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Morel Tien

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Morel TIEN

REGIONAL MIGRATION AND ECONOMIC INTEGRATION IN AFRICA

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en vue de l'obtention du doctorat de Sciences économiques de l'Université Paris
Nanterre
sous la direction de M. Dramane COULIBALY (Université Lumière Lyon 2)

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À ma famille.

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Résumé général

L'intégration économique et régionale ne cesse d'être une question d'intérêt pour les économies africaines, qui multiplient les efforts pour y parvenir. À nos jours, la migration intra-africaine, représentant 83% de la migration totale du continent, constitue le principal pilier de l'intégration africaine. Quant au commerce continental, il est moins reluisant et représente seulement 15% des échanges totaux de la région. Cette thèse s'inscrit dans le cadre de cette intégration africaine et a pour objectif d'évaluer son impact par la migration intra-africaine sur trois aspects macroéconomiques qui constituent ses différentes contributions. La première contribution est une évaluation empirique de l'impact de la migration intra-africaine sur le taux de change réel du point de vue du pays de destination. La deuxième contribution, à l'aide d'un modèle théorique examine empiriquement l'effet pro-commerce des migrants intra-africains avec une dissociation des canaux de transmission et une analyse du rôle des unions monétaires dans cette relation. La dernière contribution, qui est aussi empirique, analyse l'effet de la migration sur la synchronisation des cycles économiques en Afrique.

Mots-clés: Migration intra-africaine; taux de change réel; structure démographique; transferts des migrants; compte courant; commerce intra-africain; union monétaire; synchronisation des cycles économiques.

Overall summary

Economic and regional integration continues to be a key issue for African economies, which are stepping up their efforts to achieve it. Today, intra-African migration, representing 83% of the continent's total migration, is the main pillar of African integration. Continental trade, on the other hand, is less impressive, accounting for just 15 percent of the region's total trade. In that African integration context, the aim of this thesis is to assess the impact of intra-African migration on three macroeconomic aspects constituting its different contributions. The first contribution is an empirical assessment of the impact of intra-African migration on the real exchange rate from the point of view of the destination country. The second contribution, using a theoretical model, empirically examines the pro-trade effect of intra-African migrants, with dissociation of transmission channels and an analysis of the role of currency unions in this relationship. The last contribution, which is also empirical, analyzes the effect of migration on the synchronization of economic cycles in Africa.

Keywords: Intra-African migration; real exchange rate; demographic structure; migrants' remittances; current account; intra-African trade; currency union; business cycles synchronization.

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Introduction Générale

0.1 Définition et faits stylisés

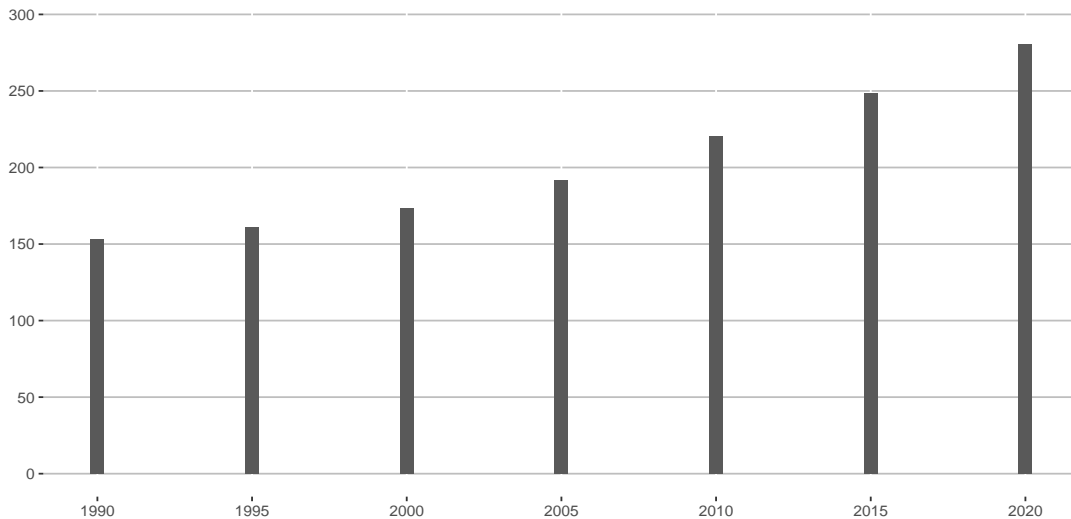
Quelle que soit sa raison, le déplacement de populations d'une région, d'un pays à un autre de manière temporaire ou pérenne remonte aux origines de l'humanité. Ces déplacements continus ont contribué et continueront à façonner les différentes sociétés dans le monde. Les Nations Unies définissent le migrant international comme toute personne qui change de pays de résidence habituelle (UN, 1999). Pour éviter toute confusion, ils excluent les déplacements effectués pour le loisir, les vacances, la visite à des amis ou à de la famille, les affaires, le traitement médical et le pèlerinage religieux.

Du point de vue du pays d'origine, ce déplacement est appelé émigration et au niveau du pays de destination, il est qualifié d'immigration. L'ensemble de la population sortante enregistré comme émigrants par le pays d'origine correspond donc à la somme de ce qui est comptabilisé en tant qu'immigrants dans les différents pays de destination. Un pays au cours d'une année donnée peut enregistrer à la fois des immigrants et des émigrants. La différence nous donne le solde migratoire net qui peut être positif, négatif ou nul.

Nous pouvons distinguer deux types de migrations: les migrations par choix (volontaires) et les migrations par nécessité (involontaires). Dans les migrations volontaires, nous retrouvons les étudiants et les travailleurs alors que dans celles involontaires, sont classés ceux qui se déplacent suite à des conflits (réfugiés), des catastrophes naturelles et du changement climatique. Selon les dernières données disponibles publiées par les Nations Unies, le nombre de migrants internationaux dans le monde en 2020 était estimé à 281 millions de personnes (Figure 0.1), soit 3,6% de la population mondiale pour cette année. Cette estimation peut être quelque peu biaisée à la baisse, surtout au niveau des migrations Sud-Sud en raison des entrées et sorties dites irrégulières qui sont partiellement voire pas du tout enregistrées dans

les données (Ratha et Shaw, 2007).¹ Sur la Figure 0.1, nous remarquons que le nombre de migrants dans le monde a connu une évolution considérable depuis 1990, avec surtout une accélération à partir de l'an 2000.

Figure 0.1: Évolution du stock de migrants dans le monde (en millions)

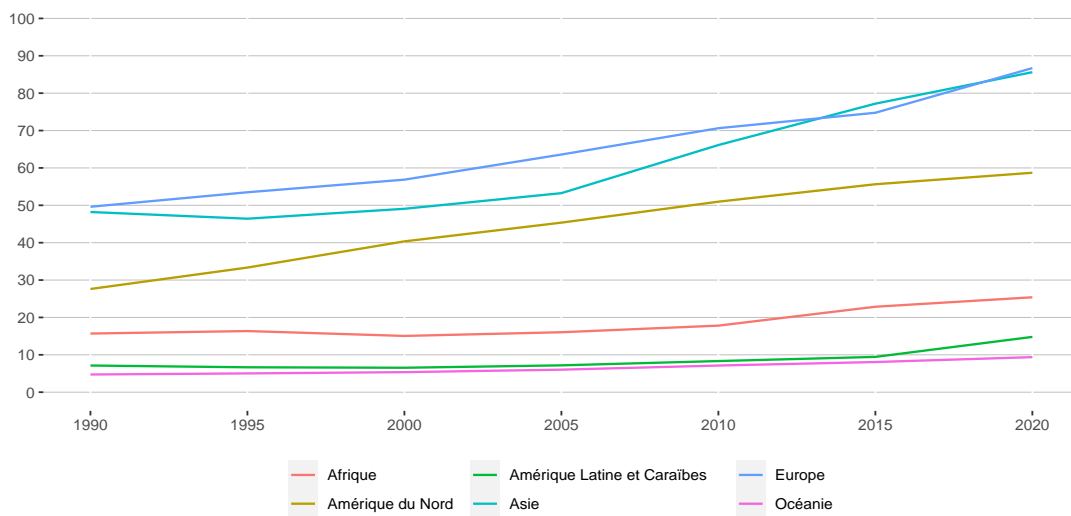


Source: Calculs de l'auteur basés sur les données du stock de migrants des Nations Unies (Département des Affaires Économiques et Sociales, Division de la population).

Au niveau des différentes régions du monde, le nombre de migrants internationaux reçus n'a pas évolué de la même manière, cachant ainsi une hétérogénéité. La Figure 0.2 met en lumière deux groupes de régions. Celles où l'évolution est modérée (Afrique, Amérique Latine et Caraïbes et Océanie), et celles où elle est rapide (Amérique du Nord, Asie et Europe). Même si le continent africain se démarque légèrement de l'Amérique Latine et Caraïbes et de l'Océanie, cela reste suffisamment faible. Il en ressort également de la Figure 0.2, que les migrants internationaux vont généralement vers des régions développées économiquement, car l'Amérique du Nord, l'Asie et l'Europe ont reçu plus de migrants que les autres régions. Cette observation n'est pas surprenante, car par exemple ces régions présentent plus d'opportunités d'emploi.

¹Les migrations Sud-Sud sont un type de flux migratoire entre les pays situés dans la partie Sud des continents émergés.

Figure 0.2: Évolution du stock de migrants reçus par région en provenance du reste du monde (en millions)



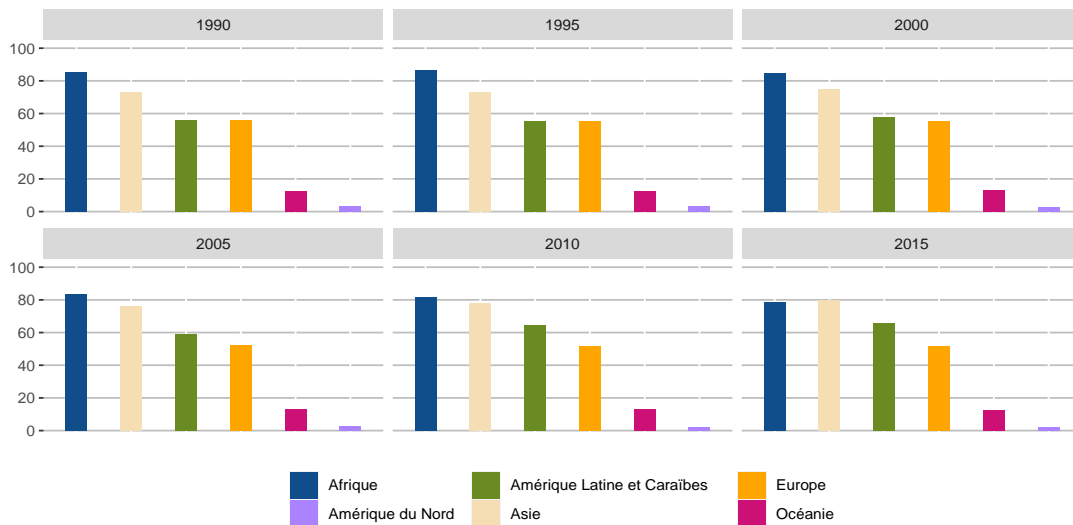
Source: Calculs de l'auteur basés sur les données du stock de migrants des Nations Unies (Département des Affaires Économiques et Sociales, Division de la population).

Note: Le découpage des régions du monde considéré pour cette figure est celui qui est adopté par les Nations Unies.

Malgré cette caractéristique, il faut noter que les migrations internationales restent à ce jour essentiellement intra-régionales. La migration intra-régionale désigne les déplacements de migrants vers un pays de la même région géographique que leur pays d'origine. Pour mieux appréhender l'ampleur de ce phénomène, il est possible de mobiliser le concept de taux de migration intra-régional. Ce taux se calcule comme le stock de migrants ayant quitté un pays vers un autre pays de la région, en pourcentage du total des migrants dans la même région. La Figure 0.3 nous indique qu'en moyenne, entre 1990 et 2015, l'Afrique arrive en première position sur les taux de migrations intra-régionales (83%) et l'Asie en deuxième position (75%). L'Amérique Latine et les Caraïbes ainsi que l'Europe sont respectivement à 59% et 53%. Les deux régions qui font l'exception de cette caractéristique de migration intra-continentale sont l'Océanie et l'Amérique du Nord, respectivement à 12% et 2%.

Parmi les facteurs explicatifs de ces niveaux élevés de migration intra-régionale, on peut énumérer: la proximité géographique et culturelle (langue officielle, dialectes, religion, passé colonial commun), et les raisons institutionnelles comme les processus

Figure 0.3: Taux de migration intra-régionale par région du monde (en pourcentage)



Source: Calculs de l'auteur basés sur les données du stock de migrants des Nations Unies (Département des Affaires Économiques et Sociales, Division de la population).

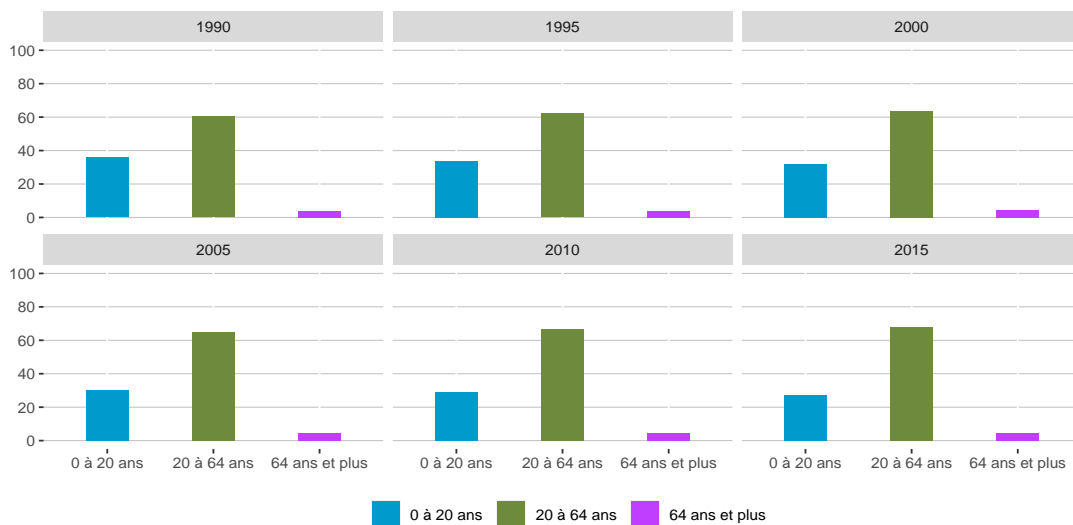
Note: La migration intra-régionale est le stock des migrants ayant quitté un pays vers un autre pays de la région en pourcentage des migrants dans la même région. Le découpage des régions du monde considéré pour cette figure est celui qui est adopté par les Nations Unies.

d'intégration économique et régionale. En effet, ces processus ont pour but le développement régional par le rapprochement des systèmes économiques via la libre circulation des personnes et des biens. Pour n'en citer que quelques-uns, il y a l'Organisation de l'Unité Africaine (OUA) fondée en 1963, devenue Union Africaine (UA) en 2002, l'Association des Nations de l'Asie du Sud-Est (ASEAN) datant de 1967, l'Union Européenne (UE) créée en 1993 et le Traité de Libre Échange nord-Américain (NAFTA) entré en vigueur en 1994, qui a été dissout et remplacé par l'Accord Canada-États-Unis-Mexique (ACEUM) en 2020.

En 1990, les migrations internationales étaient composées de presque autant d'hommes que de femmes, respectivement 50.7% et 49.3%. Ces taux n'ont pas vraiment changé en trente ans. Mais sans distinction de sexe, les migrants internationaux sont des personnes généralement en âge de travailler, c'est-à-dire que la plupart d'entre eux sont âgés de 20 à 64 ans. Leur déplacement modifie donc la structure par âge des pays d'origine et d'accueil, selon qu'ils en représentent une part plus ou moins importante de la population. La structure par âge ou la structure démographique, est définie comme la répartition en pourcentage des tranches d'âges au sein de la

population à un instant donné. Sur la Figure 0.4, nous observons que les 20-64 ans représentent la plupart des migrants et que leur part croît au fil du temps. Sur la période 1990-2015, elle est en moyenne de 65%. La part des 0-20 ans a diminué et est de 31% en 2015. Celle des 64 ans et plus ne représente que les 4% restants en 2015.

Figure 0.4: Structure d'âge des migrants internationaux (en pourcentage)



Source: Calculs de l'auteur basés sur les données du stock de migrants des Nations Unies (Département des Affaires Économiques et Sociales, Division de la population).

Note: La structure d'âge des migrants est leur répartition par tranches d'âge, en pourcentage à un instant donné.

La migration a inévitablement des conséquences sur les systèmes politiques, économiques et sociaux des pays d'origine et d'accueil. On peut s'attendre à ce que ces conséquences soient naturellement plus grandes quand le nombre de migrants s'accroît et surtout quand ceux-ci représentent une part significative de la population. Au vu de l'intensification de ce phénomène ces vingt dernières années (Figure 0.1), l'une des préoccupations majeures sur la migration, est de pouvoir en quantifier les effets notamment économiques pour une meilleure gestion. Cet exercice a suscité beaucoup d'intérêt dans le monde académique, comme chez les décideurs politiques et la littérature traitant de ce sujet présentée ci-dessous est abondante.

0.2 Vue d'ensemble de la littérature sur les impacts macroéconomiques de la migration internationale

0.2.1 Effet sur le marché du travail

Étant principalement en âge de travailler, les migrants représentent une main d'œuvre non-négligeable dans le pays de destination. Ce choc d'offre positif de main d'œuvre va avoir des effets sur le marché du travail notamment sur le taux d'emploi et sur les niveaux des salaires. D'un point de vue théorique, suite à une arrivée de migrants, si les prix et les salaires sont flexibles, l'ajustement par les prix fera baisser les salaires et donc les coûts de production diminuent. Cependant, dans le cas de rigidités salariales, c'est l'ajustement par les quantités qui prime et donc le taux d'emploi sera affecté négativement. Toutefois, il faut aussi prendre en compte que l'arrivée des migrants modifie le ratio des facteurs de production entre le travail et le capital. Si les rendements du facteur capital s'accroissent suite à une baisse des coûts de production, l'investissement va se répercuter positivement sur le taux d'emploi. L'effet total peut donc être mitigé. Il est important de noter que l'effet négatif sur les salaires induit par l'arrivée des migrants est plus probable lorsque les migrants sont principalement faiblement qualifiés et substituables à la main d'œuvre native. Lorsque la main d'œuvre migrante et native sont complémentaires alors un autre scénario peut se produire, c'est-à-dire une augmentation de l'emploi et des salaires si on a de la spécialisation par exemple ([Johnson, 1980](#); [Greenwood et Hunt, 1995](#)).

Au niveau empirique, les études de [Simon *et al.* \(1993\)](#), [Friedberg et Hunt \(1995\)](#) et [Borjas *et al.* \(1997\)](#) pour le cas des États-Unis ont conclu à des effets très peu significatifs de l'immigration sur le niveau de salaire et le taux d'emploi des natifs. Deux principales critiques ont été adressées à l'encontre des résultats ci-dessus. Premièrement, une non prise en compte des potentiels biais d'endogénéité concernant la

migration. Cette endogénéité tient au fait que le choix de migrer est influencé par le niveau de salaire et le taux d'emploi dans le pays d'accueil. Deuxièmement, si les opportunités d'obtenir un emploi baissent suite à l'arrivée de migrants, on peut avoir de la mobilité des natifs, qui va contrebalancer l'effet de l'augmentation de l'offre de travail. Après avoir traité l'endogénéité, [Card \(1990\)](#) pour les États-Unis, [Hunt \(1992\)](#) pour la France et [Dustmann *et al.* \(2005\)](#) pour l'économie britannique, indiquent l'absence d'effets notoires sur le niveau de salaire et d'emploi. Quant à celui du déplacement des travailleurs natifs, pour le cas des États-Unis, [Borjas \(2003\)](#) trouve pour des effets significatifs, contrairement à [Card \(2001\)](#) et [Card et DiNardo \(2000\)](#). Il faut noter que le manque de consensus sur ces derniers résultats est dû au fait qu'au sein du même pays, les auteurs considèrent des échantillons différents, par conséquent une amplitude différente de la mobilité des natifs. Outre cela, [Borjas \(2003\)](#) a aussi mis en évidence un effet négatif de la migration sur les salaires en considérant les différents groupes de qualifications et de compétences. Son résultat indiquerait une substitutalité entre migrants et natifs. Néanmoins, ce résultat est contredit dans le cas des États-Unis par [Card \(2009\)](#) et [Ottaviano et Peri \(2012\)](#) qui montrent que cet effet peut être positif. Cela s'explique par la possible complémentarité au sein des différents groupes de compétences.

Plutôt que de se limiter à un seul pays et faire une analyse interne, d'autres études ont considéré un panel de pays et concluent à un effet négatif sur le taux de chômage ([Angrist et Kugler, 2003](#)), mais seulement à court-terme ([Jean et Jiménez, 2011](#)). Jusque-là dans cette littérature n'avaient pas été pris en compte les liens de causalité inverse entre immigration et taux de chômage. En tenant compte de ces liens de causalité sur un échantillon de 22 pays de l'OCDE, [Boubtane *et al.* \(2013b\)](#) concluent que pour aucun de ces pays l'immigration ne cause du chômage. Ces mêmes auteurs confirment ce résultat avec une approche différente en panel VAR ([Boubtane *et al.*, 2013a](#)).

0.2.2 Impact sur le revenu et la croissance économique

Tout comme la décision de migrer est sensible au niveau du revenu dans le pays d'accueil, la migration contribue aussi à l'accroissement de ce revenu. Avec pour cadre théorique un modèle de croissance endogène, [Walz \(1996\)](#), [Bretschger \(2001\)](#) et [Lundborg et Segerstrom \(2002\)](#) montrent que les migrants hautement qualifiés constituant du capital humain, augmentent la productivité et favorisent la croissance de la production. Des études plus récentes comme celles d'[Ortega et Peri \(2014\)](#) et d'[Alesina et al. \(2016\)](#), montrent aussi que cet impact positif de la migration passe par un accroissement de la productivité globale des facteurs. Cet accroissement est soutenu par le fait que les migrants apportent de la diversité dans les compétences de la main d'oeuvre dans le pays de destination et encouragent aussi l'innovation. En se concentrant uniquement sur les économies africaines, [Coulibaly et al. \(2018\)](#) trouvent que l'émigration vers les pays développés n'a pas d'impact significatif sur la croissance du revenu par tête de ces pays. Ils expliquent cela par le contre-effet négatif de la fuite des cerveaux ("*brain drain*"). Dans le cadre de l'intégration économique et régionale africaine, [Gnimassoun \(2020\)](#) apporte quelques éclairages et montre que certes la migration intra-africaine n'a pas d'impact à long-terme sur l'accroissement du revenu par tête, mais l'effet est significatif à court et moyen-terme. Pour prendre en compte les différentes interactions dans les deux sens entre croissance et migration, [Boubtane et al. \(2013a\)](#) dans une approche en panel VAR ont démontré que la migration n'aurait pas d'impact sur la croissance par tête dans les pays de l'OCDE sur la période 1990-2006.

