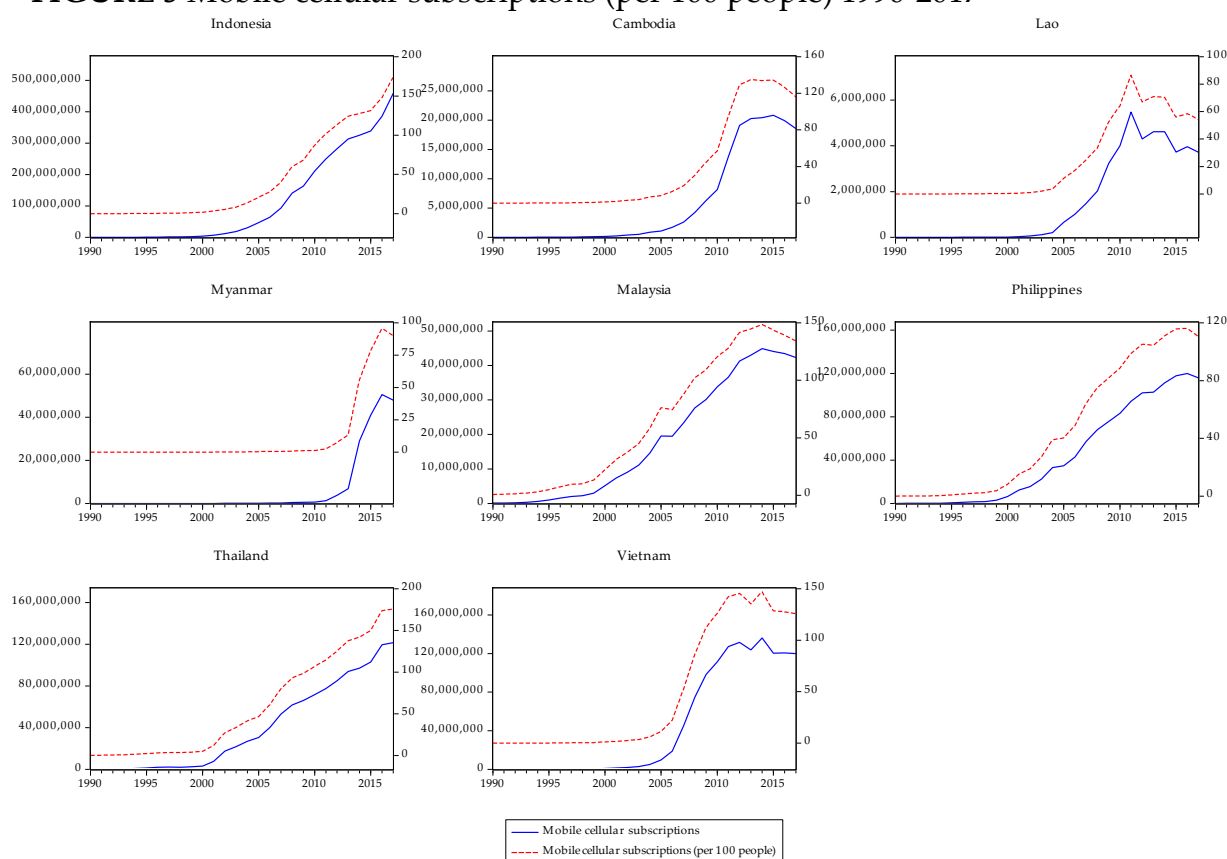
NOTES Domestic credit provided by the financial sector includes all credit to various sectors on a gross basis, with the exception of credit to the central government, which is net. The financial sector includes monetary authorities and deposit money banks, as well as other financial corporations where data are available (including corporations that do not accept transferable deposits but do incur such liabilities as time and savings deposits). Examples of other financial corporations are finance and leasing companies, money lenders, insurance corporations, pension funds, and foreign exchange companies.

2.3 Financial Technology

To contribute to the literature in studying the role of financial technology, we include the existence of mobile cellular subscriptions and mobile money into the analysis. Unlike the advanced economies, where financial sectors developed greater and many people can access its services and products, the financial sectors in developing countries, like those in Southeast Asia, are still by far accessed by only higher-income citizens and those living in urban and capital cities. However, the favourable socio-demographic trends combined in the Southeast Asian countries with recent

developments in financial technology and mobile banking have been seen as the driving force that could support initiatives aiming at providing financial services to the most vulnerable groups. The use of technology in the banking sector contributes to more efficient risk management and helps reduce operational costs, which should make banking products and services more affordable for the poor. In this regard, mobile phone which is holding by more people from lower income background and living in rural can be a solution for developing countries. In one perspective, it might help to deal with poverty issue, but in other perspectives, it might be also interesting to deal with human development issues.

FIGURE 5 Mobile cellular subscriptions (per 100 people) 1990-2017

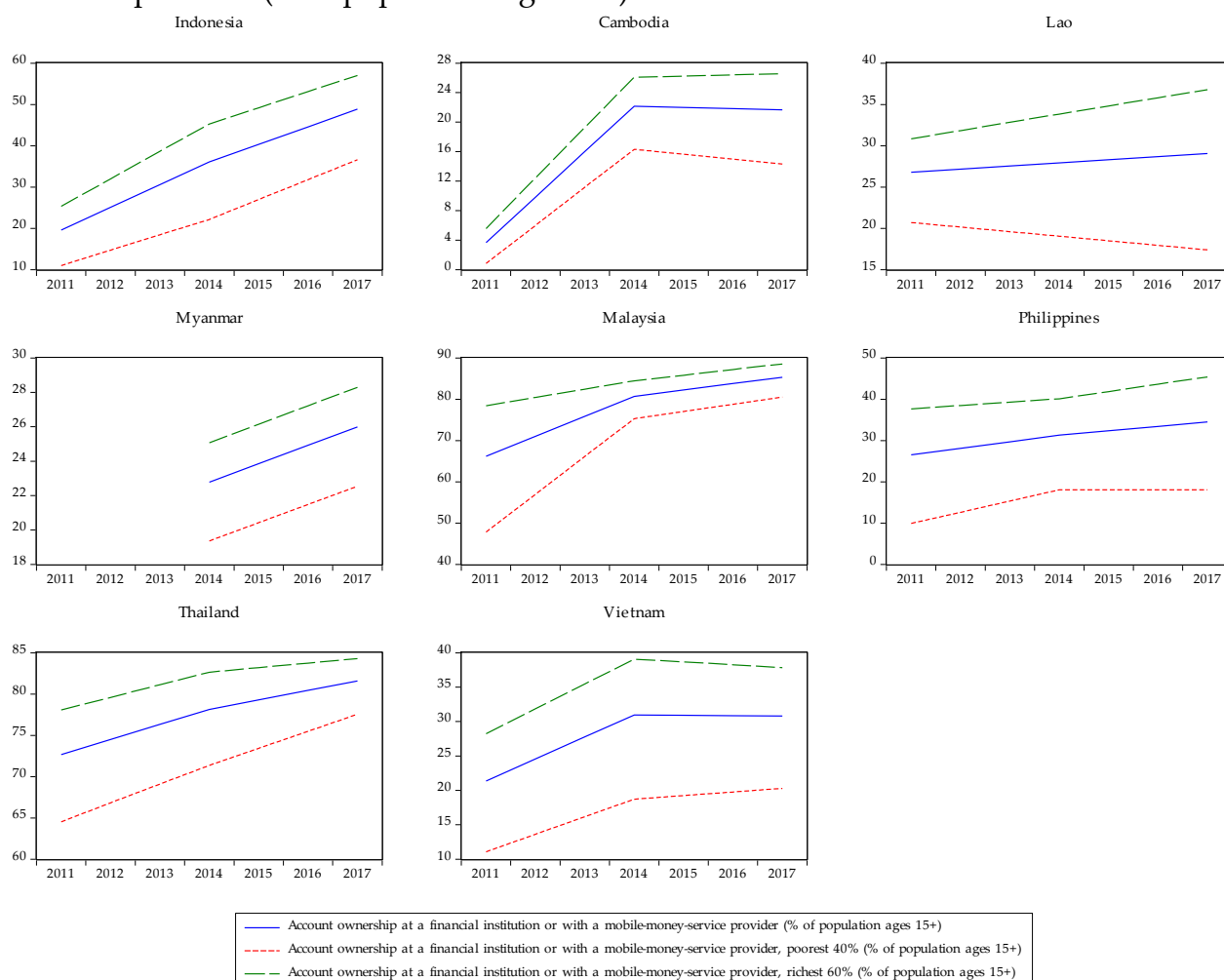


SOURCE Author's estimation with database from International Telecommunication Union, World Telecommunication/ICT Development Report and database.

NOTES Mobile cellular telephone subscriptions are subscriptions to a public mobile telephone service that provide access to the PSTN using cellular technology. The indicator includes (and is split into) the number of postpaid subscriptions, and the number of active prepaid accounts (i.e. that have been used during the last three months). The indicator applies to all mobile cellular subscriptions that offer voice communications. It excludes subscriptions via data cards or USB modems, subscriptions to public mobile data services, private trunked mobile radio, telepoint, radio paging and telemetry services.

Figure 5 indicates that nearly everyone among 100 people had no mobile phone in the 1990s; however, more than 100 or 150 mobiles have been presently holding by 100 people, except in Myanmar and Laos, where mobile phone holders are less than 100.

FIGURE 6 Account ownership at a financial institution or with a mobile-money-service provider (% of population ages 15+) 2011-2017



SOURCE Author's estimation with database from Demircuc-Kunt et al., 2018, Global Financial Inclusion Database, World Bank.

NOTES Account denotes the percentage of respondents who report having an account (by themselves or together with someone else) at a bank or another type of financial institution or report personally using a mobile money service in the past 12 months (% age 15+).

Figure 6 shows the account ownership at a financial institution or with a mobile-money-service provider (% of population ages 15+) in the Southeast Asian countries from 2011 to 2017. Up to the present, nearly every person is holding one

mobile phone and some are holding more than one mobile phone, but only Malaysian and Thai people, who the account ownership at a financial institution or with a mobile-money-service provider with the percentage of about 80% of total population. It is the highest percentage among the member countries. Other countries have its rate, varying between 20% and 50%.

3 Methodology

We investigate poverty and human development, linking to financial development and financial technology variables by including many additional control variables into the analysis. The annual data are taken from the eight Southeast Asian countries during the period of 1990 to 2017. The equation (1) indicates our overall regression model, using the instrumental variables and fixed-effects two-stage least squares for panel-data models (IV-FE2SLS).

$$\tilde{Y}_{it} = \alpha + \rho\tilde{Y}_{it-1} + \beta\widetilde{finance}_{it} + \eta\tilde{X}_{it} + u_i + y_t + \varepsilon_{it} \quad (1)$$

Where \tilde{Y}_{it} is the dependent variable from the fixed-effects model, explaining respectively poverty and human development, of country i at time t . It should be noted that we estimate separately our model for poverty and human development; therefore, there is no relationship between these two dependent variables. α is constant. \tilde{Y}_{it-1} is the lagged dependent variable. $\widetilde{finance}_{it}$ is proxy of the explanatory variables from the fixed-effects model, which is built with the instrumental variables. This proxy includes the financial development variable (measured by broad money as % of GDP and domestic credit provided by financial sectors as % of GDP), and the financial technology variables (measured by mobile cellular subscriptions per 100 people and account ownership at a financial institution or with a mobile-money-service provider as % of population ages 15+). \tilde{X}_{it} are additional control variables, including GDP growth (annual %), government expense (% of GDP), inflation

consumer prices (annual %), and population growth (annual %). u_i is country fixed effect to control for unobserved cross-country heterogeneity. y_t is time fixed effect to control for Asian financial crisis in 1997 and global financial crises during 2007 to 2009. ε_{it} is error term.

The following is the detail explanation on how we build our model. We start by constructing the following equation for each country:

$$Y_{it} = \alpha + \rho Y_{it-1} + \beta \text{finance}_{it} + u_i + y_t + \varepsilon_{it} \quad (2)$$

From the equation (2), if we set the boundary of our analysis to only time-varying covariates and we assume that all the variables are truly exogenous, we may apply the one-stage least square estimations. However, there are many statistical issues, which we have to critically consider in order to obtain the good estimations. To deal with this issue, we use instrumental variables and fixed-effects two-stage least squares for panel-data models. Karsten Staehr uses the country fixed effect model to study the relationship between capital flows and growth dynamics in 11 post-communist Central and Eastern Europe with the dataset from 1995 to 2015 (Staehr 2018).

Firstly, one statistical problem that may occur from the equation (2) is related to the exclusion of the lagged dependent variable Y_{it-1} . In the macroeconomic literature, the dependent variable Y_{it} is normally affected by its past value (Fatás and Mihov 2003). We introduce, therefore, the lagged poverty and human development (−1) to take into consideration for the unexplained factors of poverty and human development. Other problem may also arise because the addition of the lagged Y_{it-1} can produce biased results from the fixed effects estimations (Nickell 1981). However, if we have a small number of cross sections and the outcomes of autoregressive coefficients are modest, the biased results are relatively small and reasonable (Anderson and Hsiao 1981). Thus, the results from fixed-effects estimations are

somehow more reliable than the System Generalized Method of Moments (GMM) estimators (Judson and Owen 1999, Bun and Kiviet 2001). In our studies, since we cannot obtain accurate and satisfied results, we decide not to show the estimation with lagged analysis.

Secondly, it is related to the problem of causality, which we want to identify cause and effect, then what we hope to get is only the causal direction from the explanatory variable $finance_{it}$ to the dependent variable Y_{it} and not vice versa. The idea is to remove variation in explanatory variables $finance_{it}$ that may be caused by dependent variable Y_{it} . We then keep part of $finance_{it}$, which is not explained by Y_{it} . In this regard, we need to find the instrumental variable and/or variables Z that is/are correlated with $finance_{it}$, but not with error term, which it is unexplained part of $finance_{it}$.

In this study, the instrumental variables include total natural resources rents (% of GDP), employment in agriculture (% of total employment), and rural population (% of total population).⁷⁰ It is suggested that the developing or poor countries normally have high percentage of rural households and high proportion of agricultural employment. Although these countries are rich in natural resources but have weak institution and high corruption, the financial sector in those countries tend to be less developed.

According to Sambit Bhattacharyya and Hodler, Roland, natural resource revenues may deteriorate contract enforcement if political institutions are weak. As poor contract enforcement leads to low financial development, resource revenues may hinder financial development in countries with poor political institutions, but not in countries with comparatively better political institutions (Bhattacharyya and Hodler 2014). Daron Acemoglu, Simon Johnson and James A. Robinson explain that the

⁷⁰ To observe the trend and descriptive statistics of the instrumental variables, please see [Appendix 2 to 4](#).

countries, which are rich in natural resources and have weak governance, normally design their institutions only to support the political powers (Acemoglu, Johnson and Robinson 2001). Raghuram G. Rajan, and Luigi Zingales, in their study on the politics of financial development in many countries in the twentieth century, suggest that political powerful elites might restrict financial development from new firms' competition for their own personal interest because the new firms might danger the existing dominant firm institutions. Therefore, we would expect less financial development in those countries (Rajan and Zingales 2003).

At the first stage, when we estimate $finance_{it}$ by the instrumental variables. We obtain the following equation:

$$\text{Estimate: } finance_{it} = \alpha + \beta Z_{it} + \xi_{it}$$

$$\text{Compute predicted value: } \widehat{finance}_{it} = \alpha + \beta Z_{it}$$

The instrumental variables are valid only if the following assumptions are respected: (a) the exclusion restriction is: $E[\varepsilon|Z] = 0 \rightarrow Z_{it}$ does not explain directly, but only through $finance_{it}$. In this case, Z_{it} is exogenous with regards to Y_{it} ; (b) the relevance is: $Cov(finance_{it}, Z_{it}) \neq 0$. It is important to take note that if Z_{it} is valid instrument, then $finance_{it}$ does not 'contain' effect from Y_{it} to $finance_{it}$, but it reflects part of $finance_{it}$, which is exogenous with regards to Y_{it} . Please review with Michael P. Murray to avoid the invalid instruments and cope with weak instruments (Murray 2006). In addition, for the validity of the instruments, we use the first-stage F-statistic. If its statistical value is bigger than 10, we assume therefore that the model has good instruments. In the same way, we use the Sargan-Hansen test of overidentification of restrictions of instruments. If the p - value is bigger than 5%, we assume that there is non-rejection of the null hypothesis. Therefore, we obtain good instruments.

At the second stage, we estimate the equation (2) with our predicted value of explanatory variables. Therefore, our regression equation becomes as follows:

$$Y_{it} = \alpha + \rho Y_{it-1} + \beta \widehat{finance}_{it} + u_i + y_t + \varepsilon_{it} \quad (3)$$

In equation (3), the estimation of β in principle is consistent, reflecting effect from $\widehat{finance}_{it}$ to Y_{it} . Yet, it is less efficient if standard error (SE) is larger.

From the results of the pairwise correlation between instruments and explanatory variables in Table 1, we observe that there are significantly high correlations between employment in agriculture and rural population to almost all financial development and financial technology variables. Therefore, we might expect the good instruments. However, natural resources seem to be correlated at a very weak coefficient with almost explanatory variables. This is required to detect it carefully and interpret with a very high caution.

TABLE 1 Pairwise correlation between instruments and explanatory variables

	NR	EA	RP	M2	DC	MOBILE	MOBILE_\$_
NR	1						
(Sig. 1%)							
Nb. of Obs.	203						
EA	0.081	1					
(Sig. 1%)	(0.259)						
Nb. of Obs.	197	216					
RP	-0.091	0.875***	1				
(Sig. 1%)	(0.197)	(0.000)					
Nb. of Obs.	203	216	224				
M2	-0.021	-0.774***	-0.662***	1			
(Sig. 1%)	(0.773)	(0.000)	(0.000)				
Nb. of Obs.	194	203	209	209			
DC	-0.080	-0.697***	-0.608***	0.954***	1		
(Sig. 1%)	(0.267)	(0.000)	(0.000)	(0.000)			
Nb. of Obs.	194	204	210	209	210		
MOBILE	-0.106	-0.578***	-0.458***	0.543***	0.450***	1	
(Sig. 1%)	(0.132)	(0.000)	(0.000)	(0.000)	(0.000)		
Nb. of Obs.	203	216	224	209	210	224	
MOBILE_\$_	-0.121	-0.557***	-0.768***	0.598***	0.781***	0.547***	1
(Sig. 1%)	(0.680)	(0.007)	(0.000)	(0.009)	(0.000)	(0.009)	
Nb. of Obs.	14	22	22	18	19	22	22

SOURCE Author's estimation

NOTES Total natural resources rents (% of GDP) as NR, Employment in agriculture (% of total employment) as EA, Rural population (% of total population) as RP, Broad money (% of GDP) as M2, Domestic credit provided by financial sectors (% of GDP) as DC, Mobile cellular subscriptions (per 100 people) as MOBILE, and Account ownership at a financial institution or with a mobile-money-service provider (% of population ages 15+) as MOBILE_\$_.

Thirdly, it is related to the problem of the omitted variables (that we might forget to include one of the relevant explanatory variables) and multicollinearity (that these variables might highly correlate to each other). We therefore include several major additional control variables, which are theoretically linked to poverty and human development. These variables include GDP growth (annual %), government expense (% of GDP), inflation consumer prices (annual %), and population growth (annual %).⁷¹ Actually, trade (% of GDP) and labour force participation rate are also in our consideration to include in additional control variables; nevertheless, we decide to drop these variables because these variables are highly correlated to others.

From the results of pairwise correlation between additional control variables in [Table 2](#), we confirm that the problem of having multicollinearity should be avoided as the highest coefficient is -0.442 between expense (% of GDP) and GDP growth.

