Three essays on economic transformation and distributional changes in middle-income countries

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Three essays on economic transformation and distributional changes in middle-income countries

Sous la direction de: Eric ROUGIER et François COMBARNOUS

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In my beginning is my end… In my end is my beginning.

T.S. Eliot, *Four Quartets.*

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General Introduction

Economic growth, productive and distributional changes in middle-income countries

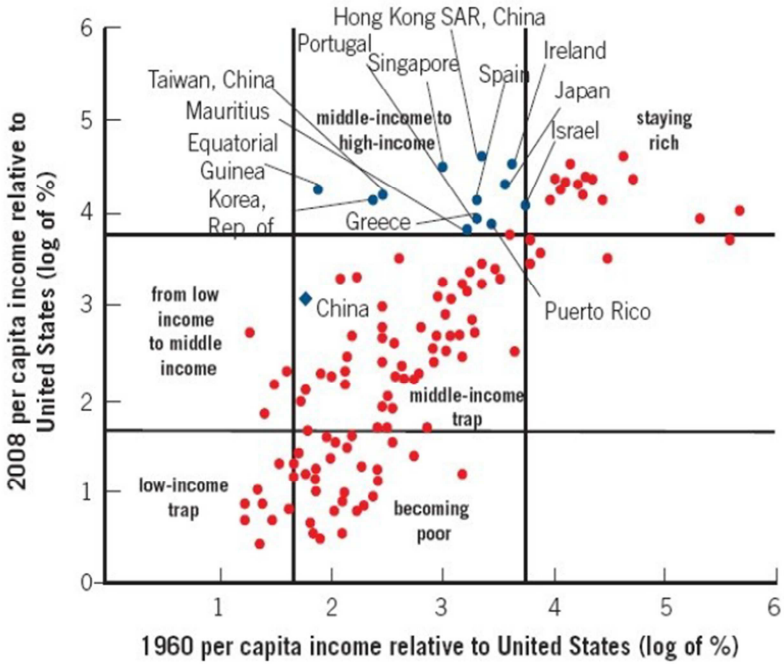
Research in development economics has long tended to focus on low-income countries and poverty issues rather than on middle-income countries. Although these countries are quite heterogeneous as regards their characteristics,[1] they also have some common distinctive features compared to the poor and advanced economies. Achievements with respect to many socioeconomic dimensions, distinguishing them from poor countries, coexist with various structural shortcomings that put them a few steps behind advanced countries. In general, their economic growth trajectory can no longer be sustained by the regime of accumulation that put them out of poverty, but their innovation capacity is still limited. They have a diversified production, but the sectors are unequally competitive; they have better institutions than low-income countries, but not entirely efficient, and they have not achieved their demographic transition. The economic transformations that prompted their transition into the middle-income category have led to a tremendous decline in poverty and the emergence of a class of consumers with gradually globalized aspirations and behavior that challenges existing public policies. The well-being of their population has improved, but vertical and horizontal inequalities persist and require many improvements in terms of inclusive growth.

Although some middle-income countries achieved sustainable growth and caught up with advanced economies, many others are durably stuck in the middle-income group. Many countries characterized by fast economic growth in the 1990s have also experienced a growth slowdown during the past two decades, and some countries seem to be at risk of falling into a durable phase of stagnation, which would complicate their transition into the high-income

[1] See Vázquez and Sumner (2012) for a discussion on the heterogeneity of income groups.

group. According to the World Bank (2013), only 13[2] out of 101 countries that have successfully escaped the low-income trap in the 1960s have become rich by 2008 (Figure 0.1) with the few successful transitions being concentrated in Europe and East Asia. Gill and Kharas (2007) introduced the concept of "*middle-income trap*" (MIT) to describe this phenomenon.

Figure 0.1 Countries in the middle-income trap (relatively to the United States)



Source: World Bank (2013)

The middle-income trap can be described as a stable equilibrium occurring at the middle-income level and articulating low growth, slow structural change, and arduous policy transitions. Despite growing interest in this issue from regional and international development banks and some academic researchers, the definition, measures, and explanations of the middle-income trap are still debated. The absence of theoretical guidance in the selection of its determinants and in the way their combination drives traps was recently pointed by Han and Wei (2017). While some papers could identify persistent growth slowdowns in various developing regions (for instance Aiyar et al., 2013; Robertson and Ye, 2013), others have cast doubts on the existence of middle-income traps by pointing out statistical issues (Im and Rosenblatt, 2013; Pritchett and Summers, 2014). Other studies argue that the episodes of

[2] Equatorial Guinea, Greece, Hong Kong, China, Ireland, Israel, Japan, Mauritius, Portugal, Puerto Rico, South Korea, Singapore, Spain, and Taiwan.

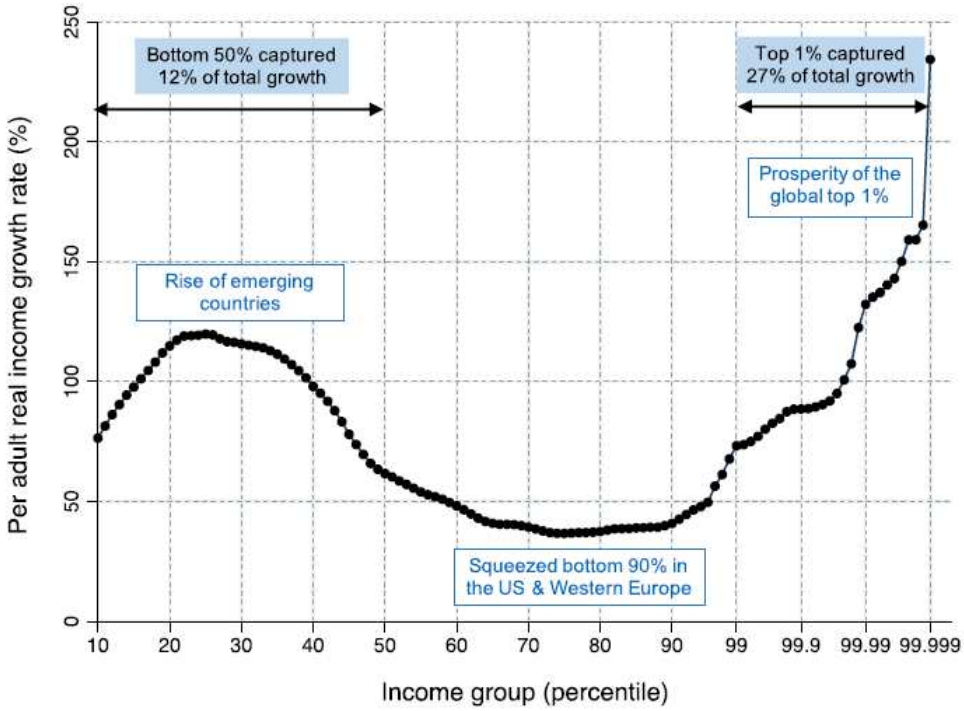
growth slowdowns observed in middle-income economies may not necessarily be interpreted as traps but, instead, eithter as the result of convergence towards a long-term level of per capita income (Alias, Hussein, and Mohamad, 2013) or of transition from lower- to higher levels of economic development (Bulman, Eden, and Nguyen, 2017). Rodríguez (2008) or Bloom et al. (2006) also point out the absence of a clear theoretical distinction between models of multiple equilibria, such as poverty trap models, and multiple steady-state models drawn from long-term growth theory. Nonetheless, as contended by Agénor (2017:775), "*the concept of middle-income trap is useful to understand the experience of individual countries and the policy challenges that productivity slowdowns, and the transition to high-income status, present to them.*"

Various studies have listed a series of symptoms shared by countries trapped in enduring slow growth spells (Agénor, 2017; Bulman et al., 2017). Most of these symptoms point to the productive or policy patterns impeding the transition to the innovation-based growth model and include diminishing returns to physical capital, exhaustion of cheap labor, imitation gains, insufficient quality of human capital, distorted incentives, the lack of access to advanced infrastructure and finance, or misallocation of talent. Surprisingly, up until now, distribution dynamics have rarely been discussed in the context of middle-income trap, even though they are related to the issues of productive transformation. Nonetheless, there is an extensive literature on the relationship between inequality and economic growth. While the earlier studies dealt with the causation running from growth to inequality following the influential work of Kuznets (1955), the literature in the 1990s and onward has investigated profusely the mechanisms through which changes in the income distribution affect economic development. With regard to the channel of political economy, the arguments revolve around redistributive conflicts, stressing the distortionary impact of redistributive taxation on investment incentives, and political instability issues born from the frustration of the majority of voters (Acemoglu and Robinson, 2006; Alesina and Rodrik, 1994; Benabou, 1996; Perotti, 1992; Persson and Tabellini, 1994 among others). From an economic perspective, the effect of inequality can be analyzed through the channel of imperfect capital market, constraining productive investment (Banerjee and Newman, 1993; Galor and Zeira, 1993; Piketty, 2000), and the channel of endogenous fertility determined by transfers of income or human capital assets (Dahan and Tsiddon, 1998; Kremer and Chen, 2002).

Several theoretical contributions have also focused on the interconnection between income distribution and economic growth, giving a central place to the domestic markets and alluding

to the prominent role of the "middle-class" (Murphy, Shleifer, and Vishny, 1989a; Falkinger and Zweimuller, 1997; Jamarillo, 1995). As summarized by Ehrhart (2009:11), "*the initial degree of income inequality, by establishing the structure of expected demand, determines the structure of future effective supply. So, the initial distribution of national income can also affect the long-term growth rate of the economy by modifying the size and the composition of domestic-end demand*." In countries at earlier stages of economic development, redistribution allows the constitution of a large "middle-class," which fuels domestic demand for various manufactured goods. However, the "*coexistence of a small upper-class can support the process of innovation by initiating or encouraging the production of new goods and services which will be purchased later by a large class of middle-income consumers*" (Ehrhart, 2009: 15).

Figure 0.2 Total income growth by percentile between 1980 and 2015

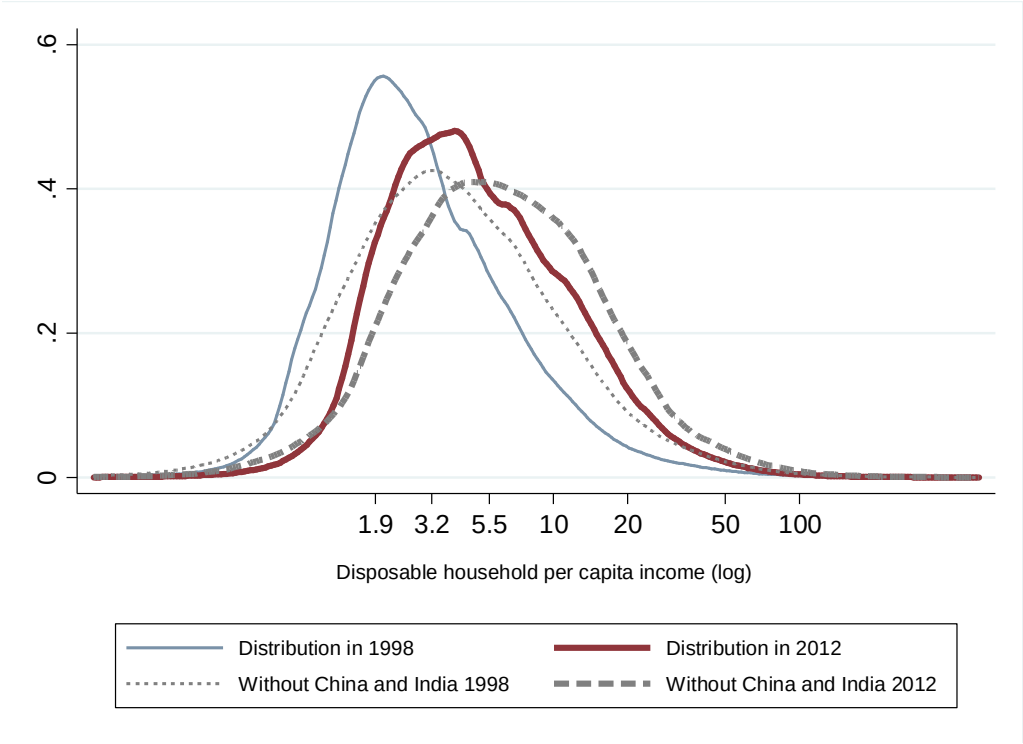


Source: World Inequality Report (Alvaredo et al., 2018)