0.2.3 Effet sur le commerce

Le commerce bilatéral est plus important à la suite de l'arrivée de migrants, et ce par deux canaux : l'information et les préférences. Le canal de l'information est tel que, par leur connaissances des langues parlées dans les deux pays, des opportunités commerciales, de la fiabilité des institutions et leur carnet d'adresses, les migrants

facilitent les échanges en diminuant leurs coûts de transaction et d'information. Ce canal booste à la fois les importations et les exportations. Concernant le second canal, il se manifeste par l'attachement (plus ou moins fort) qu'ont les migrants pour les biens produits dans leur pays d'origine. Ce canal de préférence favorise seulement les importations en provenance du pays d'origine des migrants. [Gould \(1994\)](#) fût le premier à démontrer cette relation positive entre la migration et le commerce, pour le cas des États-Unis. [Head et Ries \(1998\)](#), [Girma et Yu \(2002\)](#) et [Peri et Requena-Silvente \(2010\)](#) ont analysé respectivement les cas du Canada, du Royaume-Uni et de l'Espagne. Ils aboutissent au même résultat positif dans des amplitudes différentes selon qu'il s'agisse des importations ou des exportations. Ces auteurs, entre autres, développent que la proximité culturelle ou institutionnelle entre les pays d'origine et d'accueil est un facteur important dans la relation migration-commerce. Cela s'explique par le fait que les migrants venant de pays culturellement ou institutionnellement proches du pays d'accueil ont un effet limité sur le commerce bilatéral, car les informations qu'ils véhiculent sont de moins grande valeur ajoutée et il se peut qu'ils retrouvent les mêmes produits à destination. Ce résultat est aussi mis en exergue par [Ehrhart *et al.* \(2014\)](#), en ne considérant que les exportations des économies africaines. Les auteurs ont testé comme facteur de proximité la distance géographique et l'ethnicité. [Felbermayr et Toubal \(2012\)](#) furent les premiers à dissocier quantitativement les canaux de transmission: information et préférences. Dans leur étude, ils font l'hypothèse que l'information apportée par les migrants impacte de façon symétrique les importations et les exportations. Ainsi, un déficit commercial serait lié à l'effet de préférence, vu que celui-ci n'influence que les importations. Sur un échantillon des pays de l'OCDE, ils concluent que le canal d'information est dominant pour les biens homogènes et pour les migrants hautement qualifiés.

0.2.4 Impact sur les finances publiques

L'impact des migrants sur les finances publiques du pays hôte a fait l'objet de plusieurs études utilisant diverses approches. L'approche statique consiste en une comparaison à une année donnée, de la contribution des migrants par rapport à tout ce dont ils bénéficient venant du secteur public. Dans son étude sur les économies avancées, [Rowthorn \(2008\)](#) conclut que la contribution fiscale nette des migrants est très limitée, se situant dans un intervalle de plus ou moins 1% du PIB. Par ailleurs [Dustmann et Frattini \(2014\)](#), se sont focalisés sur l'économie britannique et aboutissent à un résultat mitigé selon que les migrants viennent de l'Espace Économique Européen ou non. Une seconde approche qui est dynamique, tient compte du cycle de vie du migrant pour mieux appréhender la valeur actuelle nette de la contribution des migrants, en prenant également en compte l'impact de leurs descendants ([Lee et Miller, 1997](#); [Auerbach et Oreopoulos, 1999](#); [Lee et Miller, 2000](#); [Storesletten, 2003](#); [Chojnicki, 2013](#)). Les résultats montrent généralement une contribution nette plutôt faible, dépendante de beaucoup d'autres facteurs. Cela maintient toujours l'ambiguïté quant à l'impact des migrants. En considérant l'effet des migrants sur la structure par âge de la population, qui se traduit par une population de plus en plus active, [d'Albis *et al.* \(2019\)](#) montrent que les migrants ont un effet positif sur les finances publiques (la balance fiscale). En effet, ils expliquent que la migration internationale améliore le solde budgétaire en réduisant les transferts par habitant versés par le gouvernement et les dépenses publiques de vieillesse par habitant. Pour les pays de destination caractérisés par une population vieillissante et une large part du secteur public, l'immigration améliore le solde fiscal.

0.2.5 Effet sur le compte courant

A l'aide d'un modèle de générations imbriquées, [Coulibaly *et al.* \(2020\)](#) font figure de pionniers dans l'analyse de la relation entre les déséquilibres de compte courant et la migration internationale. L'étude fût menée sur un ensemble de 162 pays développés

et en développement sur la période allant de 1990 à 2014 découpée en moyennes quinquennales. Les auteurs montrent qu'une augmentation du stock net de migrants a des effets positifs sur le solde du compte courant. Pour bien comprendre ce résultat, il faut partir de la théorie du cycle de vie qui nous enseigne que l'agent économique désépargne quand il est très jeune et dans sa vieillesse, et épargne durant sa vie active (Leff, 1969; Higgins et Williamson, 1997; Higgins, 1998). Les migrants internationaux étant pour la plupart d'entre eux en âge de travailler, leur effet sur la structure par âge de la population du pays hôte va affecter le taux d'épargne (Bloom *et al.*, 2007). Ce dernier va augmenter et par conséquent améliorer le solde du compte courant. Dans le pays d'origine, nous observons les mécanismes inverses mais qui peuvent être atténués par les transferts de fonds des migrants et leurs effets sur le compte courant. D'ailleurs toujours du point de vue des pays d'origine et particulièrement pour les pays de l'Afrique sub-saharienne, Coulibaly et Gnimassoun (2023) montrent que ce sont les émigrants faiblement qualifiés qui améliorent le compte courant. En effet, les émigrants hautement qualifiés, malgré leur taux d'épargne élevé, ont tendance à moins transférer des fonds vers leurs pays d'origine.

0.2.6 Impact sur le niveau général des prix et le taux de change réel

Du point de vue du pays de destination, l'immigration influence le niveau des prix soit par des canaux d'offre et/ou de demande (Lach, 2007; Cortes, 2008; Zachariadis, 2011, 2012) et par conséquent le taux de change réel. Le mécanisme du canal de l'offre est tel que les migrants ont un coût d'opportunité généralement plus faible que les natifs, ils reçoivent donc un salaire plus faible exerçant ainsi une pression à la baisse sur les prix (Lach, 2007; Cortes, 2008). Celui du canal de la demande est tel qu'une augmentation du nombre de migrants stimule la demande de biens, donc une pression à la hausse sur les prix (Zachariadis, 2011, 2012). Ces pressions à la hausse ou à la baisse sur les niveaux des prix se traduiront par une augmentation ou une

diminution des prix relatifs des biens non-échangeables (ceux des biens échangeables étant soumis à la concurrence internationale). En conséquence, on a une appréciation ou une dépréciation réelle du taux de change.

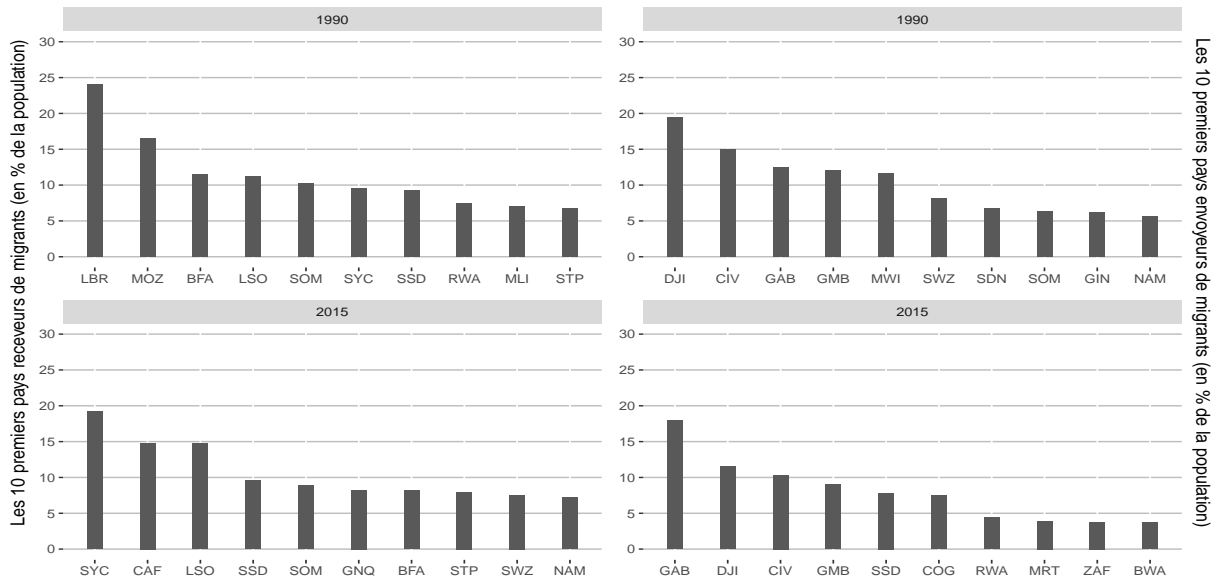
Du point de vue du pays d'origine, c'est-à-dire à travers l'émigration, on a un premier canal par les transferts de fonds des migrants ([Amuedo-Dorantes et Pozo, 2004](#); [Acosta et al., 2009](#); [Lartey et al., 2012](#)) et un second par les prix ([Ouyang et Paul, 2018](#)). Pour le premier canal, en lien avec le phénomène de la maladie hollandaise ("*dutch disease*") , les transferts de fonds induisent un effet de dépense dans les pays bénéficiaires. Cet effet de dépense peut conduire à une appréciation de leur taux de change réel et à un déplacement des ressources du secteur des biens échangeables vers celui des biens non-échangeables. Le canal des prix ici, tient du fait que les salaires plus élevés dans le pays d'origine résultant de l'émigration hautement qualifiée, vont induire des effets de dépenses et une réallocation de ressources similaire au phénomène de maladie hollandaise. Ces effets de dépenses et de réallocation de ressources vont pousser les prix à la hausse et apprécier le taux de change réel.

Que ce soit du point de vue du pays d'origine ou de destination, la migration peut aussi influencer le taux de change réel par le canal de la structure démographique. Le premier mécanisme de ce canal qui est détaillé dans la section ci-dessus, est l'effet du changement de la structure démographique induit par la migration sur le compte courant. En effet, une amélioration (détérioration) de la balance courante nécessite l'ajustement du taux de change réel par une dépréciation (appréciation) ([Andersson et Österholm, 2006](#); [Rose et al., 2009](#); [Groneck et Kaufmann, 2017](#)). Le second mécanisme, est l'effet de la structure démographique sur le type de biens consommés. Les jeunes en âge de travailler vont généralement consommer des biens échangeables au détriment de biens non-échangeables principalement consommés par les plus jeunes et les plus vieux. Cela affecte le taux de change réel qui est le prix relatif des biens non-échangeables ([Andersson et Österholm, 2006](#); [Rose et al., 2009](#); [Groneck et Kaufmann, 2017](#)).

0.3 Présentation et structure de la thèse

Par la création de l'UA (ex OUA), le continent africain n'est pas resté en marge du processus d'intégration économique et régionale, qui a sans doute contribué d'une manière à cette forte migration intra-continentale (Figure 0.3). Si la migration intra-africaine est une réussite pour le continent dans son processus d'intégration, une autre dimension de cette intégration qu'est le commerce intra-africain, est resté faible. En effet, en moyenne depuis 1990, les échanges commerciaux au sein de la région ne représentent que 15% du commerce total de l'Afrique. Ce taux peine à augmenter malgré la création de plusieurs instances économiques et monétaires vouées à l'accroître. La migration interne en Afrique est donc un atout majeur pour le continent et a de multiples conséquences positives comme mentionné dans le rapport sur le développement économique de l'Afrique de la Conférence des Nations Unies sur le Commerce et le Développement ([CNUCED, 2018](#)). Au titre de ces conséquences, ce rapport indique par exemple l'accroissement du PIB : 19% en Côte d'Ivoire (2008), 13% au Rwanda (2012), 9% en Afrique du Sud (2011) et 1% au Ghana (2010) et le développement même du commerce intra-africain via l'importation de denrées alimentaires. Le migrant intra-africain tout comme le migrant international est également jeune et en âge de travailler (31 ans en moyenne) et c'est principalement la demande de main d'œuvre qui motive son déplacement ([CNUCED, 2018](#)). Ce déplacement a donc aussi un impact sur la structure d'âge des pays d'accueil. La spécificité de cette thèse tient au fait qu'elle se place dans le contexte de cette intégration africaine et prend pour axe majeur cette forte migration intra-africaine pour en analyser les impacts économiques pour les pays d'origine et d'accueil. La littérature sur les impacts économiques de la migration est abondante comme vu dans la section précédente. Cependant la migration intra-africaine est intéressante à étudier car elle est très importante et dans certains pays les migrants représentent des parts significatives de la population (Figure 0.5).

Figure 0.5: Les 10 premiers pays africains receveurs et envoyeurs de migrants (en pourcentage de la population)



Source : Calculs de l'auteur basés sur les données du stock de migrants des Nations Unies (Département des Affaires Économiques et Sociales, Division de la population) et de la population totale de la Banque Mondiale.

Note : L'émigration (immigration) exprimée en pourcentage de la population totale correspond au stock d'émigration (immigration) par rapport à la population totale du pays d'origine (accueil). Les pays sont représentés par leurs codes ISO respectifs à trois lettres.

De plus, la littérature traitant spécifiquement des migrations intra-africaines n'est certes pas inexistante mais peu abondante pour révéler les particularités du continent. Parmi les études existantes, il y a par exemple [Coulibaly *et al.* \(2018\)](#), qui analysent les effets de la migration intra-africaine sur sa capacité à générer de la croissance économique. [Gnimassoun \(2020\)](#) également s'est focalisé sur l'estimation des effets de la migration intra-africaine sur le revenu par tête en Afrique. [Ehrhart *et al.* \(2014\)](#), ont mesuré les effets de la migration intra-africaine sur les exportations au sein du continent. Dans cette thèse, nous nous proposons donc de se focaliser sur trois aspects macroéconomiques qui vont constituer ses différents chapitres.

Le premier chapitre est une évaluation empirique de l'impact de la migration intra-africaine sur le taux de change réel du point de vue du pays de destination.

Le second chapitre est une étude empirique appuyé par un modèle théorique pour estimer l'impact des migrants intra-africains sur le commerce intra-africain avec une dissociation des différents canaux de transmission et une emphase sur le rôle des

unions monétaires dans cette relation.

Le troisième et dernier chapitre examine empiriquement l'impact des migrants intra-africains sur la synchronisation des cycles économiques entre les pays d'accueil et ceux de destination.

Ces différents chapitres sont décrits ci-après en présentant pour chacun d'eux la motivation, la méthodologie, les données puis les résultats.

Chapitre 1: Intra-African migration and real exchange rate

Motivation

La première motivation de ce chapitre est que l'indice du taux de change effectif réel est un indicateur important pour une économie. Il permet, de mesurer la compétitivité-prix d'un pays spécifique par rapport à ses partenaires commerciaux. En ce sens, il va refléter le coût de la vie. Le taux de change réel joue aussi un rôle dans les échanges commerciaux via son effet sur les prix des importations et des exportations. Si l'intégration économique et régionale via l'axe de la migration, a pour but le développement économique, la question du taux de change réel est intéressante car cet indicateur a lui même un impact sur la croissance économique ([Razin et Collins, 1997](#); [Eichengreen, 2007](#); [Rodrik, 2008](#); [Miao et Berg, 2010](#)).

La seconde motivation est que se pencher sur la question de l'impact de la migration sur la dynamique du taux de change réel requiert une attention particulière. Comme exposé dans la section précédente, plusieurs canaux qui vont dans des sens contraires entrent en jeu et créent une ambiguïté sur l'effet total.

Méthodologie, données et résultats

La méthodologie utilisée dans ce chapitre est empirique. Elle repose sur un modèle de taux de change réel dont la valeur est déterminée par ses fondamentaux de long-terme couramment utilisés dans la littérature. Nous considérons des données de panel quinquennales avec les 54 pays du continent africain sur la période 1990-2019. La variable dépendante est le logarithme de l'indice du taux de change effectif réel. Cet indice provient de la base de données Bruegel (Darvas, 2012). La principale variable explicative est le stock net de migrants en pourcentage de la population du pays de destination. Les données sur le stock de migrants utilisées proviennent de la base des Nations Unies (UN, 2019) et celles de la population totale sont tirées de la Banque Mondiale. Le stock est utilisé plutôt que le flux pour prendre en compte le fait que les migrants font des transferts de fonds vers leur pays d'origine et mieux expliquer ce phénomène de moyen-long terme.

Les fondamentaux du taux de change effectif réel considérés pour servir de variables de contrôle sont: le logarithme du PIB par tête en termes relatifs afin de capter l'effet Balassa-Samuelson (Balassa, 1964; Samuelson, 1964), la position extérieure nette en pourcentage du PIB réel (Lane et Milesi-Ferretti, 2002) et l'indice des termes de l'échange (De Gregorio et Wolf, 1994; Mendoza, 1995). Le PIB par tête en termes relatifs est tiré de la base RPROD du CEPII (Couharde *et al.*, 2020). La position extérieure nette qui est la différence entre les avoirs et engagements est extraite de la base compilée par Lane et Milesi-Ferretti (2018). L'indice des termes de l'échange qui est le rapport entre les prix des exportations et les prix des importations à été extrait de la base de données de la CNUCED.

Les estimations économétriques montrent qu'une augmentation de la migration nette intra-africaine exerce un effet d'appréciation sur le taux de change réel des pays d'accueil des migrants. Nos résultats sont valables lorsque nous contrôlons pour l'endogénéité potentielle avec une estimation en deux étapes utilisant les instruments

de gravité pour la migration couramment utilisé dans littérature (Ortega et Peri, 2014; Alesina *et al.*, 2016; Docquier *et al.*, 2016; Coulibaly *et al.*, 2018, 2020).

La robustesse de ces résultats est analysée dans un premier temps par l'ajout de variables de contrôle supplémentaires que sont: le taux d'ouverture commerciale et le régime de change (MacDonald et Ricci, 2003; Coudert *et al.*, 2011). L'ouverture commerciale pris en termes réels est la somme des importations et des exportations en pourcentage du PIB. La caractérisation des régimes de changes a été faite suivant la classification de Ilzetki *et al.* (2019). Dans un second temps, nous tenons compte de l'hétérogénéité des pays de l'échantillon en (i) excluant les pays exportateurs de pétrole, (ii) considérant que les pays de l'Afrique sub-saharienne, (iii) séparant l'échantillon selon que les pays soient receveurs ou envoyeurs nets de migrants. Ces deux ensembles de tests de robustesse n'ont pas d'effet sur les résultats principaux.

Chapitre 2: The pro-trade effect of intra-African migration

Motivation

Le niveau du commerce intra-africain resté faible jusque là (en moyenne 15% du commerce total africain), malgré la création de plusieurs institutions économiques et monétaires pour le stimuler suscite plusieurs questions.² Outre cela, quand il a été suffisamment démontré dans la littérature que la migration impacte positivement le commerce bilatéral et que la migration intra-africaine est si élevée, il convient de se questionner sur l'efficacité de la transmission des effets de ces migrants sur le commerce intra-continental.

Cette préoccupation est la première motivation de ce chapitre. Ainsi nous nous consacrons à une étude complète de l'impact de la migration intra-africaine sur le commerce intra-africain. Un premier volet de notre étude est que nous dissociions

²Le dernier projet en cours concernant le commerce intra-africain est la ZLECAf (Zone de Libre-Échange Continentale Africaine) dont les 54 pays membres du continent sont signataires.

les deux différents canaux de transmissions: information et préférence, suivant la méthodologie de [Felbermayr et Toubal \(2012\)](#).

La seconde motivation de ce chapitre est de considérer le rôle des unions monétaires dans cette relation migration-commerce. Dans l'absolu, les unions monétaires africaines peuvent jouer un double rôle. Leur premier rôle intrinsèque est qu'elles réduisent naturellement les coûts de transaction liés au commerce bilatéral ([Rose, 2000](#)). Dans ce sens, elles peuvent rendre inefficaces les canaux de transmission de la migration au commerce. Le second rôle des unions monétaires spécifiquement africaines est que de par leur nature d'héritage colonial, elles constituent un facteur de proximité institutionnelle et culturelle entre les pays membres. Ainsi, elles pourraient limiter l'effet des migrants sur le commerce bilatéral, car les canaux de transmission deviendraient inefficients.

Méthodologie, données et résultats

Dans ce chapitre nous développons d'abord un modèle théorique qui dissocie les deux canaux de transmissions. Par la suite, nous testons empiriquement les implications de cette approche théorique. Ce modèle développé par [Felbermayr et Toubal \(2012\)](#) s'appuie sur une fonction d'utilité de type Dixit-Stiglitz ([Dixit et Stiglitz, 1977](#)), qui dépend de la consommation des variétés de biens domestiques et importés. L'utilité de l'agent représentatif est déterminée par la consommation de ces variétés de biens importés. Pour ces biens importés, il manifeste un certain niveau de préférence qui dépend positivement du nombre de migrants dans le pays d'accueil. Le prix de ces biens importés dépend des coûts liés aux échanges commerciaux bilatéraux. Ces coûts sont eux-même exprimés en fonction de la migration bilatérale (immigration et émigration) par laquelle va se transmettre des informations (coûts d'information), et des variables standards de gravité. Ces variables sont la distance, l'existence d'une frontière commune, l'enclave, l'usage d'une même langue officielle, d'une monnaie commune et l'existence d'un accord de commerce régional.