TABLE 2 Pairwise correlation between additional control variables

	GDP	EXP	INF	POP
GDP growth (annual %)	1			
(Sig. 1%)				
Nb. of Obs.	220			
Government expense (% of GDP)	-0.442***	1		
(Sig. 1%)	(0.000)			
Nb. of Obs.	135	135		
Inflation consumer prices (annual %)	-0.039	-0.209	1	
(Sig. 1%)	(0.573)	(0.015)		
Nb. of Obs.	213	135	213	
Population growth (annual %)	-0.157	0.006	0.013	1
(Sig. 1%)	(0.020)	(0.948)	(0.847)	
Nb. of Obs.	220	135	213	224

SOURCE Author's estimation

NOTES GDP growth (annual %) as GDP, Government expense (% of GDP) as EXP, Inflation consumer prices (annual %) as INF, and Population growth (annual %) as POP.

We include therefore the additional control variable into the regression equation:

⁷¹ To observe the trend and descriptive statistics of the additional control variables, please see [Appendix 5 to 10](#).

$$Y_{it} = \alpha + \rho Y_{it-1} + \beta \widehat{finance}_{it} + \eta X_{it} + u_i + y_t + \varepsilon_{it} \quad (4)$$

To estimate the coefficients β and η of the financial development, financial technology and additional control variables in equation (4), the fixed-effects model follows the within transformation.⁷² The within transformation of a variable, for example *finance*, is:

$$\widetilde{finance}_{it} = finance_{it} - \overline{finance}_i + \overline{finance}$$

Where,

$$\overline{finance}_i = \frac{1}{n} \sum_{t=1}^{T_i} finance_{it}$$

$$\overline{finance} = \frac{1}{N} \sum_{i=1}^n \sum_{t=1}^{T_i} finance_{it}$$

Where n and N are the number of groups and the total number of observation of the variable respectively. The within transformation of equation (4) becomes therefore:

$$\tilde{Y}_{it} = \alpha + \rho \tilde{Y}_{it-1} + \beta \widetilde{finance}_{it} + \eta \tilde{X}_{it} + \tilde{y}_t + \tilde{\varepsilon}_{it} \quad (5)$$

The model removes the u_i (country fixed effects or time-invariant covariate as it is varying with country but not time, for example race, or membership year in ASEAN community of any Southeast Asian countries.). Then, we can estimate with the two-stage least-square regression (2SLS) of dependent variables (\tilde{Y}_{it}) on explanatory variables with instrumental variable ($\widetilde{finance}_{it}$).

Let's suppose that we have constant and k variables, then, the parameters of the model are $k + n - 1$, and the conventional VCE for the within estimator is:

⁷² This methods and formulas can be found at StataCorp. 2013. Stata: Release 13. Statistical Software. College Station, TX: StataCorp LP: 214-215.

$$\frac{N - K}{N - n - k + 1} V_{IV}$$

Where V_{IV} represents the VCE from the 2SLS.

From the estimated results, we obtain therefore: The $\hat{u}_i = \bar{Y}_{it} - \widehat{\beta finance}_i$ (\hat{u}_i is its standard deviation and its correlation with $\widehat{\beta finance}_i$. The ε_{it} is the regression's estimated root mean squared error that is adjusted for the $n - 1$ estimated means. With the null hypothesis indicating that \hat{u}_i is different from zero, the estimated results from the regression also report *F Statistics* (Wooldridge 1990).

- R^2 is calculated as the R^2 from the mean-deviated regression
- R^2 is calculated as $\left\{ \text{corr}(\widehat{\beta finance}_i, \bar{Y}_i) \right\}^2$
- R^2 is calculated as $\left\{ \text{corr}(\widehat{\beta finance}_{it}, \bar{Y}_{it}) \right\}^2$

Finally, it is related to the way we interpret the results. We can interpret the coefficient of all variables only as deviation from their country mean. It explains within-dynamic of individuals, but not differences between individuals, i.e. it does explain to what extent Y_{it} differs from \bar{Y}_i , but it does not explain why \bar{Y}_i is different from \bar{Y}_j (Mundlak 1978, Hsiao 2010). In this model, the coefficient of variables is identified only through the within the dimension of the data. We cannot therefore estimate the coefficient of time-invariant individual variables such as birthyear of membership in ASEAN community, race, etc. We can only estimate by interacting time-invariant variables with time dummies and estimate the variable-in-time effect.

4 Empirical Results and Discussions

4.1 Estimating the Effect of Financial Development on Poverty and Human Development

We start our regression of financial development variables on poverty and human development, also including country fixed effects and dummies of the Asian financial crises in 1997 and the global financial crises during 2007 to 2009. The impact of financial crises on poverty and human development be found in the following empirical and theoretical works (Nikoloski 2011, Jarrow 2014, Fiorentini 2015, Mohseni-Cheraghlou 2016). The specific experiences of the Southeast Asia countries and the Asian and global financial crises are also examined (Knowles, Pernia and Racelis 1999, Rasiah, Cheong and Doner 2014).

We then introduce the additional control variables, including GDP growth (annual %), government expense (% of GDP), inflation consumer prices (annual %), and population growth (annual %), into the analysis. Finally, we estimate the specification with instrumental variables and two-stage least squares for panel-data models. In order to eliminate the possibility that the instrumental variables itself are driven by the dependent variable, we include the following instruments, including total natural resources rents (% of GDP), employment in agriculture (% of total employment) and rural population (% of total population). The data in parentheses () indicates standard errors. *P* – value, where *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$ denote significance levels. At the bottom of the regression results, the table shows *First stage F stat*, which is used to test for weak instruments. In case if *p* – value of *First stage F stat* is smaller than 5%, we obtain good instruments. Since most of the variables are estimated in *logs*, the coefficients are interpreted as elasticity from an economic point of view.

In this paper, we show only the regression results from the analysis with additional control variables and instrumental variable analysis. The results from other regression are not shown. However, it is available upon request.

Table 3 presents the formal regression analysis between financial development variables, using broad money (% of GDP), and domestic credit provided by the financial sectors (% of GDP), on the poverty and human development with the dataset from 1990 to 2017 in the Southeast Asian countries.

TABLE 3 Fixed-effect estimations of the poverty and human development with additional control variables

	(POV3.1)	(POV3.2)	(HDI3.1)	(HDI3.2)
Broad money (% of GDP)	-0.716** (0.352)		0.038*** (0.010)	
Domestic credit provided by financial sectors (% of GDP)		-0.527** (0.205)		0.025*** (0.006)
GDP growth (Annual %)	-0.082 (0.137)	-0.081 (0.132)	0.008* (0.004)	0.008* (0.004)
Inflation consumer prices (Annual %)	0.030 (0.104)	0.024 (0.101)	-0.0002 (0.003)	-0.0001 (0.003)
Population growth (Annual %)	1.615*** (0.380)	1.536*** (0.369)	-0.129*** (0.011)	-0.133*** (0.010)
Government expense (% of GDP)	-0.191 (0.337)	-0.301 (0.301)	0.062*** (0.010)	0.070*** (0.009)
DUMCRISIS	0.118 (0.196)	0.119 (0.187)	-0.001 (0.006)	-0.00003 (0.006)
Constant	5.986*** (1.432)	5.486*** (1.120)	0.335*** (0.041)	0.369*** (0.034)
Country Fixed Effects	Yes	Yes	Yes	Yes
Time	90-17	90-17	90-17	90-17
F test	17.86	17.92	44.65	46.04
Prob > F	0.00	0.00	0.00	0.00
R-squared	0.45	0.48	0.77	0.78
Observations	50	50	120	120

NOTES *** p < 0.01, ** p < 0.05, and * p < 0.1. Data in parentheses indicates standard errors.

The reported results present the satisfied *R – squared*. The number of observations for poverty declined importantly, comparing to that of the human

development. We can observe that the coefficients of financial development variables are statistically significant, suggesting that the broad money (% of GDP), and the domestic credit provided by the financial sectors (% of GDP) contribute to reduce poverty at 5% sig. (see *POV3.1* and *POV3.2*) and promote human development at 1% sig. (see *HDI3.1* and *HDI3.2*) in the Southeast Asian countries from 1990 to 2017.

TABLE 4 Fixed-effect estimations of the poverty and human development with instrumental variables

	(POV4.1)	(POV4.2)	(HDI4.1)	(HDI4.2)
Broad money (% of GDP)	-0.209 (0.439)		0.048*** (0.012)	
Domestic credit provided by financial sectors (% of GDP)		-0.367 (0.249)		0.034*** (0.007)
GDP growth (Annual %)	-0.040 (0.142)	-0.063 (0.134)	0.008* (0.004)	0.008* (0.004)
Inflation consumer prices (Annual %)	0.021 (0.107)	0.022 (0.102)	0.00001 (0.003)	0.0002 (0.003)
Population growth (Annual %)	1.594*** (0.391)	1.551*** (0.373)	-0.127*** (0.011)	-0.131*** (0.011)
Government expense (% of GDP)	-0.417 (0.364)	-0.365 (0.308)	0.058*** (0.011)	0.067*** (0.010)
DUMCRISIS	0.201 (0.205)	0.154 (0.191)	-0.001 (0.006)	0.0002 (0.006)
Constant	4.413*** (1.660)	4.962*** (1.217)	0.305*** (0.046)	0.343*** (0.037)
Country Fixed Effects	Yes	Yes	Yes	Yes
Time	90-17	90-17	90-17	90-17
F test	17.23	17.83	42.34	41.38
Prob > F	0.00	0.00	0.00	0.00
Hansen				
R-squared	0.42	0.47	0.76	0.76
Observations	50	50	116	116

NOTES *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$. Data in parentheses indicates standard errors.

Among all additional control variables, only few have significant impacts. GDP per capita explains significantly the propensity only at 10% significant level. The higher population growth contributes to higher poverty rate and lower human

development. Government expenses helps to increase human development. On the other hand, we found no statistically significant impact of financial crises.

Table 4 reports the results of country fixed effect estimation, taking into account the instruments. It is suggested that the value of $F - test$, $R - squared$, and number of observation are decreased, meaning the less impactful existence of the instruments. However, the whole models remain robust to predict the results. In overall, the results, taking into account the coefficients of financial development variables, additional control variables and dummies of financial crises, are almost the same, except there is no significant coefficients in poverty analysis (see $POV4.1$ and $POV4.2$), even its direction does not change.

4.2 Estimating the Effect of Financial Technology on Poverty and Human Development

We then estimate the coefficients of mobile cellular subscriptions and mobile money, applying the same methodology of country fixed effect estimators. It is worth noting that the dataset of mobile cellular subscriptions was available from 1990 to 2017 while that of the mobile money was available only in 2014, 2016 and 2017.

Table 5 reports regression results with additional control variables. We found the satisfied value of $F - test$ and $R - squared$. However, the number of observation drops considerably when we estimate the poverty with mobile money (see $POV5.2$). The existence of the mobile phone contributes significantly to reduce poverty at sig. 5% (see $POV5.1$) and promote human development at sig. 1% (see $HDI5.1$). The mobile money also significantly explains human development at sig. 1% (see $HDI5.2$), but we found no significant coefficients with poverty (see $POV5.2$).

TABLE 5 Fixed-effect estimations of the poverty and human development with additional control variables.

	(POV5.1)	(POV5.2)	(HDI5.1)	(HDI5.2)
Mobile cellular subscriptions (Per 100 people)	-0.150** (0.065)		0.014*** (0.001)	
Mobile money (% of population ages 15+)		-0.262 (0.222)		0.014*** (0.004)
GDP growth (Annual %)	0.090 (0.140)	0.027 (0.179)	-0.003 (0.002)	-0.001 (0.003)
Inflation consumer prices (Annual %)	0.011 (0.103)	0.020 (0.215)	-0.0008 (0.002)	-0.006*** (0.002)
Population growth (Annual %)	1.029** (0.444)	0.991 (1.462)	-0.054*** (0.008)	-0.025 (0.016)
Government expense (% of GDP)	0.089 (0.390)	0.479 (2.128)	0.017*** (0.006)	0.025* (0.013)
DUMCRISIS	0.310 (0.187)		-0.009*** (0.003)	
Constant	2.637*** (1.031)	1.764 (5.685)	0.568*** (0.018)	0.557*** (0.036)
Country Fixed Effects	Yes	Yes	Yes	Yes
Time	90-17	14-17	90-17	14-17
F test	19.19	12.47	276.94	199.96
Prob > F	0.00	0.00	0.00	0.00
R-squared	0.47	0.30	0.92	0.68
Observations	51	23	125	42

NOTES *** p < 0.01, ** p < 0.05, and * p < 0.1. Data in parentheses indicates standard errors.

Inflation explains negatively at sig. 1% only when we estimate with mobile money. Population once again increases poverty at sig. 5% and decrease human development at sig. 1% only when we estimate with the mobile phone. Public expenditure negatively explains human development at sig. 1% when we estimate with the mobile phone and at sig. 10% when we estimate with mobile money. Considering the existence of financial crises, it significantly reduced human development at sig. 1% when we estimate with mobile subscription. However, these dummy variables become omitted when we estimate with mobile money.

Table 6 reports the regression results, estimating with instrumental variables. Comparing to the estimation with only additional control variables, the value of *F test*, *R – squared* and number of observation decrease slightly. However, the robustness remains satisfied. The findings show that all the coefficients of the mobile phone are reported to be statistically significant at sig. 1% (see *POV6.1*, and *HDI6.1*), suggesting that the mobile-phone subscription reduce national poverty and promote country's human development. Moreover, the mobile money only significantly explains country's human development at sig. 1% (see *HDI6.2*), but not on poverty (see *POV6.2*).

TABLE 6 Fixed-effect estimations of the poverty and human development with instrumental variables

	(POV6.1)	(POV6.2)	(HDI6.1)	(HDI6.2)
Mobile cellular subscriptions (Per 100 people)	-0.399*** (0.099)		0.021*** (0.002)	
Mobile money (% of population ages 15+)		-0.250 (0.228)		0.019*** (0.004)
GDP growth (Annual %)	0.275 (0.172)	0.027 (0.179)	-0.009*** (0.003)	-0.0004 (0.003)
Inflation consumer prices (Annual %)	0.001 (0.122)	0.020 (0.215)	-0.001 (0.002)	-0.006*** (0.002)
Population growth (Annual %)	0.107 (0.575)	0.995 (1.462)	-0.018 (0.012)	-0.024 (0.016)
Government expense (% of GDP)	1.080** (0.525)	0.433 (2.137)	-0.014 (0.010)	0.023* (0.013)
DUMCRISIS	0.435* (0.224)		-0.013*** (0.004)	
Constant	0.763 (1.308)	1.847 (5.696)	0.632*** (0.026)	0.546*** (0.038)
Country Fixed Effects	Yes	Yes	Yes	Yes
Time	90-17	14-17	90-17	14-17
F test	14.35	12.48	172.61	164.46
Prob > F	0.00	0.00	0.00	0.00
R-squared	0.25	0.30	0.87	0.66
Observations	51	23	122	41

NOTES *** p < 0.01, ** p < 0.05, and * p < 0.1. Data in parentheses indicates standard errors.

In overall, the findings confirm the positive effect of mobile-phone subscription and its present involving in financial sectors or mobile money. The coefficients of control variables change very much. GDP per capita negatively explains human development at sig. 1% (mobile subscription). Inflation reduces human development at sig. 1% (mobile money). Expenses increase poverty at sig. 5% (mobile subscription) and human development at 10% (mobile money). Financial crises remain statistically significant only when we estimate with human development.

5 Robustness Checks of Subsample Analysis: Political and Institutional Factors and Higher- and Lower-income Countries

Most of the variation in political analysis takes place between the developed and the developing countries. Considering both from the practical and theoretical considerations, it is essential to examine whether the association between policy and output volatility occurs equally within sub-group of countries. As discussed in the previous section, the relationship between financial development in the Fintech era, poverty and human development can also depend on the level of development as well as the quality of institutions. Since the Southeast Asian countries have been normally known as the most heterogeneous area on the planet earth, considering economic development, and political and institutional factors, analysing the different subsample would provide further insight. We divided the sampling into two groups of countries, those with higher income background and higher score of the EIU democratic index, and those with lower income background and lower score of the EIU democratic index. The first group consists of the founding member of ASEAN countries (including Indonesia, Malaysia, Philippines, and Thailand). The second group with

less developed economy, called CLMV countries, includes Cambodia, Laos, Myanmar and Vietnam.⁷³

Tables 7 and 8 reports the regression results of financial development and financial technology variables, considering the different stage of economic development, political and institutional factors in the Southeast Asian countries.

In the more developed and more democratic economies, broad money (% of GDP) and domestic credit provided by the financial sectors (% of GDP) are found to statistically increase poverty at sig. 1% and sig. 5% respectively (see *HIGH7.1* and *HIGH7.2*) and decrease the human development at sig. 5% and sig. 1% respectively (see *HIGH8.1* and *HIGH8.2*). The mobile subscription is found to statistically reduce poverty at sig. 1% (see *HIGH7.3*) and increase human development at sig. 1% (see *HIGH8.3*). The mobile money, on the other hand, has statistically positive relationship with human development at sig. 1% (see *HIGH8.4*).

In the less developed and less democratic economies, we cannot find any statistical relationship for poverty analysis. However, we turn into human development analysis, broad money (% of GDP), domestic credit provided by the financial sectors (% of GDP) and mobile subscription are found to statistically increase human development at sig. 1% (see *LOW8.1*, *LOW8.2* and *LOW8.3*). The mobile money increases human development at sig. 5% (see *LOW8.4*).

⁷³ Please see [Appendix 1](#) for more detail about the economic, political and institutional development in the Southeast Asian countries.

TABLE 7 Subsample analysis - fixed-effect estimations of poverty with instrumental variables

	More developed and more democratic countries				Less developed and less democratic countries			
	HIGH7.1	HIGH7.2	HIGH7.3	HIGH7.4	LOW7.1	LOW7.2	LOW7.3	LOW7.4
Broad money (% of GDP)	6.884*** (2.466)				-0.904 (0.586)			
Domestic credit provided by financial sectors (% of GDP)		3.915** (1.777)				-0.494 (0.322)		
Mobile cellular subscriptions (Per 100 people)			-0.43*** (0.122)				-0.402 (0.263)	
Mobile money (% of population ages 15+)				-0.587 (0.582)				-0.331 (0.929)
GDP growth (Annual %)	0.615* (0.333)	0.407 (0.290)	0.276 (0.201)	0.041 (0.198)	0.520 (1.345)	0.493 (1.352)	0.469 (1.364)	
Inflation consumer prices (Annual %)	0.109 (0.204)	0.154 (0.187)	-0.0312 (0.154)	0.1340 (0.278)	-0.106 (0.409)	-0.067 (0.408)	0.055 (0.414)	-0.326 (1.761)
Population growth (Annual %)	1.947*** (0.703)	2.21*** (0.661)	0.085 (0.693)	0.028 (2.008)	-2.228 (6.447)	-1.420 (6.404)	-2.132 (6.473)	
Government expense (% of GDP)	0.653 (1.275)	-0.109 (1.076)	1.230 (1.042)	1.433 (3.393)	0.424 (0.713)	0.093 (0.677)	1.269 (1.034)	0.533 (7.476)
DUMCRISIS	0.919** (0.392)	0.809** (0.375)	0.442* (0.240)		0.210 (0.228)	0.216 (0.227)	0.203 (0.229)	
Constant	-22.38** (9.631)	-10.988 (6.958)	0.985 (2.139)	0.931 (7.169)	3.135** (1.314)	2.844** (1.227)	2.119* (1.188)	2.312 (4.423)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time	90-17	90-17	90-17	14-17	90-17	90-17	90-17	14-17
F test	8.92	10.30	8.88	9.71	16.33	16.28	13.89	28.04
Prob > F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
R-squared	-	-	0.09	0.23	0.16	0.16	0.16	0.07
Observations	50	50	51	23	50	50	51	23

NOTES *** p < 0.01, ** p < 0.05, and * p < 0.1. Data in parentheses indicates standard errors.

TABLE 8 Subsample analysis - fixed-effect estimations of human development with instrumental variables.