These arguments are all the more relevant in the context of middle-income countries that have experienced an unprecedented expansion in the middle of the income distribution (between the 10^{th} and 50^{th} percentile), in sharp contrast with the decline of the corresponding group (between the 60^{th} and the 90^{th} percentile) in Western countries during the last two decades as portrayed by the well-known growth incidence curve of global income (Figure 0.2). Ravallion

(2010) estimates that the "middle-class"[3] has grown from 1.4 billion to 2.6 billion individuals between 1990 and 2005 and represents 48.5% of the world population in 2005 against 32.7% in 1990. This proportion reaches more than 40% of the local population in North Africa, South Africa, but also in countries of Sub-Saharan Africa such as Gabon, Botswana, or Kenya. The same absolute criterion applied to some Latin American countries in 2006 classifies 55.5% (Argentina) to 76.6% (Peru) of the population in the middle-class (Castellani et al., 2014). A close-up on middle-income countries reveals that the density of the distribution of income has neatly shifted to the right between 1998 and 2012 with an upsurge of people with per capita income between USD 3.2[4] and USD 50 (Figure 0.3), even when China and India are excluded.[5]

Figure 0.3 Kernel density of the total distribution of income of 79 middle-income countries (in logarithm) in 1998 and 2012[6]

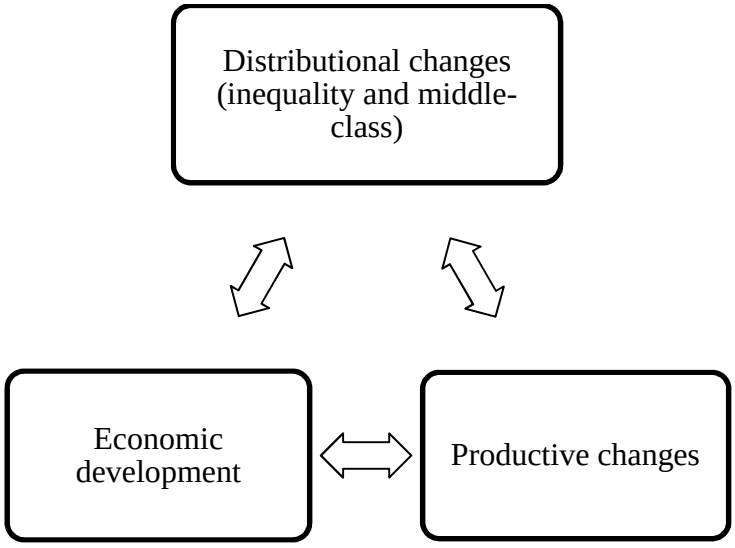


Source: PovcalNet. Author's computations.

[3] The "middle-class" here is defined as the population whose income per capita is between USD 2 and USD 13 per day (at 2005 PPP).
[4] The threshold of US 3.2 corresponds to the international poverty line of lower middle-income countries defined by the (World Bank, 2018b).
[5] This trend can be observed at the regional level as well, particularly in East Asia and Pacific, Europe and Central Asia and Latin America and Caribbean (Appendix 0.4).
[6] To construct the distribution of income of 79 middle-income countries, we compile a dataset using data from PovcalNet and WIID 3.4. The list of middle-income countries in the sample is reported in Appendix 0.2 and the methodology is described in detail in Appendix 0.3.

The stakes involved in the emergence of the "middle-class" in middle-income countries are multiple at both national and global levels. The phenomenon as well as the mechanisms associated to the emergence of the "middle-class" in developing countries have been highlighted in several recent studies (Banerjee and Duflo, 2008; Birdsall, 2012; Birdsall, Graham, and Pettinato, 2001; Brandi and Büge, 2014; Chun, 2010; Chun, Hasan, Rahman, and Ulubaşoğlu, 2017; Kharas, 2010; Ravallion, 2009, among others). Building on the literature on the growth-inequality nexus, some studies explain how changes in the income structure, and most notably the expansion of the "middle-class", can spur economic growth through mass consumption and various mechanisms related to human capital accumulation and investment (Desdoigts and Jaramillo, 2014; Mani, 2001; Matsuyama, 2002). The "middle-class" is assumed to seek and support the stability and performance of political and economic institutions, for instance, the recognition of property rights and regulations (Wheary, 2009). Therefore, an affluent and homogenous "middle-class" can have more political weight than the poor, and influence redistribution, public investment policies (Birdsall, 2010) and spur institutional reforms through their demand for better governance (Loayza et al., 2012; World Bank, 2014). Likewise, because they are more numerous than the rich, they can have large-scale impacts through the aggregation of their aspiration and behavior.

Figure 0.4 Interconnection between economic transformation and distributional changes



Source: Author

In summary, economic transformation, productive changes, and such distributional changes as "middle-class expansion" are interconnected as schematized in Figure 0.4. To ensure that middle-income countries are able to sustain their development and put up with the challenge of inclusive growth, it is necessary to get a better understanding of these mechanisms. Empirical evidence that could help guiding public policies is all the more necessary to materialize the expected large-scale effects of the buoyant "middle-class" in emerging economies on their development and on the global economy. This dissertation thus aims to shed light on these effects of interaction between distributional changes and economic transformation in middle-income countries.

Middle-class: definition and measurement issues

The concept of "middle-class" has always been controversial, and more so, its application in the context of developing countries. Historically, the notion of "middle-class" was defined in terms of occupation and privileges related to a particular social status, generally related to the *petty bourgeoisie*, distinguishing them from peasants and nobles in the 19th-century literature. In the Marxist dualistic approach, the middle-class corresponds to the minority bourgeoisie stuck in-between the two major antagonistic groups of capitalists and proletariat (Marx and Engels, 1967). Various alternative concepts were proposed to refer to them, including the "new petty bourgeoisie," the "new class," or "middle strata" (Wright, 1980). According to the "*contradictory class location*" approach of Wright (1985), people in the middle-class are both exploiting, as regards their qualification and responsibility in the division of labor, and exploited, as regards their ownership of the means of production. From the late 1990s onward, the rise of modern capitalism and globalization, and the ensuing transformations of trade and productive structures propelled the emergence of a group of non-manual and skilled workers. The interest in this latter group has since increased in the sociological sphere and motivated the shift from frameworks based on the capital-labor divide to more multidimensional ones to analyze social stratification (Bidou-Zachariasen, 2004).

An upsurge of studies has transposed the concept of "middle-class" to the emerging intermediate group in developing countries, often defined in monetary terms, to examine this phenomenon with approaches that take into consideration the country's sociological and historical backgrounds to a various extent (Berrou et al., 2019). Many private banks, marketers and marketing researchers, and international development banks have documented profusely the implication of an increasing prominent "*consumer class*" for the global

economy (Cavusgil, Deligonul, Kardes, and Cavusgil, 2018; Dobbs, Remes, Roxburgh, Smit, and Schaer, 2012; Kochhar, 2015; Wilson and Dragusanu, 2008) or more generally the implications of an increasing "*global middle-class*" (ADB, 2010; AFDB, 2011; World Bank, 2007). The academic economic literature has also recently started to take an interest in this question, with papers examining the changes in the global distribution of income (Birdsall, 2010; Kharas, 2010; Kharas and Gertz, 2010; Jayadev et al., 2015; Milanovic and Yitzhaki, 2002; Ravallion, 2009) and some others providing insights on the potential explanations and implications in terms of socio-economic and political transformations (Banerjee and Duflo, 2000; Desdoigts and Jaramillo, 2009; Easterly, 2001; Ferreira et al., 2013; Loayza et al., 2012; Shimeles and Ncube, 2015). This dissertation follows this strand of literature. To this end, we use the term "middle-class" to refer to a group of people with intermediate income who are economically secure, with lower risk of falling back into poverty, and can sustain their basic needs while keeping a portion of disposable income that can be used for additional consumption or saving (Handley, 2014).

The most widespread approach to measure the middle-class, especially in cross-country and comparative studies, either identifies a set of thresholds on a vector of income, consumption or wealth (Banerjee and Duflo, 2008; Birdsall, Lustig, and Meyer, 2014; Kharas, 2010; Ravallion, 2010 among others), or estimates it by using the probability of falling into poverty (Dang and Lanjouw, 2017; López-Calva and Ortiz-Juarez, 2014; Schotte et al., 2018). In the literature using the income-based definition of the middle-class, there are three main approaches to define the lower and upper thresholds of the income range. First, in the absolute approach, the income boundaries are common to all countries and are expressed in terms of purchasing power parity, which enables international comparisons. The (country-specific or international) poverty line is often used as reference (ADB, 2010; Ravallion, 2010; Banerjee and Duflo, 2008). However, there is a growing consensus on a threshold of USD 10 among scholars (Birdsall, 2007b; Birdsall, Lustig, and Meyer, 2014; Kharas, 2010; Kharas and Gertz, 2010; Lopez-calva, Rigolini, and Torche, 2012; World Bank, 2007) because it is more in line with the idea that the middle-class is composed of economically secure households and not just people who escaped poverty temporarily. The upper-bound is more subject to debate, but three thresholds are often used in studies on emerging economies: USD 20 (for instance Clément and Rougier, 2015; Kochhar, 2015); USD 50 in studies on the Latin American

middle-class (for instance Birdsall, 2012; Ferreira et al., 2013); and USD 100 (Brandi and Büge, 2014; Kharas, 2010).

Second, the relative approach defines the middle-class as the people that are in the middle of the income distribution, for instance, corresponding to the three quintiles in the middle of the distribution (Easterly, 2001). The mixed approach combines a relative threshold with an absolute one. For instance, Birdsall (2010) uses an absolute lower-bound of USD10 and a relative upper-bound corresponding to the 95th percentile, excluding the 5% wealthiest people. Birdsall (2010) notes that this relative upper-bound should ideally be country-specific. The relative and mixed approaches are most appropriate for microeconomic studies but become tricky for cross-sectional or comparative studies.[7]

This exclusively monetary approach is often criticized for being reductive, and some authors rely on different vectors like the education of the household head, the assets index (Filmer and Pritchett, 2001; Shimeles and Ncube, 2015), or the self-perceived social status which has been found not to be correlated with the level of income (Amoranto, Chun, and Deolalikar, 2010). Other studies have adopted a multidimensional framework following Weber (1995).[8] This approach is close to the sociological perspective and relies on the construction of synthetic indices or hierarchical classifications based on socioeconomic criteria which generally include the occupation profile, education level, assets and variables of living conditions (for instance access to water, and/or health care) fitted to the context of the study (Andrianampiarivo, 2016; Bonnefond, Clement, and Combarnous, 2015; Handley, 2014; Nallet, 2015; Rasch, 2017; Torche and Lopez-Calva, 2013). Such approaches require detailed household survey data, and comparability issues complicate their implementation in a cross-country analysis. The arbitrariness in the choice of the thresholds in the income-based definition is also subject to recurring criticism, but this also applies to the alternative classifications with respect to the choice of weights in synthetic indices, the probability of falling into poverty or the choices of criteria to take into consideration in multidimensional classifications.

Most studies that have tested different definitions and identification of the middle-class (Berrou et al., 2019; Jayadev, Lahoti, and Reddy, 2015; Rasch, 2017 for instance) agree that the choices of the vector, thresholds, and methods depend on the context of the study and

[7] We review in more detail the various income thresholds in the literature in Appendix 0.1.
[8] In the Weberian perspective, the position of individuals in society is determined by three distinct dimensions namely their social status, political power and economic class.

research questions. The availability of data also constrains them. Chapter 2 follows the strand of literature that deals with cross-country analysis of the trends, macroeconomic determinants, and implications of the global middle-class. In the absence of large enough comparable household survey datasets, we choose the income-based definition of middle-class, and more precisely the absolute approach which is the best suited for time-series and comparative studies. In Chapter 3, we combine the monetary approach, adopting a methodology that reduces the arbitrariness of the classification, with a multivariate analysis which allows to understand the context-specific sources of differentiation and inequality among the households in Turkey.