De la maximisation de la fonction d'utilité, on tire la demande pour les biens importés qui dépend donc de l'immigration (préférences et information), de l'émigration (information) et des autres variables de gravité. Cette équation de demande constitue la première spécification standard dans laquelle les canaux de l'information et des préférences sont indissociables. Cependant, en supposant que les coûts du commerce bilatéral sont symétriques et que le canal d'information impacte de la même manière les importations et les exportations, alors un déficit commercial serait lié à l'effet de préférence manifesté par les immigrants. Ainsi pour déduire cet effet de préférence, le déficit commercial est exprimé dans le modèle comme une fonction de la migration nette bilatérale. C'est la deuxième spécification et le coefficient associé à la migration nette bilatérale est l'effet de préférence.

Au niveau empirique, la période d'étude est de 1990-2019 structurée en moyennes quinquennales et 49 pays africains composent l'échantillon du panel dans un cadre bilatéral. Les données du commerce bilatéral proviennent de la base COMTRADE des Nations Unies. Nous ne considérons pas uniquement le commerce total mais aussi le commerce désagrégé par type de produit (denrées alimentaires, produits manufacturés et produits de base). Nous utilisons seulement les importations et les exportations domestiques, cela nous évite de capter le commerce de transit (ré-importation et ré-exportation) qui pourrait biaiser les résultats. Concernant la migration, nous extrayons ces données de la base des Nations Unies sur le stock de migrants ([UN, 2019](#)). Les variables de contrôle sont les variables de gravité mentionnées au préalable qui capturent les coûts du commerce. Ces variables de gravité sont extraites de la base Gravity du CEPII. À ces variables nous ajoutons le PIB en valeur réelle, tiré de la base sur les indicateurs de développement dans le monde de la Banque Mondiale pour tenir compte de la taille de la paire de pays. Face au potentiel problème d'endogénéité, nous utilisons les valeurs retardées de la migration comme instruments.

À l'aide d'un modèle de gravité, nos résultats empiriques sont les suivants. Premièrement, les migrations intra-africaines favorisent le commerce régional pour tous

les types de produits (denrées alimentaires, produits manufacturés et produits de base). Deuxièmement, en dissociant les canaux d'information et de préférence par lesquels la migration peut avoir un impact sur le commerce, nous constatons que le canal d'information (par le biais de l'immigration) est efficace pour les denrées alimentaires et les produits de base et inefficace pour les produits manufacturés. Troisièmement, le canal des préférences est efficace pour toutes les catégories de produits, mais cet effet est atténué par le partage d'une monnaie commune pour les denrées alimentaires et les produits manufacturés. En effet, les monnaies communes sont des héritages coloniaux qui induisent une proximité culturelle entre les pays membres.

Chapitre 3: Regional migration and business cycles synchronization in Africa

Motivation

La synchronisation des cycles économiques est importante pour une bonne coordination des politiques publiques dans le cadre des processus d'intégration économique et régionaux et spécifiquement pour les unions monétaires [Mundell \(1961\)](#). Jusque-là, dans la littérature sur ce qui détermine cette synchronisation de l'activité économique n'a été mis directement en évidence l'impact de migration. Or, celle-ci peut jouer un rôle à travers l'ajustement face aux chocs notamment ceux du marché du travail ([Beyer et Smets, 2015](#); [Arpaia et al., 2016](#)) et par les envois de fonds ([Barajas et al., 2012](#)), dont il a été démontré qu'ils sont contra-cycliques dans l'économie bénéficiaire ([Sayan, 2006](#); [Frankel, 2011](#)) et pro-cycliques dans l'économie émettrice ([Lueth et Ruiz-Arranz, 2008](#); [Giuliano et Ruiz-Arranz, 2009](#)). Ces premiers arguments constituent la première motivation de ce chapitre.

La seconde motivation est que, mesurée comme la corrélation des composantes cycliques du PIB, la synchronisation des cycles peut être mise en lien avec la migration

qui elle même influence les niveaux de revenus ([Ortega et Peri, 2014](#)).

Le troisième élément de motivation de ce chapitre concerne le lien positif qu'il existe entre la migration et l'intensité commerciale, elle même déjà prouvée comme déterminant clé de la synchronisation des cycles.

Méthodologie, données et résultats

Dans ce dernier chapitre empirique, nous considérons une configuration bilatérale pour 47 pays africains en panel, en moyenne quinquennale sur la période 1990-2019. La variable dépendante est la corrélation des composantes cycliques du PIB réel. Pour extraire ces composantes cycliques, nous utilisons le filtre de [Baxter et King \(1999\)](#). Le PIB réel est tiré de la base de la Banque Mondiale. Notre variable explicative est l'intensité migratoire entre la paire de pays. Les données sur le stock de migrants bilatéral proviennent de la base des Nations Unies ([UN, 2019](#)). Pour corriger du potentiel problème d'endogénéité de la variable explicative, nous utilisons des instruments basés sur l'approche de gravité ([Ortega et Peri, 2014](#); [Alesina et al., 2016](#); [Docquier et al., 2016](#); [Coulibaly et al., 2018, 2020](#)).

Les résultats principaux montrent dans un premier temps que l'intensité migratoire entre la paire de pays a un impact positif et significatif sur la synchronisation de leurs cycles économiques. Dans un second temps, nous ajoutons des variables de contrôles qui représentent les autres déterminants de la synchronisation des cycles mentionnés dans la littérature. Ces variables sont l'intensité commerciale ([Baxter, 1995](#); [Frankel et Rose, 1998](#); [Calderon et al., 2007](#); [Tapsoba, 2009](#)), le degré de spécialisation économique ([Imbs, 2004](#)) et l'intégration financière ([Cerqueira et Martins, 2009](#); [Kalemli-Ozcan et al., 2013](#)). L'intensité commerciale est calculée comme le ratio des exportations et importations sur le PIB des deux pays. Les données du commerce sont extraites de la base COMTRADE des Nations Unies. Le degré de spécialisation est calculé comme la valeur absolue de la différence des parts respectives dans le PIB

des différents secteurs (agriculture, manufactures et services). Les parts des secteurs dans le PIB sont tirés de la Banque Mondiale. L'intégration financière est mesurée comme le total des avoirs et engagements pour les deux pays et rapportés à leur PIB réel respectif. Les avoirs et engagements sont disponibles dans la base de [Lane et Milesi-Ferretti \(2018\)](#). Nos résultats ne sont pas sensibles à l'ajout de ces variables de contrôle.

La sensibilité de nos résultats est aussi analysée à l'aide d'un autre ensemble de tests. Nous changeons premièrement le filtre utilisé au profit de celui de [Christiano et Fitzgerald \(2003\)](#). Nous ajoutons la divergence de politique fiscale comme variable de contrôle supplémentaire ([Thornton, 2008](#)) et enfin nous faisons une transformation de Fisher sur notre variable dépendante. L'ensemble de ces tests de robustesse n'impacte pas les résultats. L'intensité migratoire a toujours un effet positif sur la synchronisation des cycles.

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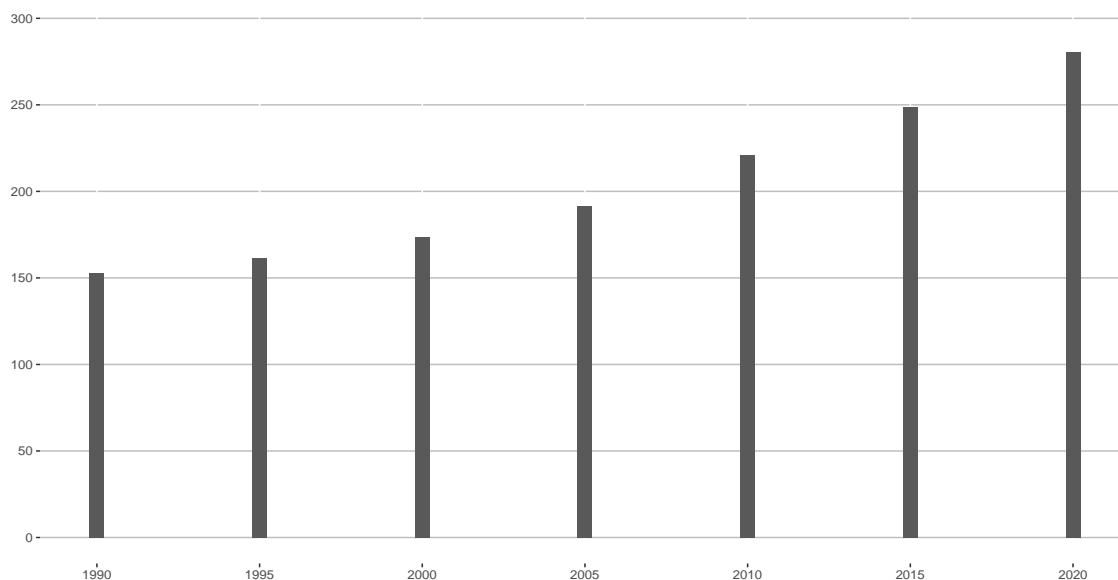
Chapter 1

Intra-African migration and real exchange rate

1.1 Introduction

The issue of migration's impact on home and host countries have always been of interest to scholars and policymakers, especially as migration has increased drastically in the world, from 150 million people in 1990 to 281 million in 2020 (Figure 1.1). The existing studies on the question cover several fields. Some studies focus on internal aspects and investigate the impact of migration on variables such as output, employment, and fiscal balance (Boubtane et al., 2013b,a; Ortega and Peri, 2014; d'Albis et al., 2018, d'Albis et al., 2019). Others investigate external considerations and analyze how migration influences variables like trade (Gould, 1994; Felbermayr and Toubal, 2012), the real exchange rate or the cross-country difference in prices (Amuedo-Dorantes and Pozo, 2004, Lach, 2007; Cortes, 2008; Zachariadis, 2011, 2012; Ouyang and Paul, 2018) and global imbalances (Coulibaly et al., 2020; Coulibaly and Gnimassoun, 2023).¹

Figure 1.1: Evolution of the stock of migrants in the world (in millions)



Source: Author's calculations based on United Nations migrant stock data (Department of Economic and Social Affairs, Population Division).

This chapter aims at providing new insights into the impact of international

¹See Kerr and Kerr (2011) for a survey of economic impacts of immigration.

migration on the real exchange rate by focusing on intra-African migration. In the world, intra-continental migration is the strongest in Africa (Figure 1.2). On average over the period 1990-2019, intra-continental migration in Africa is about 83%, against about 75% in Asia, 59% in Latin America and the Caribbean, 53% in Europe, 12% in Oceania, and 2% in Northern America (Figure 1.2). For many African countries, intra-continental migration represents an important share of their populations (see in Appendix Figures A-1 and A-2).

Figure 1.2: Intra-migration rate by world regions (in percentage)



Source: Author's calculations based on United Nations migrant stock data (Department of Economic and Social Affairs, Population Division).

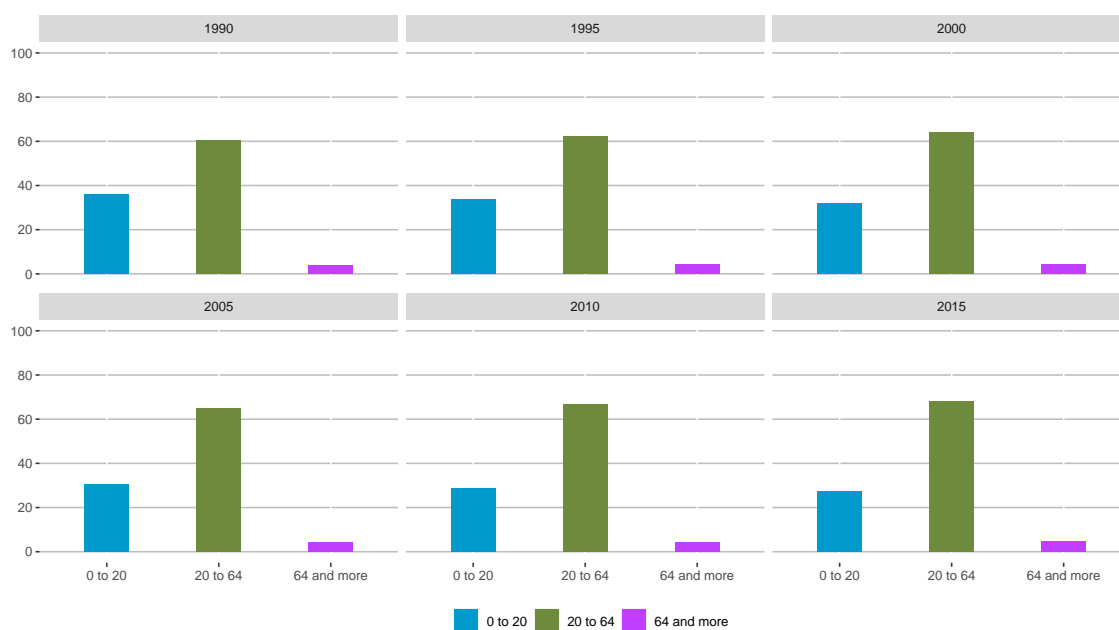
Note: Intra-regional migration is the stock of migrants having left a country for another country in the region as a percentage of migrants in the same region. AFR = Africa, EUR = Europe, NA = Northern America, ASIA = Asia, LAC = Latin America and Caribbean, OCN = Oceania. The world regions considered for this figure are those adopted by the United Nations.

There are many pathways through which international migration may influence the real exchange rate, thus leading to ambiguous effects. Specifically, as highlighted by [Zachariadis \(2011, 2012\)](#), migration may matter for prices of goods and services in destination countries through both the demand-side and the supply-side effects. On the demand side, international migration by pushing up (down) aggregate demand in the host (home) country should induce an upward (downward) pressure on prices

determined domestically. On the supply side, since immigrants are generally poorer and characterized by a lower opportunity cost of time than native-born, they are expected to receive a lower wage for a given productivity (Lach, 2007; Cortes, 2008), exerting downward pressure on prices determined domestically in the host country. The resulting upward or downward pressure will lead to an increase or a decrease in relative prices of non-tradable goods (prices of tradable being subject to international competition) and thereby an appreciation (depreciation) of the real exchange rate.

There are also indirect channels through international migration may affect international price differences: the demographic structure channel and the remittance channel. The demographic structure channel is based on the fact that, since international migrants are mainly of working age population (Figure 1.3), flows of migrants raise the working age population in destination countries but decrease it in origin countries.

Figure 1.3: Age structure of world migrants (in percentage)



Source: Author's calculations based on United Nations migrant stock data (Department of Economic and Social Affairs, Population Division).

Note: The age structure of migrants is their distribution by age bracket, as a percentage at a given time.

In line with the life-cycle theory (Leff, 1969; Higgins and Williamson, 1997; Higgins, 1998; Bloom et al., 2007), by affecting the share of the working-age population, migration improves (worsens) the saving-investment balance or the current account balance in destination (origin) countries. This improving (worsening) impact of immigration (emigration) on the current account, corroborated by empirical studies of Coulibaly et al. (2020) and Coulibaly and Gnimassoun (2023), requires a depreciation (appreciation) of the equilibrium real exchange rate in the host (home) country (Andersson and Österholm, 2006; Rose et al., 2009; Groneck and Kaufmann, 2017). At the same time, since the consumption of young and old dependent people is biased towards non-tradable items, immigration (emigration), by raising (reducing) the share of working-age people, will push down (up) the relative prices of non-tradable (prices of tradable being subject to international competition) (Andersson and Österholm, 2006; Rose et al., 2009; Groneck and Kaufmann, 2017), inducing a depreciating (appreciating) pressure on the real exchange of host (home) country. Concerning the remittance channel, in line with the “Dutch Disease” phenomenon, remittances induce a spending effect in recipient countries that may lead to an appreciation of their real exchange rates and a resource movement from the tradable sector to the non-tradable one (Amuedo-Dorantes and Pozo, 2004; Acosta et al., 2009; Lartey et al., 2012). For remittance-sending countries, one can expect an opposite effect of remittances, to a certain extent.

As a result of these different contradictory pathways, studying the impact of international migration on the real exchange rate is strongly an empirical issue. Since an African country can be both a destination and an origin country of continental migrants, in line with these different contradictory channels, the directly measurable effect is the impact of net migration on the real exchange rate. Our empirical study considers a sample of 54 African countries over the period 1990-2019. Econometric estimations on this sample show evidence that an increase in net continental migration exerts an appreciating effect on the real exchange rate of host countries. This finding

holds when controlling for potential endogeneity using gravity-based instruments for migration.

The rest of this chapter is structured as follows. Section 1.2 reviews the literature related to how migration matters for prices. Section 1.3 presents the econometric specification and describes data. Section 1.4 reports and discusses the empirical results. Finally, Section 1.5 concludes.

1.2 Literature review

There are several forces through which migration may impact directly or indirectly the prices of goods and services in host and home countries, and thereby their real exchange rates. From the host country perspective, while there are many studies ([Borjas, 1994, 2003](#); [Dustmann et al., 2005](#)) having looked at immigration's impact on wages (of natives), very few papers have investigated immigration's impact on the prices of goods and services. [Lach \(2007\)](#) and [Cortes, 2008](#) are the pioneer papers having directly evaluated the impact of migration on prices. [Lach \(2007\)](#) uses store-level price data on 915 tradable goods (excluding services) across 52 cities in Israel during 1990 and shows evidence that immigration reduces prices through a demand-side channel of higher price elasticities and lower search costs of immigrants than the native population. [Cortes \(2008\)](#) considers store-level data on 74 goods and services (34 of which are non-tradable) across 30 U.S. cities over the period 1980-2000. She finds a negative impact of low-skilled immigration on the prices of the non-traded components of the cost of living, and this impact operates through a supply-side channel by decreasing wages. Following [Lach \(2007\)](#) and [Cortes \(2008\)](#), [Zachariadis \(2011, 2012\)](#) estimates the impact of immigration on price levels for 304 items across 140 cities in 90 countries during 1990-2006 and finds a negative impact of immigration on price levels for a broad number of goods and services comprising the consumer price index (CPI).

Since international migrants are mainly of working age and international migration then alters the demographic structure, this chapter is related to works ([Andersson and Österholm, 2006](#), [Rose et al., 2009](#); [Aloy and Gente \(2009\)](#); [Groneck and Kaufmann, 2017](#)) that make a connection between demographic structure and the real exchange rate. The underlying idea of this link is that, according to the life cycle hypothesis ([Leff, 1969](#); [Higgins and Williamson, 1997](#); [Higgins, 1998](#); [Bloom et al., 2007](#)), during younger and older ages, economic agents are net borrowers, and during the middle (working) ages they are net savers. The demography-related increase (decrease) in savings results in an improvement (deterioration) in the current account that must be accompanied by a depreciation (appreciation) of the real exchange rate. At the same time, consumption of young and old dependent people being biased towards non-tradable goods, changes in demographic structure matter for the relative price of non-tradable goods (prices of tradable being subject to international competition) and thereby the real exchange rate. This theoretical prediction was supported by some empirical works, such as [Andersson and Österholm \(2006\)](#), [Rose et al. \(2009\)](#), and [Groneck and Kaufmann, 2017](#). Estimating a model on a panel of 25 OECD countries over the period from 1971 to 2002, [Andersson and Österholm \(2006\)](#) find results indicating that the productive age group exerts a depreciating effect on the real exchange rate whereas the elderly population induces an appreciating impact. Using data for 87 countries between 1975 and 2005, [Rose et al. \(2009\)](#) estimate that a decline in the fertility rate is associated with a depreciation of the real exchange rate. After illustrating by a two-sector overlapping generations (OLG) model that demand induced by population aging increases the relative prices of non-tradable goods and thereby appreciates the real exchange rate, [Groneck and Kaufmann, 2017](#) confirm this hypothesis empirically for a panel of 15 OECD countries between 1970 and 2009. Previously, in a different theoretical framework with a two-good (a domestically produced good and an imported good) OLG model of a semi-small open economy, [Aloy and Gente \(2009\)](#) show that, in a creditor (debtor) country, an aging population

induces an appreciating (depreciating) real exchange rate due to a positive (negative) wealth effect. From numerical simulations, they then find that population aging explains an important part of the real appreciation of the Yen against the US Dollar between 1971 and 2000.

The study in this chapter is also related to [Coulibaly et al. \(2020\)](#) and [Coulibaly and Gnimassoun \(2023\)](#), who analyze how international migration impacts the external balance. In line with the life cycle theory, since international migrants are mainly of working age, [Coulibaly et al. \(2020\)](#) build an OLG model and show that international migration increases (decreases) national savings and then improves (worsens) the current account balance in the host (home) country, and these impacts are mitigated by migrants' remittances. They confirm this theoretical prediction using a large panel data of developed and developing countries over the period 1990-2014. In the same vein, [Coulibaly and Gnimassoun \(2023\)](#) focus on SSA countries being characterized by high-skilled emigration or the brain drain to high-income OECD economies. Using data over the period 1990-2014 on these countries, they get evidence that the current account balance is improved by low-skilled emigration, but it is worsened by high-skilled emigration. This finding stems from the fact that, while highly-skilled emigrants have higher saving potential, they tend to remit less than low-skilled ones.

From the home country perspective, our study is related to the literature on the Dutch Disease effect of remittances. The argument for this effect is that remittances received in home countries cause a spending effect that results in a rise in prices of non-tradable goods, i.e. an appreciation of the real exchange rate since prices of tradable goods are determined in the international market. This spending effect (real exchange rate appreciation) is accompanied by a reallocation of resources to the non-tradable sector to the detriment of the tradable sector. The pioneer study on the Dutch Disease effect of remittances is the work by [Amuedo-Dorantes and Pozo \(2004\)](#). Relying on data for 13 Latin American and Caribbean countries over the period 1979-1998, they find empirical evidence corroborating that remittances result in real exchange rate

appreciation. Later, [Acosta et al. \(2009\)](#) develop and estimate a two-sector dynamic stochastic general equilibrium (DSGE) model for El Salvador to find that an increase in remittance flow induces higher non-tradable prices with a reallocation of labor away from the tradable sector. Using disaggregated sectorial data for 109 developing and transition countries for the period 1990-2003, [Lartey et al. \(2012\)](#) also find evidence of the two characteristics of the Dutch disease (real exchange rate appreciation and resource reallocation that favor the non-tradable sector) induced by remittances. Conducting further investigation, they show that the resource movement effects are stronger under a fixed exchange rate regime. They explain this result by the fact that countries with a nominal peg cannot adjust international relative prices in response to an adverse shock to the tradable sector.