	More developed and more democratic countries				Less developed and less democratic countries			
	HIGH8.1	HIGH8.2	HIGH8.3	HIGH8.4	LOW8.1	LOW8.2	LOW8.3	LOW8.4
Broad money (% of GDP)	-0.138** (0.058)				0.121*** (0.030)			
Domestic credit provided by financial sectors (% of GDP)		-0.10*** (0.039)				0.068*** (0.017)		
Mobile cellular subscriptions (Per 100 people)			0.033*** (0.006)				0.062*** (0.017)	
Mobile money (% of population ages 15+)				0.065*** (0.020)				0.013** (0.007)
GDP growth (Annual %)	0.010 (0.006)	0.012** (0.006)	-0.02*** (0.009)	0.001 (0.006)	0.040 (0.056)	0.046 (0.056)	0.088 (0.067)	-0.044 (0.030)
Inflation consumer prices (Annual %)	-0.013* (0.007)	-0.011* (0.006)	0.0004 (0.007)	-0.0090 (0.006)	0.002 (0.007)	0.003 (0.007)	-0.012 (0.008)	-0.007 (0.005)
Population growth (Annual %)	-0.17*** (0.023)	-0.15*** (0.018)	0.045 (0.036)	0.042 (0.050)	0.047 (0.114)	0.051** (0.115)	-0.117 (0.096)	-0.026 (0.072)
Government expense (% of GDP)	0.079*** (0.028)	0.077*** (0.028)	-0.127** (0.049)	-0.062 (0.067)	0.018 (0.031)	0.058 (0.030)	-0.118 (0.055)	0.033 (0.022)
DUMCRISIS	-0.004 (0.008)	-0.006 (0.008)	-0.014 (0.009)		0.009 (0.011)	0.011 (0.011)	-0.004 (0.012)	
Constant	0.938*** (0.202)	0.830*** (0.145)	0.818*** (0.085)	0.621*** (0.117)	0.451*** (0.071)	0.485*** (0.066)	0.619*** (0.065)	0.652*** (0.044)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time	90-17	90-17	90-17	14-17	90-17	90-17	90-17	14-17
F test	39.96	41.55	21.24	43.87	17.16	16.82	15.34	117.52
Prob > F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
R-squared	0.56	0.57	0.40	0.19	0.17	0.17	-	0.49
Observations	116	116	122	41	116	116	122	41

NOTES *** p < 0.01, ** p < 0.05, and * p < 0.1. Data in parentheses indicates standard errors.

6 Conclusion

The key conclusion from this paper is that the traditional financial development indicators, measured by broad money (% of GDP) and domestic credit provided by the financial sectors (% of GDP), contribute to reduce poverty and improve human development in the Southeast Asian countries from 1990 to 2017. In the same way, we observe the impact of mobile subscription and mobile money into the analysis, considering rising financial technology in Fintech era. The results confirm that rising mobile subscription and mobile money help to promote human development. However, only mobile subscription shows its statistically positive effect on poverty reduction.

We take a closer look as well at the analysis of the different stage of economic, political and institutional development in the Southeast Asian countries. The findings show that the traditional financial development indicators, measured by broad money (% of GDP) and domestic credit provided by the financial sectors (% of GDP), are found to statistically promote human development and (not statistically) reduce poverty only in the less developed and less democratic countries, but not in the more developed and more democratic countries. Alternatively, the financial technology indicators, measured by mobile subscription and mobile money, are found to statistically promote the human development in both groups of countries, but there is no statistical relationship for poverty analysis, except for mobile subscription in the more developed and more democratic countries.

To avoid any endogeneity bias, driven by the fact that the variables in our analysis are not exogenous, we use instrumental variables in the two-stage least square panel-data estimations. Our estimations come from economic development literature on the role of determinants of financial globalisation in developing

countries. In doing so along with additional statistical tests, we can confirm the robustness of our results.

There are still many open questions, which are not answered in this study. The most important weakness is likely to be related to our estimation models. We apply the 2SLS fixed-effects model with instrumental variables. For example, Nickell (1981) warns that the fixed-effects estimator is consistent for dynamic linear panel model if both time is infinite and individual is infinite. We suggest for further researches, which may consider alternative methods. For instance, the 2SLS random-effects model allows to analyse time-invariant covariates. The 2SLS first-differenced estimator allows to analyse with lagged dependent variables. Finally, the GMM estimators for dynamic panel data allow dealing with endogenous problems, fixed individual effects and autocorrelation (StataCorp 2013). And, it is not done in this study. Other potential weakness is related to our dataset. In our study, there are many missing values, especially for poverty variable. There are less than 30% among the full 224 observations for poverty. When we estimate with instrumental variables, the number of observations was reduced. Because of having this low observation, it is possibly risky to use the first-differenced estimator. As the fixed-effect model is also consistent in some particular cases, especially for unbalanced panel dataset, we end up using only this method. Least but not last, we use also mobile cellular subscriptions to study the role of digital financial innovation in the Southeast Asian countries from 1990 to 2017. The mobile cellular subscriptions, which we have available data since 1990, is not relevant directly to digital financial innovation, while mobile money with direct impact has available data only from 2011. Some literatures estimate the mobile money as dummy variable, using cross-section analysis method, to measure whether mobile money operates are presented or not. However, it is not possible in our cases since the mobile money operates in all countries in the sampling.

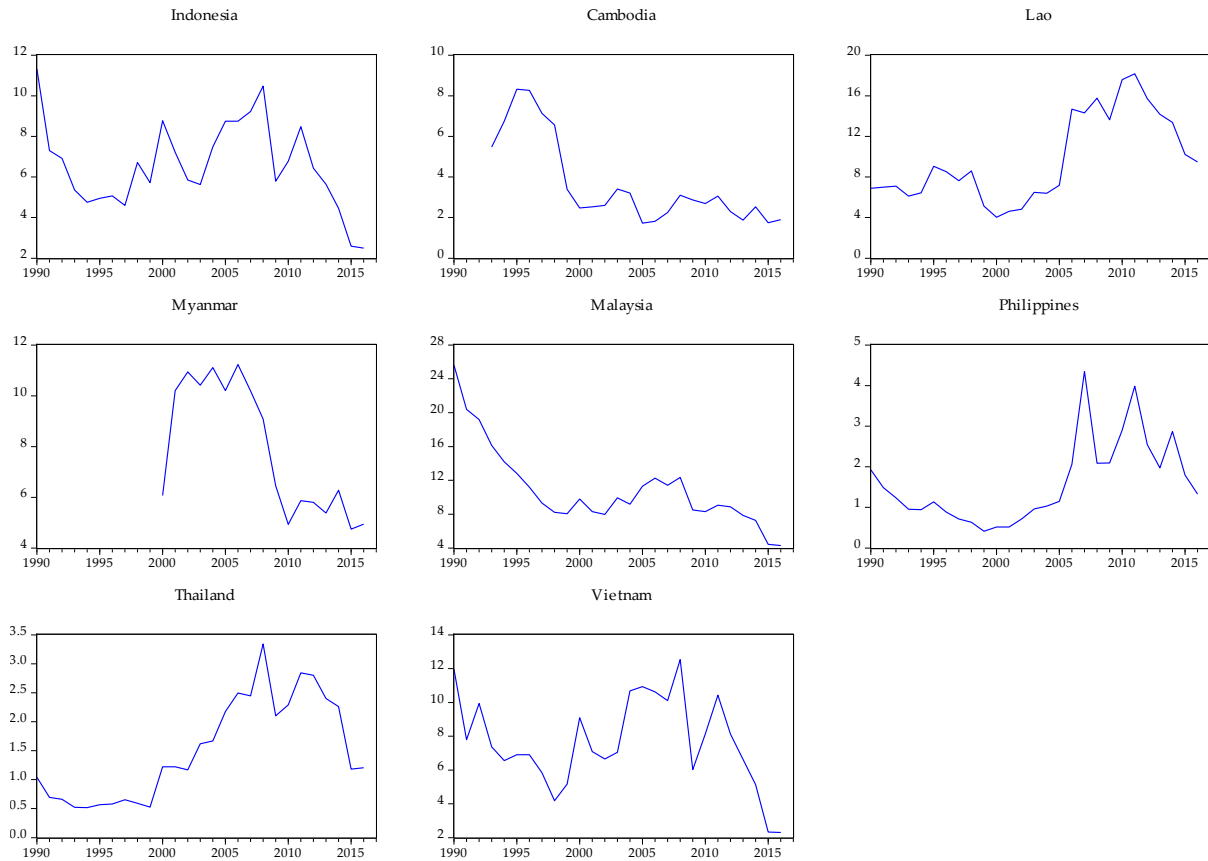
Appendix Chapter 4

APPENDIX 1 Economic, political and institutional development (2016)

Rank	Country	EIU Score	EIU Democratic Index	GDP per capita	Economic Development Stage
48	Indonesia	6.97	Flawed democracy	\$3,511	Developed economy
50	Philippines	6.94	Flawed democracy	\$3,568	Developed economy
65	Malaysia	6.54	Flawed democracy	\$13,123	Developed economy
100	Thailand	4.92	Hybrid regime	\$5,697	Developed economy
112	Cambodia	4.27	Hybrid regime	\$1,111	Less developed economy
113	Myanmar	4.20	Hybrid regime	\$1,419	Less developed economy
131	Vietnam	3.38	Authoritarian	\$2,370	Less developed economy
151	Laos	2.37	Authoritarian	\$1,709	Less developed economy

SOURCE Author's elaboration with database from EIU democratic index and World Bank.

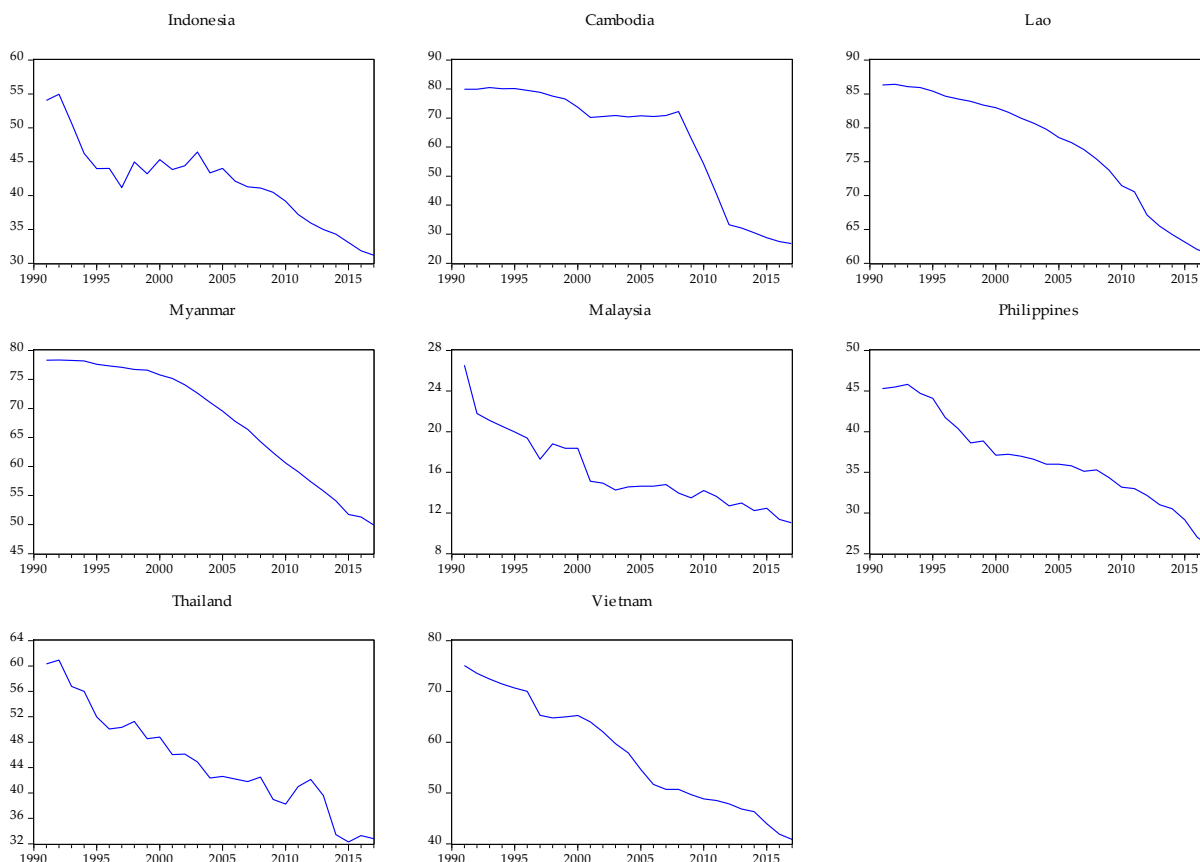
NOTES Considering the economic development stage in the region, as shown in Appendix 1, we can see two groups of countries: higher developed economies (representing the ASEAN's founding members or the four Asian tigers) and less developed economies (representing the CLMV countries). The institutional framework, however, has been seen to progress slowly like a crab, moving forward then backward from time to time. Indonesia, the Philippines, and Malaysia have the better score in the EIU democracy index as the flawed democracy countries; yet, it is far from the full democracy score. Thailand, Cambodia and Myanmar go up and down in the hybrid regime, and Vietnam and Laos have been always known as authoritarian. The EIU democracy index is based on five categories: electoral process and pluralism; civil liberties; the functioning of government; political participation; and political culture. Based on their scores on 60 indicators within these categories, each country is then itself classified as one of four types of regime: full democracy; flawed democracy; hybrid regime; and authoritarian regime (The Economist 2018).

APPENDIX 2 Total natural resources rents (% of GDP) 1990-2017

SOURCE Author's elaboration with data from World Bank staff estimates based on sources and methods described in "The Changing Wealth of Nations 2018: Building a Sustainable Future" (Lange et al 2018).

NOTES Total natural resources rents are the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents.

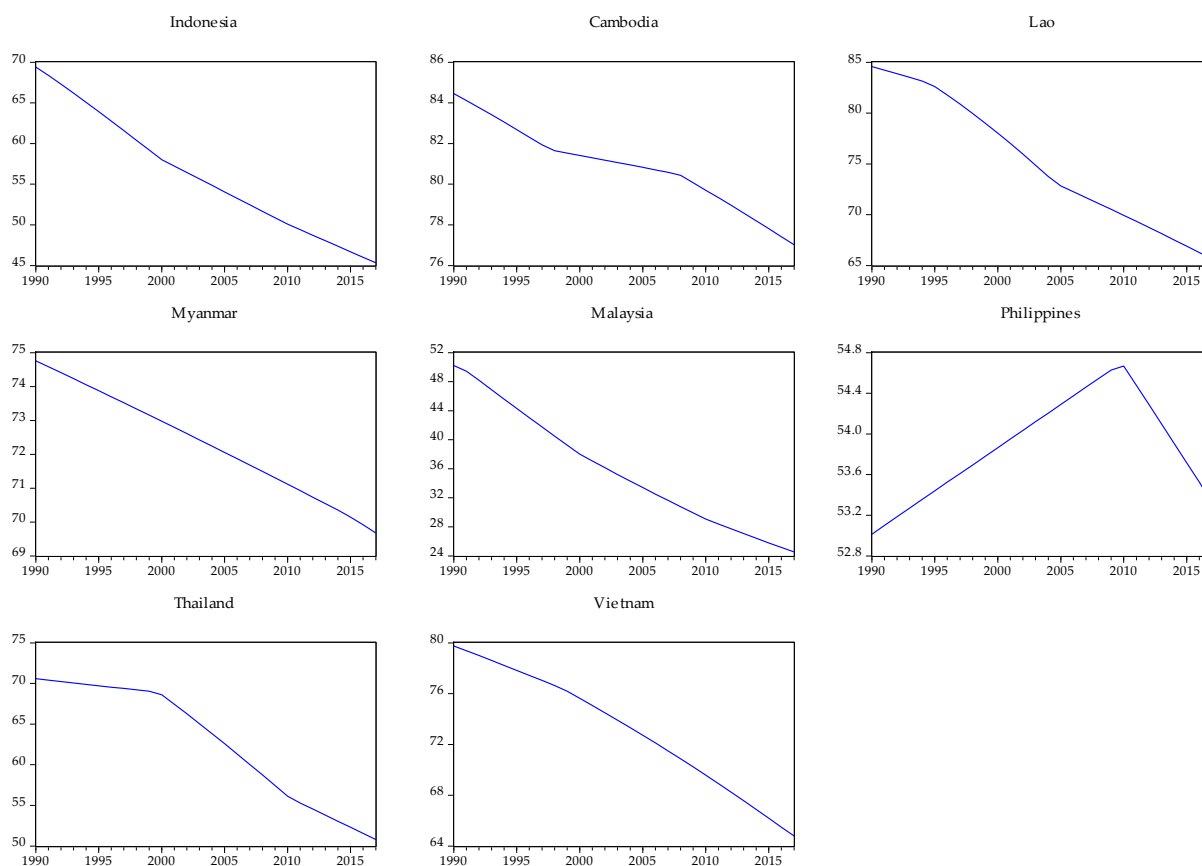
APPENDIX 3 Employment in agriculture (% of total employment) (modeled ILO estimate) 1990-2017



SOURCE Author's elaboration with data from International Labour Organization, ILOSTAT database. Data retrieved in September 2018.

NOTES Employment is defined as persons of working age who were engaged in any activity to produce goods or provide services for pay or profit, whether at work during the reference period or not at work due to temporary absence from a job, or to working-time arrangement. The agriculture sector consists of activities in agriculture, hunting, forestry and fishing, in accordance with division 1 (ISIC 2) or categories A-B (ISIC 3) or category A (ISIC 4).

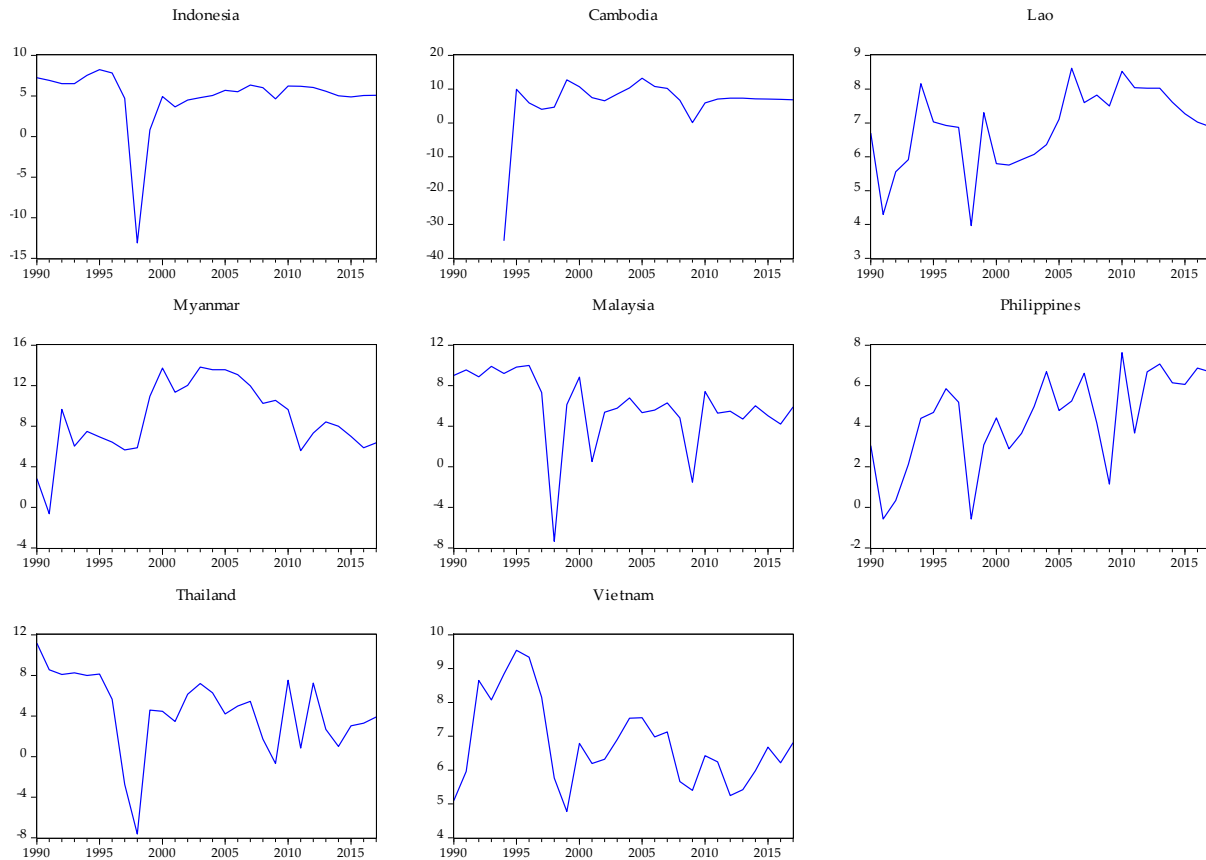
APPENDIX 4 Rural population (% of total population) 1990-2017



SOURCE Author's elaboration with data from World Bank staff estimates based on the UN Population Division's World Urbanization Prospects: 2018 Revision.