Data issues and choices

All the chapters included in this thesis use data based on national income distributions. However, finding reliable and comprehensive data on income distribution, especially in developing countries, has long been a central concern for cross-country studies. Many papers start by compiling their original datasets or use various techniques to obtain a large enough dataset using the existing sources of data (Deininger and Squire, 1996; Easterly, 2001; Kaufmann, Kharas, and Penciakova, 2012; Milanovic, 2002; Sala-i-Martin, 2009; Sala-i-Martin, 2006). In the recent years, considerable efforts have been put in improving and expanding the data coverage and comparability resulting in institutional datasets such as the World Bank's PovcalNet database (available to the general public since 2001), the Standardized WIID (Solt, 2009), the World Income Inequality Database (UNU-WIDER, 2017a), and more recently, the World Inequality Database (WID.world), and the Global Consumption and Income Project **(**Lahoti, Jayadev, and Reddy, 2016).

Our choice in this thesis has been guided by the reliability of data and recommendations of researchers from the most well-known data sources (Chancel and Gethin, 2017; UNU-WIDER, 2017b) as well as by our research questions. In Chapter 1, our empirical framework follows Ostry, Berg, and Tsangarides (2014) and requires data distinguishing between gross and net inequality, motivating the choice of Solt (2009). For Chapter 2, we choose to use PovcalNet, the database with the greatest country and period coverage as the main source of data.[9] Following the advice of UNU-WIDER (2017b), we restrained from mixing databases

[9] The database from Lahoti, Jayadev, and Reddy (2016) would have been an interesting alternative. Building on various institutional sources of data, they construct estimates of consumption and income on a wide set of

because of comparability issues. For instance, data on Latin American countries from the SEDLAC sometimes differ significantly from PovcalNet for specific years. From the PovcalNet data, we construct a dataset following the methodology described in Appendix 0.3. Data issues also constrained microeconomic researches and confined empirical investigations to some geographical locations and over a limited period, especially on such questions as economic mobility and distributional dynamics. This explains in part why the literature on economic mobility on Turkey is still very limited, hence motivating our investigation in Chapter 3, even if we could only examine the short/medium-run income dynamics.

The lack of data coverage on macroeconomic variables adds up to the difficulty because some of them do not cover the same countries and periods, in particular data on institutions, public expenditures, and the productive structure. In the first and second chapters, we end up with less countries and observations once we account for all explanatory variables. Overall, we choose to favor the indicators that are available for most countries in our sample, and when possible, we use alternative indicators for robustness checks. We undertake careful verifications each time we switch to a restricted sample and are cautious with our interpretations of the additional results.

Outline of the thesis

The literature on the middle-income trap and the literature on the middle-class in middle-income countries are still burgeoning, and many questions have yet to be investigated. While the different studies we discussed earlier have pointed to the cross-country heterogeneity of growth slowdown episodes, they have not attempted to explain why enduring growth slowdowns, be they symptoms of real middle-income traps or mere statistical artifacts, happen or not in different middle-income economies. The issues and mechanisms relating the middle-income trap to distributional dynamics have hardly been documented. Likewise, the empirical literature on the implications of the middle-class consists mainly of descriptive studies and has provided only limited evidence on the macroeconomic effects of the size of this intermediate group so far. Moreover, although many comparative and microeconomic studies have started to tackle the issues of social stratification over the past years, few of them have investigated the economic dynamics within the middle-class in middle-income countries empirically. This thesis aims to fill this gap by examining the extent to which economic

countries (more than 160 countries) from 1960 to 2015. However, by the time the data were released, in late 2016, we already finished compiling our own dataset, and started working on our empirical analysis.

performances in middle-income countries are explained by the patterns of productive and distributive changes. For this purpose, we investigate the three following questions:

1. What difference do productive factors, inequality, and redistribution make for the economic growth of countries inside the middle-income trap?

2. What are the channels through which the emerging global middle-class generates growth-enhancing economic transformations?

3. What factors determine the changes in income and social position of the middle-class households in middle-income countries?

The two first questions are addressed in a cross-country macroeconomic framework, while the last chapter adopts a microeconomic perspective to delve into the case of Turkey. The specific empirical issues and strategies are discussed in each chapter. The thesis is structured as follows.

In Chapter 1, we intend to shed light on differentiated patterns of medium-run growth between middle-income countries inside and outside the middle-income trap. We first survey the literature concerning the statistical issues raised by the identification of middle-income traps, and also the analytical approaches used to provide theoretical foundations to this concept including several mechanisms highlighted by the few existing theoretical models on this issue. Then, by combining the main criteria used in the literature, we statistically identify middle-income trap episodes and contrast various dimensions of economic characteristics, notably demography, skill endowment, investment rate, inequality, and redistribution, inside and outside the trap using five-year average panel regressions on a sample of 78 countries over 1970-2010. We find evidence of misallocation issues and adverse effect of redistribution on medium-run growth.

In Chapter 2, we examine the indirect effects of the size of the middle-class on economic growth over 1995-2014. We provide evidence on the heterogeneity of the effects depending on the type of middle-class, the level of development, and the transmission channels. We start with an analysis of the simultaneous and causal impacts of a larger middle-class on household consumption, private and public investment, and public expenditures. A second section is dedicated to the exploration of the role of the middle-class in productive transformation by regressing successively variables measuring the productive structure, export diversification

and sophistication, imports volume and diversification on the size of the middle-class. We find evidence that an affluent middle-class could influence the supply of public goods and services and plays a major role in the development of the manufacturing sector.

Chapter 3 analyzes intra-generational economic mobility among the middle-class in Turkey for a panel of 2591 households from 2010 to 2013. The groups of middle-class are identified using the Esteban-Gradin-Ray polarization framework. We quantify economic mobility and portray the households that have experienced downward, upward, or no mobility. Afterward, we use econometric models to analyze the socioeconomic determinants of absolute income variations and transition into and out of the middle-class, notably the role of demographic characteristics, assets endowment, and exposure to shocks, and the occupation of the household heads. Our results suggest the existence of mechanisms of social reproduction and cumulative (dis)advantages that prevent some households from climbing up the ladder.

Chapter 1

"What difference does it make (to be in the Middle-income Trap)?" An empirical exploration of the drivers of growth slowdowns[10]

Introduction

Over the past five decades, many formerly low-income countries could reach intermediate positions on the global scale of income. Although deeply heterogeneous, all middle-income economies have achieved significant progress in terms of health, education, poverty reduction, and agricultural productivity. They also have started diversifying their economy and integrating it to global markets. Most of them had to face lingering growth slowdown after the 1980s and eventually failed to catch up with higher-income countries (Rodrik, 1999). Middle-income countries typically have to deal with such enduring handicaps as the persistence of weakly productive activities or limited access to finance, while simultaneously having to face new difficulties, like declining competitiveness in labor-intensive industries or unsuitable governance hindering innovation. Persistent growth slowdown has become so

[10] This chapter is an extended version of the paper Razafimandimby Andrianjaka and Rougier (2019), written with Eric Rougier and published in Structural Change and Economic Dynamics.

pervasive among middle-income economies that the literature has described them as middle-income traps (hereafter MIT) from the late 2000s onwards (Agénor, 2017; Alias, Hussein, and Mohamad, 2013; Eichengreen, Park, and Shin, 2012; Flaaen, Ghani, and Mishra, 2013; Gill and Kharas, 2007; Jimenez, Nguyen, and Patrinos, 2012; Kanchoochat and Intarakumnerd, 2014; Lin and Treichel, 2012; Woo, 2009). In Asia, China, Malaysia and Thailand are regularly mentioned as typical examples of countries that have experienced a growth slowdown and may feature a variety of symptoms suggesting that they could be stuck into a middle-income trap (Alias et al., 2013; Cai, 2012; Eichengreen et al., 2012; Jimenez et al., 2012; Lin and Treichel, 2012; Woo, 2009). All these repeated experiences suggest that as the pattern of extensive capital accumulation and of productive diversification that enabled them to escape the lower income group starts running out of steam, developing economies have to face new challenges once reaching intermediary levels of incomes. Over the course of economic development, middle-income is the locus of strongly contradictory patterns like rapid economic growth and export surges paralleling skilled worker unemployment and growing inequality. Ray (2010) has insisted that these contradictory patterns, described as uneven growth, might simultaneously rise individuals' ambitions and generate frustrations, and claims that,

> "*Countries in the middle of that distribution would tend to accumulate faster, be more dynamic and take more risks as they see the possibility of full catch-up within a generation or less. One might expect the greatest degree of "country mobility" in this range. In contrast, societies that are far away from the economic frontier may see economic growth—exponential or otherwise—as too limited and too long-term an instrument, leading to a failure, as it were of "international aspirations. Groups within these societies may well resort to other methods of potential economic gain, such as rent seeking or conflict.*" (Ray, 2010: 57).

There is not a constituted theory of the MITs in the academic literature; neither can we find any consensual econometric identification of them. This extensive and impressionist literature was recently overviewed by Agénor (2017), albeit with no attempt to empirically test these candidate explanations. The more sophisticated papers would mobilize multiple equilibrium models to explain MIT as a stable equilibrium featuring slow growth and structural change. Because analytical foundations are sparse and partial, though, the identification of the MIT has substantially relied on informal and descriptive evidence pointing to a series of symptoms highly typical of middle-income countries like stagnation or decline of income and

productivity growth, growing inequality between rich and poor, over-urbanization and growing spatial polarization, shortage of public services, unemployment and skill misallocation, pervasive corruption, social unrest, electoral instability, decreasing trust and inefficient financial system. MITs are also frequently described as the consequence of policy failures, which are policy changes that fail to accompany the major structural change required to support economic growth. Although no shared definition has emerged, MITs have come to be loosely typified as "*situations where a growth slowdown results from bad policies (…) that prove difficult to change in the short-run*" (Gill and Kharas, 2015:6). Analytical elaborations of the nature of the MIT and the dynamic mechanisms underlying it are therefore few and far between. The bulk of existing empirical papers provides identification criteria based on growth slowdowns and lists various MIT symptoms generally based on evidence drawn from country surveys. As for empirical tests of the specificities of middle-income countries' pattern of medium-run economic growth, they are still sparse. Berg, Ostry, and Zettelmeyer (2008) or Eichengreen et al. (2012, 2014) have only addressed the determinants of growth slowdown, Hausmann, Pritchett, and Rodrik (2005) have separately analyzed the determinants of growth acceleration.

While these heterogeneous contributions have pointed to the cross-country heterogeneity of growth slowdown episodes, they have not attempted to explain why enduring growth slowdowns, be they symptoms of true MITs or mere statistical artifacts, happen or not in different middle-income economies. Furthermore, if the structural drivers of middle-income trap have been quite widely discussed, there are only a few papers that focus on the redistributive dynamics at play in MIT mechanics. Even Agénor (2017) and Gill and Kharas (2015), the most recent and comprehensive literature review on MIT, only scratch the surface of this subject. The present chapter proposes an empirical investigation of the core explanation of MITs, the one related to the patterns of productive and distributive transformation. Our method consists in identifying episodes of MIT, defined as spells of persistent growth slowdown, and relies on conditions of intensity and duration of growth slowdown that are now standard in the literature. Based on this identification, we check whether the impact of various factors suggested in the literature is different inside and outside the MIT. To our knowledge, our study is one of the very first empirical investigations of the main mechanisms underlying MITs. Indeed, the literature dealing with the mechanisms explaining MITs is emerging and, as such, it is still fairly heterogeneous, methodologically speaking, and hardly conclusive.

The rest of the chapter is structured as follows. The three first sections deal with the conceptual and methodological frameworks and methodology of our study. In Section 1, we discuss the analytical approaches used to provide theoretical foundations to the MIT. In Section 2, we overview several mechanisms highlighted by the few existing theoretical models that could potentially explain the trap. Section 3 describes the methodology we adopt to statistically identify MIT episodes as well as the empirical strategy we implement to address our research question. Section 4, 5, and 6 present and discuss the results of the descriptive and empirical investigation before concluding.