Still, from the home country perspective, the relatively recent work of [Ouyang and Paul \(2018\)](#) develops an analytical two-sector model highlighting that high-skilled emigration results in higher wages induce an appreciating real exchange rate through a spending effect and a resource allocation effect which are analogous to the remittance-related Dutch disease effect. Based on cross-sectional data for 67 countries in 1990 and 2000, they provide empirical evidence that net skilled emigration appreciates the bilateral real exchange rates in origin countries.

The study in this chapter aims at contributing to the existing literature by looking at the impact of intra-African (intra-continental) migration on the real exchange rate of African economies. The focus on intra-continental migration is motivated by the fact that Africa's openness to labor mobility is strongly continental. Since migration may impact the real exchange rate of both destination and origin countries through different contradictory channels, and an African economy is at the same time a destination country and an origin country, we estimate the impact of net intra-continental migration (immigration from African countries minus emigration to African countries) on the real exchange rate.

1.3 Empirical methodology

1.3.1 Econometric model

Our empirical strategy aims at emphasizing the role of medium-to-long-term determinants of the real exchange rate, rather than factors influencing its short-run dynamics. For a panel with quinquennial data, we rely on the following econometric model:

$$LREER_{it} = a + b \cdot MIG_{it} + \sum_{k=1}^K \beta^k \cdot X_{it}^k + \delta_t + \varepsilon_{it} \quad (1.1)$$

where $i = 1, \dots, N$ and $t = 1, \dots, T$ respectively denote country and periods indices; *LREER* stands for the log of the real effective exchange rate index (REER); *MIG* is the net migration stock rate; X^k are the k control variables; δ_t represent time dummies; and ε_{it} is the error term that may include country fixed-effects depending on the econometric specification.

1.3.2 Data

1.3.2.1 Sample

The sample data covers all 54 African countries over the period from 1990 to 2019.² This time interval matches the data coverage of migration stock, which is available for the years 1990, 1995, 2000, 2005, 2010, and 2015. Since migration stock is available at five-year intervals, for other variables, we compute non-overlapping five-year averages over these different five-year intervals: 1990-1994, 1995-1999, 2000-2004, 2005-2009, 2010-2014, and 2015-2019. The sample contains six time periods, making 324 observations for our panel data.

²Table A-1 in Appendix lists the various countries in the sample.

1.3.2.2 The dependent variable

As mentioned in Equation (1.1), the dependent variable is the log of the REER index. We use the REER index from the Bruegel database (Darvas, 2012). For country i in period t , this index is computed using the bilateral real exchange rates against $N = 172$ trading partners.

$$REER_{it} = \prod_{j=1}^N RER_{ijt}^{w_{ijt}} \quad (1.2)$$

where $RER_{ijt} = NER_{ijt} \times P_{it}/P_{jt}$ is an index of the bilateral real exchange rate of the currency of the country i vis-à-vis the currency of the trading partner j in period t . NER_{ijt} , P_{it} and P_{jt} respectively denote the bilateral nominal exchange rate, the price indexes in country i and j . An increase in the REER index represents an appreciation of the domestic currency, i.e., a loss of price competitiveness vis-à-vis trading partners. In the Bruegel database, the REER is base 2007 = 100, which we recalculate to match base 2015 = 100, for we express the net foreign assets position as a percentage of 2015 constant dollars GDP and we also use the terms of trade index, base 2015 = 100.

1.3.2.3 Net migration

Since former migrants may continue to remit to their home country, relying on migration stocks rather than flows should be more relevant to analyze our medium-to-long-run phenomenon. Our explanatory variable of interest is the net migration stock rate which is computed as the difference between immigration stock and emigration stock expressed as a share total population in the host country. Migration stock data are collected from the United Nations (Department of Economic and Social Affairs, Population Division, UN, 2019). The total population data is extracted from the World Bank World Development Indicators (WB WDI) Database.

1.3.2.4 Controls variables

In the literature, there are many potential drivers of the real exchange rate. However, in our baseline specification, we select only three covariates that are the main fundamentals (relative GDP per capita, net foreign asset (NFA), and terms of trade (TOT)). This avoids multicollinearity issues and is motivated by the further down-mentioned reasons.

- **Relative GDP per capita**, taken from the RPROD database of CEPII (Couharde et al., 2020), is computed as the deviation of GDP per capita relatively to trading partners. This variable is used to proxy for productivity differential and allows to capture the well-known Balassa-Samuelson effect (Balassa, 1964; Samuelson, 1964). The idea of the Balassa-Samuelson effect is that, since the price of tradable goods is determined in international markets, a rise in productivity in the tradable sector, by increasing wages in both tradable and non-tradable sectors, leads to a rise in the prices of non-tradable goods, i.e an appreciation of the real exchange rate. Since productivity gains are higher in the tradable sector, an economy that is developing experiences an appreciation of its rate real exchange rate: the cost of living tends to be higher in more developed countries than in less developed ones.
- **Net foreign asset (NFA)** position is the total assets minus total liabilities expressed as a percentage of GDP and is taken from the updated database of Lane and Milesi-Ferretti (2018).³ The link between the NFA position and the real exchange rate is that, if an economy is a net debtor (creditor), it must generate in the future a trade surplus (deficit); this requires the real exchange

³On the website <https://www.brookings.edu/research/the-external-wealth-of-nations-database>. Due to very large or very small values for some countries, the NFA variable has been winsorized in this chapter as outliers treatment.

rate to depreciate (appreciate) (see for instance [Lane and Milesi-Ferretti, 2002](#) for empirical evidence).

- **Terms of trade (TOT)** are defined as the relative price of exports to imports (taken from UNCTAD). The impact of terms of trade on the real exchange rate is ambiguous. On the one hand, there is the substitution effect: an improvement of terms of trade, i.e., an increase of the relative price of exports, conducts the domestic agents to turn their demand towards imported goods, then the real exchange rate should depreciate to restore the external equilibrium. On the other hand, an improvement in the terms of trade generates a positive income effect, leading to higher demand for non-traded goods. The price of these goods increases; therefore real exchange rate appreciates. According to the literature, the income effect dominates ([De Gregorio and Wolf, 1994](#); [Mendoza, 1995](#)).

To avoid any multicollinearity issue, we consider only these three covariates (relative GDP, NFA, and TOT) for the following reasons. The NFA captures the same savings and investment imbalances as other demographic variables, such as population growth, aging speed, dependency ratios, and fertility rates ([Rose et al., 2009](#)). Besides, the government expenditure through the Froot-Rogoff effect ([Froot and Rogoff, 1995](#)) and the proxy for the Balassa-Samuelson effect capture the same reallocation effects between tradable and non-tradable sectors. Therefore, with these main drivers, one can isolate the effect of net migration on the real exchange. Table A-2 in the Appendix summarizes the definitions of variables while providing their sources and details on their calculations. Table 1.1 below reports descriptive statistics for the variables included in the REER regression. On average over the period 1990-2019, net intra-African migration rate is about 1.32% of the population. For some countries, it may be higher than 10% of the population.

Table 1.1: Descriptive statistics

Variable	Mean	Std. Dev.	Min	Max
Real effective exchange rate (log)	4.56	0.29	3.29	5.79
Net migration stock rate (%)	1.32	2.33	0	11.73
Relative GDP per capita (log)	-1.87	0.91	-4.5	0.47
Net foreign assets (% GDP)	-0.03	0.25	-3.06	0.14
Terms of trade (log)	4.52	0.29	3.26	5.79

Source: Authors' computations based on data from the following databases: Bruegel database (Darvas, 2012), CEPII RPROD (Couharde et al., 2020), UN (2019), Lane and Milesi-Ferretti (2018), UNCTAD.

1.4 Results

This section presents and discusses results from different estimation techniques. Subsection 1.4.1 focuses on the estimation results from pooled ordinary least squares (OLS), fixed-effects (FE), and random-effects (RE). Subsection 1.4.2 deals with the potential endogeneity issue with (pooled, FE, and RE) two-stage least squares (2SLS). The last subsection 1.4.3 conducts some sensitivity analyses.

1.4.1 Estimates from pooled OLS, fixed-effects, and random-effects

The results from pooled OLS, FE, and RE estimations are reported in Table 1.2. To bring more precision to the correct specification between FE and RE, we have performed the Hausman test. The result reported in the last rows of Table 1.2 favors the RE specification. However, we still consider the FE specification with the pooled and RE models, since it is difficult to admit that there are no unobserved country effects that are uncorrelated with explanatory variables (including migration). At first sight, for all three estimations, we confirm the existence of the Balassa-Samuelson effect that is significant at least 5% level of significance: an increase in the relative GDP per capita is significantly associated with a real appreciation of the exchange rate. The magnitude of the effect is the highest for the FE specification. As expected, an improvement in the NFA position also induces a real exchange rate appreciation

that is significant at 5% in column (1) and at 1% in columns (2) and (3). Our results do not really allow us to conclude on the effect of the terms of trade variable, as the sign of the coefficient changes according to the specification.

Table 1.2: Results from pooled OLS, fixed and random effects

Variables	Log (real effective exchange rate)		
	Pooled OLS	Fixed effects	Random effects
	(1)	(2)	(3)
Net migration stock rate	0.023*** (0.007)	0.030** (0.013)	0.025** (0.011)
Relative GDP per capita	0.042*** (0.012)	0.127** (0.048)	0.065*** (0.018)
Net foreign assets	0.124** (0.048)	0.124*** (0.023)	0.127*** (0.031)
Terms of trade	0.024 (0.063)	-0.056 (0.058)	-0.001 (0.063)
Constant	4.643*** (0.289)	5.154*** (0.303)	4.789*** (0.290)
Observations	257	257	257
R-squared	0.152	0.169	
Period FE	Yes	Yes	Yes
Country FE	No	Yes	No
Hausman test			
$\chi^2(9)$	3.96		
p-value	0.9142		

Notes: Robust standard errors in parentheses. The stars: *, **, and *** denote significance at the 10%, 5%, and 1% confidence level, respectively.

Let us now turn to our variable of interest, i.e., the net migration stock rate. For all three estimations in Table 1.2, the net migration stock rate has a positive coefficient. It is significant at the 1% level for pooled OLS estimates and at the 5% level of confidence for FE and RE. This indicates that, among the different contradictory channels through which migration may impact the real exchange rate, the appreciating impact on the demand side dominates. Due to limited production capacities, specifically, by pushing up aggregate demand, net migration induces an increase in the relative prices of non-tradable items (prices of tradable being subject to international competition) and thereby an appreciating real exchange rate. Since integration into host communities is easy for intra-African migrants, their opportunity cost of

time is not much lower than that of native-born, weakening the depreciating channel on the supply side.

1.4.2 Accounting for endogeneity: 2SLS estimates

In regression estimations reported in Table 1.2, we have assumed that migration is exogenous with respect to the real exchange rate. However, there may be measurement errors of migration causing endogeneity. In this subsection, we deal with any potential endogeneity issue with 2SLS estimation using a gravity-based instrument of migration, following the literature (Ortega and Peri, 2014; Alesina et al., 2016; Docquier et al., 2016; Coulibaly et al., 2018, 2020). As in Coulibaly et al. (2020), to deal with negative values for the net migration rate in the log-gravity model, we consider two separate gravity models for net-immigration countries (countries with positive net immigration) and net-emigration countries (countries with negative net immigration), as follows:

$$\begin{aligned} \text{Ln } immig_{ijt} = & \alpha_0 + \alpha_1 \text{Ln } Pop_{i1960} + \alpha_2 \text{Ln } Dist_{ijt} + \alpha_3 \text{Border}_{ij} + \alpha_4 \text{OffLang}_{ij} \\ & + \alpha_5 \text{EthLang}_{ij} + \alpha_6 \text{Colony}_{ij} + \omega_{jt} + \theta_t + e_{ijt} \end{aligned} \quad (1.3)$$

$$\begin{aligned} \text{Ln } emig_{ijt} = & \gamma_0 + \gamma_1 \text{Ln } Pop_{j1960} + \gamma_2 \text{Ln } Dist_{ijt} + \gamma_3 \text{Border}_{ij} + \gamma_4 \text{OffLang}_{ij} \\ & + \gamma_5 \text{EthLang}_{ij} + \gamma_6 \text{Colony}_{ij} + \omega_{it} + \theta_t + e_{jit} \end{aligned} \quad (1.4)$$

where $i, j = 1, \dots, N$, with $i \neq j$ respectively denotes the destination and origin country. The variable *immig* is the net bilateral immigration stock – the difference between the stock of migrants born in the country j and living in the country i and those born in i and living in j – as a share of the destination country i population.

In the same way, $emig$ is the net bilateral emigration stock – the difference between the stock of migrants born in the country i and living in the country j and those born in j and living in i – as a share of the origin country j population. Pop_{1960} is the total population size in 1960, it is used to account for the size of the destination (origin). The migration costs are captured by the variables $Dist$, $Border$, $OffLang$, $EthLang$, and $Colony$. $Dist$ is the country-to-country distances considering each country’s spatial distribution of economic activity. Following [Docquier et al. \(2016\)](#), we allow the distance effect to be time-varying to capture the reduction in migration costs due to improvements in transport technology (aircraft, roads). The dummies: $Border$, $OffLang$, $EthLang$, and $Colony$, respectively, indicate if the country pair share a common border, common official language, common ethnic minority language, and colonial ties. As in [Coulibaly et al. \(2020\)](#), we include origin (destination) time dummies ω_{jt} (ω_{it}) to account for multilateral resistance in migration, which reflects the response of bilateral migration of a given origin-destination pair to time-varying common origin (destination) shocks that influence migrants’ destination (origin). Bilateral migration stock data are collected from the United Nations (Department of Economic and Social Affairs, Population Division, [UN, 2019](#)). The explanatory variables are taken from the CEPII Gravity database.

We estimate the gravity equations using the OLS estimator and the PPML (Poisson Pseudo Maximum Likelihood) estimator. Compared with the OLS estimator, the PPML estimator is preferable since it deals with issues related to heteroskedasticity and the zero-values observations of the dependent variable ([Silva and Tenreyro, 2006](#)). We rely on the procedure of [Silva and Tenreyro \(2010\)](#) to deal with the potential identification problem of the nonexistence of the (pseudo) maximum likelihood estimates of the Poisson regression, with non-negative values of the dependent and the large number of zeros on some regressors due to dummies. Once the gravity equations described above are estimated, we sum up the predicted values over origin (destination) countries $j(i)$ to obtain the predicted net immigration

(emigration) stock as share for each destination (origin) country $i(j)$ in the sample:

$$\widehat{immig}_i = \sum_j \widehat{immig}_{ijt} = \sum_j \exp(\ln \widehat{immig}_{ijt}) \quad (1.5)$$

$$\widehat{emig}_j = \sum_i \widehat{net\ emig}_{jit} = \sum_i \exp(\ln \widehat{emig}_{jit}) \quad (1.6)$$

Therefore, these PPML predicted values in Equations (1.5) and (1.6) will serve as instruments for net-immigration stock in Equation (1.1). The results of OLS and PPML estimates are reported in Table A-3 in the Appendix. Most variables have the expected signs that are significant. The population size has a negative effect on bilateral migration. The distance effect is less high over time, which means a decreasing cost. The bilateral migration intensity is higher between pairs of countries with borders. Ethnic language appears positive and significant in all cases. Having colonial ties is also a factor of bilateral migration but not much significant.

Table 1.3 reports the results of pooled 2SLS, FE 2SLS, and RE 2SLS. Before interpreting these results, we need to check for the relevance of our instrument. To this end, we implement the [Kleibergen and Paap \(2006\)](#) rk Wald F-stat test (KP test), which tests for the null hypothesis of the weak instrument. Our regressions do not suffer from weak identification problems, as all the values of the KP F stat are above the critical values tabulated by [Stock and Yogo \(2005\)](#). Then the instrument has significant explanatory power. Results in Table 1.3 show that for all specifications (pooled, FE, and RE) of 2SLS, the net migration stock rate has a positive significant coefficient. Therefore, even if we account for any potential endogeneity, we find evidence of the dominance of the demand-side effect through net intra-African migration appreciates the real exchange rate in host countries. The rest of the coefficients associated with the other covariates changed slightly in significance level but not in sign.

Table 1.3: 2SLS estimates

Variables	Log (real effective exchange rate)		
	Pooled 2SLS	FE 2SLS	RE 2SLS
	(1)	(2)	(3)
Net migration stock rate	0.026*** (0.007)	0.032* (0.017)	0.028** (0.012)
Relative GDP per capita	0.041*** (0.012)	0.127** (0.051)	0.065*** (0.019)
Net foreign assets	0.127*** (0.045)	0.126*** (0.040)	0.130*** (0.031)
Terms of trade	0.023 (0.062)	-0.058 (0.050)	-0.002 (0.063)
Constant	4.640*** (0.283)		4.682*** (0.305)
Observations	257	257	257
Period FE	Yes	Yes	Yes
Country FE	No	Yes	No
K-P F-Stat	194.5	27.45	
SY 10% max IV size	16.38	16.38	
SY 25% max IV size	5.530	5.530	

Notes: Heteroskedasticity-robust standard errors are reported in parentheses. K-P F-stat is the Kleibergen and Paap (2006) rk Wald F-stat test of weak identification that has to be compared with Stock and Yogo (2005) critical values (SY 10% /25% max IV size) under the assumption of independent identically distributed errors. The stars *, **, and *** denote significance at the 10%, 5%, and 1% confidence levels, respectively.

1.4.3 Sensitivity analyzes

In this subsection, we conduct two sensitivity analyzes: including additional controls and controlling for further heterogeneity effects.

1.4.3.1 Including additional controls

As aforementioned, there are many potential determinants of the real exchange rate. To test the sensitivity of our results, we include additional controls, namely trade openness and the exchange rate regime, following the literature (MacDonald and Ricci, 2003; Coudert et al., 2011).⁴ Since trade openness is also determined by the same geographic factors that influence migration, so including trade openness allows a better evaluation of the impact of migration. Including the exchange rate regime captures how the degree of flexibility of the exchange rate regime matters for the

⁴See Table A-2 for the description of these variables.

real exchange rate (Coudert et al., 2011). With these additional controls, for the sake of parsimony and to save space, we consider only pooled specification (without fixed effects) with 2SLS estimation.⁵ Results reported in columns (1)-(3) of Table 1.4 indicate that including these additional controls does not alter our finding.

Table 1.4: Including additional controls (pooled 2SLS)

Variables	Log (real effective exchange rate)		
	(1)	(2)	(3)
Net migration stock rate	0.026*** (0.007)	0.026*** (0.007)	0.026*** (0.007)
Relative GDP per capita	0.039*** (0.014)	0.039*** (0.012)	0.038*** (0.014)
Net foreign assets	0.126*** (0.045)	0.114** (0.050)	0.114** (0.050)
Terms of trade	0.024 (0.062)	0.020 (0.061)	0.020 (0.061)
Trade openness	0.009 (0.031)		0.005 (0.030)
Exchange rate regime		-0.020 (0.036)	-0.020 (0.036)
Constant	4.630*** (0.290)	4.683*** (0.274)	4.676*** (0.281)
Observations	257	257	257
K-P F-Stat	212.1	199	212.3
SY 10% max IV size	16.38	16.38	16.38
SY 25% max IV size	5.530	5.530	5.530

Notes: Heteroskedasticity-robust standard errors are reported in parentheses. Period dummies are included in all regressions. K-P F-stat is the Kleibergen and Paap (2006) rk Wald F-stat test of weak identification that has to be compared with Stock and Yogo (2005) critical values (SY 10% /25% max IV size) under the assumption of independent identically distributed errors. The stars *, **, and *** denote significance at the 10%, 5%, and 1% confidence levels, respectively.

1.4.3.2 Accounting for potential heterogeneity effects

We deal with some potential sources of heterogeneity by (i) excluding oil-exporting countries since being an oil-exporting country may matter for the real exchange rate and migration⁶; (ii) focusing on only SSA countries (excluding North African

⁵The estimations results with Panel FE 2SLS and RE 2SLS are considered as additional results and are displayed in Appendix, respectively Table A-4, and A-5.

⁶We rely on the IMF classification that an oil-exporting country—or fuel-exporting countries—is a country that has mineral fuels, lubricants, and related materials comprising over 50 percent of

countries)⁷; (iii) comparing net-immigration countries against net-emigration countries⁸. For the sake of parsimonious with these sub-samples and to save space, we consider only pooled 2SLS.⁹ The corresponding estimates are displayed in Table 1.5. Estimates in Table 1.5 show that when excluding oil-exporting countries (column (1)), focusing only on SSA countries (column (2)) or on net immigration countries (column (3)), we find a positive coefficient of net immigration. With the sub-sample net emigration countries (column (4)), we find a positive but non-significant effect of emigration, indicating that the positive and negative channels seem to compensate each other for net emigration countries. Therefore, to a certain extent, accounting for these potential sources of heterogeneity does not alter our previous finding of an appreciating impact of net migration on the real exchange rate of host countries.

their exports. Based on this classification, oil-exporting countries in our sample are Algeria, Angola, Chad, Congo, Equatorial Guinea, Gabon, Libya, and Nigeria.

⁷North African countries are: Algeria, Egypt, Libya, Morocco, and Tunisia.

⁸As in [Coulibaly et al. \(2020\)](#), we exclude the countries that have net migration close to being balanced, then a net-immigration (emigration) country is one with an immigration (emigration) stock rate exceeding the emigration (immigration) stock rate by one per thousand persons.

⁹The estimations results with Panel FE 2SLS and RE 2SLS are considered as additional results, and are displayed in Appendix, respectively Table A-6, and A-7.

Table 1.5: Accounting for heterogeneity effects (pooled 2SLS)

Variables	Log (real effective exchange rate)			
	Excluding Oil-exp. countries	Only SSA countries	Net immig. countries	Net emig. countries
	(1)	(2)	(3)	(4)
Net immig. stock rate	0.033*** (0.009)	0.027*** (0.007)	0.025*** (0.008)	
Net emig. stock rate				0.004 (0.006)
Relative GDP per capita	0.047*** (0.012)	0.037*** (0.012)	0.056** (0.022)	0.047*** (0.016)
Net foreign assets	0.127*** (0.048)	0.131*** (0.044)	0.140*** (0.042)	-1.743* (1.004)
Terms of trade	-0.053 (0.066)	0.049 (0.067)	0.041 (0.074)	0.067 (0.107)
Constant	4.993*** (0.311)	4.519*** (0.310)	4.601*** (0.342)	4.403*** (0.478)
Observations	215	231	114	142
K-P F-Stat	269.8	188.5	148.4	26.68
SY 10% max IV size	16.38	16.38	16.38	16.38
SY 25% max IV size	5.530	5.530	5.530	5.530

Notes: Heteroskedasticity-robust standard errors are reported in parentheses. Period dummies are included in all regressions. K-P F-stat is the [Kleibergen and Paap \(2006\)](#) rk Wald F-stat test of weak identification that has to be compared with [Stock and Yogo \(2005\)](#) critical values (SY 10% /25% max IV size) under the assumption of independent identically distributed errors. The stars *, **, and *** denote significance at the 10%, 5%, and 1% confidence levels, respectively.