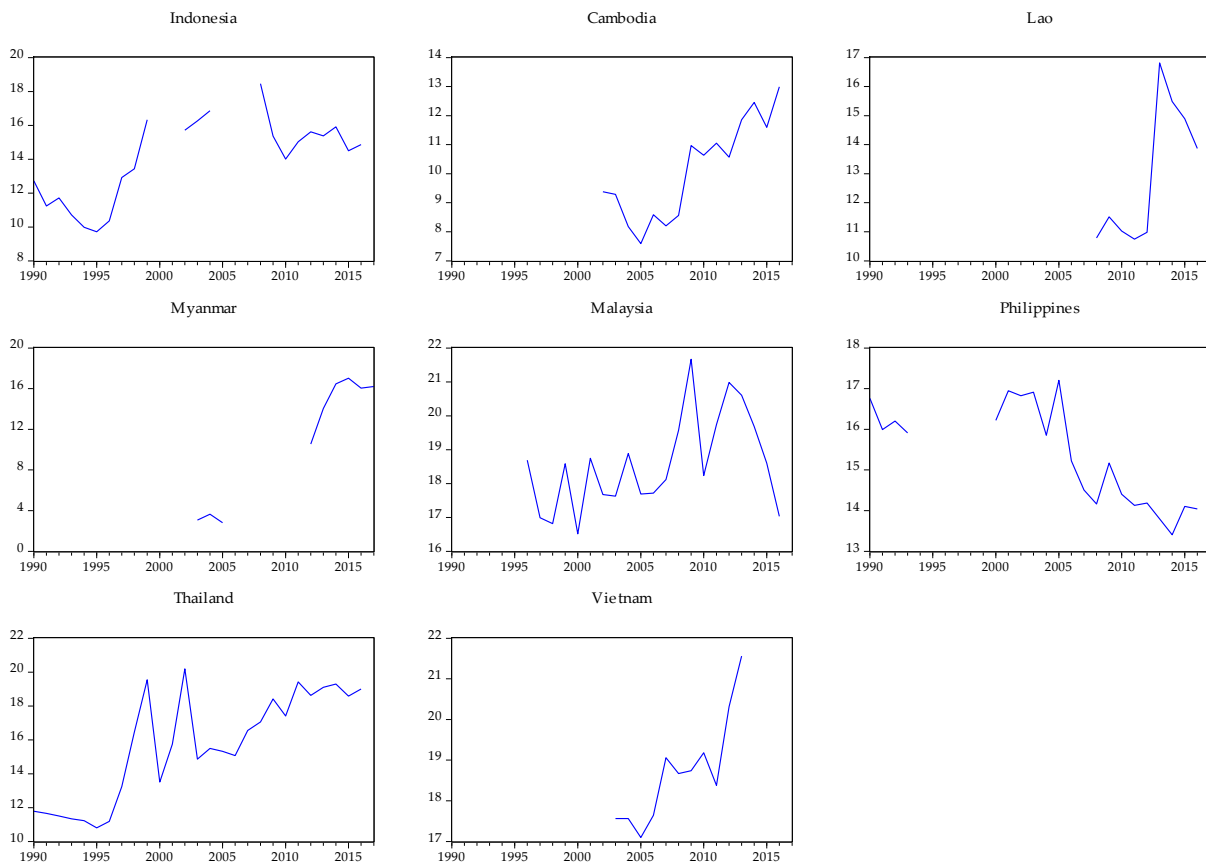
NOTES Rural population refers to people living in rural areas as defined by national statistical offices. It is calculated as the difference between total population and urban population.

APPENDIX 5 GDP growth (annual %) 1990-2017



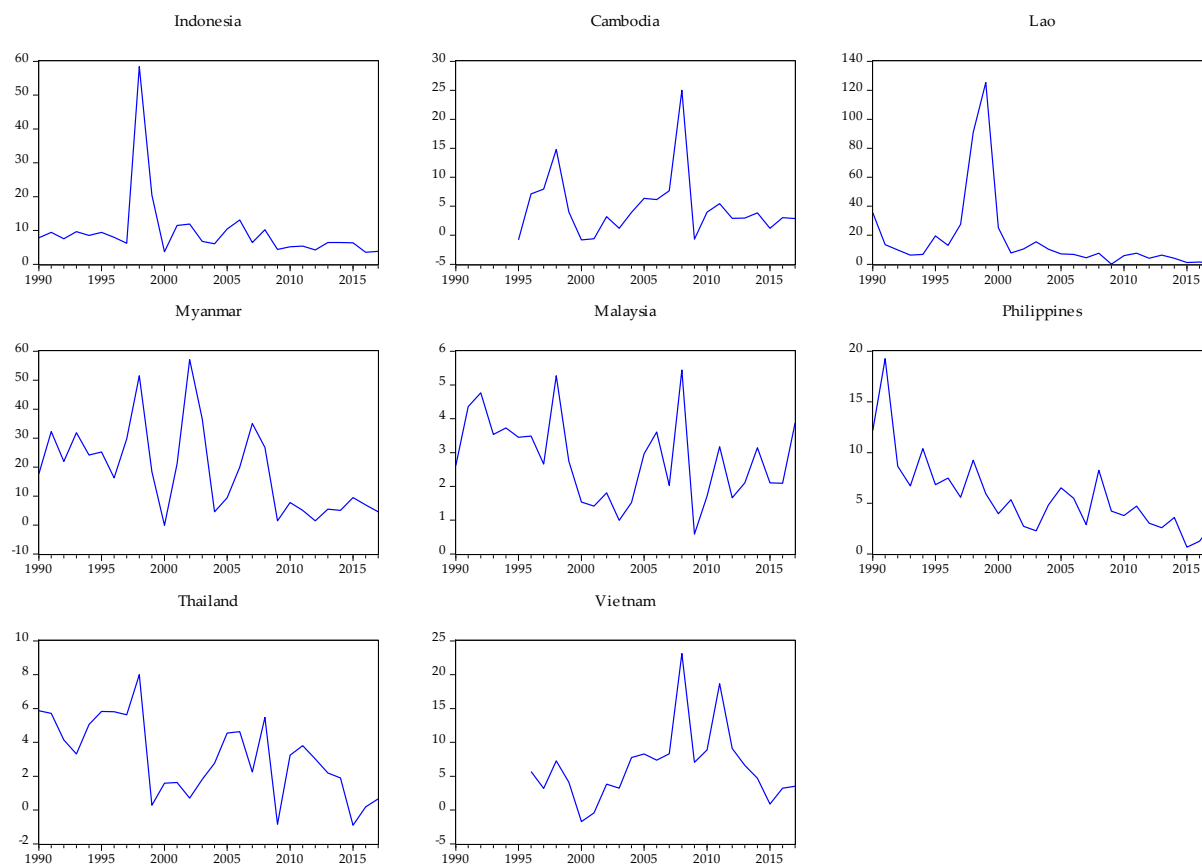
SOURCE Author's elaboration with data from World Bank national accounts data, and OECD National Accounts data files.

NOTES Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2010 U.S. dollars. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.

APPENDIX 6 Government expense (% of GDP) 1990-2017

SOURCE Author's elaboration with data from International Monetary Fund, Government Finance Statistics Yearbook and data files, and World Bank and OECD GDP estimates.

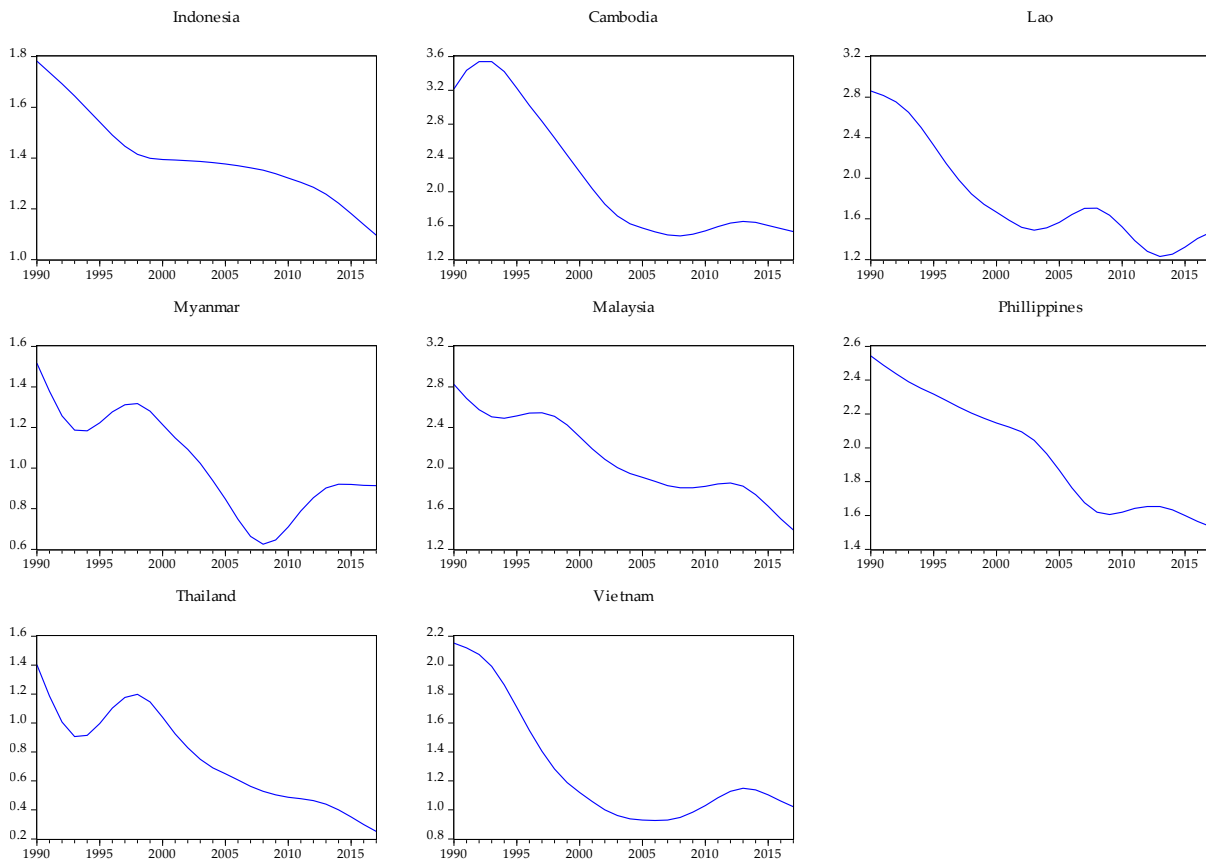
NOTES Expense is cash payments for operating activities of the government in providing goods and services. It includes compensation of employees (such as wages and salaries), interest and subsidies, grants, social benefits, and other expenses such as rent and dividends.

APPENDIX 7 Inflation consumer prices (annual %) 1990-2017

SOURCE Author's elaboration with data from the World Bank national accounts data, and OECD National Accounts data files.

NOTES Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used.

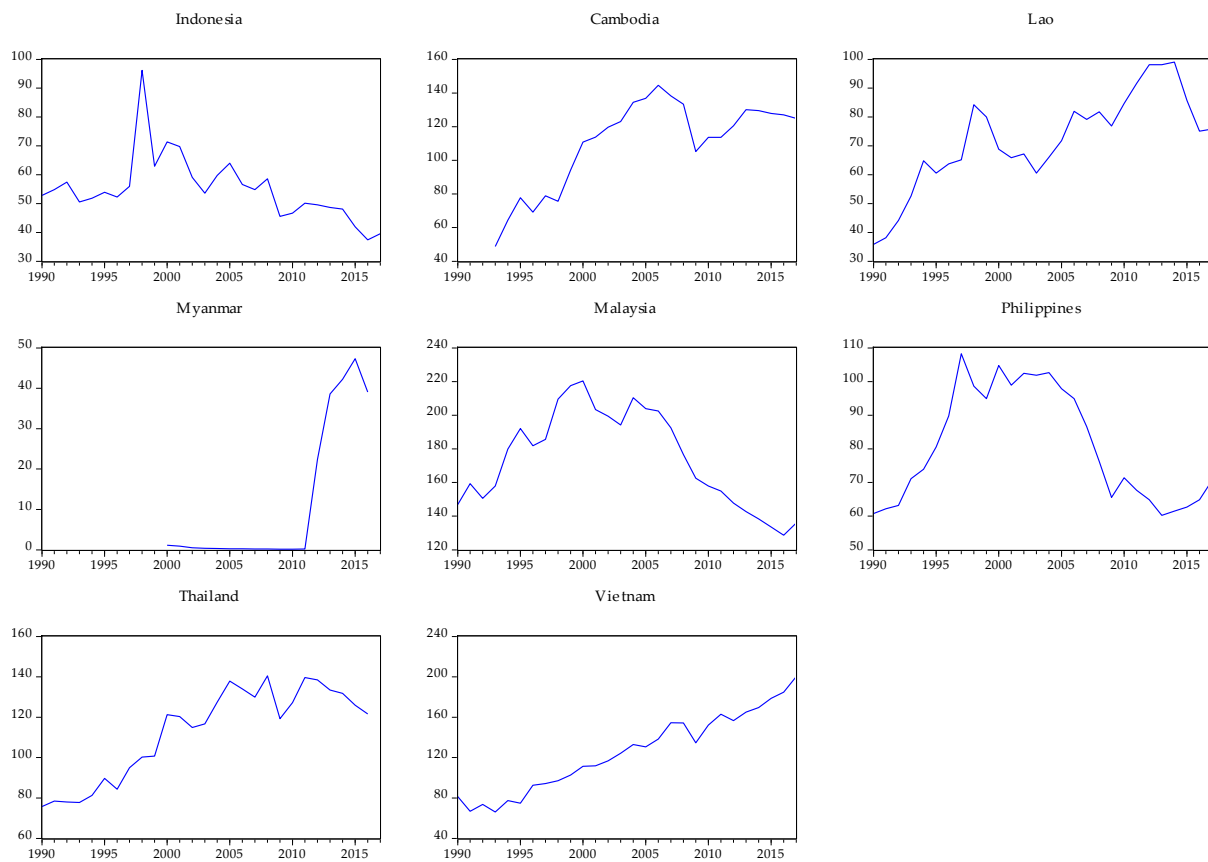
APPENDIX 8 Population growth (annual %) 1990-2017



SOURCE Author's elaboration with data from total population. Population source: (1) UN Population Division. World Population Prospects: 2017 Revision, (2) Census reports and other statistical publications from national statistical offices, (3) Eurostat: Demographic Statistics, (4) UN Statistical Division. Population and Vital Statistics Reprint (various years), (5) U.S. Census Bureau: International Database, and (6) Secretariat of the Pacific Community: Statistics and Demography Programme.

NOTES Annual population growth rate for year t is the exponential rate of growth of midyear population from year $t-1$ to t , expressed as a percentage. Population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship.

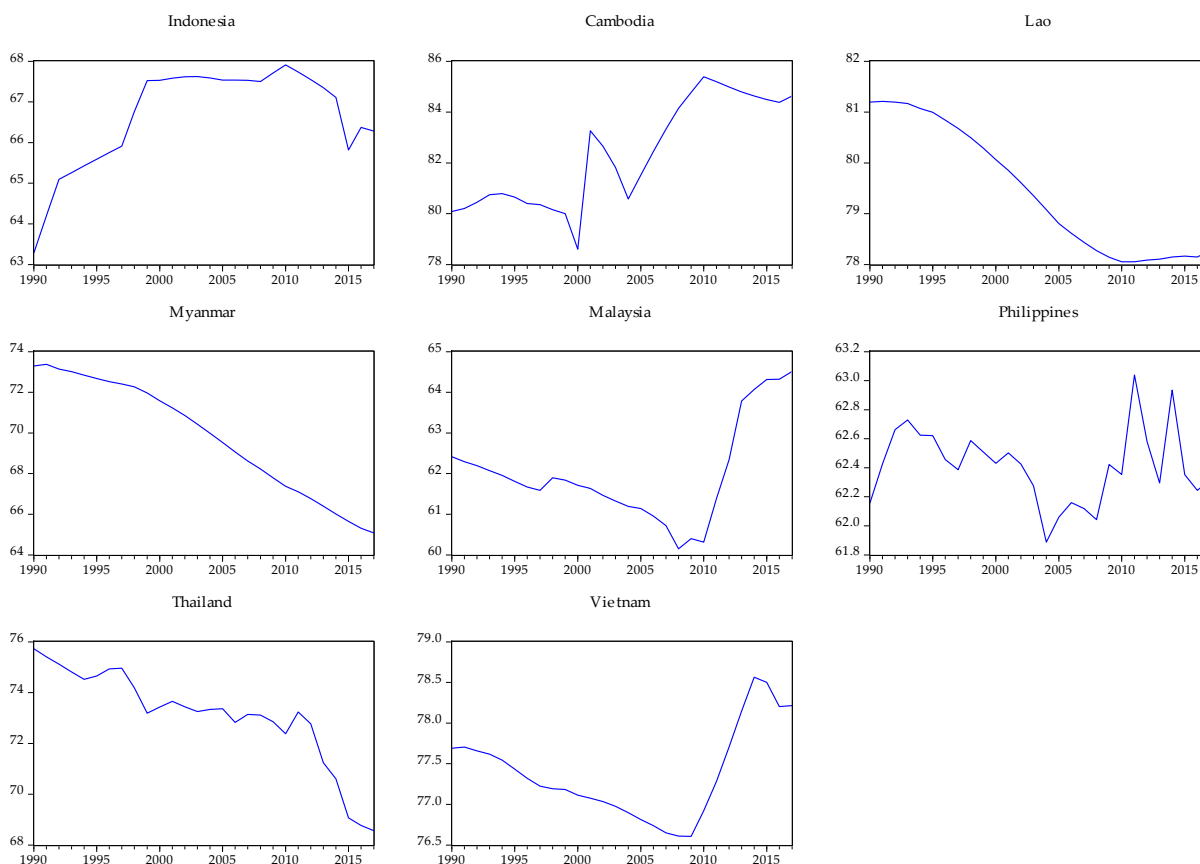
APPENDIX 9 Trade (% of GDP) 1990-2017



SOURCE Author's elaboration with data from World Bank national accounts data, and OECD National Accounts data files.

NOTES Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.

APPENDIX 10 Labour force participation rate, total (% of total population ages 15+) (modelled ILO estimate) 1990-2017



SOURCE Author's elaboration with data from International Labour Organization, ILOSTAT database. Data retrieved in September 2018.

NOTES Labour force participation rate is the proportion of the population ages 15 and older that is economically active: all people who supply labour for the production of goods and services during a specified period.

CHAPTER 5**Government Intervention, Institutional Quality and
Inequality: Evidence from Asia-Pacific Countries
(1988-2014)**

ABSTRACT This chapter studies the long-run equilibrium relationship between public expenditure, institutional quality and income inequality in Asia-Pacific countries with diverse institutional backgrounds. By applying panel co-integration methods with a dataset from 1988 to 2014, the main findings suggest that public expenditure has negative long-run steady-state effect on income inequality in countries with weaker institutional quality. Its effect has only one-way Granger causality link to income inequality. However, there is not enough statistical evidence of such a long-run relationship, when we estimate the effect in countries with stronger institutional quality or combine all Asia-Pacific countries together. The globalized forces, measured by trade openness, do increase income inequality while population growth negatively explains income inequality in all Asia-Pacific countries and those with diverse institutional quality.