1. What is the Middle-Income Trap? Conceptual and statistical issues

In its simplest form, the MIT suggests that the GDP growth of a middle-income country has remained below its potential for a long time. However, this leaves open the question as to how to define both the potential level and the duration. A more sophisticated characterization would describe MIT as a stable equilibrium typical of middle-income countries featuring slow growth and structural change. However, here again, theorization faces various difficulties. So far, one of the most consensual symptoms of the middle-income trap is certainly the slowdown of formerly sustained trend of productivity increase.[11] The easiest method to identify MITs has consisted in identifying its main symptom, an episode of GDP growth or productivity slowdown (Aiyar et al., 2013; Daude and Fernandez-Arias, 2010; Eichengreen et al., 2012, 2014). Rather than defining the MIT as a low-level stable equilibrium, akin to the poverty trap, this method relies on an operational definition of MITs as a deterministic medium-run growth slowdown episode, out of the predictable trajectory that would be driven by a convergence or catch-up process. The different papers having identified the countries allegedly located in the MIT have tried to find breaks in GDP time series by mobilizing two contrasting approaches. Although the first one is more akin to the multiple steady-state models since they essentially address relative and absolute income divergence in a standard framework of growth empirics,[12] the other one accepts or tries to demonstrate the existence and distinctive nature of the MIT.

[11] Such a slowdown has for example been evidenced by Aiyar et al., 2013 or Eichengreen et al., (2012) on a sample of developing countries, and by Daude and Fernandez-Arias (2010) for Latin America.
[12] On the distinction between relative and absolute traps, see Im and Rosenblatt (2013).

The first approach consists in identifying breaks in GDP or productivity growth trajectories. This first set of studies has adopted an absolute definition of divergence to identify structural breaks in growth time series. Although some of them do not seek specifically to identify common patterns akin to a trap across middle-income countries, some characterization points toward this direction. Under the assumption that the evolution of GDP per capita in developing countries does not follow a single trend but has a stronger instability than in developed countries, structural breaks in GDP time series, that draw breakdowns, slowdowns, or accelerations spells, are identified. Pritchett (2000) ranks growth episodes into "hills" (steady growth), "plateaus" (strong growth followed by stagnation), "mountains" (rapid growth followed by a decline), "cliffs" (rapid decline), "plains" (continuous stagnation) and "valleys" (regular steady decline). If the "plains", i.e. the countries having experienced an average growth rate below 1.5% either before or after their structural break, reflect the situation of low-income countries retained in the poverty trap, the "plateaus", i.e., the countries that had an average growth rate over 1.5% before the structural break but less than 1.5% thereafter, are more akin to the MIT. However, this finding is not supported by Im and Rosenblatt (2013), who could not find a common growth configuration of a plateau-type across the countries identified as being caught in the MIT. Reddy and Minoiu (2009) find that the number and depth of growth stagnation episodes has increased during the 1970s and 1980s, before decreasing during the 1990s.[13] More importantly, they also show that the probability of becoming a stagnating economy is higher for the countries that were already stagnating during the previous decades, this result pointing to a possible hysteresis through which past episodes of stagnation might increase the country's vulnerability to future episodes of stagnation. Then, various structural determinants were econometrically investigated in order to explain these medium-run growth acceleration or slowdown spells.[14]

It is worth emphasizing that this purely "empirical" approach has been criticized on various grounds. First, existing researches have tended to isolate a single mechanism as being

[13] Reddy and Minoiu (2009) define the depth of stagnation as the percentage by which the income would have been higher than its observed level at the end of the study period, if the country had a steady income from the "beginning" of stagnation and year for which the minimum income during the period of stagnation has been reached.

[14] Various other studies have also focused on short term shock-related determinants to explain growth breakdowns (for instance Abiad, Bluedorn, Guajardo and Topalova, 2012; Carrière-Swallow and Céspedes, 2013; Cerra and Saxena, 2008). Still, they are relevant for the explanation of short-term growth volatility, and not the pattern of long-term trend volatility associated with MIT.

responsible for the inability to reach the next level of income, as Williamson (2012)[15] states, whereas mechanisms at work are more likely to be self-reinforcing. Another important criticism is the absence of a sound theory of middle-income traps on which empirical tests could rely, and the absence of a clear theoretical distinction between models of multiple equilibria, typically represented by models of traps, and multiple steady-state models, drawn from long-term growth theory (Rodríguez, 2008). As a consequence, the very existence of the MIT has been challenged by a series of papers contending that the episodes of growth slowdowns observed in middle-income economies may not necessarily be symptoms of a MIT but, rather, of the mechanism of convergence towards their long-term level of income per capita (Alias et al., 2013) or a transition from lower- to higher levels of economic development (Bulman et al., 2017).

Acknowledging these caveats, the second approach has consisted in relying on a priori statistical criteria in order to define MIT episodes and in subsequently listing the countries that have been trapped at middle-income levels. In line with the literature on growth transitions, Eichengreen et al. (2012, 2014) define the trap as an enduring growth slowdown spell. A country is in the MIT if its income per capita is above USD 10,000 (in constant 2005 PPP) and has undergone a slowing growth episode satisfying two conditions: (1) the average growth over the seven years preceding the downturn must be greater than 3.5%; (2) the decline in growth must have been significant and therefore the average growth over the seven years following the slowdown should be at least 2%. They identify growth slowdown episodes around the USD 17,000 threshold for per capita income, amounting to 57% of the technological frontier income and when the share of industrial employment reaches 23%. They also find that the higher the rate of growth over the seven years prior to the slowdown, the more likely this slowdown will take place. In a different vein, Felipe (2012a, 2012b) uses the distribution of the number of years a country has spent in the lower- or upper-middle-income category to identify a duration threshold above which, and a growth rate threshold below which, a country is supposed to be trapped. Although purely empirical, this approach has the merit to be based on a formal definition, albeit statistical, of the MIT. In a slightly different vein, some papers have attempted to identify episodes of MIT by looking at catch-up failures, i.e., growth trajectories that do not fit the projections made on the basis of unconditional or conditional convergence models. Robertson and Ye (2013) test the existence

[15] Before that paper, Rodrik (1999) was the single study to have investigated the combined impact of two groups of determinants: inequality and conflict management institutions.

of a MIT on time series data by checking whether the long-run estimated mean value of the log income difference between each country and the technological frontier is stationary and nonzero and lies in the middle-income band. They find that only one half of the middle-income countries of their sample fit to their MIT concept.[16] Aiyar et al. (2013) identify growth slowdowns by estimating the extent and time duration of negative deviations from the predicted growth path[17] and that match the stylized facts of traps observed in Latin American developing regions, the Middle East and North Africa, Sub-Saharan Africa and East Asia during the period from 1975 to 1985. Also relying on the convergence theory, Im and Rosenblatt (2013) have reconstituted matrices of transition between the different categories of income using transition probability and duration estimated by calculating the number of years required for each middle-income country to reach the higher income category on the basis of its initial income and growth rate differential with the frontier. They find on their sample that the transition from middle- to higher income is just as likely as the transition from the lower to the middle-income category, with the duration of the former being not significantly longer. Lastly, Pritchett and Summers (2014) have shown that the "*regression better explains growth slowdowns at middle-income level to the mean*" phenomenon than the alleged middle-income trap one. In addition, they argue that the episodes of rapid growth tend to be affected by frequent and discontinuous drop-offs in developing countries. Although contributing to the debate about how best to identify episodes of middle-income traps and their real nature, these various studies are not informative about the drivers of persistent growth slowdown that should be counterbalanced by efficient policies.

As a consequence of the absence of any clear theoretical and empirical distinction between multiple equilibria and multiple steady states, the very existence of the MIT has been

[16]All but 9 out of the 46 countries classified as middle-income in 2007 had passed an informal test of MIT consisting in having a mean growth rate of income relative to the USA not significantly different from zero, suggesting that these countries did not catch-up relative to the technological frontier during the observed period. According to the authors, this test rules out the possibility that the slowdown is due to a convergence episode or to purely stochastic trends. The 22 countries (years of break) having passed the formal MIT test are Bolivia (1982) Botswana, Bulgaria (1991), Costa Rica (1980) El Salvador (1978), Guatemala (1982), Honduras (1982), Indonesia (1997), Iran (1976), Iraq (1990), Jordan (1995), Lebanon, Mexico (1979/1994), Mongolia (1990), Morocco (1960), Panama (1979), Peru (1982/1987), South Africa (1983), Syria (1979/2000), Thailand (1990), Tunisia (1983) and Turkey.

[17] Their methodology focuses on countries that have started to converge toward a higher level of income and experience a growth slowdown episode relative to the predicted catch-up growth, during several consecutive years. They regress GDP per capita on the lagged income and measures of physical and human capital accumulation for a panel of 138 countries over 11 periods (1955 to 2009) and identify a period of slower growth if the deterioration of the effective performance against predicted growth (measured by the residual) is sufficiently pronounced to place the period observed in the smallest quintile of change in residuals between two successive years.

challenged by the argument that the growth slowdowns observed at middle-income levels may not necessarily be symptoms of a trap but, instead, of the natural mechanism of convergence towards their long-term income slowdown when laggard countries reach middle-income levels (Alias et al., 2013). Furthermore, insofar as growth slowdowns come from a variety of sources including external crises, civil conflicts or poor governance (Berg et al., 2008), and since the national and regional development models are multiple, researchers should not try to find a single mechanism as being responsible for the inability to reach to the next level of income (Williamson, 2012). Although its existence and nature remain highly debatable consensual working definition of the MIT may nevertheless be drawn from the variety of approaches. Rather than a low-level stable equilibrium, the MIT could be seen as a deterministic medium-run growth slowdown episode, out of the predictable convergence trajectory. The next section reviews the literature about and beyond MIT in order to identify and order possible theoretical and testable explanations of the growth slowdowns identified as MITs.

2. An overview of the productive and distributive drivers of MIT

We choose to discuss separately two main categories of persistent growth slowdown drivers. The first one concerns the productive drivers related to growth regime, factor misallocation, trade, and productive structure transformation. The second category, which has been less documented in the literature, concerns the mechanisms associated with distributive dynamics.

2.1. Productive transformation issues

Countries in the MIT have reached a stage of development at which the structures, endowments, and institutions that had initially promoted growth are no longer effective in sustaining it (Agénor, 2017; Flaaen et al., 2013; Gill and Kharas, 2007, 2015). Growth slows down in middle-income countries because inadequate patterns of factor accumulation and economic growth are not removed, thereby generating dynamic inefficiencies that will eventually make it more difficult to remove them. Inadequate productive structures and economic policies may, therefore, be responsible for the slow or absent transition from the extensive growth pattern, based on technological imitation and broad-based mobilization of

unskilled labor and physical capital, to a more intensive pattern relying on technological innovation and skills (Doner and Schneider, 2016).

Innovation-based and skill-based growth is theoretically supported by larger educational endowment. Long-run growth is supported by investment in primary and secondary education, which spurs investment in imitation capabilities, in developing countries, while the ability to produce advanced technology is spurred by investment in tertiary education when the country gets closer to the technological frontier (Vandenbussche, Aghion, and Meghir, 2006). Agénor, Canuto, and Jelenic (2012) establish in a two-sector model that the persistence of the imitation-led pattern in middle-income economies might well generate a stable low-level equilibrium called "*imitation trap*". Narrow productivity and wage differentials between the innovation and imitation sectors constrain individual investment in the advanced skills that would be required to be employed in the innovation sector. As high-ability individuals remain under-employed in the imitation sector, investment in public infrastructures complementary to skills (like transport or information networks) does not increase skilled labor productivity, and the innovation sector fails to expand. Indeed, skill misallocation is highly typical of the middle-income economies, which have heavily invested in secondary and tertiary education, while their productive system is feebly absorptive of the increasing skilled workforce (Eeckhout and Jovanovic, 2012).

Demographic transition also stands as a potential reinforcing factor of skill misallocation and a potential driver of a persistent growth slowdown in middle-income countries. Furuoka and Munir (2011) have identified positive reinforcement mechanisms between population growth and structural change as, by increasing potential market size, population growth triggers competition between firms and investment in new activities. However, the population age structure also matters. High dependency ratios will hinder medium-run growth due to the inactive children and pensioners who are poorly contributive to wealth generation and saving, (Leff, 1964). Conversely, provided young workers are sufficiently endowed in physical and human capital, a demographic dividend may appear at intermediate stages of the demographic transition, as constraints on savings, productive investment and labor supply progressively stop to be binding (Bloom et al., 2006; Van der Ven and Smits, 2011).[18] The balance between the demographic drag and dividend is thus conditional on the physical and human capital

[18] For some middle-income countries, like China or Argentina, the demographic dividend may also progressively vanish with population aging and increased dependence ratios.

endowment of new workers, as well as on the correct matching of skill supply and demand, which eventually depends on the pace of productive transformation.