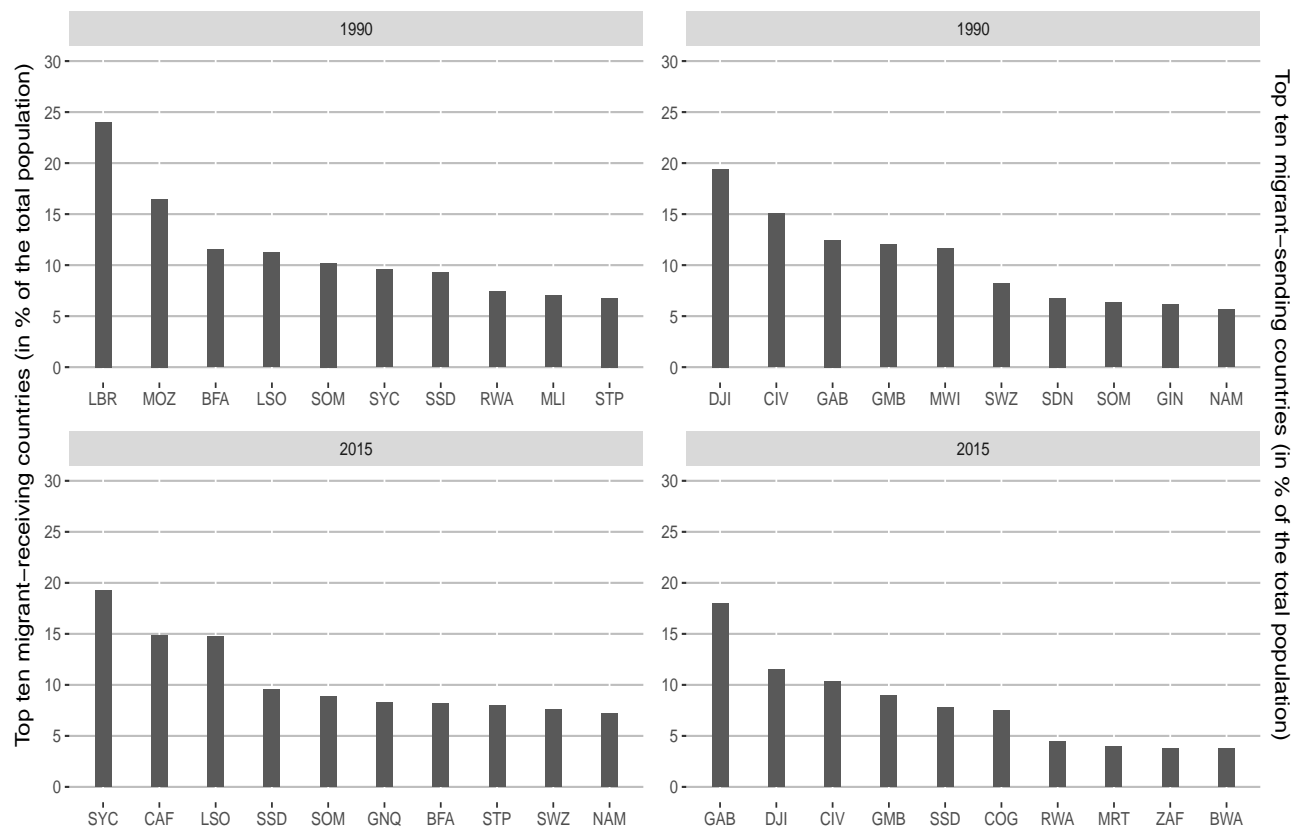
1.5 Conclusion

There are many channels through which international migration matters for prices, thus leading to ambiguous impacts on the real exchange rate. Since Africa's openness to migration is strongly intra-continental, this chapter explores how intra-continental migration impacts the real exchange rate of African economies. Using data on 54 African countries over the period 1990-2019, we find evidence that an increase in net intra-African migration exerts an appreciating effect on the real exchange rate of host countries. This finding holds when we control for potential endogeneity using gravity-based instruments for migration.

In their desire to promote continental integration, African economies should keep in mind that, this appreciating impact of labor mobility on the real exchange rate of host economies, i.e. rising in their cost of living.

Appendix

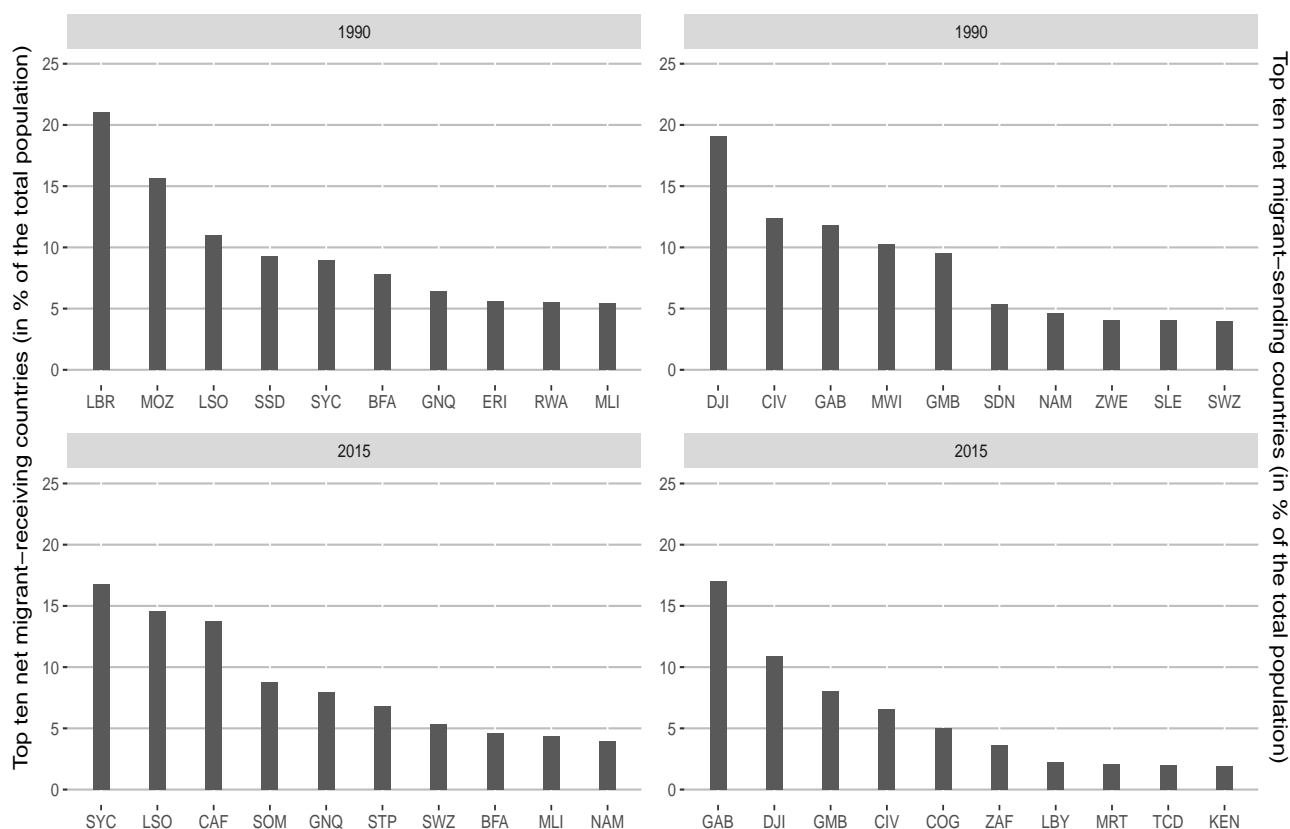
Figure A-1: Top ten African migrant-receiving and sending countries (as a percentage of population)



Source: Author's calculations based on United Nations data (Department of Economic and Social Affairs, Population Division) and total population (World Bank).

Note: Emigration (immigration) expressed in percentage of the total population is emigration (immigration) stock to the total population of the home (host) country. Countries are represented by their respective three-letter ISO codes.

Figure A-2: Top ten African net migrant-receiving and sending countries (as a percentage of population)



Source: Author's calculations based on United Nations data (Department of Economic and Social Affairs, Population Division) and total population (World Bank).

Note: Net emigration (immigration) expressed in percentage of the total population is emigration (immigration) stock minus immigration (emigration) stock to the home (host) country's total population. Countries are represented by their respective three-letter ISO codes.

Table A-1: List of countries (54)

Algeria (DZA) ^b	Angola (AGO) ^{a,b}	Benin (BEN) ^a
Botswana (BWA) ^a	Burkina Faso (BFA) ^a	Burundi (BDI) ^a
Cameroon (CMR) ^a	Cape Verde (CPV) ^a	Central African Republic (CAF) ^a
Chad (TCD) ^{a,b}	Côte d'Ivoire (CIV) ^a	Comoros (COM) ^a
Democratic Republic of Congo (COD) ^a	Djibouti (DJI) ^a	Egypt (EGY)
Equatorial Guinea (GNQ) ^{a,b}	Eritrea (ERI) ^a	Ethiopia (ETH) ^a
Gabon (GAB) ^{a,b}	Gambia (GMB) ^a	Ghana (GHA) ^a
Guinea (GIN) ^a	Guinea-Bissau (GNB) ^a	Kenya (KEN) ^a
Lesotho (LSO) ^a	Liberia (LBR) ^a	Libya (LBY) ^b
Madagascar (MDG) ^a	Mali (MLI) ^a	Malawi (MWI) ^a
Mauritania (MRT) ^a	Mauritius (MUS) ^a	Morocco (MAR)
Mozambique (MOZ) ^a	Namibia (NAM) ^a	Niger (NER) ^a
Nigeria (NGA) ^{a,b}	Republic of Congo (COG) ^{a,b}	Rwanda (RWA) ^a
São Tomé and Príncipe (STP) ^a	Senegal (SEN) ^a	Sierra Leone (SLE) ^a
Seychelles (SYC) ^a	Somalia (SOM) ^a	South Africa (ZAF) ^a
South Sudan (SSD) ^{a,b}	Sudan (SDN)	Swaziland (SWZ) ^a
Tanzania (TZA) ^a	Togo (TGO) ^a	Tunisia (TUN)
Uganda (UGA) ^a	Zambia (ZMB) ^a	Zimbabwe (ZWE) ^a

Note: *a*, and *b* respectively denotes the sub-Saharan African country, and African oil-exporting country. Countries' ISO 3-digit codes are in parentheses.

Table A-2: Variables, sources, definitions, and comments

Variable	Source	Definition and comments
Real effective exchange rate	Bruegel database (Darvas, 2012)	Fixed weights Broad index base 2007 = 100 recalculated to match base 2015 = 100
Relative GDP per capita	CEPII RPROD	Deviation of countries GDP per capita from trading partners. BS based on 186 partners using the 2008-2012 trade trading weights
Net immigration stock	UN (2019)	Total immigration stock minus total emigration
Total population	World Bank WDI	Country total population
Net foreign asset	Lane and Milesi-Ferretti (2018)	Total assets minus total liabilities (% of GDP)
Trade openness	World Bank WDI	Total trade (Imports plus exports) in % of 2015 constant dollars GDP
Terms of trade	UNCTAD	Relative price of exports over imports (index base 2015 = 100)
Exchange rate regime	Ilzetzki et al. (2019)	Coarse classification is used and the regimes are reclassified as follows: 1 = pegged if initial classification code = 1 and 2; 2 = Intermediate if initial classification code = 3; 3 = Floating if initial classification code = 4, 5 and 6.
Distance	CEPII Gravity	Country-to-country distances considering each country's spatial distribution of economic activity
Border	CEPII Gravity	1 = Common border, 0 otherwise.
Official language	CEPII Gravity	1 = Common official or primary language, 0 otherwise.
Ethnic language	CEPII Gravity	1 = Language is spoken by at least 9% of the population, 0 otherwise.
Colonial ties	CEPII Gravity	Dummy equal to 1 if pair ever in sibling relationship

Table A-3: Gravity regressions

Variables	Net immigration		Net emigration	
	OLS	PPML	OLS	PPML
	(1)	(2)	(3)	(4)
Ln 1960 Population at destination	-0.53*** (0.13)	-0.39*** (0.10)		
Ln 1960 Population at origin			-0.66*** (0.12)	-0.41*** (0.13)
Ln distance * I (1990)	-1.15*** (0.28)	-0.59*** (0.11)	-1.10*** (0.23)	-0.76*** (0.18)
Ln distance * I (1995)	-1.35*** (0.36)	-0.47*** (0.13)	-1.23*** (0.27)	-0.61*** (0.22)
Ln distance * I (2000)	-1.31*** (0.31)	-0.52*** (0.09)	-1.04*** (0.23)	-0.82*** (0.17)
Ln distance * I (2005)	-1.41*** (0.30)	-0.44*** (0.07)	-0.97*** (0.28)	-0.64*** (0.16)
Ln distance * I (2010)	-1.17*** (0.32)	-0.42*** (0.05)	-0.87*** (0.28)	-0.60*** (0.18)
Ln distance * I (2015)	-1.11*** (0.33)	-0.26*** (0.06)	-0.83*** (0.23)	-0.49*** (0.17)
Common Border	1.41*** (0.35)	1.28*** (0.26)	1.67*** (0.35)	1.60*** (0.35)
Common Official language	0.06 (0.43)	-0.25 (0.36)	-0.06 (0.45)	-0.14 (0.32)
Common Ethnic language	0.70** (0.34)	0.64* (0.39)	0.17 (0.31)	0.60*** (0.21)
Colonial ties	0.57 (0.35)	0.35 (0.26)	0.57* (0.33)	0.13 (0.27)
Constant	7.70*** (2.64)	-0.88 (0.63)	5.50** (2.29)	0.94 (1.90)
Observations	1,298	1,298	1,293	1,293
R-squared	0.66	0.64	0.70	0.64
Origin-time dummies	Yes	Yes	No	No
Destination-time dummies	No	No	Yes	Yes
Time-dummies	Yes	Yes	Yes	Yes

Notes: Robust standard errors clustered by the destination country are in parentheses. The stars: *, **, and *** denote significance at the 10%, 5%, and 1% confidence levels, respectively.

Table A-4: Including additional controls (Panel FE 2SLS)

Variables	Log (real effective exchange rate)		
	(1)	(2)	(3)
Net migration stock rate	0.031* (0.016)	0.043** (0.018)	0.042** (0.018)
Relative GDP per capita	0.128** (0.052)	0.126** (0.052)	0.127** (0.053)
Net foreign assets	0.124*** (0.041)	0.123*** (0.039)	0.121*** (0.040)
Terms of trade	-0.057 (0.050)	-0.086* (0.050)	-0.085* (0.049)
Trade openness	-0.024 (0.067)		-0.018 (0.067)
Exchange rate regime		-0.085** (0.037)	-0.085** (0.037)
Observations	257	257	257
K-P F-Stat	26.50	29.70	28.53
SY 10% max IV size	16.38	16.38	16.38
SY 25% max IV size	5.530	5.530	5.530

Notes: Heteroskedasticity-robust standard errors are reported in parentheses. Period and countries fixed-effects are included in all regressions. K-P F-stat is the [Kleibergen and Paap \(2006\)](#) rk Wald F-stat test of weak identification that has to be compared with [Stock and Yogo \(2005\)](#) critical values (SY 10% /25% max IV size) under the assumption of independent identically distributed errors. The stars *, **, and *** denote significance at the 10%, 5%, and 1% confidence levels, respectively.

Table A-5: Including additional controls (Panel RE 2SLS)

Variables	Log (real effective exchange rate)		
	(1)	(2)	(3)
Net migration stock rate	0.028** (0.012)	0.029** (0.012)	0.029** (0.012)
Relative GDP per capita	0.067*** (0.019)	0.061*** (0.021)	0.064*** (0.021)
Net foreign assets	0.129*** (0.031)	0.118*** (0.032)	0.116*** (0.032)
Terms of trade	-0.003 (0.064)	-0.014 (0.065)	-0.016 (0.067)
Trade openness	-0.012 (0.040)		-0.019 (0.043)
Exchange rate regime		-0.057 (0.038)	-0.058 (0.039)
Constant	4.698*** (0.319)	4.804*** (0.316)	4.830*** (0.339)
Observations	257	257	257

Notes: Heteroskedasticity-robust standard errors are reported in parentheses. Period dummies are included in all regressions. The stars *, **, and *** denote significance at the 10%, 5%, and 1% confidence levels, respectively.

Table A-6: Accounting for heterogeneity effects (Panel FE 2SLS)

Variables	Log (real effective exchange rate)			
	Excluding Oil-exp. countries	Only SSA countries	Net immig. countries	Net emig. countries
	(1)	(2)	(3)	(4)
Net immig. stock rate	0.040** (0.019)	0.034** (0.017)	0.028 (0.024)	
Net emig. stock rate				0.018 (0.015)
Relative GDP per capita	0.101* (0.059)	0.115** (0.052)	0.023 (0.146)	0.180*** (0.037)
Net foreign assets	0.124*** (0.045)	0.132*** (0.040)	0.046 (0.035)	-0.699 (0.573)
Terms of trade	-0.067 (0.059)	-0.038 (0.057)	0.049 (0.087)	-0.033 (0.085)
Observations	215	231	109	138
K-P F-Stat	19.96	27.48	25.39	4.956
SY 10% max IV size	16.38	16.38	16.38	16.38
SY 25% max IV size	5.530	5.530	5.530	5.530

Notes: Heteroskedasticity-robust standard errors are reported in parentheses. Period and countries fixed-effects are included in all regressions. K-P F-stat is the [Kleibergen and Paap \(2006\)](#) rk Wald F-stat test of weak identification that has to be compared with [Stock and Yogo \(2005\)](#) critical values (SY 10% /25% max IV size) under the assumption of independent identically distributed errors. The stars *, **, and *** denote significance at the 10%, 5%, and 1% confidence levels, respectively.

Table A-7: Account for heterogeneity effects (Panel RE 2SLS)

Variables	Log (real effective exchange rate)			
	(1)	(2)	(3)	(4)
Net immig. stock rate	0.037*** (0.013)	0.029** (0.012)	0.024* (0.014)	
Net emig. stock rate				0.009 (0.008)
Relative GDP per capita	0.059** (0.024)	0.058*** (0.019)	0.047 (0.031)	0.095*** (0.026)
Net foreign assets	0.128*** (0.028)	0.134*** (0.032)	0.086** (0.034)	-1.137 (0.743)
Terms of trade	-0.055 (0.080)	0.021 (0.067)	0.018 (0.076)	0.043 (0.069)
Constant	4.920*** (0.376)	4.570*** (0.327)	4.536*** (0.379)	4.397*** (0.382)
Observations	215	231	114	142

Notes: Heteroskedasticity-robust standard errors are reported in parentheses. Period dummies are included in all regressions. The stars *, **, and *** denote significance at the 10%, 5%, and 1% confidence levels, respectively.

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Chapter 2

The pro-trade effect of intra-African migration

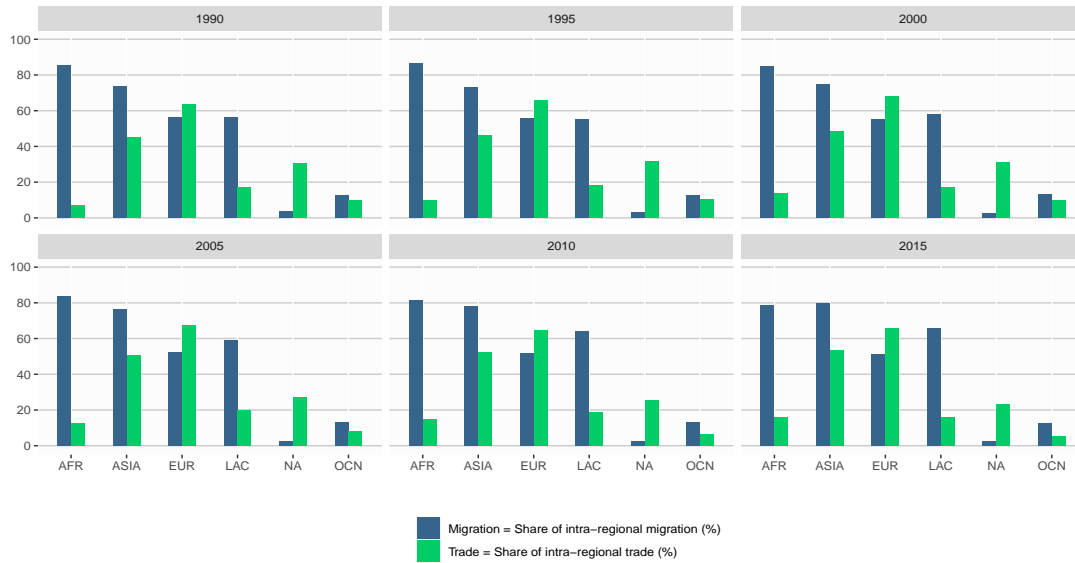
2.1 Introduction

The literature has demonstrated that international migration favors the emergence or expansion of trade links through the information or network and the preference channels (Gould, 1994; Girma and Yu, 2002, Felbermayr and Toubal, 2012). The information channel lies in the fact that migrants represent a positive information shock. Indeed, thanks to their knowledge of the languages spoken in both countries, trade opportunities, the reliability of institutions, and the networks created by their contacts, migrants reduce transaction costs and stimulate imports and exports between home and host countries. The preference channel is the fact that the attachment of migrants to goods produced in their home country enhances exports from their home country to the host country. In an increasingly integrated world, international migration and trade have grown dramatically, respectively reaching in 2020, 282 million people (UN, 2020) and over 50% of the world's GDP (UN COM-TRADE). However, the world's regions present different trends of migration and trade (Figure 2.1). While in Asia, Europe, and Oceania, intra-continental migration and trade seem to go hand in hand, the story is different for Africa. On average over the period 1990-2019, intra-continental migration was about 83% of Africa's openness to migration, while intra-continental trade was only around 15% of total African trade.¹ Despite the strong intra-African migration, the intra-African trade is struggling to take off. However, currency unions in Africa appear to be relatively integrated, both in terms of migration and trade (Figure 2.2).²

¹It is worth mentioning that there is potential measurement bias on the real value of African intra-trade due to the informal trade. Informal trade arises because of tariffs and non-tariff measures. Bensassi et al. (2019) illustrates the adverse effects of tariff and non-tariff measures on Benin's trade, as a 10% increase in tariffs on a given product increases the probability that the product will be imported informally rather than formally by 12%.