KEYWORDS Public expenditure, institutional quality, inequality, Asia-Pacific

JEL CLASSIFICATION H53, E02, D63

1 Introduction

During the last few decades, Asia-Pacific countries, comparing relatively to the global share, have achieved their economic development impressively; however, it is lagging behind the concern of rising economic inequality. The Hollywood's romantic comedy-drama film, *"Crazy Rich Asians"*, can be a social evidence to explain how the top incomes go far from the rest of the society. According to the last updated data of the Credit Suisse's global wealth report and the Oxfam, the number of super-rich, called millionaires and billionaires, ranging from Australia, China, Hong Kong, Taiwan, India, Indonesia, Japan, South Korea, Thailand, Vietnam and others, has surpassed that of North America and Europe. In another sign of rising inequality, Asia-Pacific's income Gini coefficient increased from 0.37 to 0.48 between 1990 and 2014 while the wealth inequality is even wider; on the other hand, Asia-Pacific region is also the home of the nearly two-thirds of the world's working poor (Ana 2018).

At the early stage of social and economic development throughout half a century ago, the Asia-Pacific region has widely known as a place where there were countless internal conflicts, political instability, civil wars, and home of poverty. During this particular period of time, the government of any societies would focus on offering basic needs, rebuilding basic infrastructures, and instituting a minimum degree of social security as well as the rule of law to their citizens (World Bank 2013). Up to the present, Asia-Pacific economies, however, have become the most open to international trade. Like most societies in advanced countries, especially those from the West, as long as a society prospers, people's expectation would become more demanding in access to better governmental services, including rule of law, accountability, transparency, social justice, social security and, simultaneously, improvement of welfare and income redistribution (Fleurbaey 2018). As reported by the most recent findings, rising wealth / income inequality is considered as one among

today's biggest challenges for the global government (Stiglitz 2012, Piketty 2013, Piketty 2016, Blancheton 2017, Blancheton 2018) and there is no exception for Asia-Pacific nations. In the long run, the history lessons show that the unequal society could lead to the World's disastrous, like what the Europeans faced in the 20th century. For that reason, this issue does matter above all.

In the modern era of globalisation, many factors from an economy's factor endowments, trade openness, financial deepening, geography, and institutions, to its historical trajectories, and changes in technology have been detected to explain inequality (see, e.g., Avarmaa et al. 2013, Hartmann et al. 2017). Therefore, to address the inequality issue, it is without doubt the matter of controversy and complexity. Besides a variety of many redistributive policies, governmental intervention through public expenditure is normally taken into account as a priority in developing countries. This is because taxation mechanism is viewed as less effective and less efficient, thanks to low size of tax revenues and low quality of good governances and institutions. It is suggested that public expenditure is able to function well and promote a more equal society only if the institutional quality in some contexts, for example with low level of corruption and high political competition, is allowed to do it (Nyblade and Reed 2008). In the Asia-Pacific countries, however, the institutional framework has been seen to progress slowly like a crab, moving forward then backward from time to time. Accordingly, a closer look at this specific issue is required.

This paper aims to investigate long-run equilibrium relationship between public expenditure and inequality in Asia-Pacific countries, where different groups of institutional quality are taken into account. To realize this, we use a dataset in eight Asia-Pacific countries, including Australia, China, India, Japan, Korea, Malaysia, Singapore and Thailand, from 1998 to 2014.

The fundamental contribution of this paper to the literature is as follows. First of all, it gives other empirical findings on the long-run economic impact of public expenditure on income inequality, of which the problematic has been extensively studied only in short and medium time analysis. Combining strength of the Panel Fully Modified Ordinary Least Squares (PFMOLS) and the Panel Dynamic Ordinary Least Squares (PDOLS) as well as the Granger causality tests, our approaches can examine simultaneously the effect of public expenditure on income inequality and the effect of income inequality on public expenditure in Asia-Pacific countries.

Secondly, it is applied with new measures and in different specific context of studies. To measure inequality, we normally use the Gini index by the World Bank, the World Income Inequality Database (WIID) by the United Nations University, or the Standardized World Income Inequality Database (SWIID) by Frederick Solt. However, the weakness of these databases, especially in the context of our study, is that it is available only in advanced countries, mostly in Europe or North America, and there are many annually missing values, especially for those in Asia-Pacific countries. Therefore, we use the *World Wealth and Income Database* (WID.world), first developed by Piketty and Zucman. Our dataset is available at least 26 years (1988 to 2014), except 19 years for Korea from 1995 and 14 years for Thailand from 2000.

Thirdly, this paper focuses on specific Asia-Pacific countries. It is complementary to the existing literature, which we find many studies in Western countries. However, when the global economies change, the standard model of economic thoughts would also change and it matters for Asia-Pacific economies, which might not follow the similar pattern of development as that of the West. As Robert Solow explains, there is no economic theory of everything. In this regard, as in the 21st century, when the centre of gravity of the world economy has shifted decisively from the Atlantic to the Pacific Ocean; therefore, everything that happens in these two regions will attract very strong public attention.

Finally, this study also attempts to detect heterogeneous impacts between Asia-Pacific countries with diverse institutional foundations, including countries with strong institutional quality and those with weak institutional quality.

The rest of the paper is organized as follows. Section 2 considers the theoretical framework. Section 3 explains empirical methodology by describing data and providing the testing results from panel unit root tests and panel cointegration tests. Section 4 looks at the overall regression results and discussions. The final section gives the concluding remarks.

2 Theoretical Considerations

2.1 Public Expenditure on Inequality

Beside taxes, government intervention may help to reduce inequality by redistributing resources through public expenditure (Doerrenberga and Peichla 2014). In this perspective, the government might implement a wide range of mechanisms through transfers involving in education, health, social insurance, housing, infrastructure, investment, and other welfare programs, so on and so forth (Gruber 2015). There are many theories and evidences to suggest that certain sorts of public spending policies are likely to promote more equal society.

For instance, the human capital theory argues that investment in further education tends to increase a person's stock of skills and productivity (Gruber 2015). Thus, education may promote a better outcome in the society. For some particular contexts, government intervention for instance by providing subsidize to low-income families' early-education investment, which could mitigate young parents' budgetary concerns, could have a significant role to provide the equality of opportunity of an

equal access to education, which consequently decrease income inequality and increase intergenerational mobility (Juan and Muyuan 2016).

However, assuming that better education interprets as more preferable results and given that education is a normal good, children from the well-off families would have better opportunities than those from the poorer families. Because high-income families invest more heavily in their children's early education, their children receive more schooling than do children with the same innate ability who are from low-income families. Therefore, the gap in early education investment would result in greater income inequality and less intergenerational income mobility than do differences in innate ability (Glomm and Ravikumar 2003, Igal, Joel and Paul 2005, Juan and Muyuan 2016). The income inequality would be consequently projected to increase in the long run.

Empirically, some studies suggest that global higher education has increased significantly, but we are living in the less equal world (Milanovic 2011). In Asia-Pacific countries, we observe that the participation in higher (or tertiary) education is increasing rapidly in most countries, but, at the same time, greater development of higher education is lagging behind by low social mobility (Marginson 2018). We find as well rising wealth and income inequality in Western English-speaking countries even they have many top universities in the World (Piketty 2013). According to Marginson (2018), many higher education systems are more vertically stratified, with a larger stretch in status and resources between top universities and other higher education institutions. Elite universities tend to be dominated by students from advantaged backgrounds, blocking potentials for greater social mobility, though their social composition varies from case to case. Nevertheless, given that the education from primary to tertiary in the European countries is free or almost free in European welfare countries, we observe that they have faced higher equal society in wealth and income distribution.

In this regard, the effectiveness of distributive public policies would be necessitated to go along with particular assumption or hypothesis. There is much evidence to argue that public expenditures, which target lower and lower-middle social classes as it affects the majority of the population, would produce a more equal distribution of outcomes. This is supported to the idea that public policies need to be involved in providing basic health insurance, compulsory education (primary and secondary), unemployment insurance, housing subsidies, or public infrastructure developments (Gruber 2015). Considering policy and implementation, it would become not only complex but also complicated. Some studies suggest that although public policies were designed to target the most vulnerable or the most needed citizens at the early stage, the benefits might end up receiving by the middle or elites social classes. It might be due to government failure, corruption, low quality of good governances and institutions. These evidences can be found in many developing countries such as low income countries and middle income countries (Anderson, et al. 2017).

Another consideration is to view things in both short and long run. Let's suppose we are living in the World, where we have an equal degree of good governances and institutions so that the government can function at the highest efficiency (lowest rate of corruption or less possible government failure). In this case, even though public expenditure tends to reduce inequality in the short run, it does not guarantee that inequality is less likely to get worse in the long run. Francois Bourguignon states that too much income transfers, not of wealth, can lower the expected return from acquiring physical and human capital. They might distort the economy and reduce savings and investment, and therefore the rate of growth (F. Bourguignon 2003). According to Yew (2013), it reduces people's incentive to work for themselves, then the less dynamic economy would generate possible economic recession in the long run. As long as this hypothesis is right, the citizens from lower

and middle classes would find themselves more struggling compared to the high social classes. Thus, inequality might be rising subsequently.

2.2 Institutional Quality on Inequality

According to Juzhong et al. (2010), we can associate institutional quality to inequality in two different ways: first, by political institutions and democracy, and, second, by corruption. On the one hand, in relation to political factors, it is suggested that more equal income distribution would be promoted in a democracy society with more political rights. When political rights to vote have extended to the majority of the population, the amount of redistribution is decided by the median voter and this determines directly or indirectly the rate of growth of the economy (Bourguignon 2004). However, it failed to verify empirically in some cases, where the countries with the higher score of democracy are not necessary to reduce inequality (Li, Squire and Zou 1998). In this regard, it is subject to the fact that political system alone can't explain enough to the inequality. According to Mark Gradstein, Branko Milanovic and Yvonne Ying, despite having a lower score in democracy or restrictive political rights, income distribution in many countries, such as East European countries, the Republic of Korea, Singapore, Taipei and China, was relatively equal as long as their societies function with special political ideology. In the same way, democracy is more likely to reduce inequality in countries with a parliamentary than a presidential system (Gradstein, Milanovic and Ying 2001). Faqin Lin and Dahai Fu find that inequality is decreasing in autocracy countries, which export more primary commodities, and increasing in democratic countries, which are active in manufacturing outsourcing (Lin and Fu 2016).

The corruption, on the other hand, tends to increase income inequality for the reason that it would lead to tax evasion, less effective administration, lower progressive taxes, less effective public expenditure, or lower investment. The problem

would potentially create a political, economic and social systems that favour only the rich, but hurt the poor (Pedauga et al. 2017, Anderson, et al. 2017). In contrast, some argue that corruption can lead to lower inequality if the social benefit from corrupted activities is higher than social damage. According to Boris Begović, decreasing the effective tax burden can have beneficial effects on growth, not necessarily decreasing inequality, but increasing the poor's prospects of improving their welfare (Begović 2005). The other recent study has found that corruption tends to be associated with lower inequality in less-developed countries due to the existence of the informal sector in many developing countries (Andres and Ramlogan-Dobson 2011).

In an analysis of more disaggregated degree, Nyblade and Reed (2008) have linked corruption to inequality in two contexts of political competition or voting: first, it is related to illegal acts for material gain, namely 'looting', and second, it is related to illegal acts for electoral gain, namely 'cheating'. It is suggested that the first involves in corrupted actions to gain personal benefits by the elites in group of society, which would produce higher inequality. The second, however, involves in buying votes by using for instance public budget to the mass of people. This tends to decrease inequality because at least the money goes to the poor people.

Linking together government intervention through public expenditure and income inequality in the context of diverse institutional quality, we might consequently presume that the distributive effect of public expenditure tends to reduce inequality, given that an economy has high quality of good governances and institutions. If not, the policies would not be implemented effectively. Alternatively, in perceptive of having low institutional quality or corruption, the public intervention is likely to promote more quality outcomes only if the existence of social benefits is linked to the mass of the population (the poorest). However, this hypothesis does not take into account its effect in medium and long run, which are complex by its nature.

3 Methodology

3.1 Data

We collect data from various sources during 1988-2014. Because of data's availability for countries, we include only the following countries: Australia, China, India, Japan, Korea, Malaysia, Singapore and Thailand. There are missing data for a few of our variables, which we solve by using linear interpolation between the available years.

We use the pre-tax top 1% income share of the population to measure the income inequality. The data are taken from the World Wealth and Income Database (WID.world), first developed by Piketty and Zucman. The data is currently available in more countries, especially Asia-Pacific countries. Comparing to the Gini index provided by the World Bank's world development indicators, the annual data are more complete. According to Malinen (2016), the top 1% income share measures the share of national income concentrated in the hands of the highest percentile of income earners. As GDP is, in practice, the national income of a country, the share of total income received by top 1% of the earners can also be presented as $\frac{\text{income of the top 1\%}}{GDP}$. The top 1% income share can be comparably well-suited measure of income inequality since it has a high correlation with other measure of income inequality, like the Gini index (Leigh 2007, Malinen 2016).

To make our estimation comparably reasonable, we use public expenditure as a share of GDP, $\frac{\text{Public expenditure}}{GDP}$. The public expense is cash payments for operating activities of the government in providing goods and services. It includes compensation of employees (such as wages and salaries), interest and subsidies, grants, social benefits, and other expenses such as rent and dividends (World Bank estimate).

To investigate the role of the institutional quality, we divide our sample into two groups: countries with strong institutional quality and countries with weak institutional quality. We use average value of the Worldwide Governance Indicators (WGI) in order to measure the good governance and institutions. The WGI consists of six broad dimensions of governance: voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law, and control of corruption. The estimate of governance in standard normal units is ranging from approximately -2.5 (weak) to 2.5 (strong) governance performances.

The Asia-Pacific countries, which are defined as the strong institutional quality, have the WGI's average value "bigger or equal to zero"; otherwise, they are defined as the weak institutional quality. Therefore, Australia, Japan, Korea, Malaysia and Singapore are in a group of countries with strong institutional quality. China, India, and Thailand are in a group of countries with weak institutional quality. To analyse in such a distinct way, we can identify separate effects to account for heterogeneity between Asia-Pacific countries, which have been known to have quite a different institution.

In addition to explanatory indicator of public expenditure as a share of GDP, we add two major aggregated variables, trade openness as a share of GDP and population growth as control variables. Trade as a share of GDP is the sum of exports and imports of goods and services (World Bank estimate). The annual population growth rate for year t is the exponential rate of growth of midyear population from year $t - 1$ to t , expressed as a percentage. Population is based on the de facto definition of population, which counts all residents, regardless of legal status or citizenship (World Bank estimate).

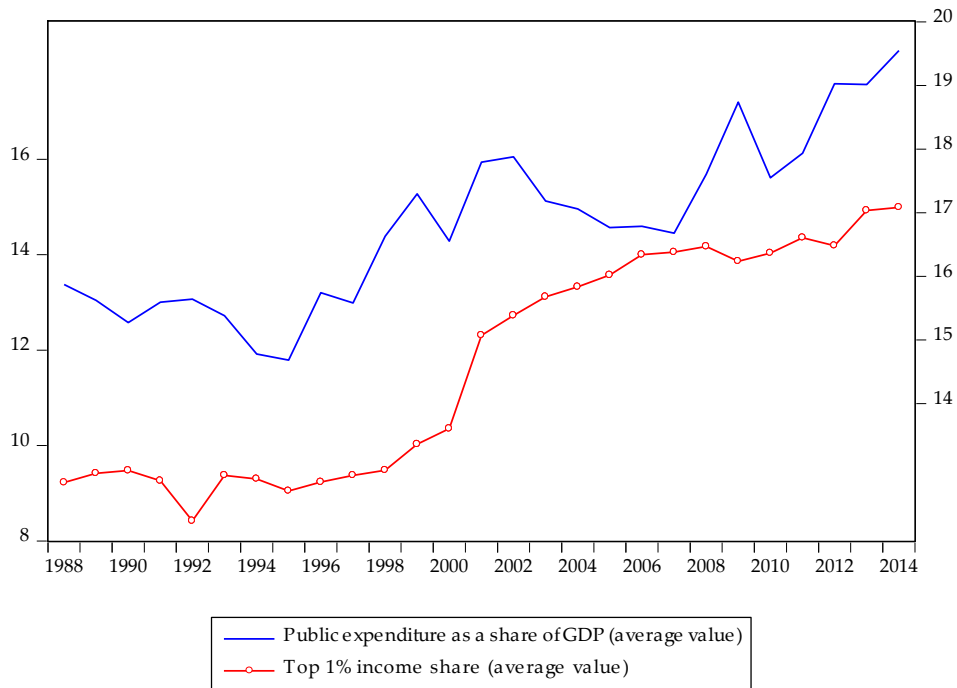
The list of countries divided by regions, income status and institutional status along with descriptive statistics of Asia-Pacific countries, countries with strong

institutional quality, countries with weak institutional quality, and the graphic of each variable in every country are reported in [Appendix 1-9](#). India is the only lower middle income country from South Asia, and others are all from East Asia and Pacific. Malaysia is the only country with upper middle income, but classifies in the same group of countries with strong institutional quality along with other high income countries. Countries with strong institutional quality is relatively described by higher public expenditure and trade openness as a share of GDP; yet, income inequality seems to be higher in those with lower institutional quality. Population changes in nearly similar growth rate.

[Figure 1-2](#) presents respectively the time series of mean plus SD bounds and individual cross sections in line graph of top 1% income share and public expenditure as a share of GDP from 1988 to 2014 among the Asia-Pacific countries. According to the results in [Figure 1](#), public expenditure is in a rising trend from the end of the 1980s to 2014. The top 1% income share, on the other hand, evolves in stable trend, then starts increasing since early 1990s, but, overall, it also shows a rising trend from 1988 to 2014. The results give some evidences to the extent of the 'trending hypotheses', indicating a possible long-term correlation between the variables. However, it can be a reverse causality, i.e. public expenditure explains top 1% income share and vice versa.

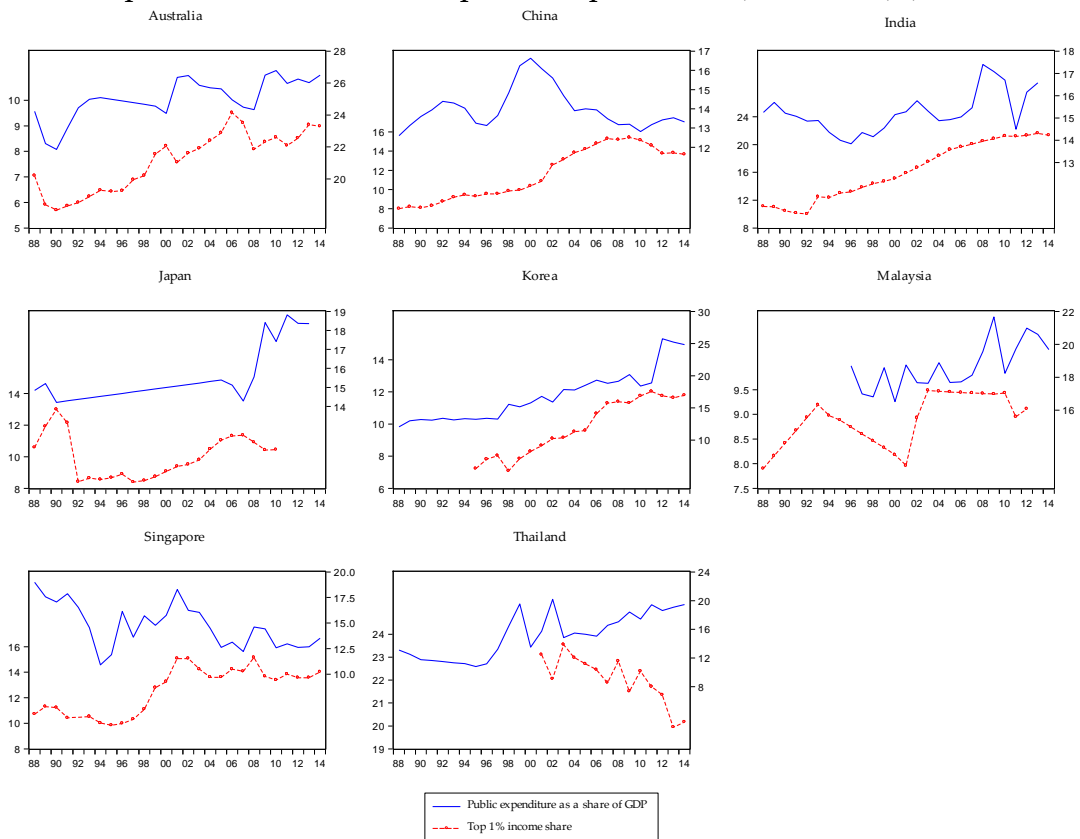
[Figures 2](#) shows a different pattern in each country. Australia, India, Korea and Malaysia show both rising trend of public expenditure and top 1% income share. Singapore and China show only rising trend of top 1% income share, but a nearly stable trend of public expenditure. This is opposite to Japan, where public expenditure is rising, but top 1% income share is likely to become stable in the long run. Thailand shows a very different trend, comparing to other countries, where there is a reverse trend between the variables.