Issues related to productive transformation characterizing middle-income countries have also been described by the "*scissor*" effect. According to Gill and Kharas (2007, 2015), middle-income countries tend to be squeezed between low-wage competitors dominating mature industries and advanced innovators dominating skill-intensive industries. Along the path from lower- to middle-income levels, broad-based physical capital accumulation gradually modifies relative factor prices and comparative advantage towards more capital-intensive goods (Lin, 2009, 2011; Schott, 2003; World Bank, 2013). One unintended consequence is that former comparative advantage relying on cheap labor starts vanishing at the time when skill-intensive industries are not yet competitive (Agénor, Canuto, and Jelenic, 2012; Eichengreen et al., 2012, 2014). Productivity slowdown in middle-income economies may thus be explained by the simultaneous loss of comparative advantage in labor-intensive industries consecutive to rising wages and weakness of new comparative advantage in skill-intensive industries (Felipe, 2012b; Gill and Kharas, 2007; Kharas and Kohli, 2011; Spence, 2011). Consequently, deeper trade integration may not be as beneficial to middle-income economies, which lack of sound comparative advantage, as it may be to the lower- or higher-income economies, as the latter are endowed with firmer comparative advantage than the former (Felipe, 2012b; Jankowska, Nagengast, and Perea, 2012; Kharas, Zeufack, and Majeed, 2010).

Productive diversification is a crucial driver of growth slowdown or acceleration in middle-income countries, as was evidenced by Felipe (2012b). Still, the relationship is not straightforward as middle-income economies' productive system may be diversified but not necessarily fully efficient and competitive. As put forward by Hausmann and Rodrik (2003), middle-income economies start diversifying their production before they start rationalizing it by facilitating the market-based selection of competitive industries. As was evidenced by Imbs and Wacziarg (2003) and Cadot, Carrère, and Strauss-Kahn (2011a), productive transformation is first driven by output and export diversification along the extensive margins; output and export diversification reaching their maximum level at intermediate levels of economic development. This may drive economic growth for a while, before inefficiencies and lack of competitiveness reduce the growth divide of diversification. For most middle-income countries, further upgrading production and trade, therefore, would require diversification along the intensive margins (Cadot et al., 2011a) and productive re-

concentration through rationalization and selection of the most productive industries and firms (Hausmann and Rodrik, 2003). Indeed, according to Gill and Kharas (2015: 7), "*the fact that economies tend to re-specialize at higher-income level is the most important lesson from Imbs and Wacziarg (2003).*" This lesson has tended to be ignored by policy-makers in many middle-income countries who seek to encourage the rise of new industries distant from the country's comparative advantage, through vertical or assembly FDI, with only weak impacts on productive rationalization and sophistication, as was recently evidenced by Lectard and Rougier (2018). However, the empirical evidence on this non-linear relationship between specialization and development level are mitigated. For instance, De Benedictis, Gallegati, and Tamberi (2009) do not support the existence of re-specialization at a higher level of development but find that richer countries tend to diversify more. For Kaulich (2012), the relationship between specialization and development takes the shape of an "L-curve" rather than an "U-curve" interpreting this pattern as a tendency of high-income countries to "*diversify away from the global average, possibly due to specific products that can only be produced by countries with the highest incomes*" (p.52).

From this review of the theoretical and empirical literature related to productive issues in middle-income countries, we can draw a set of candidate explanations of MITs that will be tested in Section 5. We will check whether human capital misallocation, the demographic dividend, and productive diversification help explain the difference in growth regime between the countries within and outside the MIT.

2.2. Distributive change issues

Another set of possible causes of MIT relates to the distributive issues, including changes in the structure of income, income inequality, distributive conflicts, and redistribution policies. As recently evidenced by Berg et al. (2018), inequality and redistribution have a significant impact on medium-run GDP growth. The size of the middle-class and the pace of its variation may also probably help explain why GDP growth is sustained or not in the medium run. Although fundamental for the issue of medium-run sustained growth slowdown, these issues have received only scant attention in the emerging literature on the MIT, and no study so far, to our knowledge, has tried to document in as much detail as in the case of productive transformation the mechanisms through which distributive changes and redistribution could be linked to growth slowdown at the middle-income level.

2.2.1. Changes in the income structure

As regards the extensive literature linking inequality to economic growth, Ehrhart (2009) and Birdsall (2007a) identify several channels through which inequality can be harmful to growth (imperfect market, endogenous fertility, endogenous fiscal policy, and political instability). However, inequality can also have a positive influence on growth by allowing at least a few individuals, to invest in human and physical capital and by giving incentives for innovation and entrepreneurship. In the specific literature on MIT, Agénor (2017) talks only briefly about the potential harmfulness of inequality for growth for countries in the middle-income category pointing to the financial constraints that would prevent individuals (and their children) from investing in human capital and thus potentially constrain their productivity and therefore economic growth. Egawa (2013) provides some evidence for China, Malaysia, and Thailand that inequality may have prompted a growth slowdown episode after the country has successfully passed the first stage of extensive accumulation. It is also claimed that China and Malaysia should improve access to secondary education and implement income redistribution measures to develop high-tech industries before their demographic dividends expire.[19] More recently, Wang and Lan (2017) estimate the probability of falling/escaping a MIT on inequality (measured by Gini) and aging population indicator and find evidence of the importance of income inequality as a determinant of MIT.

Nonetheless, the body of literature that seems to be the most relevant to the issue of trap is that documenting how income distribution has differentiated effects on long-run growth, depending on both the level of inequality and development. More so, rather than playing separately, the distributive mechanisms tend to be intertwined and are closely related to the productive transformation issues discussed above. In addition, they also need to be discussed in light of the institutional dynamics that characterize the countries at an intermediate stage of development.

Galor and Moav (2004, 2006) describe a virtuous circle involving distributive dynamics and centered on human capital accumulation. Indeed, structural transformations result in significant changes in the structure of employment, the distribution of income, and social mobility. In an economy where access to education remains unequal and where the possession of capital is highly polarized, income inequality can rise tremendously under the pressure of

[19] Yet, since their estimation explains GDP growth and not the probability of a growth slowdown, this work is not fully informative with respect to the issues involved here.

structural changes. On the contrary, in an economy where access to physical and human capital is more egalitarian, economic inequalities tend to fall, and opportunities for upward social mobility are more abundant.

Jamarillo (1995) combines the model of Murphy, Shleifer, and Vishny (1989)with an endogenous growth model and shows that in less unequal societies, the widening of domestic markets can improve the profitability of investment in modern technologies, thereby generating more employment in the modern sector with positive fallout on labor productivity and real demand for modern goods. This is quite close to the mechanism described by Agénor et al. (2012) with the difference that, for the latter, skill misallocation issues disrupt the positive sequence. Indeed, they show that an imitation trap, which is assimilated to the MIT, may result from the stagnation of innovation related to skill misallocation. They explain how the inability to mobilize enough skilled workers in the modern sector generates a decrease in the salary in this sector, the low wage differential between the traditional and modern sector then results in lack of incitation to invest in the acquisition of the skills required to work in the modern sector. In this framework, wage inequality is still necessary to provide incentive for investment in human capital. Dahan and Tsiddon (1998) provide one way to reconcile both rationales. For them, wage inequality between skilled and unskilled is necessary during early stage of development to provide incentives for human capital accumulation; but, when the country is rich enough (in the latter stages of development), the effect is reversed since incentive is outweighed by the increasing opportunities allowing more individuals to invest in human capital. This idea that inequality can be beneficial (or harmful) to economic growth in earlier (latter) stages of development is shared by Galor and Tsiddon (1997) and Galor (2000).

2.2.2. Distributive conflicts and redistribution

Distributive conflicts can potentially inhibit the pace of economic transformation and economic growth in middle-income countries. The slowness of productive transformation, as well as the bottlenecks they drive to, may challenge social cohesion and existing redistribution policies. In the middle-income economies where productive transformation is slow, the dearth of employment opportunities for young and skilled workers might prompt politico-economic instability (Campante and Chor, 2012) or, on the contrary, persistent authoritarian-redistributive political economies (Rougier, 2016) both thwarting medium-run growth.

The transition from lower to intermediary income levels generally, therefore, creates relative dissatisfaction for those for whom well-being has not significantly improved, or has been reduced, by productive or sectoral employment changes (Ray, 2010). When economic growth is rapid, individuals' expectations generally grow even faster than average income, and the lack of short-term opportunities for a large share of the population, therefore, puts heavy pressure on redistribution or protection. At middle-income levels, self-perpetuating mechanisms linking governance to social frustration can stick an economy into a growth slowdown equilibrium after years of sustained expansion. The failure by middle-income economy to efficiently mobilize human resources, by providing their educated population with opportunities of productive or creative jobs, can increase the frustration of the middle-classes of urbanized educated workers of services or manufactures, whose talents (and those of their offspring) are not adequately allocated by the economy. This, in turn, can provoke higher demand for redistribution or social conflicts as recently happened in Brazil or Egypt (Campante and Chor, 2012).

The impact of redistribution on long-run growth is relatively controversial and less clear than the impact of inequality. Indeed, redistribution is supposed to promote private investment by increasing socioeconomic stability by reducing inequality and conflict over economic resources. However, redistribution may also depress saving and investment rates, with adverse effects on economic growth by imposing high taxation on the wealthiest. At the country level, empirical studies have first found that redistribution effectively has either a positive (Persson and Tabellini, 1994) or an adverse effect on the latter (Alesina and Rodrik, 1994; Perotti, 1992). More recent studies tend to converge towards a positive effect, notably those conducted in more recent periods. By using an *ex post* measure of redistribution, *i.e.* the difference between market (pre-redistribution) and net (post-redistribution), Ostry, Berg, and Tsangarides (2014) and Berg et al. (2018) [20] have provided new evidence that lower net inequality seems to drive faster and more durable growth for a given level of redistribution; and redistribution generally appears benign in its impact on growth; only in extreme cases is there some evidence that it may have direct adverse effects on growth. They conclude that "*the combined direct and indirect effects of redistribution—including the growth effects of the resulting lower inequality—are, on average, pro-growth*" (Ostry et al., 2014: 7).

[20] Berg et al. (2018) is an updated and extended version of Ostry et al. (2014).

Since Alesina, Baqir, and Easterly (2000), we also know that public employment can be used as a disguised redistributive policy in order to avoid political opposition to explicit tax-transfer schemes. Their empirical test on U.S. municipalities shows that public employment tends to be higher when income inequality and ethnic fragmentation are higher. Stepanyan and Leigh (2015) have provided evidence on the Middle East and North African countries, that public employment schemes used to provide jobs to the unemployed, give rise to distortions in the labor market in the medium to long run. Not only does public employment fail to reduce the unemployment rate, but large public employment leads to job destruction in the private sector, with the extent of this impact being largely influenced by the degree of substitutability between public and private production and the size of the rents in the public sector.

In middle-income countries with weakly accountable government, such political pressure can, in turn, foster fiscal deficits and inflation, like it did in Latin America during the 1970s, therefore triggering financial crises and subsequent growth collapses (Haggard and Kaufman, 2008). In the presence of weak institutions of conflict management, social conflicts also tend to increase the economic costs of exogenous shocks by delaying fiscal adjustment, increasing economic and political uncertainty, and channeling fiscal resources towards redistribution rather than investment, therefore constraining the medium-term growth potential (Rodrik, 1999).[21] In some Asian or MENA middle-income countries, the risk of political instability has driven incumbent rulers to provide socio-economic security by increasing the degree of state regulation of the economy, albeit this policy certainly worsens the structural transformation deficit by thwarting competition and hindering the emergence of new activities. Aghion, Algan, Cahuc, and Shleifer (2010) have built a non-linear growth model in which high corruption prompts social distrust and, eventually, increases demand for high state regulation of the economy, with the latter increasing, in turn, corruption and trapping the country into a low-growth equilibrium.

In summary, various dimensions of the transformation of income distribution can be at play in determining economic development. They can be analyzed separately, but are more likely interconnected as well as depending on the institutional environment. More so, those distributive dynamics are undoubtedly related to the structural transformation of the economy.

[21]Hausmann (2003)'s analysis of the collapse of Venezuela's growth in the years 1980-1990 provides a perfect confirmation of this sequence, with the persistent inability to resolve the distributive conflicts increasing the country risk and subsequently downgrading the quality and legitimacy of public institutions.