²Nowadays there are three monetary unions: the Common Monetary Area (CMA), the West Africa Economic and Monetary Union (WAEMU), and the Economic and Central African Economic and Monetary Community (CEMAC). The CMA was established in 1986 and includes Lesotho, Namibia, South Africa, and Swaziland. In the CMA, the South African Rand circulates freely among its member countries with equal parity with the respective currencies. The WAEMU was created in 1994; its member states are Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo. The CEMAC was created in 1994 like the WAEMU; its member states include Cameroon, Central African Republic, Congo, Gabon, Equatorial Guinea, and Chad. As a

Figure 2.1: Intra-regional migration and trade by world regions (in percentage)

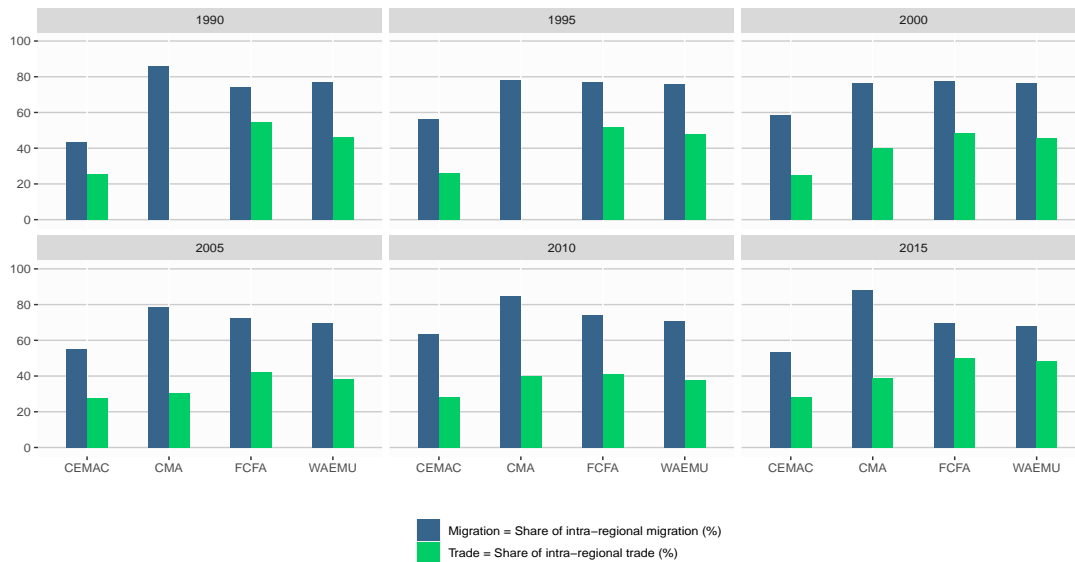


Source: Author's calculations based on United Nations data (Department of Economic and Social Affairs, Population Division) and trade data (UN COMTRADE).

Note: Intra-regional migration is the ratio of migrants moving within the same region to the total number of migrants of this region. Intra-regional trade is the sum of exports and imports within the same region over the total of all imports and exports of this region.

AFR = Africa, EUR = Europe, NA = Northern America, ASIA = Asia, LAC = Latin America and Caribbean, OCN = Oceania. The world regions considered for this figure are those adopted by the United Nations.

Figure 2.2: Intra-regional migration and trade in currency unions in Africa (in percentage)



Source: Author's calculations based on United Nations data (Department of Economic and Social Affairs, Population Division) and trade data (UN COMTRADE).

Note: Intra-regional migration is the ratio of migrants moving within the same region to the total number of migrants of this region. Intra-regional trade is the sum of exports and imports within the same region over the total of all imports and exports of this region. Intra-regional trade data are missing for CMA for the years 1990 and 1995.

The FCFA group covers all WAEMU and CEMAC countries.

In light of these observations, the objective of the study in this chapter is to empirically evaluate the potential trade-creating effect of migration in the regional context of Africa. In line with [Felbermayr and Toubal \(2012\)](#), we investigate whether the information and the preference channels are effective. We then put a particular emphasis on how sharing a common currency matters for the impact of intra-regional migration on intra-regional trade. Indeed, currency unions may make intra-regional migration ineffective in promoting regional trade, since sharing a common currency reduces transaction costs in and of itself ([Rose, 2000](#)). Besides, in the African context, currency unions represent colonial legacies going with cultural or institutional proximity between member states, mitigating the impact of migration through both the information and preference channels.

Relying on bilateral migration and trade data for 49 African countries over the period 1990-2019, we find that intra-continental migration promotes regional trade for different products (foods, manufactures, and primary commodities). By disentangling the information and the preference channels, we find some evidence that the information channel is effective for food and primary products and ineffective for manufactures. While the preference channel is effective for all product categories, this effect is mitigated by sharing a common currency for food and manufactures, as common currencies are colonial legacies inducing cultural proximity between member countries.

The remainder of this chapter is organized as follows. Section 2.2 discusses the literature related to the pro-trade effect of migration. Section 2.3 presents the theoretical background helping to specify the econometric modeling. Section 2.4 describes data. Section 2.5 reports and discusses the empirical results. Finally, Section 2.6 concludes the chapter.

2.2 Literature review

The pro-trade effect of migration has been highlighted in the literature taking into account the characteristics of migrants' origin country, the skill level of migrants, their sector of professional activity at the destination, and the type of goods traded.³ [Gould \(1994\)](#) first develops a theoretical model showing that migrants' ties to their home countries (knowledge of home-country markets, language, business contacts, preferences), by reducing trading transaction costs, foster bilateral trade linkages between home and host countries. Using bilateral data for the U.S. trade with 47 trading partners from 1970 to 1986, he finds evidence corroborating that immigrant links have promoted bilateral trade flows with the origin countries of immigrants. [Dunlevy and Hutchinson \(1999\)](#) also find this pro-trade effect of immigration using data on U.S. imports of 78 commodities from 17 countries during the 40 years preceding World War I (the period of the massive inflow of migrants to the U.S.). The pro-trade effect of migration was found for other host countries: for instance, [Head and Ries \(1998\)](#) for Canada, [Girma and Yu \(2002\)](#) for the UK, [Peri and Requena-Silvente \(2010\)](#) for Spain. [Head and Ries \(1998\)](#) evaluate the pro-trade effects of immigration on bilateral trade data of Canada with 136 trading partners over the period 1980 to 1992. They find that the most significant pro-trade effect is for imports rather than exports. According to whether migrants come to Canada as part of a family reunion, as refugees, or as independent, their evidence indicates that independent migrants are much more likely to create trade links because they tend to be more skilled. For the UK, and over the period 1891-1993, [Girma and Yu \(2002\)](#) analyze the link between trade and immigration from Commonwealth and non-Commonwealth countries. They find that immigrants from non-Commonwealth countries have a higher effect as they carry more valuable information about foreign markets. With data on individual exporting transactions and immigrants in Spanish provinces covering the period 1995-2008, [Peri and Requena-Silvente \(2010\)](#) find evi-

³See [Wagner et al. \(2002\)](#) for a survey.

dence of a strong trade-creating effect for differentiated goods and for countries that are culturally distant from Spain. [Ehrhart et al. \(2014\)](#) confirm the positive impact of migration on export for an international sample of 195 countries (including 52 African countries) and covering the period 1980-2010. Focusing on the regional context of Africa, they find that the pro-trade effect of intra-African migration is larger when host countries are more geographically and ethnically distant from home countries. In the same vein, [Rauch and Trindade \(2002\)](#) investigate whether the presence of Chinese ethnic migrants in two countries fosters bilateral trade between them, as the Chinese community is one of the world's most extensive and most internationally interlinked business and social networks. They particularly consider the network effect of migrants combined with the type of traded goods: homogeneous versus differentiated.⁴ They relied on data for 63 countries in 1980 and 1990, their estimates yielded a positive effect, especially for differentiated goods.

Until [Felbermayr and Toubal \(2012\)](#), none of the existing papers in the literature have disentangled the two channels of the pro-trade impact of migration: the information/network and the preference channels. As aforementioned, the information channel lies in the fact that migrants promote bilateral trade between home and host countries, by reducing transaction costs thanks to their knowledge of the languages spoken, trade opportunities, the reliability of institutions, and networks created through their contacts. While the preference channel stems from the fact that the attachment of migrants to goods produced in their home countries fosters exports from their home countries to host countries. Based on a theoretical model with bilateral affinity parameter into the Dixit-Stiglitz utility function, and with the aim of disentangling the two channels, [Felbermayr and Toubal \(2012\)](#) make the assumption that "*improved information affects host countries' imports and exports **symmetrically**, while the preference channel matters for imports only*". To then reflect the

⁴The good classification, introduced by [Rauch \(1999\)](#), is as follows: homogeneous goods are those sold at a unique price, while differentiated ones are characterized by significant matching costs.

preference effect, the bilateral trade deficit is related to net immigration (immigration minus emigration). Using data for OECD countries for the year 2000, their results show that the two channels contribute evenly to the total pro-trade effect of migration. However, they find a relative dominance of the information channel especially for homogeneous traded goods and high-skilled migrants (being less attached to their home countries' goods). Using data covering 89 destination countries and 233 origin countries for the years 2000-2002, [Aleksynska and Peri \(2014\)](#) also conducted an analysis to isolate the information effect. They find that the share of migrants employed in managerial/business-related occupations exerts an additional trade-creating effect since this type of immigrant is generally directly involved in the diffusion and transmission of trade-related information relevant for companies. Since Africa's openness to migration is mainly continental and intra-African trade is low, in line with [Felbermayr and Toubal \(2012\)](#), this chapter aims at disentangling the two channels of the trade-creating effect of migration in the regional context of Africa. The study then put a particular emphasis on the role of common currencies in the trade-creating effect, since sharing a common currency may make these two channels ineffective.

2.3 Modeling framework

We present here the theoretical model developed in [Felbermayr and Toubal \(2012\)](#) that provides the empirical specification allowing to disentangle the two channels of the pro-trade effect of migration. This model relies on the Dixit-Stiglitz utility function ([Dixit and Stiglitz, 1977](#)) depending on domestic and imported varieties. The utility function of the representative household in country $i \in \{1, \dots, N\}$ is given by

$$U_i = \sum_{j=1}^N \sum_{s=1}^{n_j} (\alpha_{ijs} c_{ijs})^{\frac{\sigma-1}{\sigma}}, \quad \sigma > 1 \quad (2.1)$$

where c_{ijs} is the consumption of generic variety s produced in country j , σ is the elasticity of substitution between the different varieties s , α_{ij} is the preference that the representative consumer in country i attaches to country j 's products. From the utility maximization program, the country i 's import demand for goods from country j is given by:

$$c_{ij} = \alpha_{ij}^{\sigma-1} n_j T_{ij}^{1-\sigma} p_j^{1-\sigma} Z_i P_i^{\sigma-1} \quad (2.2)$$

where Z_i denotes the aggregate expenditure; p_j is the mill price of a variety from country j ; T_{ij} stands for *ad valorem* iceberg-type trade cost between countries i and j . Therefore, the price of country j 's products consumed in country i is then $p_{ij} = T_{ij} p_j$ and the aggregate price level in country i is $P_i = (\sum_j \alpha_{ij}^{\sigma-1} n_j p_{ij}^{1-\sigma})^{\frac{1}{1-\sigma}}$.

The bilateral preference parameter is assumed to depend on migration, as follows:

$$\alpha_{ij} = e^{\bar{\gamma} m_{ij}}, \quad \bar{\gamma} > 0 \quad (2.3)$$

where m_{ij} is the share of foreign-born people from country j and living in country i .

The trade costs T_{ij} depend on bilateral migration and standard gravity variables, as follows:

$$T_{ij} = \bar{T}_{ij} \bar{t}_i^{\bar{X}_1} \bar{t}_j^{\bar{X}_2} \quad (2.4)$$

$$\begin{aligned} \text{where } \bar{T}_{ij} = & I(m_{ij}, m_{ji}) \times (1 + Dist_{ij})^{\bar{\beta}_1} \times e^{\bar{\beta}_2(1-Border_{ij})} \times e^{\bar{\beta}_3(1-Landlock_{ij})} \\ & \times e^{\bar{\beta}_4(1-OffLang_{ij})} \times e^{\bar{\beta}_5(1-Cur_{ij})} \times e^{\bar{\beta}_6(1-RTA_{ij})} \end{aligned}$$

with $I(m_{ij}, m_{ji}) = e^{\bar{\theta}_1 m_{ij} + \bar{\theta}_2 m_{ji}}$ is the information cost depending on the share of immigrants m_{ij} and emigrants m_{ji} . $Dist_{ij}$ is the bilateral distance between countries i and j . $Border_{ij}$, $OffLang_{ij}$, and Cur_{ij} , RTA_{ij} and $Landlock_{ij}$ are dummy

variables that respectively indicate if the country pair shares a common border, has a common official language and shares a common currency, has a regional trade agreement, and if at least one of the two countries are landlocked.

The “standard” (STD) model: Replacing the Equations (2.3) and (2.4) in Equation (2.2), and taking logarithms yields the standard (STD) econometric model that is widely used in the literature:

$$\begin{aligned} \ln c_{ij} = & (\gamma + \theta_1)m_{ij} + \theta_2m_{ji} + \beta_1\ln Dist_{ij} + \beta_2Border_{ij} + \beta_3Landlock_{ij} \\ & + \beta_4OffLang_{ij} + \beta_5Cur_{ij} + \beta_6RTA_{ij} + u_i + v_j + e_{ij} \end{aligned} \quad (2.5)$$

where $u_i \equiv \ln Z_i + (\sigma - 1)(\ln P_i - \bar{\chi}_1 \ln t_i)$, $v_j \equiv \ln n_j + (1 - \sigma)(\ln p_j + \bar{\chi}_2 \ln t_j)$, $\gamma \equiv (\sigma - 1)\bar{\gamma}$, $\theta_1 \equiv (\sigma - 1)\bar{\theta}_1$, $\theta_2 \equiv (\sigma - 1)\bar{\theta}_2$, $\beta_k \equiv (\sigma - 1)\bar{\beta}_k$ for $k = 1, 2, 3, \dots, 6$, and e_{ij} is the idiosyncratic error term.

Equation (2.5) is the first empirical model that we will estimate, where c_{ij} is bilateral imports from j to i , expressed as a function of immigration and emigration shares, and gravity variables. The information/network channel (through immigration and emigration,) is captured by (θ_1, θ_2) , while the preference channel is represented by γ . The terms u_i and v_j will be captured by including the logarithms of the product of real GDP of countries i and j . Note that with the estimation of Equation (2.5), the two channels cannot be identified separably.

The “symmetric trade cost” (STC) model: To disentangle the two channels, we identify separably the preference parameter γ using the assumption of [Felbermayr and Toubal \(2012\)](#) that “*improved information affects host countries’ imports and exports symmetrically, while the preference channel matters for imports only*”. With

this assumption, trade costs are symmetric and given by:

$$\frac{\bar{T}_{ij}}{\bar{T}_{ji}} = e^{\Psi_{ij}}, \quad \Psi_{ij} \sim \mathcal{N}(0, \sigma_{\Psi}) \quad (2.6)$$

Dividing imports by exports while substituting (2.6) in (2.2), we obtain:

$$\frac{c_{ij}}{c_{ji}} = (e^{\bar{\gamma}m_{ij}-m_{ji}})^{\sigma-1} (e^{\Psi_{ij}})^{1-\sigma} \frac{Z_i t_i^{1-\sigma} P_i^{\sigma-1}}{n_i p_i^{1-\sigma}} \frac{n_j p_j^{1-\sigma} t_j^{1-\sigma}}{Z_j P_j^{\sigma-1}}$$

Taking logarithms, we get the symmetric trade cost (STC) empirical model that links the excess of imports to the net migration share:

$$\ln(c_{ij}/c_{ji}) = \gamma(m_{ij} - m_{ji}) + v_i + v_j + \epsilon_{ij} \quad (2.7)$$

with $v_i \equiv \ln(Z_i t_i^{1-\sigma} P_i^{\sigma-1}) - \ln(n_i p_i^{1-\sigma})$, $v_j \equiv \ln(n_j p_j^{1-\sigma} t_j^{1-\sigma}) - \ln(Z_j P_j^{\sigma-1})$, and ϵ_{ij} is idiosyncratic error term. Equation (2.7) is then the second empirical model that we will estimate in order to identify the preference parameter γ .

2.4 Data

2.4.1 Sample

To estimate the empirical models described by Equations (2.5) and (2.7), we consider a data sample covering 49 African countries over the period 1990-2019.⁵ This time span matches the data coverage of bilateral migration stock, which is available for the years 1990, 1995, 2000, 2005, 2010, and 2015. Since migration stock is available at five-year intervals, for other variables, we compute non-overlapping five-year averages over these different five-year intervals: 1990-1994, 1995-1999, 2000-2004, 2005-2009, 2010-2014, and 2015-2019. The sample contains six time periods, mak-

⁵Table A-1 in Appendix lists the various countries in the sample.

ing 14,112 observations for our panel data, but due to some missing values, we have finally 13,448 available observations. Note that, as the STC model relates the bilateral trade deficit to the net migration share, it will be estimated by half of this number of available observations (6,724).

2.4.2 The dependent variable(s)

Bilateral trade data (imports and exports) are from the UN COMTRADE database. In our analysis, we also look at the standard product groups. Using Revision 1 of the SITC 1-digit classification, we extract data from UN Comtrade and consider these three categories: food, manufactured, and primary products. As aforementioned, to identify the preference channel, we rely on the assumption of [Felbermayr and Toubal \(2012\)](#) that improved information affects in symmetrical manner exports and imports. For this assumption to work, we need to reconstruct imports from exports in the same way as both are differently reported (f.o.b for exports and c.i.f for imports). We then reconstruct bilateral imports in f.o.b. All trade data are deflated using trade unit-value indices collected from the UNCTAD database. By construction, imports and exports in our database will have identical summary statistics.

2.4.3 Migration share

In our empirical models (2.5) and (2.7), m_{ij} is the foreign-born population from the country j and living in i , expressed as a share of the country i population. In the same way, m_{ji} is the foreign-born population from the country i and living in j , expressed as a share of the country j population. By construction, the share of immigrants and emigrants have also identical summary statistics. Data on bilateral migration stock are collected from the United Nations (Department of Economic and Social Affairs, Population Division, [UN, 2019](#)). Data on population are taken from the World Bank World Development Indicators database (WB WDI).

2.4.4 Control (gravity) variables

Data on control variables (bilateral distance, border, language, and regional trade agreement) are collected from the CEPII Gravity database. The landlocked dummy is from the GeoDist CEPII database, and the common currency variable is taken from De Sousa (2012) database. Besides these gravity variables as controls, we also consider the GDP in 2015 constant dollars to account for the country pair size. This variable is taken from the WB WDI.

Table A-2 summarizes information (source, definition, and comments) on each variable. Table 2.1 reports descriptive statistics for both the STD and STC models.

Table 2.1: Descriptive statistics

Variable	Mean	Std. Dev.	Min.	Max.
STD model				
Imports (exports)	17.79	125.03	0	5197.16
Food imports (exports)	2.24	15.93	0	492.59
Manufacture imports (exports)	7.99	66.76	0	2476.76
Primary products imports (exports)	8.41	66.78	0	2560.7
Share of immigrants (emigrants)	0.05	0.33	0	11.17
Ln product of GDPs	258.21	35.38	156.86	394.24
Ln distance	8	0.73	3.14	9.18
Common border	0.08	0.27	0	1
Common official language	0.45	0.5	0	1
Common currency	0.09	0.28	0	1
Regional trade agreement	0.15	0.35	0	1
Landlocked	0.63	0.65	0	2
STC model				
Imports/Exports	186.18	7450.42	0	542113.75
Food (imports/exports)	58.52	1220.11	0	72485.82
Manufactured (imports/exports)	166.27	6355.97	0	449614.5
Primary products (imports/exports)	156.06	5264.16	0	355997.38
Share of immigrants - share of emigrants	-0.02	0.53	-14.01	7.73

Source: Authors' computations based on data from the following databases: UN Comtrade, WB WDI, CEPII Gravity, CEPII GEODist, and United Nations (Department of Economic and Social Affairs, UN (2019)).

2.5 Results

We first present in Subsection 2.5.1 our baseline results from the Poisson regression without control for the potential endogeneity issue. In Subsection 2.5.2, we account

for potential endogeneity. Finally, in Subsection 2.5.3, we deal with the role of currency unions in altering the pro-trade effect of regional migration in Africa.

2.5.1 Estimates from Poisson regression

We use the Poisson estimator rather than the Ordinary Least Square (OLS), as the Poisson estimator helps overcome the two issues related to heteroskedasticity and zero-values observations in the dependent variable (Silva and Tenreyro, 2006, 2010). The results of estimates of Equation (2.5) are displayed in Table 2.2. At first sight of the estimates in Table 2.2, regardless of the specification, we can notice that covariates are globally well-signed and significant. As commonly found in the literature, the size of the country pair, sharing a common border, having a trade agreement, sharing a common language, and having a common currency positively drive trade links. While the distance and the landlockedness are barriers to trade. Concerning our variables of interest, in column (1), the share of emigrants appears to be positive and strongly significant, while the coefficient of immigration is negative but not significant. Specifically, the results indicate that an increase in emigration share by one percentage point boosts imports from the emigrants' host country by 0.22 percent, while imports do not significantly respond to immigration. It is worth mentioning that the estimated coefficients of immigration in Table 2.2 is a combination of the information and preference channels of immigration. Therefore, coefficients of immigration in Table 2.2 reflect the upper bounds of the information channel.