FIGURE 1 Average value of top 1% income share and public expenditure (% of GDP) (1988 to 2014)



SOURCE Author's estimation

FIGURE 2 Top 1% income share and public expenditure (% of GDP) (1988 to 2014)



SOURCE Author's estimation

To assess the long run equilibrium association between the variables, we would perform several tests, including the panel unit root tests, the panel co-integration tests, and the cointegration regression estimations.

3.2 Panel Unit Root Tests

In analysing panel data, the non-stationarity or stationarity of estimated variables affects the choice of the estimator. Since some estimators are inconsistent and some are not asymptotically unbiased estimators in panel cointegrated data, it is important to know the time series features of estimated variables (Hämäläinen and Malinen 2011). We use three types of panel unit root tests. The first follows unit root, assuming individual unit root process, including the IPS by (Im, Pesaran and Shin 2003), the ADF-Fisher test by (Maddala and Wu 1999) and the PP-Fisher test by (Choi 2001). The second follows unit root, assuming common unit root process, including the LLC test by (Levin, Lin and Chu 2002). The third allows for homoscedastic error processes across the panel, including the tests of Hadri Z-stat and Heteroscedastic Consistent Z-stat by (Hadri 2000).

The panel unit root tests, in this paper, are based on the following regression equation:

$$\Delta y_{it} = \rho_i y_{i,t-1} + \alpha_i + \eta_i t + \theta_t + \varepsilon_{it} \quad (1)$$

Where α_i are individual constants; $\eta_i t$ are individual time effects, and θ_t are the common time effects. The null hypothesis of the individual unit root process is that the panel data has unit root, $H_0: \rho_i = 0 \quad \forall i$, i.e. the series in $I(0)$ are non-stationary.

The alternative hypothesizes are:

$$H_1: \rho_i < 0, i = 1, 2, \dots, N_1, \rho_i = 0, i = N_1 + 1, N_2 + 2, \dots, N.$$

The same principle is applied to the LLC test, assuming common unit root process. However, the null hypothesis of the tests of Hadri Z-stat and Heteroscedastic Consistent Z-stat is that panel data has not unit root (the process is stationary) and the alternative hypothesis is that the panel data has unit root (the process is non-stationary).

The Hadri test has a null of stationarity around a deterministic level or a unit-specific deterministic trend. It allows for homoskedastic error processes across the panel, or heteroskedastic error processes across cross-sectional units. The test allows for the correction of autocorrelation using a Newey–West estimator of the long-run variance (Atems and Jones 2015).

TABLE 1 Panel unit root tests

Series	Individual unit roots			Common unit roots	Heteroskedastic	
	IPS	ADF-Fisher	PP-Fisher	LLC	Hadri	Hetero. Con. Z-stat.
Top 1% income share	-1.4004 (0.0807)	22.656*** (0.1233)	21.513*** (0.1596)	0.4647*** (0.6789)	3.7536*** (0.0001)	3.1379*** (0.0009)
Public expenditure (% of GDP)	-0.2071*** (0.4180)	21.581*** (0.1572)	17.752*** (0.3386)	-0.8257*** (0.2045)	2.8356*** (0.0023)	4.1001*** (0.0000)
Trade (% of GDP)	0.1690*** (0.5671)	12.266*** (0.7255)	11.483*** (0.7787)	-0.5886*** (0.2781)	6.1307*** (0.0000)	5.5342*** (0.0000)
Population (annual growth)	-1.2123*** (0.1127)	32.6189 (0.0083)	19.089*** (0.2641)	3.0113*** (0.9987)	0.75290 (0.2258)	4.2954*** (0.0000)

*** Emphasizes that the process is non-stationary at level, then become stationary at the level $I(1)$ after we reject or do not reject the null hypothesis.

NOTES All tests are taken automatic selection of maximum lags; automatic lag length selection based on SIC; Newey-West automatic bandwidth selection and Bartlett kernel; assumed asymptotic normality and individual effects, individual linear trends, except for public expenditure (% of GDP), which we include only individual effects.

According to the results of the panel unit root tests from [Table 1](#), five among six tests for top 1% income share, six among six tests for public expenditure as a share of GDP and trade openness as a share of GDP, and four among six tests for population growth emphasize that the majority of tests become non-stationary at level, then the series became stationary after first difference, $I(1)$. It is worth noting that some macro-

economic variables like the top 1% income share could be bounded from above and below. Malinen (2016) explains that, because of the nonlinear structure of top 1% income series, they can be approximated by a random walk. Because of this, the results of Table 1 can be challenged, considering the perspective of unit root process. To deal with this problem, we also estimate the panel unit root tests with logit-transformed series; however, the results remain nearly the same.

3.3 Panel Cointegration Testing

To estimate the panel cointegration model, it is required that the series of our variables must be non-stationary at the level, $I(0)$, but become stationary at first difference, $I(1)$. This condition is confirmed in our model. We applied, therefore, the Pedroni Residual Cointegration test by Pedroni (1999, 2004), the Kao Residual Cointegration test by Kao (1999) and the Fisher-Johansen co-integration test by Maddala and Wu (1999).

The models for testing panel cointegration between income inequality and public expenditure are structured as follows:

$$inequality_{it} = \alpha_i + \beta_i expense_{it} + \eta_i t + \theta_t + \varepsilon_{it} \quad (2)$$

Where $(1, -\beta_i)$ is country-specific cointegrating vector; α_i are individual constants; $\eta_i t$ are individual time effects, and θ_t are the common time effects. The null hypothesis is that $H_0: \beta_i = 1 \forall i$, i.e, there is no cointegration.

Table 2-3-4 reports the results from the Pedroni Residual Cointegration test, the Kao Residual Cointegration test, and the Fisher-Johansen co-integration test with a dataset from 1988 to 2014.

Table 2 reports the results from the Pedroni Residual Cointegration test, which we estimate with deterministic intercept and trend as trend assumption, automatic lag length selection based on SIC with lags of 2 to 5, and Newey-West automatic

bandwidth selection and Barlett Kernel. Most of the statistics have $p - value$ less than 5% and 1% level of significance. Among eleven statistics, seven statistics can be rejected, i.e. the null hypothesis of absence of co-integration at 5% and 1% was rejected. Therefore, the results support strongly that there might be long-run equilibrium relationship between the variables of interest.

Table 3 reports the results of the Kao Residual Cointegration Test, which we estimate with no deterministic trend as trend assumption, automatic lag length selection based on SIC with lags of 2, and Newey-West automatic bandwidth selection and Barlett Kernel. The results show that we have enough evidence to reject the null hypothesis of no cointegration at 5% level of significance considering the value of ADF, and at 1% level of significance considering the value of RESID(-1) and D(RESID(-1)).

Table 4 reports the Fisher-Johansen co-integration test, which we estimate with the quadratic deterministic trend as trend assumption and lags interval (in first differences), and the probabilities are computed using asymptotic Chi-square distribution. According to the results, the null hypothesis of no cointegration can be rejected at 1% level of significance. This indicates that the long run equilibrium relationship is strongly existed among the variables.

In brief, according to the estimated results from various panel co-integration tests, we come up with the conclusion that there is highly possible long-run equilibrium relationship between public expenditure and income inequality in Asia-Pacific countries.

TABLE 2 Pedroni Residual Cointegration test (Pedroni 1999, Pedroni 2004)

Within-dimension				
	Statistic	Prob.	Weighted Statistic	Prob.
Panel v-Statistic	-1.188351	0.8827	-0.607342	0.7282
Panel rho-Statistic	-3.028726***	0.0012	-2.143784**	0.0160
Panel PP-Statistic	-4.720504***	0.0000	-3.582860***	0.0002
Panel ADF-Statistic	-5.312362***	0.0000	-4.580491***	0.0000
Between-dimension				
	Statistic	Prob.		
Group rho-Statistic	0.931657	0.8242		
Group PP-Statistic	-0.509336	0.3053		
Group ADF-Statistic	-1.668320**	0.0476		
Countries	8			
Observation	216			

NOTES *** 1% level of significance, ** 5% level of significance, * 10% level of significance.

Null Hypothesis: No cointegration; the tests are estimated with the following assumptions: trend assumption (deterministic intercept and trend); automatic lag length selection based on SIC with lags from 2 to 5, and Newey-West automatic bandwidth selection and Bartlett kernel.

TABLE 3 Kao Residual Cointegration Test (Maddala and Wu 1999)

	t-Statistic	Prob.
ADF	1.711586**	0.0435
Residual variance	1.474068	
HAC variance	0.865002	
RESID(-1)	-2.962640***	0.0035
D(RESID(-1))	-3.220636***	0.0015
Observations	216	

NOTES *** 1% level of significance, ** 5% level of significance, * 10% level of significance.

Null Hypothesis: No cointegration; the tests are estimated with the following assumptions: trend assumption (no deterministic trend); automatic lag length selection based on SIC with a max lag of 2; Newey-West automatic bandwidth selection and Bartlett kernel.

TABLE 4 Fisher-Johansen co-integration tests (Kao 1999)

Unrestricted Cointegration Rank Test (Trace and Maximum Eigenvalue)

Hypothesized No. of CE(s)	Fisher Stat. ^{A*} (from trace test)	Prob.	Fisher Stat. ^{A*} (from max-eigen test)	Prob.
None	89.74***	0.0000	72.52***	0.0000
At most 1	53.83***	0.0000	53.83***	0.0000
Observations	165			

NOTES *** 1% level of significance, ** 5% level of significance, * 10% level of significance.

Null hypothesis: Each series have unit root and no co-integration

^{A*} Probabilities are computed using asymptotic Chi-square distribution.

The tests are estimated with the following assumptions: trend assumption (quadratic deterministic trend) and tags interval (in first differences): 1 1

4 Results and Discussions

4.1 Estimating a Cointegrating Regression

Many standard panel estimators are not consistent or asymptotically unbiased in panel cointegrated data. For example, the GMM estimator is inconsistent when the dependent variable is not stationary. Neither is OLS asymptotically unbiased where the panel includes cointegrating relations between the dependent and explanatory variables (Hämäläinen and Malinen 2011). To obtain the long-run coefficients between the variables of interest, we take into account two different but complementary estimators. First, we estimate with the PFMOLS by Phillips and Hansen (1990). Second, we estimate with the PDOLS by Stock and Watson (1993), and Mark & Sul (2003).

Beside public expenditure as a share of GDP using as explanatory variable, we include a few macro-economic variables that may have an influence on the income inequality. Following for example Stolper and Samuelson (1941), Krugman and Lawrence (1993), and Melitz and Redding (2015), we include trade openness as a share of GDP, which is theoretically linked to inequality. We also incorporate population growth. According to Asteriou et al. (2014), income inequality can shift because of changes affecting labour supply and labour demand. The changes in population affect changes in labour supply and demand, which affect wages on the labour market. An increase in population is expected to increase income inequality if the unemployment rate increases.

The regression is structured to estimate the following equation:

$$inequality_{it} = \alpha_i + \beta_1' expense_{it} + \beta_2' \Delta trade_{it} + \beta_3' \Delta pop_{it} + \eta_{it} + \rho_i + \varepsilon_{it} \quad (3)$$

Where α_i are individual constant. η_{it} are individual trends. ρ_i is the common time effect. $(1, -\beta'_1, -\beta'_2, -\beta'_3)$ are cointegrating vectors between public expenditure as a share of GDP, trade as a share of GDP and population growth. ε_{it} is an idiosyncratic error.

The resulting PFMOLS estimator is asymptotically unbiased and has fully efficient mixture normal asymptotics allowing for standard Wald tests using asymptotic Chi-square statistical inference (Phillips and Hansen 1990). Complementary to the PFMOLS, the PDOLS is estimated with fixed effects, fixed effects and heterogeneous trends, and with fixed effects, heterogeneous trends, and common time effects. The model takes into account for cross-sectional dependence by introducing a common time effect, and the estimators are asymptotically normally distributed (Mark and Sul 2003).

In the question (3), although the PFMOLS and the PDOLS estimators can provide improvements comparing to the OLS estimator, we might face other statistical issues, including (a) the cointegration between the explanatory variables, (b) the possible endogeneity problem of spurious correlation and (c) potential serial correlation, which are required us to estimate with great caution.

First of all, the PFMOLS and the PDOLS estimators do not allow for the cointegration between the explanatory variables. In our estimations, we include the leads and lags of the first differences of trade as a share of GDP $\Delta trade_{it}$ and population growth Δpop_{it} .

Secondly, to address the endogeneity problem of spurious correlation between $inequality_{it}$ and $expense_{it}$ and other explanatory variables, the PDOLS assume that μ_{it} is supposed to be correlated at most with p_i leads and lags of $\Delta expense_{it}$. The possible endogeneity can be controlled by projecting ε_{it} into these p_i leads and lags (Hämäläinen and Malinen 2011):

$$\mu_{it} = \sum_{s=-p_i}^{p_i} \xi'_{i,s} \Delta expense_{i,t-s} + \varepsilon_{it}^* = \xi'_i \Delta z_{it} + \varepsilon_{it}^* \quad (4)$$

Where z_{it} is a random vector with panel observation and $\xi'_i z_{it}$ is a vector of projection dimensions. The projection error ε_{it}^* is orthogonal to all leads and lags of $\Delta expense_{it}$ and therefore the estimated equation is transformed as follows:

$$inequality_{it} = \alpha_i + \beta'_1 expense_{it} + \beta'_2 \Delta trade_{it} + \beta'_3 \Delta pop_{it} + \eta_{it} + \rho_i + \xi'_i z_{it} + \varepsilon_{it} \quad (5)$$

Finally, to address the potential serial correlation between equilibrium error, ε_{it} and leads and lags of other cross-sections $\Delta expense_{ji}$, $j \neq i$, the PDOLS computes the same form of second order asymptotic bias as pooled OLS. In overall, the estimation of the equation (5) is consistent under the condition which $T \rightarrow \infty$ then $n \rightarrow \infty$. The equation (5) therefore can be feasible estimated in panel with small to moderate n (Mark and Sul 2003).

We start our regression by estimating individually the impact of public expenditure as a share of GDP on income inequality, measured by top 1% income share. Four steps are taken: first, we estimate with the constant (level) and no trend; second, we estimate with the constant (level) and trend in all Asia-Pacific countries; third, we introduce the controlled variables in our regression, including first differences of trade as a share of GDP $\Delta trade_{it}$ and population growth Δpop_{it} . Finally, we estimate the results with the same principle in countries with strong institutional quality and countries with weak institutional quality.

Table 5 presents the results from the PFMOLS estimation using a dataset during 1988 to 2014. In our estimation, the long-run variance estimates, namely Bartlett kernel, Newey-West fixed bandwidth, are used for coefficient covariances. We also take pooled estimation as panel method and fixed leads and lags specification in order to address the statistical issues of the possible endogeneity and potential serial correlation as discussed above. Notably, adding more lags is unable to compute because of missing data in the long-run covariance.

TABLE 5 Panel Fully Modified Ordinary Least Squares (PFMOLS)

Top 1% income share as dependent variable

Explan. Variables	All Asia-Pacific countries				Countries with Strong institution		Countries with Weak institution	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Public expenses (% of GDP)	0.300** (0.149)	0.142 (0.096)	0.114 (0.111)	0.081 (0.082)	0.202** (0.084)	0.174 (0.110)	-0.492* (0.266)	-0.132 (0.100)
Δ Trade openness (% of GDP)			0.082*** (0.011)	0.044*** (0.008)	0.054*** (0.008)	0.038*** (0.009)	0.253*** (0.044)	0.096*** (0.018)
Δ Population (annual growth)			-1.319*** (0.346)	-0.460** (0.185)	-0.697*** (0.253)	-0.385* (0.209)	0.284 (1.723)	-0.479 (0.933)
Constant (level)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trend	No	Yes	No	Yes	No	Yes	No	Yes
Countries	8	8	8	8	5	5	3	3
Years	1988- 2014	1988- 2014	1988- 2014	1988- 2014	1988- 2014	1988- 2014	1988- 2014	1988- 2014
Observations	175	175	175	175	110	110	65	65

SOURCE Author's estimation**NOTES** Panel method: Pooled estimation

Long-run covariance estimates (Bartlett kernel, Newey-West fixed bandwidth)

*** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$. Data in parentheses indicates standard errors.

Data are from 1988 to 2014

According the findings, trade openness as a share of GDP and population growth are incorporated as further explanatory variables. Public expenditure as a share of GDP is found to be positive and statistically significant when we estimate with only constant (level) and without trend. Yet, when we estimate with the trend and controlled variables, the cointegration coefficient becomes smaller but not statistically significant. The estimated value of the cointegrating coefficient varies from 0.300 (sig. 5%), 0.142, 0.114 and 0.081. This indicates that trend and controlled variables matter in our estimations. In countries with strong institutional quality, the cointegration coefficient, ranging from 0.202 (sig. 5%) and 0.174, is positive and becomes no statistical significant when we estimate the trend. However, in countries with weak institutional quality, the cointegration coefficient, ranging from -0.492 (sig. 10%) and -0.132, is negative and statistically significant only if we estimated with the constant (level) but no trend. For controlled variables, trade openness as a share of

GDP has the positive and statistically significant cointegrating coefficients (sig. 1%) in all cases. The estimated result of population growth rate is negative and statistically significant (sig. 1%, 5% and 10%), except we find no significant value in countries with weak institutional quality.

Table 6 reports the findings from the PDOLS estimation. The long-run variance estimates, namely Bartlett kernel, Newey-West fixed bandwidth, are also used for coefficient covariances. The pooled estimation as panel method and fixed leads and lags specification are considered. The first, second and third leads and lags of the first differences of trade as a share of GDP $\Delta trade_{it}$ and population growth Δpop_{it} are estimated as instruments for the explanatory variables. However, only the results from the first leads and lags are shown. The other results are available upon request.