Recently, Islam (2014) provides an illustration of this in the case of China, where he identifies two interconnected channels through which high inequality may be harmful to economic growth and put China at the risk of falling into an "*inequality-trap*." "*The economic channel works via high savings rates, misallocation and waste of investment, and declining efficiency of capital. The social channel works via discontent created by worsened relative economic situation of many citizens, resentment against politico-administrative sources of inequality, additional grievance caused by environmental injustice, which is a derivative of economic inequality*" (Islam, 2014: 12). The very nature of *traps* implies that they result from cumulative effects of various and/or concomitant rather than isolated socioeconomic phenomena.

3. Methodological approaches for identifying the MIT episodes and determinants

3.1. Who is caught in the MIT? Methodological issues

Before investigating the drivers of a persistent growth slowdown in middle-income economies, we need to identify these episodes from time-series data. Identification based on relative criteria is uneasy, and the debate as to which method is the best has not been settled down so far. In order to address the duration and magnitude of growth slowdowns at middle-income levels, we have chosen to combine the two former approaches reviewed above that are more transparent. We first look at GDP growth time series for an extensive set of countries to identify slowdown episodes using similar criteria of breakdown year and slowdown duration as in Eichengreen et al. (2012, 2014). Then, we define income per capita conditions to limit the relevant growth slowdown set to middle-income countries. As in Felipe (2012a; 2012b), we consider that the episodes of middle-income growth slowdown thus identified correspond to MITs if they fit a threshold of slowdown duration. Combining these two approaches enables identifying a subset of country-year identified as enduring slowdown episodes at the middle-income level and a subset of country-year outside enduring slowdown episodes on which various candidate explaining factors can be tested.

We, therefore, start by identifying breakpoints defined as years featuring a significant slowing-down of GDP growth from national time series. For comparison sake, we consider as

in Eichengreen et al. (2012, 2014) an episode of growth slowdown when GDP growth rate fulfills two conditions:

$$(C1)\ g_{t-n,t} \geq 0.035$$

$$(C2)\ g_{t-n,t} - g_{t,t+n} \geq 0.020$$

Where $g_{t-n,t}$ is the average growth rate of GDP per capita between times t-n and t, and $g_{t,t+n}$ the average growth rate between times t and $t+n$. As in Eichengreen et al. (2012), we set n to 7. (C1) implies that the average growth rate of the seven-year window before the breakpoint year should be at least 3.5%. (C2) defines a growth slowdown as a decline of at least 2% points of the average growth rate during at least seven years after the break year. This condition implies that the growth slowdown has to be both substantial and sustained to be considered as a MIT[22].

Eichengreen et al. (2012) have added the condition as to GDP per capita must be greater than USD 10,000. As Agénor (2017), we consider that this threshold is too high since it would evacuate from the analysis a bunch of lower middle-income countries that may be trapped in low growth equilibrium akin to MITs. Instead, we use a more fine-grained filter enabling to differentiate our results for the lower- and upper-middle-income categories. Although useful, the World Bank classification of income categories was not directly applicable to our data since it is based on the gross national income (GNI) per capita series while we use the gross domestic product (GDP) per capita.[23] To establish our thresholds, we follow Felipe (2012a; 2012b), who compute correspondence between the GNI and GDP thresholds from the Maddison dataset. Using data from 1987 to 2010, he has (i) assigned countries based on their 1990 GDP per capita measured in PPP in their income category for 10,080 different sets of thresholds[24], (ii) computed the pair-wise correlations between these 10,080 classifications and the official World Bank classifications, and (iii) selected the set of thresholds showing the strongest correlation (0.9741) with the official World Bank classification: low-income countries have per capita GDP below USD 2,000, lower-middle-income countries have GDP

[22] For a recent criticism of this approach, see Agénor (2017).

[23] Despite the high degree of correspondence between the thresholds, some countries may not have the same classification as that of the World Bank.

[24] 14 intervals of USD 250 for the low income segment ranging from USD 1.500 to USD 4.750 × 16 intervals of USD 250 for the lower middle-income segment ranging from USD 5,000 to USD 8.750 × 45 intervals of USD 250 for the lower middle-income segment ranging from USD 9,000 to USD 20,000 = 10,080 sets of thresholds. For example, the first set of threshold is given by the vector (USD 1,500; USD 5,000; USD 9,000) and the last 10080th set is the vector (USD 4,750; USD 8,750; USD 20.000).

per capita standing between USD 2,000 and USD 7,250, upper-middle-income countries have GDP per capita between USD 7,250 and USD 11,250 and higher-income countries have per capita GDP above USD 11,250. Accordingly, a condition (C3) is added, restricting MITs to the years when the country satisfying conditions C1 and C2 is located at lower- and upper-middle-income levels:

(C3) USD 2,000 $\leq y_T <$ USD 7,250 or USD 7,250$\leq y_T <$ \$11,250, where y_T is the per capita GDP in year T (expressed in PPP adjusted constant 1990 USD), with $t < T < t+n$ and $n = 7$ as in conditions (2) and (3).

The first year that a country meets the three conditions C1, C2, and C3 is taken as the year of entry into a MIT episode.

Finally, condition (C4) below means that the status of a MIT is attributed to each middle-income country having slowdown duration above the sample mean duration.

$$\text{(C4) } MIT_{i,t} = 1 \text{ if slowdown duration}_i \geq 30 \text{ years}$$

Countries are therefore considered to be trapped into a middle-income trap if they have remained more than 30 years in the middle-income category over 1950-2010. The average number of years during which our sample countries stay in the lower-and upper-middle-income segment are respectively 20 years and 7 years. The duration dispersion is, however, considerably larger for the episodes of lower middle-income growth slowdowns. Although only one-quarter of the lower middle-income growth slowdowns have lasted less than 11 years, time duration ranged between 25 and 57 years for the remaining three-quarters.[25]

3.2. What difference does it make to be caught in the MIT? Identifying medium-run growth patterns inside the trap

We propose a straightforward empirical approach consisting in comparing the impact of various candidate explanations of the persistent growth slowdown characterizing the MIT and the transition from intermediary to higher income levels.

Our intuition is that the impact of various drivers of growth may be different for the MICs inside and outside the trap. By estimating Equation 1.1 below, we seek to identify the extent

[25] Felipe (2012a ; 2012b) distinguishes between low middle-income and upper middle-income trap as well as between earlier and recent transitions. In our paper, we do not make such distinctions, plus we use the distribution of slowdown duration rather than the number of years as middle-income.

to which the medium-run growth impact of each determinant identified by the MIT literature is different for the middle-income countries inside the trap than for the rest of the sample:

[Equation 1.1]

$$\text{GDP growth}_{i,t-t+5} = \alpha_1 * \text{controls}_{i,t-t+5} + \alpha_2 * \text{MIT}_{i,t-t+5} + \alpha_3 * \text{determinant}_{i,t-t+5} + \alpha_4 * \text{MIT}_{i,t-t+5} * \text{determinant}_{i,t-t+5} + \mu_i + \nu_{t-t+5} + \varepsilon_{i,t-t+5}$$

In Equation 1.1, country *i*'s medium-run growth prospect in year *t*, measured by the average growth rate over each five-year spell, is regressed on a set of contemporaneous standard growth controls and the MIT determinant, which is specifically tested. We use a fixed effect panel estimator with errors clustered by country in order to control for the time-invariant unobserved effects, which are a major concern in long-run analysis, as well as country-invariant unobserved effects. The dummy variable MIT takes the value 1 for the country-year individual observations meeting the different conditions of a MIT episode as identified in previous Section 3 and 0 otherwise. For example, consider a country that has been into the middle-income category since 1972, started a growth slowdown in 1975 and has undergone a 31-year slowdown while remaining middle-income. Then, the years 1975 to 2006 are coded 1, and those from 1972 to 1975 and after 2006 are coded 0. The five-year intervals 1975-1980, 1980-1984, 1985-1989, 1990-1994, 1995-1999, 2000-2004 are coded 1 while the intervals 1970-1974 and 2005-2010 are coded 0 because less than three constitutive years were coded 1.

The method of identification is straightforward: each potential determinant of the MIT is introduced as part of an interaction term with the MIT dummy described above, besides traditional controls of GDP growth. In Equation 1.1, the estimated coefficient α_4 identifies the extent to which the impact of any singular growth determinant is minored or magnified for countries inside the MIT, with reference to the estimated impact α_3 of this very determinant for the middle-income countries outside the MIT. We also systematically test the difference with the growth pattern of a larger reference group labeled "extended," including the middle-income economies and the higher income countries not trapped. By doing so, we can compare the MIT's growth pattern with that of countries that could successfully avoid or escape the trap and reach higher income levels. Estimations include time and country fixed effects to control for time-varying (identical for all countries) and time-invariant (specific to each country) non-observable variables that may affect average GDP growth in the subsequent period. Likewise, the coefficient's standard errors are clustered by country.

Estimating a truly dynamic model would allow controlling for catching-up. As evoked in the previous section, growth slowdowns could correspond to a process of reversion to the mean of the convergence-type rather than to a MIT. The lagged value of the level of GDP per capita was added to the explaining factors to control for convergence. This enables us to check that our results are not driven by an uncontrolled catch-up process. Lastly, endogeneity issues are addressed by systematically estimating a model with one period (five-year) lag where the dependent variable standing for the average growth rate is measured over *t* and *t*+5 while the explaining variables are averaged over *t-5, t-1*. Insofar as the choice of future growth as the dependent variable limits the risk of reverse causality, we can be confident that our fixed effect estimations measure more than mere correlations, that is different patterns of a statistical relationship between a series of policy or economic determinants observed at each period and subsequent medium-run growth. Owing to this prudent empirical strategy, we could identify a series of factors which are differently associated with subsequent growth trajectories inside and outside the trap with fairly relative confidence that they are causal.

3.3. What variable could make a difference? Explanatory variables

As explained in the previous section, we test various candidate determinants of the sustained middle-income growth slowdown that have been put forward by the recent literature on MITs. The determinants we investigate are listed in Table 1.1 and the desriptive statistics can be found in Appendix 1.12. As regards accumulation, the investment rate is measured by the gross capital formation in percentage of GDP. As for population-related drivers, we use alternatively the population growth rate and the youth dependency ratio, which is the ratio of younger dependents (people younger than 15) to the working-age population (those ages 15-64). As our proxy for human capital, we compute the ratio of tertiary and secondary education achievement rates that is supposed to capture the extent of the higher skills with respect to lower skills. We also run estimations using secondary and education achievement rates separately.[26] To measure structural transformation, we use the overall, intensive, and extensive diversification index (measured by the Theil coefficient) computed by the International Monetary Fund. Higher values of theses indicator mean lower export diversification.[27]

[26] Only some results are reported.

[27] The IMF diversification toolkit covers187 countries including most low-income countries and provides indicators on export product diversification and export product quality from 1962-2010. The measures in this

Table 1.1 List of explanatory variables

Variables	Description	Source
Investment rate	Gross capital formation immobilized as a percentage of GDP	World Development Indicator (WDI)
Population growth	Population annual growth (in percentage)	World Development Indicator
Dependency ratio	Age dependency ratio, young (as a percentage of working-age population)	World Development Indicator
Secondary/ Tertiary completion	Percentage of population who have completed secondary/tertiary education	Barro and Lee (2013)
Skill ratio	Ratio of tertiary schooling over Secondary schooling	Authors based on Barro and Lee (2013)
Overall concentration	Theil export diversification index	International Monetary Fund (IMF) Diversification toolkit[28]
Intensive margins	Within-component of the Theil export diversification index	International Monetary Fund Diversification toolkit
Extensive margins	Between-component of the Theil export diversification index	International Monetary Fund Diversification toolkit
Trade openness	Current openness (exports and imports in percentage of GP)	Penn World Table 8.1 (Feenstra, Inklaar, and Timmer, 2015)
Democracy	Polity score	Polity IV project (Center for Systematic Peace) [29]
Market inequality	Gross inequality (Gini coefficient)	SWIID 3.1 (Solt, 2009)
Net inequality	Inequality after taxes and cash transfers (Gini coefficient)	SWIID 3.1
Redistribution	Market inequality – Net inequality: taxes and cash transfers	SWIID 3.1

The analysis of distributive changes has always been challenging due to the scarcity of reliable data and appropriate measures, even more in a long-run analysis like ours. For our baseline estimations, we take advantage of the dataset compiled by Ostry et al. (2014) using the SWIID (Solt, 2009), which contains data on net and market inequality measured by the

toolkit are based on an updated version of the UN–NBER dataset, which harmonizes COMTRADE bilateral trade flow data at the 4-digit SITC (Rev. 1) level. It is available at: https://www.imf.org/external/np/res/dfidimf/diversification.htm

[28] Data available at http://data.imf.org/?sk=A093DF7D-E0B8-4913-80E0-A07CF90B44DB

[29] For more details on the construction of the variable, see Center for Systematic Peace, 2013 Major Episodes of Political Violence codebook: http://www.systemicpeace.org/inscrdata.html

Gini coefficient and redistribution.[30] This measure does not capture all the effects of government, including government wages, tariffs, and subsidies influencing relative prices, labor market policies, or social spending. Our focus is thus on the effect of fiscal redistribution. Nevertheless, Berg et al. (2018) find that fiscal redistribution is highly correlated to other government transfers, the correlation ranging from 0.5 to 0.75. The other reason why we choose to use this database is that information on other public redistribution does not cover a large enough sample of countries and time-span, especially in developing countries.