We also consider other specifications in columns (2) to (4), where the dependent variable is one of these three sub-aggregates of SITC classification: food, manufactures, or primary products. Again the emigration share coefficient is positive and significant for all the sub-aggregates. The coefficient for manufactures is higher, meaning that the information channel through emigration seems to operate more for these products. The coefficient of immigration share is not significant for food,

Table 2.2: The STD model

Variables	Ln (bilateral imports)			
	All goods	Food	Manufactures	Primary products
	(1)	(2)	(3)	(4)
Share of immigrants	-0.003 (0.050)	0.024 (0.066)	-0.212** (0.088)	0.128** (0.058)
Share of emigrants	0.226*** (0.050)	0.261*** (0.038)	0.319*** (0.049)	0.188*** (0.061)
Ln product of GDPs	0.043*** (0.001)	0.034*** (0.001)	0.039*** (0.002)	0.046*** (0.002)
Ln distance	-0.764*** (0.068)	-0.481*** (0.068)	-0.633*** (0.086)	-0.863*** (0.088)
Common border	0.663*** (0.135)	0.983*** (0.122)	0.836*** (0.176)	0.375** (0.162)
Common official language	0.119 (0.110)	0.283*** (0.100)	0.538*** (0.107)	0.071 (0.131)
Common currency	0.831*** (0.128)	0.880*** (0.127)	0.754*** (0.163)	0.901*** (0.124)
Regional trade agreement	1.056*** (0.107)	1.327*** (0.097)	1.258*** (0.120)	1.190*** (0.139)
Landlocked	-0.120 (0.084)	-0.130 (0.080)	-0.094 (0.109)	-0.175* (0.090)
Constant	-5.839*** (0.556)	-7.649*** (0.637)	-7.199*** (0.703)	-6.623*** (0.904)
Observations	13,448	13,448	13,448	13,448

Notes: Importer and exporter fixed effects are included but not shown. Robust standard errors are in parentheses. The stars *, **, and *** denote significance at the 10%, 5%, and 1% confidence levels, respectively.

significantly negative for manufactures, and significantly positive for primary products. Therefore, the coefficients of immigration in Table 2.2 reflecting upper bounds to the information channel, one can say that the information channel (through immigration) tends to be effective for only primary products.

To disentangle the information and the preference effects of migration, we now consider the STC specification in Equation (2.7). The corresponding estimates are reported in Table 2.3. As reported in column (1), the estimated impact of the bilateral difference in migration shares on the aggregate bilateral trade deficit is not significant. Regressions by categories in columns (2)-(4) show non-significant coefficient for food but significant positive coefficients for manufactures and primary products. Therefore, based on the estimates in Table 2.3 the preference channel is not significant for food but significant for manufactures and primary products.

Table 2.3: The STC model

Variables	Ln (imports/exports)			
	All goods (1)	Food (2)	Manufactures (3)	Primary products (4)
Share of net migration	0.078 (0.084)	0.119 (0.159)	0.540*** (0.110)	0.100*** (0.035)
Constant	4.046** (1.887)	3.073*** (0.880)	-1.030 (1.619)	4.217*** (1.011)
Observations	6,724	6,724	6,724	6,724

Notes: Importer and exporter fixed effects are included but not shown. Robust standard errors are in parentheses. The stars *, **, and *** denote significance at the 10%, 5%, and 1% confidence levels, respectively.

2.5.2 Accounting for endogeneity: 2SLS Poisson estimates

In the regressions above, we consider the migration variables as exogenous with respect to trade. However, there is a potential endogeneity issue due to measurement errors and/or reverse causality from trade to migration (if for instance, people migrate in order to take advantage of trading opportunities). To deal with this potential endogeneity, we use the past share of migrants as an instrument in the 2SLS Poisson regression. Table 2.4 reports the results of the 2SLS Poisson regressions for the STD model. Estimates in Table 2.4 confirm our previous finding of a pro-trade effect of emigration for all product categories and the information channel (through immigration) tends to be effective for only primary products.

In Table 2.5, we report the estimates of the STC model with the 2SLS Poisson regression. Results in Table 2.5 indicate a significant preference effect for total trade. By product categories, the preference effect is significant for manufactures (column (3)) and primary products (column (4)) but non-significant for food (column (2)).

Table 2.4: The STD model, 2SLS Poisson estimates

Variables	Ln (bilateral imports)			
	All goods (1)	Food (2)	Manufactures (3)	Primary products (4)
Share of immigrants	0.053 (0.053)	0.077 (0.072)	-0.086 (0.087)	0.157** (0.062)
Share of emigrants	0.226*** (0.054)	0.258*** (0.043)	0.308*** (0.054)	0.193*** (0.064)
Ln product of GDPs	0.043*** (0.001)	0.034*** (0.001)	0.039*** (0.002)	0.046*** (0.002)
Ln distance	-0.756*** (0.067)	-0.476*** (0.067)	-0.629*** (0.083)	-0.855*** (0.086)
Common border	0.658*** (0.134)	0.974*** (0.123)	0.820*** (0.176)	0.372** (0.163)
Landlocked	-0.124 (0.084)	-0.136* (0.080)	-0.107 (0.109)	-0.177** (0.089)
Common official language	0.122 (0.110)	0.286*** (0.100)	0.542*** (0.108)	0.072 (0.131)
Common currency	0.813*** (0.131)	0.864*** (0.128)	0.722*** (0.166)	0.889*** (0.124)
Regional trade agreement	1.057*** (0.107)	1.327*** (0.097)	1.252*** (0.119)	1.194*** (0.139)
Constant	-5.918*** (0.543)	-7.707*** (0.629)	-7.220*** (0.675)	-6.702*** (0.888)
Observations	13,448	13,448	13,448	13,448

Notes: Importer and exporter fixed effects are included but not shown. Robust standard errors are in parentheses. The stars *, **, and *** denote significance at the 10%, 5%, and 1% confidence levels, respectively.

Table 2.5: The STC model, 2SLS Poisson estimates

Variables	Ln(imports/exports)			
	All goods (1)	Food (2)	Manufactured (3)	Primary products (4)
Share of net migration	0.107** (0.053)	0.206 (0.196)	0.402*** (0.150)	0.147*** (0.040)
Constant	5.227*** (0.488)	4.069*** (0.254)	5.101*** (0.473)	5.051*** (0.411)
Observations	6,724	6,724	6,724	6,724

Notes: Robust standard errors are in parentheses. Importer and exporter fixed effects are included but not shown. The stars *, **, and *** denote significance at the 10%, 5%, and 1% confidence levels, respectively.

2.5.3 The role of currency unions

In this subsection, we put a particular emphasis on how sharing a common currency matters for the impact of intra-regional migration on intra-regional trade. The underlying idea is that currency unions may make intra-regional migration ineffective in promoting regional trade since an intrinsic property of a common currency is to

reduce transaction costs (Rose, 2000). At the same time, in the African context, currency unions represent a colonial legacy, which goes with cultural or institutional proximity between member states, then mitigating the impact of migration through both the information and preference channels. To account for the role of currency unions, we interact migration variables with the dummy of sharing a common currency. To save space, we consider only 2SLS Poisson estimates reported in Table 2.6. These results show that, when controlling for the role of currency unions in influencing the pro-trade effect of migration, the impact of immigration is significant for food and primary products and not significant for manufactures. While the impact of emigration is significant for all products except for primary products. Since the coefficients of immigration reflect upper bounds to the information channel, this channel (through immigration) seems effective for food and primary products and ineffective for manufactures, when controlling for the interaction terms.

Particularly, results in Table 2.6 indicate that sharing a common currency exerts a significant mitigating effect for only manufactures and through only immigration. Since the mitigating effect is visible for only immigration, one can state that it concerns only the preference channel. This is confirmed by the estimates of the STC model with interaction terms in Table 2.7 (column (3)). Results in Table 2.7 clearly indicate a significant preference effect for all product categories, while this effect is mitigated by sharing a common currency for food and manufactures. The mitigating impact of sharing a common currency may be due to cultural proximity resulting from colonial legacy.

Table 2.6: The STD model, the role of currency unions (2SLS Poisson regression)

Variables	Ln(bilateral imports)			
	All goods	Food	Manufactures	Primary products
	(1)	(2)	(3)	(4)
Share of immigrants	0.138*	0.180***	0.092	0.187*
	(0.079)	(0.066)	(0.131)	(0.105)
Share of emigrants	0.187*	0.253***	0.343***	0.051
	(0.098)	(0.085)	(0.089)	(0.149)
Share of immigrants x common currency	-0.206*	-0.183	-0.294*	-0.148
	(0.122)	(0.154)	(0.176)	(0.153)
Share of emigrants x common currency	0.123	0.045	-0.008	0.265*
	(0.118)	(0.108)	(0.126)	(0.159)
Ln product of GDPs	0.043***	0.034***	0.040***	0.046***
	(0.001)	(0.001)	(0.002)	(0.002)
Ln distance	-0.750***	-0.457***	-0.593***	-0.879***
	(0.079)	(0.077)	(0.095)	(0.109)
Common border	0.657***	0.975***	0.819***	0.370**
	(0.136)	(0.123)	(0.177)	(0.164)
Landlocked	-0.123	-0.129	-0.099	-0.186**
	(0.084)	(0.080)	(0.106)	(0.093)
Common official language	0.123	0.293***	0.557***	0.065
	(0.113)	(0.103)	(0.111)	(0.134)
Common currency	0.833***	0.913***	0.816***	0.840***
	(0.153)	(0.148)	(0.199)	(0.154)
Regional trade agreement	1.060***	1.333***	1.265***	1.182***
	(0.109)	(0.101)	(0.120)	(0.142)
Constant	-5.986***	-7.927***	-7.596***	-6.472***
	(0.710)	(0.799)	(0.900)	(1.149)
Observations	13,448	13,448	13,448	13,448

Notes: Robust standard errors are in parentheses. Importer and exporter fixed effects are included but not shown. The stars: *, **, and *** denote significance at the 10%, 5%, and 1% confidence level, respectively.

Table 2.7: The STC model, the role of currency unions (2SLS Poisson regression)

Variables	Ln(imports/exports)			
	All goods	Food	Manufactures	Primary products
	(1)	(2)	(3)	(4)
Share of net migration	0.151***	0.337***	0.429***	0.187***
	(0.054)	(0.106)	(0.134)	(0.053)
Share of net migration x common currency	-0.098	-0.415***	-0.310**	-0.109
	(0.096)	(0.152)	(0.143)	(0.081)
Constant	5.227***	4.062***	5.100***	5.050***
	(0.488)	(0.255)	(0.473)	(0.412)
Observations	6,724	6,724	6,724	6,724

Notes: Robust standard errors are in parentheses. Importer and exporter fixed effects are included but not shown. The stars: *, **, and *** denote significance at the 10%, 5%, and 1% confidence level, respectively.

2.6 Conclusion

This chapter examines the potential trade-creating effect of migration in the regional context of Africa. To this end, we consider bilateral migration and trade data for 49 African countries over the period 1990-2019. Our empirical results show evidence that intra-continental migration promotes intra-continental trade for different types of products (foods, manufactures, and primary commodities). We conduct an in-depth analysis to disentangle the two channels (the information and the preference channels) through which migration may impact trade. We then find some evidence that the information channel is effective for food and primary products and ineffective for manufactures. While the preference channel is effective for all product categories, this effect is mitigated by sharing a common currency for food and manufactures. The mitigating influence of sharing a common currency may be interpreted as the fact that common currencies in Africa are colonial legacies that have induced cultural proximity between member countries.

In their will to foster regional integration, African economies should keep in mind that intra-continental labor mobility may help achieve this goal, particularly for countries not sharing a common currency.

Appendix

Table A-1: List of countries (49)

Algeria (DZA)	Angola (AGO)	Benin (BEN)
Botswana (BWA)	Burkina Faso (BFA)	Burundi (BDI)
Cameroon (CMR)	Cape Verde (CPV)	Central African Republic (CAF)
Chad (TCD)	Côte d'Ivoire (CIV)	Comoros (COM)
Democratic Republic of Congo (COD)	Djibouti (DJI)	Egypt (EGY)
Equatorial Guinea (GNQ)	Ethiopia (ETH)	Gabon (GAB)
Gambia (GMB)	Ghana (GHA)	Guinea (GIN)
Guinea-Bissau (GNB)	Kenya (KEN)	Lesotho (LSO)
Liberia (LBR)	Libya (LBY)	Madagascar (MDG)
Mali (MLI)	Malawi (MWI)	Mauritania (MRT)
Mauritius (MUS)	Morocco (MAR)	Mozambique (MOZ)
Namibia (NAM)	Niger (NER)	Nigeria (NGA)
Republic of Congo (COG)	Rwanda (RWA)	Senegal (SEN)
Sierra Leone (SLE)	Seychelles (SYC)	South Africa (ZAF)
Swaziland (SWZ)	Tanzania (TZA)	Togo (TGO)
Tunisia (TUN)	Uganda (UGA)	Zambia (ZMB)
Zimbabwe (ZWE)		

Note: Countries' ISO 3-digit codes are in parentheses.

Table A-2: Variables, sources and definitions, and comments

Variable	Source	Definition and comments
Trade data (imports and exports)	UN COMTRADE	Trade flows in current U.S. dollars
Disaggregated trade data (food, manufactured, primary products)	UN COMTRADE	Trade flows in current U.S. dollars
Bilateral migration stock	UN (2019)	Foreign-born population
Total population	World Bank WDI	Country total population
GDP	WB WDI	Sum of gross value added (constant 2015 US\$)
Distance	CEPII Gravity	Country-to-country distances considering each country's spatial distribution of economic activity
Border	CEPII Gravity	1 = common border, 0 otherwise
Official language	CEPII Gravity	1 = Common official or primary language, 0 otherwise.
Common currency	De Sousa (2012)	1 = common currency, 0 otherwise
Regional trade agreement	CEPII Gravity	1 = existence of a RTA, 0 otherwise
Landlocked	GeoDist CEPII	0 = none of country in pair is landlocked, 1 = one of the country in pair is landlocked, 2 = the country pair is landlocked
Relative im(ex)ports	Author calculation	Imports divided by exports, in current U.S. dollars
Net immigration stock	Author calculation	Immigration minus emigration

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Chapter 3

Regional migration and business cycles synchronization in Africa

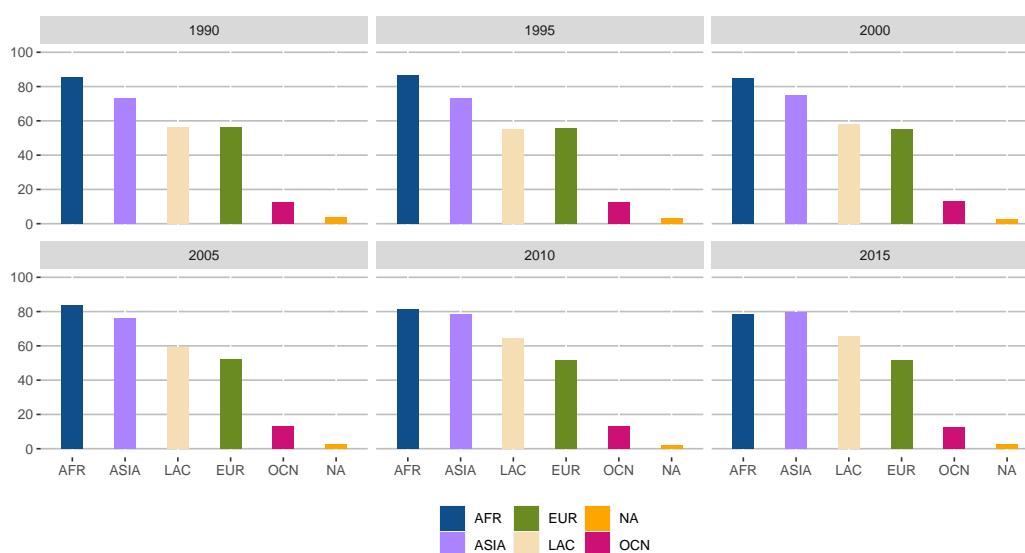
3.1 Introduction

Globalization is the phenomenon behind all the interconnections between the world's economies. These interconnections have led to increasingly synchronized global economic cycles (Kose et al., 2003; Kose et al., 2008; Ductor and Leiva-Leon, 2016). The synchronicity of economic cycles is an important factor in the growing number of regional groupings around the world. These regional groupings or integration processes take many forms according Balassa (1961): free trade area, customs union, common market, economic union, economic and monetary union. Since it reflects the degree of asymmetry of the shocks experienced by economies, business cycle synchronization among countries is important for the proper conduct of macroeconomic policies. In the case of monetary unions, it is really crucial to facilitate the use of a common monetary policy (Mundell, 1961). The literature on what determines cycle synchronization is relatively abundant. The most usual determinants revealed by the existing studies are the trade intensity (Frankel and Rose, 1998; Calderon et al., 2007; Inklaar et al., 2008; Tapsoba, 2009), the degree of economic specialization (Imbs, 2004), and the financial linkages (Cerqueira and Martins, 2009; Kalemli-Ozcan et al., 2013; Zouri, 2020). At a time when migration, an often overlooked factor of globalization, is intensifying worldwide, few papers have put it directly at the heart of the analysis of the determinants of cycle synchronization.¹ Fluctuations in economic activity arising from shocks (uncertainty, policies, productivity, supply, and demand), the migration role in synchronizing economic cycles may go through two channels. First, the smoothing of shocks, those of the labor market for example (Beyer and Smets, 2015; Arpaia et al., 2016), and second the remittances (Barajas et al., 2012). Remittances, sensitive to economic conditions, have been proven to be pro-cyclical in the sending economy (Lueth and Ruiz-Arranz, 2008; Giuliano and Ruiz-Arranz, 2009) and counter-cyclical in the receiving one (Sayan, 2006; Frankel,

¹Alongside with trade and capital flows across the world, migration has considerably increased, reaching 281 million people in 2020 i.e. 3.6% of the total population this year (UN, 2019).

2011). Beck (2021) without quantifying its effects, demonstrated the usefulness of considering migration as a determining factor of cycle synchronization using a BMA approach for the European Union.² In addition, migration influences per capita income levels (Ortega and Peri, 2014), whose correlation of cyclical components is the traditional measure of cycle synchronization. The non-negligible role of migration is also reflected in its influence on trade intensity (Gould, 1994; Felbermayr and Toubal, 2012), which is also a prior determinant of economic activity co-movement. Then the aim of this chapter is to empirically analyze the effects of migration intensity on business cycle synchronization among African economies. Today, the African continent has the highest rate of intra-continental migration of any region in the world (83% on average since 1990, see Figure 3.1), which constitutes relative to trade, the pillar of its integration.³

Figure 3.1: Intra-migration rate by world regions (in percentage)



Source: Author's calculations based on United Nations migrant stock data (Department of Economic and Social Affairs, Population Division).

Note: Intra-regional migration is the stock of migrants having left a country for another country in the region as a percentage of migrants in the same region. AFR = Africa, EUR = Europe, NA = Northern America, ASIA = Asia, LAC = Latin America and Caribbean, OCN = Oceania. The world regions considered for this figure are those adopted by the United Nations.

²The BMA (Bayesian Model Averaging) is a method used to select the key variables influencing the dependent variable among numerous ones.

³To date, intra-continental trade accounts for 15% of the region's total trade.

In this context of regional economic integration, it is therefore beneficial for African economies to have synchronized economic cycles. This could facilitate the coordination of public policies required for macroeconomic integration.

By using data on the real GDP and extracting its cycle components with the [Baxter and King \(1999\)](#) filter and bilateral migration stock data for 47 African countries over the period 1990-2019, we reveal that people mobility is a factor for economic cycles to be synchronous. This finding holds when controlling for potential endogeneity using gravity-based instruments for migration. The impact of migration remains robust along with other determinants in different specifications and to sensitivity tests.

The remainder of the chapter is organized as follows. Section 3.2 details the empirical framework. Section 3.3 discusses the results and their sensitivity, and Section 3.4 concludes the chapter.

3.2 Empirical framework

3.2.1 Econometric model

For our panel, with quinquennial data, we rely on the following econometric specification to investigate the effect of migration on business cycle synchronization:

$$BCS_{ijt} = \alpha + \beta \cdot MIG_{ijt}^k + \phi_t + \varepsilon_{ijt} \quad (3.1)$$

where $i, j = 1, \dots, N$ with $i \neq j$ and $t = 1, \dots, T$ respectively denote the country and periods indices. BCS_{ijt} , the dependent variable is the business cycle synchronization variable between countries i and j for period t . As mentioned for the dependent variable, MIG_{ijt}^k then corresponds to migration intensity for the pair of countries (i, j) at period t , calculated in two ways denoted by the k index, $k = a, b$. The two

ways reflect the choice of normalization of the migration intensity, either by the total migration or by the total population. The term ϕ_t is period dummies to capture events that affect the response of the dependent variable to migration (Jauer et al., 2019), and ε_{ijt} the error term with the good properties.

3.2.2 Data

3.2.2.1 Sample

Based on data availability (on all variables under consideration), we consider 47 African countries (listed in Appendix, Table A-1) over the period 1990-2019. This time interval matches the data coverage of bilateral migration stock, available for the years 1990, 1995, 2000, 2005, 2010, and 2015. Since migration stock is available at five-year intervals, for the dependent variable, we compute non-overlapping five-year averages over these different five-year intervals: 1990-1994, 1995-1999, 2000-2004, 2005-2009, 2010-2014, and 2015-2019. With six periods of time and 47 countries in a bilateral panel data setting and considering that $BCS_{ijt} = BCS_{jit}$, we have 1081 country pairs and 6486 available observations instead of 12972 initial observations.

3.2.2.2 The dependent variable

We use the standard measure of business cycle synchronization which is a correlation coefficient between GDP cycle components of the country pair. To measure that dependent variable, we first need to extract these cycle components of the GDP series. To this end, we use the Baxter and King (1999) band-pass linear filter (hereafter B-K filter) to estimate the cyclical component of GDP and then calculate a correlation coefficient between cycles of country i and j over the period t . The B-K filter is preferred over high band-pass filters like the Hodrick and Prescott (1997) one because, in addition to removing low-frequency components, it also eliminates high-frequency components (irregular or fast-moving).⁴ For proper use of the B-K filter

⁴See also Hamilton (2018) for limitations of Hodrick Prescott filter.

we also need to select the duration of the business cycle. [Baxter and King \(1999\)](#) suggested 6 to 32 quarters, which corresponds to a duration of 2 to 8 years. It's worth mentioning that we rely on the World Bank World Development Indicators database (hereafter WB WDI) to extract the real GDP in 2015 constant US dollars.