TABLE 6 Panel Dynamic Ordinary Least Squares (PDOLS)

Top 1% income share as dependent variable

Explan. Variables	All Asia-Pacific countries				Countries with Strong institution		Countries with Weak institution	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Public expenses (% of GDP)	0.399* (0.229)	0.266* (0.160)	0.187 (0.159)	0.057 (0.227)	0.216 (0.134)	0.433 (0.347)	-0.685 (0.696)	-0.808*** (0.102)
Δ Trade openness (% of GDP)			0.072*** (0.012)	0.047*** (0.012)	0.064*** (0.010)	0.032* (0.017)	0.206*** (0.071)	0.077*** (0.009)
Δ Population (annual growth)			-1.014 (0.643)	-0.487 (0.539)	-0.564 (0.548)	0.130 (0.731)	-1.409 (3.392)	-5.568*** (1.063)
Constant (level)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trend	No	Yes	No	Yes	No	Yes	No	Yes
Countries	8	8	8	8	5	5	3	3
Years	1988- 2014	1988- 2014	1988- 2014	1988- 2014	1988- 2014	1988- 2014	1988- 2014	1988- 2014
Observations	163	163	163	163	103	103	60	60

SOURCE Author's estimation

NOTES Panel method: Pooled estimation

Fixed leads and lags specification (lead=1, lag=1)

Long-run variance (Bartlett kernel, Newey-West fixed bandwidth) is used for coefficient covariances

*** p < 0.01, ** p < 0.05, and * p < 0.1. Data in parentheses indicates standard errors.

Data are from 1988 to 2014

According to the estimated results, the direction of the coefficient of public expenditure as a share of GDP remains the same when we estimate together all Asia-Pacific countries. The cointegration coefficient is ranging from 0.399 (sig. 10%) and 0.266 (sig. 10%); yet, there is no significant value when we incorporate the controlled variables. In countries with strong institutional quality, the cointegration coefficient remains positive, but becomes no more statistically significant. Moreover, in countries with weak institutional quality, the cointegration coefficient has a strong significant value -0.808 (sig. 1%) when we estimate with the trend. For controlled variables, the direction and significant value of trade openness as a share of GDP are very similar as the PFMOLS estimation; however, the coefficient of population growth, however, changes to be highly statistically significant, only in countries with weak institutional quality.

Therefore, by considering the estimated results from the PFMOLS and the PDOLS estimations, we don't have enough statistical information to explain that public expenditure as a share of GDP has a positive relationship with income inequality when we estimate in countries with strong institutional quality or when we combine all Asia-Pacific countries together. However, public expenditure as a share of GDP explains statistically a significant and negative relationship with income inequality in countries with weak institutional quality. Trade openness as a share of GDP and population growth, however, have respectively positive and negative relationship with income inequality in all cases of countries.

Based on our findings, the globalized forces, explained by trade openness, do increase higher income inequality in Asia-Pacific countries. Yet, it does not mean that the benefits of globalisation go only to the rich or the top incomes. It is possible that the living standard of poorer citizens also increases, but not as high as the rich. Therefore, we find the discontents toward globalisation in Asia-Pacific countries is not very significant as in Western countries. In terms of the population, which its higher

rate decreases inequality, it is likely that there is a rising number of people joining the global middle class, thanks to an increase in the living standards of Asia-Pacific people, especially in China and India, which together account for 36.41% of global population. According to Mahbubani (2014), the global middle class is defined as those households with daily expenditures between \$10 and \$100 per person in PPP terms. This excludes those who are considered poor in the poorest advanced countries and rich in the richest advanced countries. Because high demographic growth has enabled strong economic growth, especially in Asia-Pacific countries, an increase in population does not lead to an increase in income inequality.

Although we don't have enough statistical evidence to confirm a significant association of public expenditure to inequality in countries with strong institutional quality, their cointegration coefficients show a positive direction and only one among four coefficients is statistically significant at 5% level. As it is opposite to countries with weak institutional quality, it is likely that better or stronger institutional quality does not guarantee to promote a more equal society or else weaker institutional quality is not an obstacle to promote welfare of lower-income citizens. However, it should be subject to investigate further as the institutional quality at a very first level of aggregation might not be rational enough to differentiate its effect.

In the modern age of a global single market, even with less effective good governances and institutions, some giant or big economies are still able to perform high economic growth, which allows millions of people to leave from poverty and join middle-income families. For instance, it has been said that China grows because of its government (driven by strong public intervention), while India grows despite its government (driven by market forces even with less effective government). In this regard, rising trade openness and economic growth in these economies might lead to higher inequality in overall, but strong public intervention from the government as well as robust income rising help to promote significantly the poor's living standard.

In the same way, with an impressive progress in higher education and R&D (Futao and Simon 2018) along with rising social mobility, some authors argue that *'the American Dream Is Alive. In China'*, (Hernández and Bui 2018).

In overall, it is possibly accurate that stronger government intervention through public expenditure might not guarantee to have lower income inequality or promote citizens' welfare, although we have strong institutional quality (measured by the WGI), unless we have right policy designs and effective implementations so that the poor's welfare and more equal society can be stimulated directly. Moreover, it is also possibly true that higher expenditure might help to lower inequality even in a country with less quality of good governances and institutions. Considering institutional and political factors in our study, it might be relevant to the founding father's theory in Chinese economic reform. Deng Xiaoping's theory is that *'It doesn't matter whether the cat is black or white, as long as it catches mice.'* Therefore, it does not matter whether how strong and weak the institutional quality is, but whether or not it helps the people, especially the poor and the less vulnerable.

4.2. Granger Causality Tests

Many studies have emphasized that income inequality hurts economic growth, which then leads to a higher demand for redistribution through public expenditure and taxes from the people in some societies (Tanninen 1999, Kennedy, et al. 2017). This may cause the reverse effect between public expenditure and income inequality. To address this issue, it is quite challenging. Nevertheless, the Granger causality tests can be statistically applied to estimate whether public expenditure influences income inequality or in the opposite way.

In this paper, we use the Pairwise Granger Causality tests by (Granger 1969). We thus estimate the bivariate regressions of the following form:

$$\begin{aligned} inequality_t = & \alpha_0 + \alpha_1 inequality_{t-1} + \dots + \alpha_l inequality_{t-l} + \beta_1 expense_{t-1} + \\ & \dots + \beta_l expense_{t-l} + \varepsilon_t \end{aligned} \quad (6)$$

$$\begin{aligned} expense_t = & \alpha_0 + \alpha_1 expense_{t-1} + \dots + \alpha_l expense_{t-l} + \beta_1 inequality_{t-1} + \dots + \\ & \beta_l inequality_{t-l} + \varepsilon_t \end{aligned} \quad (7)$$

Where l is a lag length, which corresponds to reasonable beliefs about the longest time over which one of the variables could help predict the other (Granger 1969). From the equation (6) and (7), *inequality* can cause *expense* and, at the same time, *expense* can cause *inequality*.

The joint null hypotheses of the model are as follow: “*inequality* does not Granger-cause *expense*” and “*expense* does not Granger-cause *inequality*”. We can reject the null hypothesis if the F-statistics, which are the Wald statistics for the joint hypothesis, are reported p – value at 1%, 5% and 10% level of significance.

TABLE 7 Tests for Granger non causality between public expenditure as a share of GDP and top 1% income share

Explanatory variable (X)	Dependent variable (Y)	Obs.	F-Statistic	Prob.
All Asia-Pacific countries				
Public expenditure (% of GDP)	Top 1% income share	165	0.40009	0.6709
Top 1% income share	Public expenditure (% of GDP)		0.59913	0.5505
Countries with strong institution				
Public expenditure (% of GDP)	Top 1% income share	104	0.92934	0.3982
Top 1% income share	Public expenditure (% of GDP)		0.33557	0.7157
Countries with weak institution				
Public expenditure (% of GDP)	Top 1% income share	61	2.66098	0.0787*
Top 1% income share	Public expenditure (% of GDP)		0.72822	0.4873
Countries	8 (All Asia-Pacific countries), 5 (Strong institution), 3 (Weak institution)			
Years	1988-2014			

SOURCE Author's estimation

NOTES *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$.

The null hypothesis is that explanatory variables (X) does not cause dependent variables (Y).

Table 7 presents the results of Granger non-causality tests between public expenditure as a share of GDP and top 1% income share in all Asia-Pacific countries and those with strong and weak institution. In all Asia-Pacific countries, we have no evidence that public expenditure as a share of GDP influences the top 1% income share. It is identical that the influence of the top 1% income share cannot be used to forecast the public expenditure as a share of GDP. For countries with a strong institution, the result is the same. This is no surprise since it is as same as the predicted results in our regression models. Moreover, in case of countries with weak institutional quality, we have evidence at 10% level of significance to reject the null hypothesis, i.e. the top 1% income share helps to forecast the public expenditure as a share of GDP. This confirms to the statistical negative relationship of public expenditure as a share of GDP on top 1% income share in our regression model.

To sum up, according to the estimated results of Granger non-causality tests, we may explain that there is statistical information that would help to predict how public expenditure as a share of GDP forecast income inequality in countries with weak institutional quality. This eliminates the concern of the endogeneity problem, where there is possibly reverse relationship between dependent and explanatory variables as discussed in the previous section. The results suggest that public expenditure as a share of GDP has negative long-run steady-state effect on income inequality in countries with weak institutions.

5 Conclusion

The inequality indeed matters, not only, in the past, but also in the present and in the future and therefore the legitimacy of this issue has always been in the equation. Many studies have linked inequality to government intervention and institutional quality, but most of them are not quantitatively estimated to understand the long-run equilibrium relationship. Thus, the main objective of this chapter is to examine the

significance of such a long-run relationship. As reported by our estimated results, there is a long-run relationship between government intervention (measured by public expenditure as a share of GDP) and income inequality (measured by top 1% income share) in countries with weak institutional quality; however, there is not enough statistical evidence of such a long-run relationship when we estimate in countries with strong institutional quality or when we combine together all Asia-Pacific countries. Public expenditure is found to have only one-way Granger causality link to income inequality. The results also suggest that trade openness as a share of GDP and population growth have respectively positive and negative relationship with income inequality in all cases of countries. In this regard, governmental intervention through public expenditure in providing goods and services, such as compensation of employees (such as wages and salaries), interest and subsidies, grants, social benefits, and other expenses such as rent and dividends, has the effect on reducing income inequality in countries with weak institutional quality.

To develop a full picture of how government intervention influences inequality in the long run, additional studies would be needed. Firstly, it might be possible to use other tools of public intervention through government expenditure and/or taxation in more disaggregated level, which are extensively studied in short and medium time analysis. Secondly, it might be an alternative way if we could compare to other countries like Latin American countries, which are seen to have similar economic and political development. Thirdly, while using the average value of the WGI to distinguish strong and weak institutional quality, we have not taken a closer look at six sub-categories because each dimension can be subject to explain differently inequality. While the average score of WGI is higher, it does not mean that these sub-categories are all equally higher. Last but not least, a further study with more focus on investigating the non-linear relationship in long panels is, similarly, suggested.

Appendix Chapter 5

APPENDIX 1 List of countries

Country name	Region	Income Status	Institutional Status
Australia	East Asia & Pacific	High income	Strong quality
China	East Asia & Pacific	Upper middle income	Weak quality
India	South Asia	Lower middle income	Weak quality
Japan	East Asia & Pacific	High income	Strong quality
Korea, Rep.	East Asia & Pacific	High income	Strong quality
Malaysia	East Asia & Pacific	Upper middle income	Strong quality
Singapore	East Asia & Pacific	High income	Strong quality
Thailand	East Asia & Pacific	Upper middle income	Weak quality

SOURCE Author's estimation

APPENDIX 2 Eight Asia-Pacific countries

	Obs	Mean	Median	Max	Min	Std. Dev.	Skewness	Kurtosis
Top 1% income share	189	11.862	10.420	23.540	5.700	4.441	1.146	3.393
Public expenses (% of GDP)	206	16.853	15.474	26.790	10.807	4.040	1.034	3.143
Institutional quality	152	0.559	0.485	1.668	-0.596	0.768	-0.004	1.547
Trade openness (% of GDP)	216	106.651	54.931	439.657	13.258	109.094	1.551	4.281
Population growth	216	1.286	1.159	5.322	-1.475	0.932	0.836	4.543

SOURCE Author's estimation

NOTES Countries are included: Australia, China, India, Japan, Korea, Malaysia, Singapore and Thailand from 1988 to 2014.

APPENDIX 3 Countries with strong institutional quality

	Obs	Mean	Median	Max	Min	Std. Dev.	Skewness	Kurtosis
Top 1% income share	121	9.765	9.190	15.150	5.700	2.201	0.607	2.817
Public expenses (% of GDP)	126	18.148	17.500	26.790	10.905	4.448	0.584	2.089
Institutional quality	95	1.059	1.177	1.668	0.190	0.483	-0.342	1.587
Trade openness (% of GDP)	135	133.933	65.430	439.657	15.924	127.354	0.985	2.538
Population growth	135	1.378	1.221	5.322	-1.475	1.092	0.641	3.529

SOURCE Author's estimation

NOTES Countries are included: Australia, Japan, Korea, Malaysia and Singapore from 1988 to 2014.

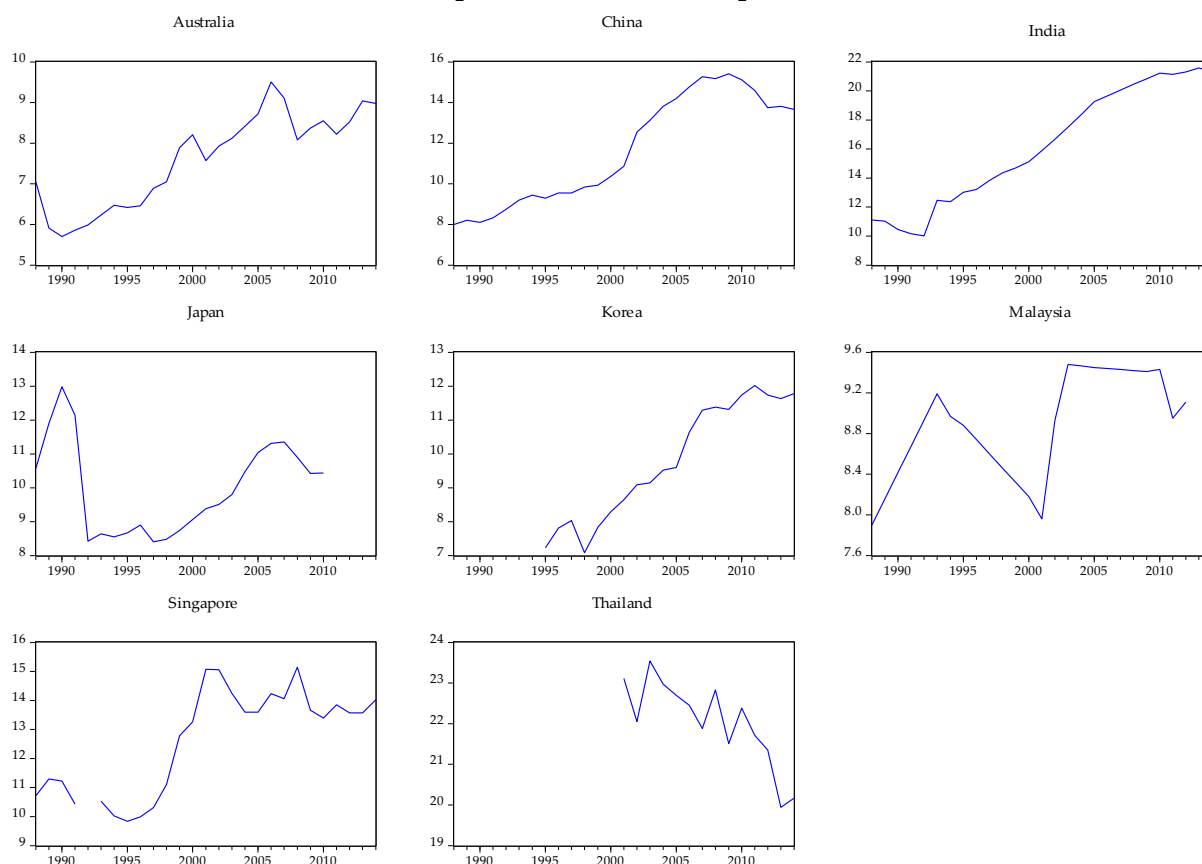
APPENDIX 4 Countries with weak institutional quality

	Obs	Mean	Median	Max	Min	Std. Dev.	Skewness	Kurtosis
Top 1% income share	68	15.594	14.735	23.540	8.000	4.959	0.105	1.608
Public expenses (% of GDP)	80	14.814	14.755	20.191	10.807	2.041	0.531	3.234
Institutional quality	57	-0.274	-0.295	0.336	-0.596	0.259	0.907	3.076
Trade openness (% of GDP)	81	61.181	48.800	140.437	13.258	38.323	0.800	2.355
Population growth	81	1.133	1.131	2.144	0.143	0.547	0.053	1.945

SOURCE Author's estimation

NOTES Countries are included: China, India, and Thailand from 1988 to 2014.

APPENDIX 5 Trend and descriptive statistics of Top 1% income share 1988-2014

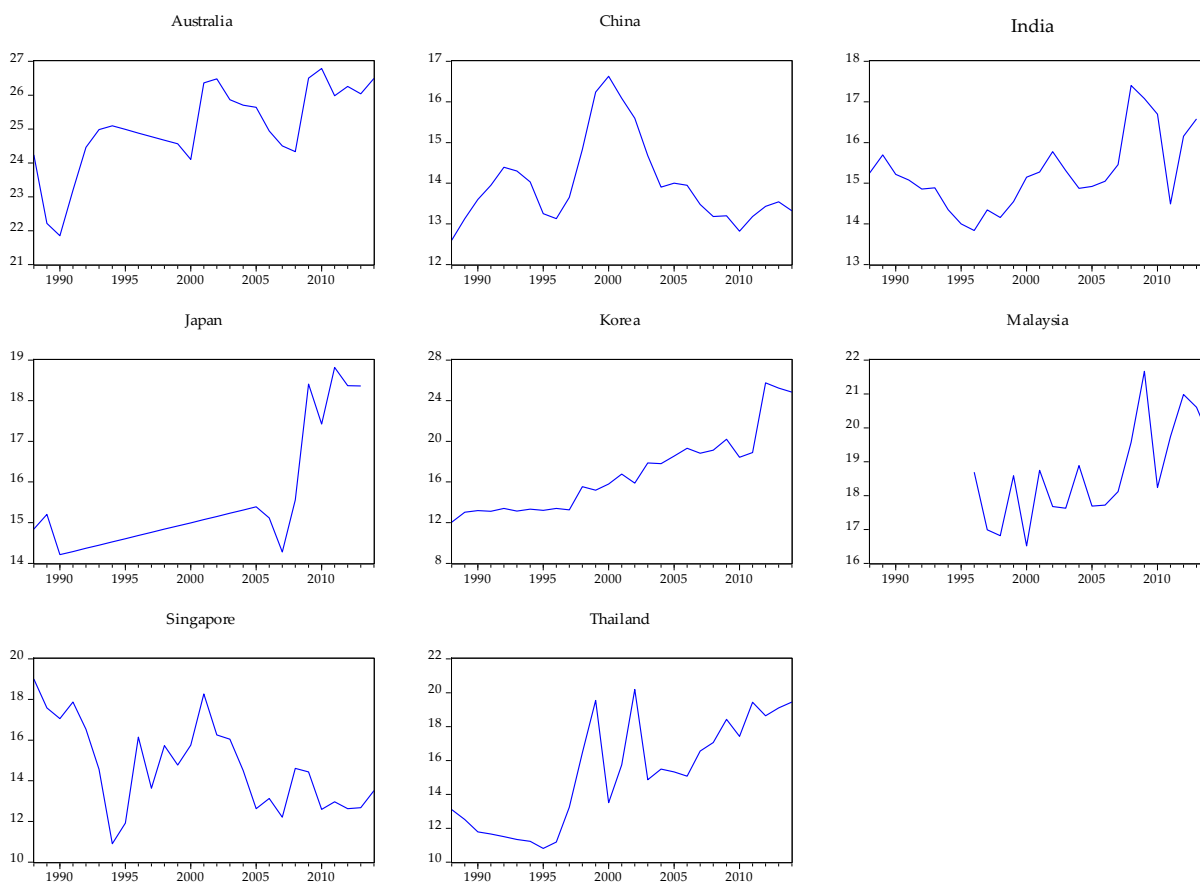


Country Name	N	Mean	Median	Max	Min	SD	Skewness	Kurtosis
Australia	27	7.603	7.930	9.510	5.700	1.155	-0.213	1.733
China	27	11.655	10.870	15.410	8.000	2.692	0.063	1.361
India	27	16.189	15.890	21.590	10.010	4.086	-0.062	1.522
Japan	23	10.003	9.800	12.980	8.400	1.363	0.473	2.136
Korea	20	9.790	9.560	12.020	7.080	1.733	-0.118	1.486
Malaysia	25	8.876	8.932	9.480	7.900	0.514	-0.401	1.937
Singapore	26	12.637	13.480	15.150	9.840	1.794	-0.296	1.580
Thailand	14	22.042	22.215	23.540	19.940	1.053	-0.693	2.688
Total / Average	189	11.862	10.420	23.540	5.700	4.441	1.146	3.393

SOURCE Author's estimation with database from the World Wealth and Income Database (WID.world), first developed by Piketty and Zucman.