As additional controls, we introduce an indicator of trade openness, which is the traditional sum of imports and exports in percentage of GDP. Although the idea that institutions are key determinants of growth is pervasive (Acemoglu, Johnson, and Robinson, 2005; Rodrik, Subramanian, and Trebbi, 2004), long-run data and measures are challenging to find. We thus choose the polity score index that is the most commonly used and captures the regime authority spectrum on a 21-point scale ranging from -10 (hereditary monarchy) to +10 (consolidated democracy).

4. Who is caught in the Middle-Income Trap? Descriptive analysis

Like Felipe (2012a), we use the Maddison dataset (Bolt and Van Zanden, 2014),[31] which is very comprehensive and covers most countries over the period 1950-2010. GDP per capita is expressed in 1990 constant USD. We complete a few series until 2010 using the GDP per capita growth rate - in local currency - measured at constant prices by the International Monetary Fund. In the absence of data, the following countries are excluded: the countries of the former Russian Federation; the countries of the former republics of Czechoslovakia and Yugoslavia; Cuba, North Korea, Puerto Rico, Somalia, Palestinian Territories and Trinidad

[30] Ostry et al. (2014) and Berg et al. (2018) follow the recommendation of Solt (2009) to improve the reliability of the data. *"In particular, in our baseline sample, we strike out a set of specific observations where Solt concludes that the raw surveys are unreliable. In addition, we require that one of two conditions be satisfied in order to include an observation, each designed to ensure that the redistribution measure is informative: either (a) that the country contain at least one survey of some sort of net concept (e.g. disposable income or expenditure) and one market concept (e.g. personal market income), so that there is country-specific information on redistribution itself from the survey data for that country; or (b) that uncertainty associated with estimated redistribution is very small relative to the size of redistribution."* (Berg et al. (2018:7)

[31] We use the version released in 2013. However, an updated version of the dataset, (Bolt et al., 2018) was released in 2018 and available at https://www.rug.nl/ggdc/historicaldevelopment/maddison/releases/

and Tobago. The countries are grouped into five regions: Asia (East Asia and Pacific, and South Asia), LAC (Latin America and Caribbean), MENA (Middle East and North Africa), SSA (Sub-Saharan Africa) and ENA (Europe and North America). In the end, we recover data for 132 countries from 1950 to 2010 that will be used for the preliminary identification of MIT described in Section 3.1. This dataset is then merged with other datasets on the various determinants and controls we are interested in, shortening the period to 1970-2010 and reducing the sample to 78 countries due to data availability issues.[32] The list of countries in the sample is in Appendix 1.10.

4.1. Transition between income group and slowdown episodes

For starters, we look at the evolution of the income classification of the 78 countries in our sample over the period 1950 to 2010. On average, the countries spent 32 years at the low-income level, 36 years at the middle-income level, and 30 years at the high-income level.[33] Most transition into the middle-income took place in the three first decades. For the 30 countries that entered into the lower middle-income category: 8 occurred in the 1950s, 8 in the 1960s, 7 in the 1970s, 4 in the 1980s, and the remaining three in the 1990s and 2000s. Regarding the upper middle-income category, even though more transitions took place in the 1950s (4), 1960s (9), and 1970s (7), there are several recent transitions in the 1990s (4) and 2000s (9).[34]

Regarding geographical location, 12 countries from Sub-Saharan Africa and South Asia are low-income countries over the entire period. Most countries from the Europe and North American regions started either at lower-middle (16) or upper-middle (5) income category and, except for Spain and Ireland, they achieved their transition into the high-income group by the end of the 1970s. 30 countries, mostly from Asia (10), Latin America and Caribbean (8), and Middle East and North Africa (7) regions, moved to middle-income levels but have remained in the lower category until 2010 except Bulgaria, China, South Korea, Malaysia, Taiwan, Thailand, and Turkey. Some countries exited the lower-middle-income category but have remained in the upper-middle category until 2010: Argentina, Colombia, Costa Rica,

[32] Some countries that are excluded may also be concerned by the middle-income trap issues. Further investigation would be needed to verify whether we can observe similar patterns as in the sample of 78 countries in their case.

[33] Appendix 1.11 shows the number of years spent in each income category over the period 1950 to 2010 by country for the 132 countries.

[34] Among the initial 132 countries, 58 countries joined the middle-income group between 1960 and 2010: 17 in the 1960s, 30 in the 1970s, 5 in the 1980s and 5 in the 1990s.

Hungary, Mexico, Peru, Poland, and South Africa. Only South Korea and Taiwan succeeded in climbing all ladders from low income to high income category.

Conditions (C1) and C2) allow for identifying growth slowdown spells. 58 countries[35] in our sample experienced at least one of those spells during the course of their development. They were more frequent at the middle-income level with an average number of slowdown episodes of 8 compared to 6 at low-income and 5 at high-income levels. Regionally speaking, Asian countries experienced them on average more often (12) than the other regions (7 for Europe and North America, 6 for Latin America and Carribean, 10 for Middle East and North Africa, and 10 for Sub-saharan Africa).

4.2. Who is caught in the middle-income trap?

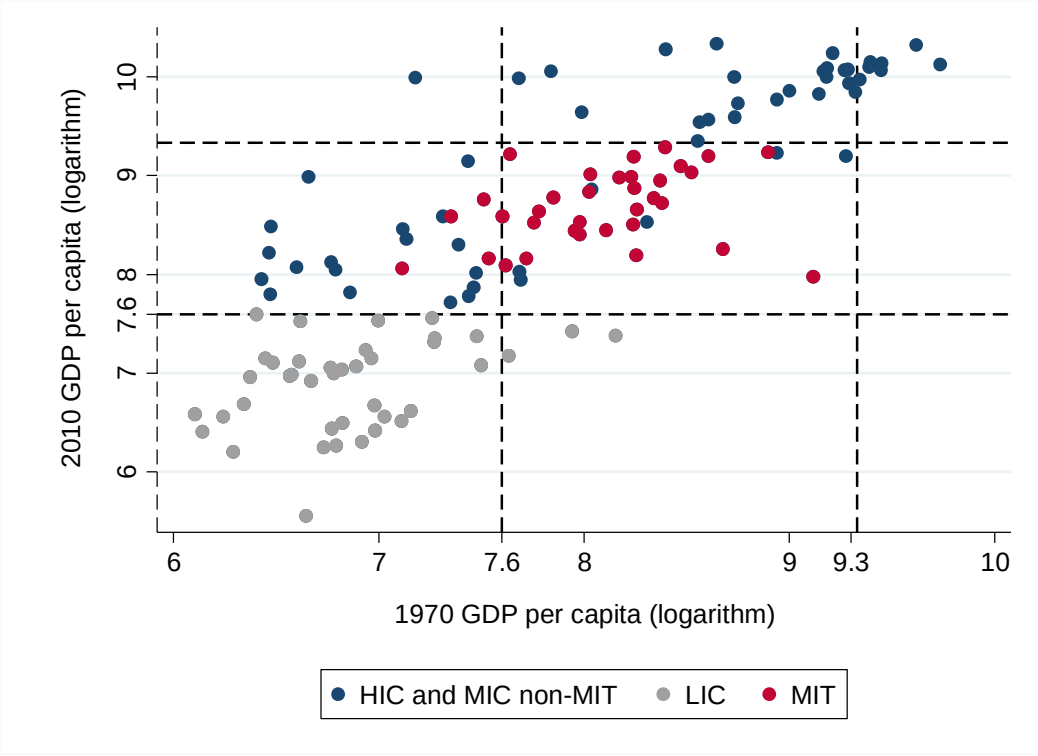
For the sake of concision, we use the following acronyms: middle-income trap (MIT), low-income country (LIC), middle-income country (MIC), and high-income country (HIC) in the remainder of the chapter. Figure 1.1 portrays the 132 countries in the initial sample based on their income level in 1970 and 2010. As we can see, most countries that are identified as MIT, except the Dominican Republic, Paraguay, Tunisia, and Yemen (on the left of the vertical reference line corresponding to 7.6), were already in the middle-income category in 1970 and except Mauritius, they remained stuck at this level in 2010. To be identified as MITs, a country must meet all four conditions in Section 3.1; some countries are thus excluded, no matter the years spent at the middle-income level or the existence of slowdown breakpoints in their trajectory. Venezuela, for instance, has been in the middle-income class since 1960 (59 years) but, having not experienced a significant growth slowdown (condition 1), it is not considered to be in a MIT.

Likewise, other countries fail to meet the duration criteria. Countries like Germany, Ireland, Portugal, and Singapore have experienced growth slowdown at the middle-income level, but their slowdown episodes lasted less than 30 years.[36] They are for most the advanced economies and oil-producing countries which have not experienced a slowdown over the period considered based on our criteria.

[35] The remaining 20 countries being: Australia, Bangladesh, Bolivia, Colombia, Denmark, El Salvador, Ghana, India, Madagascar, Nepal, New Zealand, Norway, Pakistan, Philippines, South Africa, Sri Lanka, Switzerland, Tanzania, United Kingdom, and Venezuela.

[36] Felipe (2012a, 2012b) use the median duration as a threshold because the mean can be driven by extreme values. In our case, since the median (29) is close to the mean, the difference in the classification is minor, i.e. Uruguay would be considered as a country experiencing a MIT. The inclusion of Uruguay in the latter group does not affect our empirical results.

Figure 1.1 Countries in the MIT between 1970 and 2010



Note: 7.6 and 9.3 correspond to the boundaries of the MIC income-range (USD 2,000-11,250)

Table 1.2 Growth slowdown at the middle-income level over 1960-2010: Countries and time duration (in years)

LAC		ENA		MENA		ASIA		SSA	
Jamaica	41	Germany	2	Jordan	41	Korea South	22	Mauritius	32
Brazil	41	Bulgaria	41	Israel	11	Malaysia	33	Botswana	26
Peru	41	Hungary	41	Iran	40	Singapore	9		
Panama	41	Greece	27	Turkey	38	Taiwan	14		
Argentina	41	Romania	39	Tunisia	36	Thailand	20		
Costa Rica	38	Spain	17	Algeria	32	Indonesia	19		
Dominican Rep	38	Poland	38	Egypt	31				
Ecuador	37	Portugal	16	Morocco	31				
Guatemala	36	Ireland	15						
Mexico	32								
Uruguay	29								
Chile	12								

Note: Countries with slowdown duration over the average (30 years) are in blue cells.

Source: Bolt and Van Zanden (2014). Author's computations.

Out of the 78 countries in the sample we use for the empirical analysis, 37 - listed in Table 1.2 - have experienced a slowdown at the middle-income level. Most of them are located in Latin America and Caribbean (10), Middle East and North Africa (7) and Europe and North America (4). For 9 countries, the year of entry is in the 1960s; for 21 in the 1970s; for 4 in the 1980s; for 3 in the 1990s. When the condition (C4) is strictly applied, only 23 cases of MITs are identified (in blue cells), and among them, only Mauritius successfully escaped in 2001.[37] However, due to data coverage, some slowdown episodes, namely Botswana, Indonesia, and Thailand's, which started in the late 1990s or 2000s, are right-censored: they may or may not last more than 30 years but are, at the very least, still on-going in 2010.