3.2.2.3 The migration intensity

As stated further up, the migration intensity is calculated in two ways. In the first way, bilateral migration is normalized by the total migration while in the second, we normalized by the total population:

$$MIG_{ijt}^a = \frac{Immigration_{ijt} + Emigration_{ijt}}{Immigration_{it} + Emigration_{it} + Immigration_{jt} + Emigration_{jt}}$$

$$MIG_{ijt}^b = \frac{Immigration_{ijt} + Emigration_{ijt}}{Population_{it} + Population_{jt}}$$

In the first and second measure, $Immigration_{ijt}$ is the stock of migrants born in the country j and living in the country i , and $Emigration_{ijt}$ refers to those born in i and living in j . Only in the first measure, respectively for the country i and j , $Immigration_t$ and $Emigration_t$ represent the total of immigrants and emigrants from and towards the region considered. Then the bilateral migration stock is expressed as a share of the total migrants received and sent for both countries. In the second measure, the bilateral migration stock is expressed as a share of the total population, with $Population_{it}$ and $Population_{jt}$, the total population for country i and j at period t . We make no assumptions about the quality of one measurement of migration intensity versus the other, so we use both. The bilateral migration stock data comes from the United Nations (Department of Economic and Social Affairs, Population Division, [UN, 2019](#)), and the total population data comes from

WB WDI.

The descriptive statistics are reported in Table 3.1. Business cycle synchronicity is on average very small among African countries, with a standard deviation of 0.52 indicating some variability across country pairs. The migration intensity normalized by total migration is weaker on average with a low standard deviation from the mean. The zero average of migration intensity when normalized by total population is just an effect of scale.

Table 3.1: Descriptive statistics

Variable	Mean	Std. Dev.	Min.	Max.
BCS	0.1	0.52	-1	1
Migration ^a	0.01	0.03	0	0.46
Migration ^b	0	0	0	0.05

Source: Authors' computations based on data from the following databases: WB WDI and UN (2019)

3.3 Results

This section presents our main empirical results. After first presenting the results without any controls (subsection 3.3.1), we include a set of different covariates (subsection 3.3.2). Finally, we discuss of the sensitivity of our results in subsection 3.3.3.

3.3.1 Results without controls

Table 3.2 displays the estimations results of the Equation (3.1). At all, whatever the way of normalizing the migration intensity between the two countries and the estimator used, we get the expected sign and a significance at 1% level of confidence except in the second column. Results in columns (1) and (2) based on OLS estimation may be biased due to potential endogeneity. Our migration variables are not strictly exogenous with respect to the business cycle synchronization measure.

Indeed, migration may be magnified by bad economic conditions in home countries and good economic conditions in host countries. There is a possible reverse causality, a given country pair with high synchronicity may motivate migration (Beine et al., 2019). To tackle this issue, we run two-stages least squares regressions (2SLS) in columns (3) and (4). Following Ortega and Peri (2014), Alesina et al. (2016), Gnimassoun (2020), and Coulibaly et al. (2018, 2020) among others in migration literature, we adopt the gravity-based instruments approach. Precisely, we regress the two bilateral migration intensity measures on gravity variables such as the bilateral distance, the population of both countries, a dummy for a common border, for sharing an official and ethnic language, and for colonial ties. The two gravity models are estimated with the Poisson Pseudo Maximum Likelihood Estimator (PPML). The literature (Silva and Tenreyro, 2006) supports the PPML estimates as much better than OLS ones, to overcome first the problems related to heteroskedasticity and second the zero-values observations of the dependent variable. We also rely on the procedure of Silva and Tenreyro (2010) to deal with the potential identification problem of the nonexistence of the (pseudo) maximum likelihood estimates of the Poisson regression, with non-negative values of the dependent and the large number of zeros on some regressors due to dummies.⁵ Once estimated, the predicted values from the two gravity models serve as instruments for our variables of interest. For the relevance of the instruments that are exogeneity and non-weakness, we have the Kleibergen and Paap (2006) rk Wald F-stat test (K-P F-stat) that has to be compared with the critical values tabulated by Stock and Yogo (2005) (SY 10% /25% max IV size) under the assumption of independent identically distributed (i.i.d) errors. Our regressions do not suffer from weak identification problems, as all the values of the KP F stat are above the critical values tabulated by Stock and Yogo (2005). Then the instrument has significant explanatory power.

⁵See the gravity estimations results in Appendix Table A-3.

Table 3.2: Results without controls (Pooled OLS and 2SLS)

Variable	Business cycle synchronization			
	Pooled OLS (1)	Pooled OLS (2)	Pooled 2SLS (3)	Pooled 2SLS (4)
Migration ^a	0.553*** (0.194) [0.032]		1.193*** (0.294) [0.069]	
Migration ^b		4.812** (2.409) [0.020]		18.807*** (5.636) [0.079]
Constant	0.158*** (0.014)	0.160*** (0.015)	0.153*** (0.015)	0.154*** (0.015)
Observations	6,486	6,486	6,486	6,486
Number of country pairs	1,081	1,081	1,081	1,081
K-P F-Stat			37.40	19.72
SY 10% max IV size			16.38	16.38
SY 25% max IV size			5.530	5.530

Notes: Robust standard errors clustered by country-pair are in parentheses. Standardized coefficients are in brackets. Period dummies are included in all regressions. K-P F-stat is the [Kleibergen and Paap \(2006\)](#) rk Wald F-stat test of jointly weak identification. SY 10% max IV size and SY 25% max IV size are the [Stock and Yogo \(2005\)](#) critical values under the i.i.d. assumption. The stars *, **, and *** denote significance at the 10%, 5%, and 1% confidence levels, respectively.

To interpret these baseline results in all columns of Table 3.2, we refer to the standardized coefficients in brackets rather than the usual ones. We get these coefficients when the sample mean is subtracted and divided by the sample standard deviation for each observation. Standardized coefficients are useful to gauge the relative magnitude of the effects of independent variables. They are interpreted as the increase of one unit in the dependent variable, resulting from an increase of one standard deviation in the explanatory variable. Then with the OLS estimator, an increase of one standard deviation in the first measure of migration intensity leads to an increase in the synchronization in business cycles by 0.032. With the 2SLS estimator (column 3), that magnitude is doubled. This higher magnitude with regard to the standardized coefficients reflects that OLS results underestimate the effect of migration on business cycle synchronization due to the potential endogeneity. Regarding the second measure of migration intensity, we note the same higher effect

for the 2SLS result (column (4)). Although the gap between the usual coefficients in columns (3) and (4) is dramatically high, the standardized ones are quite close. In a nutshell, the very high levels of internal migration intensity among African countries are revealed by these results to be a significant factor in enhancing the synchronization of their economic cycles.

3.3.2 Results with controls

In the results above (Table 3.2), we consider only our variable of interest: migration intensity. The following results in this part, include other determinants of business cycle synchronization that are commonly used in the literature. These are: the trade intensity, the degree of economic specialization, and the financial integration. About these controls, the higher the trade intensity, the more we observe a co-movement in economic cycles (Baxter, 1995; Frankel and Rose, 1998; Baxter and Kouparitsas, 2005; Calderon et al., 2007; Inklaar et al., 2008; Tapsoba, 2009). As countries are specialized or are different in the productive structure, as the economic cycles diverge (Imbs, 2004) and financial linkages enhance synchronization (Kose et al., 2003; Cerqueira and Martins, 2009; Dedola and Lombardo, 2012; Kalemli-Ozcan et al., 2013; Zouri, 2020). We then expect a positive sign for trade intensity and financial integration and a negative sign for the measure of specialization. These different control variables are computed as follows:

- **Trade intensity**

$$TRADE_{ijt} = \frac{X_{ijt} + M_{ijt}}{GDP_{it} + GDP_{jt}}$$

where X_{ijt} and M_{ijt} are respectively the real bilateral exports from country i to the country j in FOB (free on board) value and the real bilateral imports from country j to the country i in CIF (cost insurance freight) value. The trade data in current dollars used here are extracted from the United Nations

COMTRADE Database. GDP in constant dollars data are from WB WDI. To convert nominal values of trade to real values, we used trade unit values indices from the CNUCED database.

- **Specialization**

$$SPEC_{ijt} = \frac{1}{T} \sum_t \sum_n^N |S_{nit} - S_{njt}|$$

with S_{nit} and S_{njt} respectively representing the GDP share of sector n in country i and j . The sectors are: agriculture, manufacturing, and services. These data come from the WB WDI. The specialization indicator is taken in logarithm in the regressions.

- **Financial integration**

$$FIN_{ijt} = \frac{Assets_i + Liabilities_i}{GDP_i} + \frac{Assets_j + Liabilities_j}{GDP_j}$$

We measure financial integration by the sum of assets and liabilities for the two countries i and j expressed as a share of the real GDP. We prefer this measure of the financial openness that can be considered as *de facto* one, over the KAOPEN index developed by [Chinn and Ito \(2008\)](#) that rather refers to a *de jure* measure. Values for financial integration are taken in logarithms in the regressions. For computing this variable, we relied on data from the External Wealth of Nations Database ([Lane and Milesi-Ferretti, 2018](#)).⁶

⁶Milesi-Ferretti, Gian Maria, 2022, "The External Wealth of Nations Database," The Brookings Institution (based on Lane, Philip R. and Gian Maria Milesi-Ferretti, 2018, "The External Wealth of Nations Revisited: International Financial Integration in the Aftermath of the Global Financial Crisis," IMF Economic Review 66, 189-222.)

After consideration of all these control variables, the new econometric model to be estimated is the following:

$$BCS_{ijt} = \alpha' + \beta' \cdot MIG_{ijt}^k + \gamma_1 \cdot TRADE_{ijt} + \gamma_2 \cdot SPEC_{ijt} + \gamma_3 \cdot FIN_{ijt} + \phi'_t + \varepsilon'_{ijt} \quad (3.2)$$

As stressed above about the endogeneity issue and to save space, we directly present in the Table 3.3 the 2SLS results rather than OLS ones.

Table 3.3: Results with controls (Pooled 2SLS)

Variables	Business cycle synchronization					
	(1)	(2)	(3)	(4)	(5)	(6)
Migration ^a	0.905*** (0.329) [0.052]	0.976*** (0.334) [0.055]	0.936*** (0.352) [0.052]			
Migration ^b				13.985** (5.936) [0.059]	15.073** (6.178) [0.065]	14.896** (6.705) [0.063]
Trade intensity	10.058** (4.182)	9.114** (4.160)	9.133** (4.202)	10.102** (4.563)	8.947* (4.615)	8.831* (4.671)
Specialization		-0.008 (0.011)	-0.013 (0.012)		-0.009 (0.011)	-0.014 (0.012)
Financial integration			0.010*** (0.003)			0.010*** (0.003)
Constant	0.155*** (0.015)	0.158*** (0.045)	0.153*** (0.044)	0.155*** (0.015)	0.162*** (0.044)	0.157*** (0.044)
Observations	6,486	5,869	5,836	6,486	5,869	5,836
Number of country pairs	1,081	1,081	1,081	1,081	1,081	1,081
K-P F-Stat	34.04	32.08	32.01	20.14	19.76	19.91
SY 10% max IV size	16.38	16.38	16.38	16.38	16.38	16.38
SY 25% max IV size	5.530	5.530	5.530	5.530	5.530	5.530

Notes: Robust standard errors clustered by country-pair are in parentheses. Standardized coefficients are in brackets. Period dummies are included in all regressions. K-P F-stat is the Kleibergen and Paap (2006) rk Wald F-stat test of jointly weak identification. SY 10% max IV size and SY 25% max IV size are the Stock and Yogo (2005) critical values under the i.i.d. assumption. The stars *, **, and *** denote significance at the 10%, 5%, and 1% confidence levels, respectively.

Across all columns (1) to (6), the control variables are successively included, and they are all well-signed. Only the economic specialization does not appear to be significant in any specification. Concerning the coefficients of the first migration

intensity measure in columns (1) to (3), they remain in the same range despite the inclusion of controls. For the second measurement, the amplitude of the coefficients is also not very different across specifications (columns (4) to (6)). Therefore, our findings are not altered when we include control variables. Standardized coefficients are presented only for migration variables. They indicate a 0.052 increase in correlation of output for an increase of one standard deviation in migration intensity normalized by total migration (column 3). When we normalize by the total population, we get an increase of 0.063 (column 6). Again these standardized coefficients in all columns are quite close.

3.3.3 Sensitivity analysis

For the sake of the robustness of our results, we conduct in this subsection some sensitivity tests. First, we add the concordance of fiscal policy stances ([Darvas et al., 2005](#); [Inklaar et al., 2008](#); [Thornton, 2008](#); [Tapsoba, 2009](#)). About this variable, the literature suggests the cyclically adjusted primary balance (% GDP) as a better measure but for lack of data, we rely on the primary fiscal deficit or surplus (in % of GDP). Then we compute the divergence of fiscal primary balance as a difference of the country pair balance. The more a country pair diverges, the less they are synchronized. The data used come from the International Monetary Fund World Economic Outlook database (IMF WEO). Second, we use the Fisher transformation of our dependent variable. Consider that the variable x is a Pearson correlation coefficient, then the Fisher transformation of x that is a z -transformation is $y = (1/2)[\ln(1+x)/\ln(1-x)]$ allows us to have normality in errors terms. Third, we consider the [Christiano and Fitzgerald \(2003\)](#) filter to measure the dependent variable. The corresponding results of these tests are summarized in Table 3.4. Let's note that, only coefficients for our variables of interest are presented in this table.

The results appear to be robust. In detail, the first measure of migration intensity is positive and significant whatever the test. The second measure is only not significant

Table 3.4: Sensitivity analysis (Pooled 2SLS)

Sensitivity test	Business cycle synchronization	
	Migration ^a	Migration ^b
	(1)	(2)
Adding fiscal divergence	0.950** (0.395)	14.612* (7.880)
Fisher transformation	1.230** (0.555)	18.727* (10.460)
Christiano-Fitzgerald Filter	0.625* (0.352)	9.143 (6.620)

Notes: Robust standard errors clustered by country-pair are in parentheses. Period dummies are included in all regressions. The stars: *, **, and *** denote significance at the 10%, 5%, and 1% confidence level, respectively.

when we consider the [Christiano and Fitzgerald \(2003\)](#) filter. This non-significance indicates that the GDP cyclic components correlation coefficient as a measure of cycle synchronization can be slightly sensitive to the filter used ([Canova, 1998, 1999](#)).

3.4 Concluding remarks

The study in this chapter tries to empirically quantify for African economies, the impact of migration on the business cycle synchronization. The baseline idea supporting this study is that migrants smoothing shocks and their remittances are for the receiving country counter-cyclical and pro-cyclical for the sending country. In a bilateral panel data framework for 47 African countries and a time sample from 1990-2019 over quinquennial averages and using different estimation techniques, we find a pro-synchronization effect of intra-continental migration for Africa. With different tests of sensitivity, our results are shown to be robust. It's worth mentioning that despite the existence of channels underlying the effect of migrants on cycle synchronization, we do not test them. In particular, that of remittances, due to a lack of bilateral intra-African remittances data covering our study time-span. In view of these results, African economies would have better to continue to boost regional

migration, which is a favorable asset for their economic integration through their effect on the shocks absorption and their remittances.

Appendix

Table A-1: List of countries (47)

Algeria (DZA)	Angola (AGO)	Benin (BEN)
Bostwana (BWA)	Burkina Faso (BFA)	Burundi (BDI)
Cameroon (CMR)	Cape Verde (CPV)	Central African Republic (CAF)
Chad (TCD)	Côte d'Ivoire (CIV)	Comoros (COM)
Democratic Republic of Congo (COD)	Djibouti (DJI)	Egypt (EGY)
Equatorial Guinea (GNQ)	Ethiopia (ETH)	Gabon (GAB)
Gambia (GMB)	Ghana (GHA)	Guinea (GIN)
Guinea-Bissau (GNB)	Kenya (KEN)	Lesotho (LSO)
Libya (LBY)	Madagascar (MDG)	Mali (MLI)
Malawi (MWI)	Mauritania (MRT)	Morocco (MAR)
Mozambique (MOZ)	Namibia (NAM)	Niger (NER)
Nigeria (NGA)	Republic of Congo (COG)	Rwanda (RWA)
São Tomé and Príncipe (STP)	Senegal (SEN)	Sierra Leone (SLE)
Seychelles (SYC)	South Africa (ZAF)	Swaziland (SWZ)
Tanzania (TZA)	Togo (TGO)	Tunisia (TUN)
Uganda (UGA)	Zambia (ZMB)	

Note: Countries' ISO 3-digit codes are in parentheses.

Table A-2: Variable, source, definitions, and comments

Variable	Source	Definition and comments
Real Gross Domestic Product	WB WDI	Sum of gross value added in constant 2015 prices, expressed in U.S. dollars
GDP growth	Author calculation	First difference of logarithm of GDP
Immigration stock	UN (2019)	Foreign-born population
Trade (exports and imports)	UN COMTRADE	Exports (FOB) and imports (CIF) in current dollars
Assets and Liabilities	Lane and Milesi-Ferretti (2018)	Assets and liabilities expressed as % of GDP
Terms of trade index	UNCTAD	Relative price of exports over imports (index 2015 = 100)
GDP share of agriculture, industry and services	WB WDI	Value added of agriculture, industry and services in % of GDP
Distance	CEPII Gravity	Population-weighted distance between most populated cities, in km
Total population	WB WDI	Country total population
Border	CEPII Gravity	1 = Common border, 0 otherwise.
Remittances	Author calculation	Personal transfers and compensation of employees
Colonial ties	CEPII Gravity	Dummy equal to 1 if pair ever in sibling relationship

Table A-3: Gravity regressions

Variables	Migration ^a	Migration ^b
	(1)	(2)
Ln distance	-0.78*** (0.16)	-0.704*** (0.155)
Ln 1960 Population at origin	-0.01 (0.12)	-0.102 (0.104)
Ln 1960 Population at destination	0.29*** (0.08)	0.009 (0.099)
Common border	2.11*** (0.47)	2.850*** (0.391)
Common Official language	-0.52** (0.21)	-0.422 (0.317)
Common Ethnic language	0.36* (0.19)	0.150 (0.349)
Colonial ties	0.74*** (0.29)	0.844*** (0.316)
Constant	-0.55 (1.31)	-3.955*** (1.296)
Observations	6,486	6,486
R-squared	0.33	0.214
Time-dummies	Yes	Yes

Notes: Robust standard errors clustered by country pairs are in parentheses. The stars: *, **, and *** denote significance at the 10%, 5%, and 1% confidence levels, respectively.

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Conclusion Générale

Les trois chapitres de cette thèse constituent des contributions sur les effets macroéconomiques de l'intégration économique et régionale africaine. La migration intra-africaine qui reste à ce jour le socle de cette intégration nous a servi de point focal tout au long de ce travail.

La première contribution dans le chapitre 1, est une analyse empirique de l'impact de la migration intra-africaine sur le taux de change réel du pays de destination. La particularité de ce chapitre est qu'il met en avant un nouveau canal de transmission, celui de la structure démographique qui passe par l'effet qu'ont les migrants sur la structure par âge de la population du pays d'accueil. L'analyse économétrique est conduite en utilisant des données de panel pour les 54 pays sur la période allant de 1990 à 2019, découpée en moyennes quinquennales. Les résultats de ce chapitre montrent qu'une augmentation du stock net de migrants a un effet appréciable sur le taux de change réel du pays de destination. Dans le cadre de l'intégration africaine dont l'actuel pilier fort est la migration, cet effet appréciable reflète une augmentation du coût de la vie dans les pays de destination des migrants. D'un point de vue de la politique publique, ce chapitre met en lumière qu'il faut tenir compte de cet effet sur le coût de la vie car c'est une conséquence directe de la volonté de promouvoir la mobilité des peuples au sein du continent.

Le second chapitre, met en lien les deux dimensions du degré d'intensité de l'intégration à savoir la migration et le commerce. Plus précisément nous analysons les effets de la migration intra-africaine sur le commerce intra-africain avec une emphase sur le rôle des unions monétaires. Un modèle théorique est d'abord utilisé afin de dissocier les canaux de transmission. Nous mobilisons par la suite les données bilatérales pour un panel de 49 pays, sur la même période d'étude et le même découpage en moyenne de cinq ans. Les résultats empiriques montrent que les migrations intra-africaines ont un effet pro-commerce et cela pour tous les types de produits (denrées alimentaires, produits manufacturés et produits de base). La dissociation des canaux de transmission nous emmène à constater que le canal d'information (par le biais de l'immigration) est efficace pour les denrées alimentaires et les produits de base et inefficace pour les produits manufacturés. Le canal des préférences est efficace pour toutes les catégories de produits, mais cet effet est atténué par le partage d'une monnaie commune pour les denrées alimentaires et les produits manufacturés, car les monnaies communes sont des héritages coloniaux qui induisent une proximité culturelle entre les pays membres. Dans l'objectif de promouvoir l'intégration régionale, les décideurs politiques doivent garder à l'esprit que la mobilité intra-continentale de la main-d'œuvre peut contribuer à atteindre cet objectif, en particulier pour les pays qui ne partagent pas une monnaie commune.

Le chapitre 3 qui est la dernière contribution évalue les effets de la migration intra-africaine sur la synchronisation des cycles économiques des pays du continent. L'échantillon en panel est composé de 47 pays et les données bilatérales couvrent la période allant de 1990 à 2019, également en moyennes quinquennales. Les estimations indiquent qu'effectivement l'intensité des migrations joue un rôle positif sur la synchronicité des cycles entre les paires de pays et cela même en présence d'autres facteurs déterminants. Avec ces résultats, les autorités publiques sont encouragés à davantage favoriser les mouvements intra-régionaux car des économies synchronisés sont aussi bénéfiques pour une bonne coordination des politiques

publiques.

Comme limites de ce travail, nous pouvons évoquer le manque de données fines sur la migration intra-africaine. Tous les aspects analysés dans les différents chapitres peuvent être approfondis, si nous disposons par exemple des données sur (i) les catégories de migrants: enfants, étudiants, travailleurs, retraités et sur (ii) leur niveau de qualification. En effet concernant le chapitre 1, l'effet des migrants sur le taux de change réel peut être différent selon qu'ils soient par exemple peu ou très qualifiés (Coulibaly and Gnimassoun, 2023). Pour le chapitre 2, comme l'a démontré Felbermayr and Toubal (2012), les migrants très qualifiés manifestent très peu voire pas du tout d'effet de préférence, car ils s'assimilent parfaitement dans le pays de destination. Pour finir, une extension possible dans le chapitre 3 serait de considérer les catégories de migrants. En effet, il serait possible que seule la catégorie des travailleurs a un réel effet sur la synchronisation des cycles. Nous laissons cela pour de futures recherches sur l'impact de la migration intra-africaine sur les pays d'origine et d'arrivée des migrants.

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