NOTES Top 1% income share is the pre-tax top 1 % income share of the population to measure the income inequality.

APPENDIX 6 Trend and descriptive statistics of public expenditure (% of GDP) 1988-2014

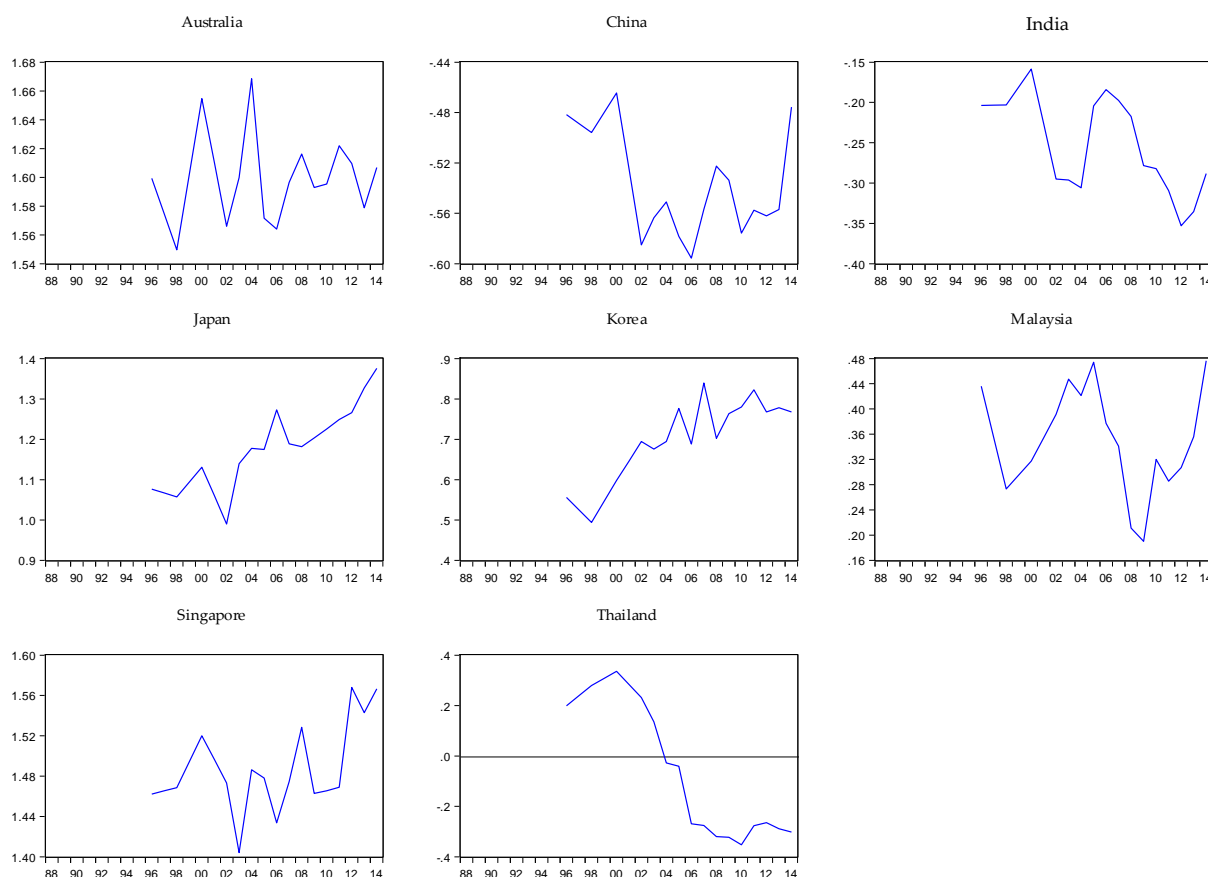


Country Name	N	Mean	Median	Max	Min	SD	Skewness	Kurtosis
Australia	27	25.033	24.984	26.790	21.849	1.251	-0.825	3.430
China	27	14.004	13.650	16.630	12.600	1.060	1.141	3.408
India	26	15.248	15.110	17.402	13.838	0.922	0.734	2.932
Japan	26	15.507	15.035	18.817	14.213	1.437	1.403	3.421
Korea, Rep.	27	16.859	15.902	25.754	12.055	3.917	0.873	2.985
Malaysia	19	18.659	18.584	21.671	16.512	1.424	0.503	2.474
Singapore	27	14.738	14.566	19.003	10.905	2.154	0.232	2.081
Thailand	27	15.207	15.315	20.191	10.807	3.113	0.082	1.627
Total / Average	206	16.853	15.474	26.790	10.807	4.040	1.034	3.143

SOURCE Author's estimation with database from IMF, Government Finance Statistics Yearbook and data files, and World Bank and OECD GDP estimates.

NOTES The public expense is cash payments for operating activities of the government in providing goods and services. It includes compensation of employees (such as wages and salaries), interest and subsidies, grants, social benefits, and other expenses such as rent and dividends (World Bank estimate).

APPENDIX 7 Trend and descriptive statistics of institutional quality (% of GDP) 1988-2014

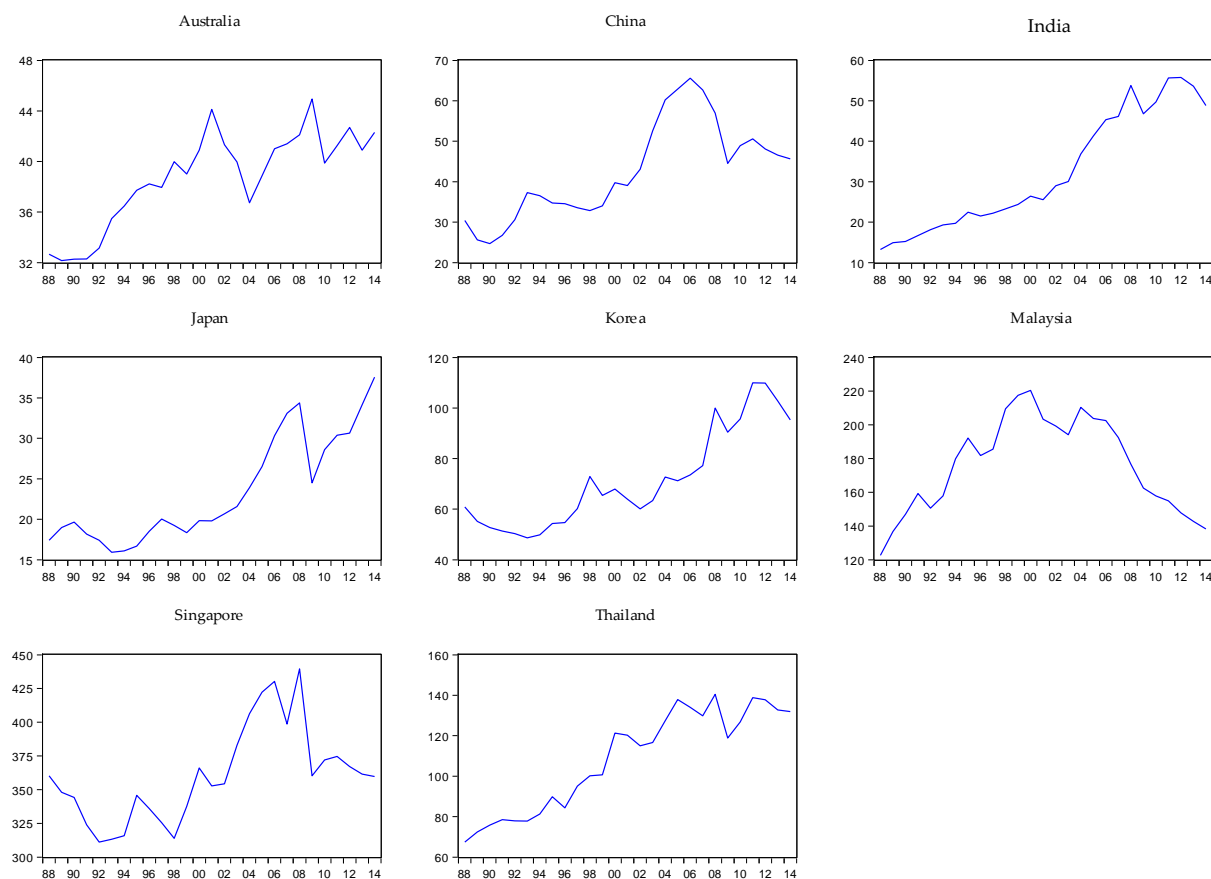


Country Name	N	Mean	Median	Max	Min	SD	Skewness	Kurtosis
Australia	19	1.599	1.599	1.668	1.550	0.029	0.650	3.358
China	19	-0.534	-0.551	-0.464	-0.596	0.042	0.307	1.711
India	19	-0.249	-0.227	-0.159	-0.353	0.059	-0.194	1.674
Japan	19	1.171	1.177	1.376	0.990	0.101	0.193	2.407
Korea, Rep.	19	0.690	0.694	0.840	0.494	0.104	-0.471	2.056
Malaysia	19	0.349	0.354	0.476	0.190	0.081	-0.158	2.403
Singapore	19	1.487	1.475	1.568	1.404	0.042	0.379	2.858
Thailand	19	-0.038	-0.041	0.336	-0.353	0.270	0.168	1.256
Total	152	0.559	0.485	1.668	-0.596	0.768	-0.004	1.547

SOURCE Author's estimation with database from the WGI.

NOTES We use the average value of the WGI in order to measure the good governance and institutions. The WGI consists of six broad dimensions of governance: voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law, and control of corruption. The estimate of governance in standard normal units is ranging from approximately -2.5 (weak) to 2.5 (strong) governance performances.

APPENDIX 8 Trend and descriptive statistics of trade openness (% of GDP) 1988-2014

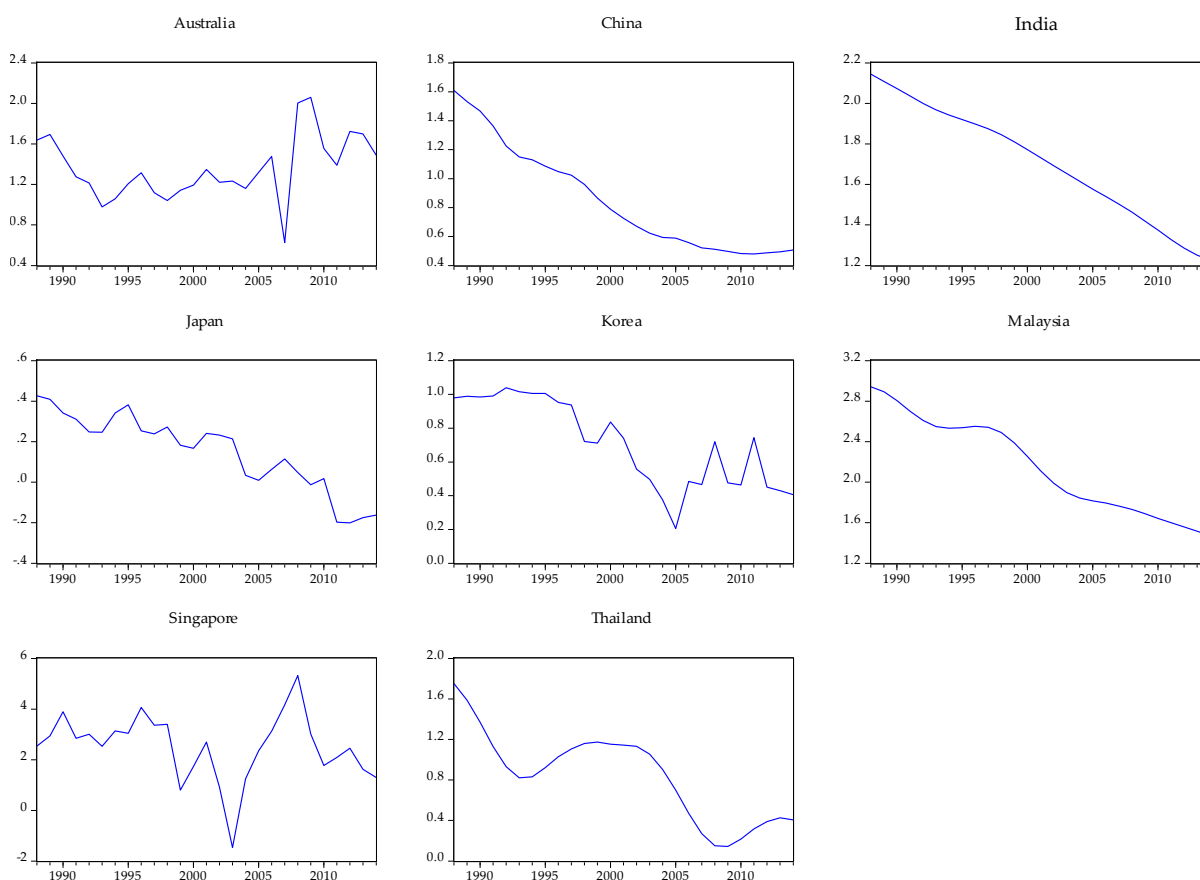


Country Name	N	Mean	Median	Max	Min	SD	Skewness	Kurtosis
Australia	27	38.731	39.860	44.947	32.155	3.737	-0.483	2.237
China	27	42.551	39.753	65.619	24.684	11.990	0.404	2.116
India	27	32.441	26.437	55.753	13.258	14.593	0.358	1.577
Japan	27	23.426	20.041	37.559	15.924	6.563	0.717	2.125
Korea, Rep.	27	71.506	65.430	110.000	48.658	19.486	0.719	2.227
Malaysia	27	175.858	179.906	220.407	122.624	28.111	-0.104	1.775
Singapore	27	360.145	359.773	439.657	311.156	35.470	0.641	2.757
Thailand	27	108.553	116.693	140.437	67.413	24.770	-0.258	1.518
Total	216	106.651	54.931	439.657	13.258	109.094	1.551	4.281

SOURCE Author's estimation with database from World Bank national accounts data, and OECD National Accounts data files.

NOTES Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.

APPENDIX 9 Trend and descriptive statistics of population (annual growth rate) 1988-2014



Country Name	N	Mean	Median	Max	Min	SD	Skewness	Kurtosis
Australia	27	1.357	1.314	2.061	0.625	0.314	0.286	3.316
China	27	0.852	0.726	1.610	0.479	0.364	0.657	2.141
India	27	1.706	1.732	2.144	1.227	0.281	-0.183	1.818
Japan	27	0.150	0.214	0.427	-0.200	0.187	-0.512	2.250
Korea, Rep.	27	0.711	0.722	1.039	0.205	0.257	-0.175	1.641
Malaysia	27	2.157	2.113	2.941	1.471	0.473	0.099	1.553
Singapore	27	2.514	2.697	5.322	-1.475	1.314	-0.739	4.750
Thailand	27	0.840	0.921	1.752	0.143	0.442	0.001	2.157
Total / average	216	1.286	1.159	5.322	-1.475	0.932	0.836	4.543

SOURCE Author's estimation with database from Derived from total population. Population source: (1) UN Population Division. World Population Prospects: 2019 Revision, (2) Census reports and other statistical publications from national statistical offices, (3) Eurostat: Demographic Statistics, (4) UN Statistical Division. Population and Vital Statistics Report (various years), (5) U.S. Census Bureau: International Database, and (6) Secretariat of the Pacific Community: Statistics and Demography Programme.

NOTES Annual population growth rate for year t is the exponential rate of growth of midyear population from year $t-1$ to t , expressed as a percentage. Population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship.

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LIST OF ABBREVIATIONS

2SLS	Two-Stage Least Squares
AC	Agriculture Cooperative
ADB	Asian Development Bank
AEC	ASEAN Economic Community
AFD	Agence Française de Développement
AFTA	ASEAN Free Trade Area
ASEAN	Association of Southeast Asian Nations
ASEAN-5	The five original member countries: Indonesia, Malaysia, Philippines, Singapore, and Thailand.
BoP	Balance of Payments
CDRI	Cambodia Development Resource Institute
CEPT	Common Effective Preferential Tariff
CLMV	Cambodia, Laos, Myanmar and Vietnam
CMA	Cambodia Microfinance Association
CMHS	Cambodia Microfinance and Households Survey
CPP	Cambodian People's Party
CSBD	Cambodia Sustainable Business Development
CSES	Cambodia Socio-Economic Survey
EBA	Everything But Arms
EBA	Everything But Arms
EU	European Union
FAO	Food and Agriculture Organization
FAPDA	Food and Agriculture Policy Decision Analysis
FBT	Food, beverages and tobacco
FDI	Foreign Direct Investment
FE	Fixed effects 'FE' model
GDP	Gross Domestic Products
GMM	System Generalized Method of Moments
GMS	Greater Mekong Subregion
GNI	Gross National Income
GREThA	Groupe de Recherche en Économie Théorique et Appliquée
GSP	Generalized System of Preferences
GTF	Garment, Textile and Footwear
HDI	Human Development Index

ICPD	International Comparison Program database
ICT	Information and Communication Technologies
IDS	International Debt Statistics
IFSBPD databases	International Financial Statistics and Balance of Payments databases
IL	Inclusion List
ILO	International Labour Organization
IMF	International Monetary Fund
IOM	International Organization for Migration
IV-FE2SLS	Instrumental variables and fixed-effects two-stage least squares for panel-data models
Lao PDR	Lao People's Democratic Republic
LDC	Least Developed Country
LICs	Low Income Countries
LIS	Luxembourg Income Study
LPM	Linear Probability Model
LSDV	Least Square Dummy Variable
MDGs	Millennium Development Goals
MFIs	Microfinance institutions
MFN	Most Favored Nation
MLVTC	Ministry of Labour and Vocational Training of Cambodia
MNEs	Multi-National Enterprises
MPC	Ministry of Planning Cambodia
MPI	Multidimensional Poverty Index
NBC	National Bank of Cambodia
NBER	National Bureau of Economic Research
NGO	Non-Governmental Organisation
NISC	National Institute of Statistics of Cambodia
NTFPs	Non-Timber Forest Products
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
OPHI	Oxford Poverty & Human Development Initiative
PDK	Party of Democratic Kampuchea
PDOLS	Panel Dynamic Ordinary Least Squares
PFMOLS	Panel Fully Modified Ordinary Least Squares
PGI	poverty-growth-inequality (PGI) triangle

PPP	Purchasing Power Parity
PPSEZ	Phnom Penh Special Economic Zone
R&D	Research and Development
RE	Random effects 'RE' model
RGC	Royal Government of Cambodia
RULE	Royal University of Law and Economics
SDG	Sustainable Development Goals
SEDLAC	Socio-Economic Database for Latin America and the Caribbean
OECD IDD	Income Distribution Database
SITC	Standard international trade classification
SME	Small and Medium-sized Enterprises
SWIID	Standardized World Income Inequality Database
The US	United States of America
TWF	Textile, wearing apparel and footwear
UK	United Kingdom
UN	United Nations
UNDP	United Nations Development Programme
UNSD	United Nations Statistics Division
UNTAC	United Nations Transitional Authority in Cambodia
USAID	United States Agency for International Development
WDI	World Bank Development Indicators
WGI	Worldwide Governance Indicators
WHO	World Health Organization
WID.world	World Wealth and Income Database
WIID	World Income Inequality Database
WITS	World Integrated Trade Solution database
WTO	World Trade Organization

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