5. What difference do productive structures make? Estimation results

5.1. Differentiated patterns of productive factor use inside and outside the MIT: extensive versus intensive growth and the demographic drag

Table 1.3 reports the results of the estimation of Equation 1.1 for the restricted reference group, including only MICs, which seems the most conceptually sound. Baseline model's estimation reported in Equation 1.1 confirms that countries with higher investment rates, more liberalized economies, lower lagged income per capita, and lower population growth rates tend to exhibit higher growth rates. It is worth noticing that, when log-transformed, the estimated coefficient of the lagged level of GDP per capita stands in a range of magnitudes (from 0.018 to 0.40) highly consistent with the standard literature on conditional convergence. The estimated coefficient of the MIT dummy shows that five-year mean GDP growth is, on average, 2.4 points lower inside the MIT than outside.

[37] Using the initial sample of 132 countries, we identified 58 cases of slowdown spells at middle-income level. The mean duration is around 28 years, bringing the number of countries having experienced a MIT (respecting condition 4) to 39. The duration dispersion is however considerably larger for the episodes of lower middle-income growth slowdowns. Although only one quarter of the lower middle-income growth slowdowns have lasted less than 11 years, time duration ranged between 25 and 57 years for the remaining three quarters. Apart from countries excluded due to data limitation, only Uruguay (with 29 years of slowdown) is excluded due to the average duration criteria. Out of the aforementioned 58 cases, 17 countries entered the MIT in the 1960s, 30 in the 1970s, 5 in the 1980s and 5 in the 1990s.

Table 1.3 GDP growth drivers, capital and population growth: Contemporaneous and lagged model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent : five-year av. GDP growth	Baseline		Investment rate interaction		Population growth interact.		Dependency rate interact.	
	Contempor.	Lagged	Contempor.	Lagged	Contempor.	Lagged	Contempor.	Lagged
Lagged GDP p. cap.	-1.2e-05***	-8.1e-06**	-1.2e-05***	-5.2e-06**	-1.2e-05***	-8.2e-06***	-1.3e-05***	-8.1e-06***
	(1.8e-06)	(1.9e-06)	(1.8e-06)	(1.9e-06)	(1.8e-06)	(1.8e-06)	(1.9e-06)	(1.9e-06)
Population growth	-0.008**	.0008	-0.008**	-0.0103***	-0.0037	0.007*	-	-
	(0.0036)	(0.004)	(0.0037)	(0.003)	(0.005)	(0.004)	-	-
Skill ratio	0.006	0.007	0.0061	0.015*	0.0066	0.008	0.0067	0.007
	(0.009)	(0.006)	(0.009)	(0.007)	(0.0084)	(0.006)	(0.0084)	(0.005)
Trade openness	3.1e-04***	4.5e-05	3.1e-04***	2.0e-04**	3.1e-04***	6.4e-05	3.0e-04***	6.1e-05
	(9.3e-05)	(8.2e-05)	(9.2e-05)	(7.7e-05)	(9.0e-05)	(7.6e-05)	(9.6e-05)	(7.4e-05)
Investment rate	0.0018***	-0.0010***	0.0019***	-0.0014***	0.0018***	-0.001**	0.0017***	-0.001**
	(0.0003)	(0.0004)	(0.0004)	(0.0005)	(0.0004)	(0.0004)	(0.0003)	(0.0004)
MIT dummy	-0.024***	-0.020**	-0.023	0.008	-0.01	0.006	-0.019	0.013
	(0.005)	(0.007)	(0.015)	(0.014)	(0.011)	(0.011)	(0.015)	(0.019)
MIT*Investment	-	-	-0.00003	-0.0009	-	-	-	-
	-	-	(0.0005)	(0.0007)	-	-	-	-
MIT*Population gr.	-	-	-	-	-0.007	-0.0113**	-	-
	-	-	-	-	(0.0045)	(0.0048)	-	-
Dependency rate	-	-	-	-	-	-	-2.05e-04	-3.65e-06
	-	-	-	-	-	-	(2.87e-04)	(2.74e-04)
MIT*Dependency	-	-	-	-	-	-	-8.18e-05	-4.38e-04*
	-	-	-	-	-	-	(2.20e-04)	(2.39e-04)
Constant	0.036***	0.076***	0.035**	0.085***	0.024	0.060***	0.039	0.078***
	(0.013)	(0.011)	(0.016)	(0.014)	(0.016)	(0.011)	(0.026)	(0.022)
Observations	261	255	261	255	261	255	261	255
Number of countries	49	49	49	49	49	49	49	49
Adj. R-squared	0.34	0.06	0.44	0.25	0.45	0.37	0.43	0.37
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES
Marg. impact[a]			X_1 : Investment rate		X_1 : Population growth		X_1 : Dependency ratio	
MIT: X_1	-	-	NS	-	NS	**-.28**	NS	**-.33**
non-MIT: X_1	-	-	**+.41**	-	NS	**+.48**	NS	**NS**

Robust standard errors in parentheses; Restricted means that the comparison group is limited to MICs not in the MIT; Extended means that the restricted comparison group is extended to HICs; a) the marginal impact of the variable X interacted with the MIT dummy in the corresponding column measures the (in terms of standard deviation) variation of GDP growth rate for a one standard deviation increase of X (at the mean value of all other regressors); in bold are reported the marginal impacts that are statistically different for the MIT and non-MIT samples; *** p<0.01, ** p<0.05, * p<0.10, NS p>0.10

The negative coefficient of investment rate for the lagged model would suggest that the positive growth impact identified for the simultaneous model is due to the reverse positive impact of growth on capital accumulation. We checked that using the contemporaneous investment rate in columns 2 and 4 did not change the results for the other coefficients, notably for the interaction with the MIT dummy.

In Column 2 are reported the estimated coefficients for the lagged model, where all right-hand side variables are five-year lagged, accounting for medium-run impacts of some growth drivers. Although most variables are not significant, coefficient estimates for the initial level of GDP per capita and for the MIT dummy are consistent with those of the contemporaneous model of Equation 1.1 (reported in column 1). Estimations of the baseline model, therefore, confirm that countries trapped in the MIT feature lower growth rates than other middle and higher-income countries, which may durably impede convergence.

Extending the estimation sample to higher-income countries (hereafter HICs) (Appendix 1.1's columns 1 and 2) leads to fairly similar results for the lagged levels of GDP per capita, the MIT dummy, trade openness, and the investment rate, whenever the model is contemporaneous or lagged. Interestingly, the skill ratio becomes a driver of growth, while it was not significant in the MICs subsample, and the adverse impact of population growth reverses to a positive one in the extended sample (albeit only in the lagged model). This suggests that, in the sample including HICs, population growth plays more as a spur than as a drag and that the general pattern of growth is more skill-intensive than in the sample containing only MICs.

Table 1.3's remaining columns 3 to 8 investigate further the extent to which growth patterns differ inside and outside the MIT with respect to the standard drivers of extensive growth, namely the investment and population growth rates and the dependency ratio. At the bottom of each column are reported the marginal growth impact (in terms of GDP growth standard deviation) of a one standard deviation increase of the X driver of interest – derived from the corresponding column's estimation and computed at the mean value of all other regressors – for the MICs inside and outside the MIT. When X has a statistically different growth impact across the two subsamples, the pair of marginal impacts are reported in bold character.

First, the coefficient of the interaction variable MIT*investment in Table 1.3's column 3 and 4 is not significant, suggesting that investment has a similar impact on growth in the MICs trapped and not trapped. However, the pattern is different when the reference sample is extended to higher-income countries since the growth impact of investment is more than two-times larger in the MIT than in the rest of the sample, as we can see in the figures of Appendix 1.1's column 3. This suggests that the growth pattern inside the MIT is more extensive than in the group composed of MICs not trapped and of higher-income countries. Re-computing the magnitudes of the predicted impacts is equally insightful: a one standard

deviation increase of the average investment rate will lead to a 0.39 standard deviation increase of the average GDP growth in the MICs in the MIT, against 0.17 standard deviation increase for the MICs not trapped and the HICs.

Results for population growth and the dependency ratio provide additional support to the assumption of an extensive pattern of growth in the MIT. Estimates reported in Table 1.3's column 6 show that a five-year lagged population expansion tends to reduce GDP growth inside the MIT while triggering growth outside the MIT. In terms of magnitude, the gap is large as a one standard deviation increase of the dependency ratio leads to a 0.28 standard deviation drop of the GDP growth rate inside the MIT while prompting a 0.48 standard deviation increase of the GDP growth rate for the MICs outside the MIT.[38]

Besides, the significant coefficient of the interaction term in Table 1.3's column 8 suggests that the dependency ratio might drive this adverse growth impact. A one standard deviation increase of the dependency ratio leads to a 0.33 standard deviation decrease of the average growth rate inside the MIT. The impacts are very similar in both direction and magnitude when the comparison group is extended to HICs (Appendix 1.1's columns 8) as a one standard deviation increase of the dependency ratio in the preceding five-year period leads to a 0.34 standard deviation drop of the average growth rate inside the MIT.

For the same level of investment, our estimations indicate that countries featuring faster population growth or higher youth dependency ratio have lower growth rates inside the MIT than outside the MIT. This would mean that slower growth in the MIT subsample could be explained by a dearth of physical capital per worker.[39] In the rest of this section, we check whether the adverse growth effect of population dynamics observed inside the MIT relaxes or persists when physical and human capital endowments increase. Indeed, moderation of the negative growth impact of the population dynamics and structure when investment rate and the skill ratio increase would mean that the demographic drag on growth might be attributed to the lack of physical or human capital per young worker. In order to test this assumption, we estimate Equation 1.2 which is an adaptation of the baseline equation with triple interactions $MIT_{i,t} * X1_{i,t} * X2_{i,t}$:[40]

[38] Appendix 1.1's column 6 confirms that a similar gap, albeit narrower, exists when the sample is extended to HICs.

[39] Quite surprisingly, human capital plays no part in this story. Appendix 1.2 and 3.3 show that, although tertiary schooling spurs growth in the extended sample not trapped, schooling levels or structure have no effect for the MICs, trapped or not, for the contemporaneous and for the lagged models.

[40] For the sake of convenience, subscripts *t-t+5* were simplified to *t*.

[Equation 1.2]

$$\text{GDP growth}_{i,t} = \alpha_1 * Z_{i,t} + \alpha_2 * MIT_{i,t} + \alpha_3 * X1_{i,t} + \alpha_4 * X2_{i,t} + \alpha_5 * MIT_{i,t} * X1_{i,t} * X2_{i,t} + \alpha_6 * MIT_{i,t} * X1_{i,t} + \alpha_7 * MIT_{i,t} * X2_{i,t} + \alpha_8 * X1_{i,t} * X2_{i,t} + \mu_i + \nu_t + \varepsilon_{i,t}$$

We compute from these estimations the predicted marginal impact of population growth for various levels of the investment rate and of the skill ratio, for the MIT and the non-MIT complementary sub-samples.[41] These conditional marginal impacts are reported in Figure 1.2.[42] As illustrated by panel 1a, the growth impact of population expansion is positive and increasing outside of the MIT, with statistical significance being limited to the highest region of the investment rate distribution (higher than 28% of GDP) corresponding to the top 5% of the extended reference sample. By contrast, inside the MIT, the predicted growth impact of population expansion remains negative and relatively unchanged, even for investment rates comprised between 20 and 30%,[43] suggesting that the dearth of capital per worker is not the channel through which population expansion reduces GDP growth.[44]

Similarly, no growth-enhancing cumulative effect of labor and skill abundance could be detected for the vast majority of countries inside the MIT sample, whatever the skill intensity of the workforce, as shown by Figure 1.2 (panel b) plotting the marginal growth impacts of population growth for different values of the skill ratio. Indeed, population expansion hinders medium-run growth inside the MIT for skill ratios lower than 0.6, representing 95% of the MIT sample. Nonetheless, the adverse effect of population growth disappears for the 5% of countries featuring the highest levels of skill ratios, as suggested by the rapid widening of confidence intervals above and below the zero line after the skill ratio reaches 0.45. For the comparator countries not in the trap, no similar adverse impact is found, either for the dependency ratio or for population growth, and the marginal impact of population growth is positive and increasing with the skill ratio when computed from the estimation of the lagged

[41] As explained in Brambor, Clark, and Golder (2006), when complex interactions including two continuous variables are present in the model, the full marginal impact sums up all estimated impacts of X_1, including those conditioned by the other continuous variable X_2. In Equation 1.2, the full impact of X_1 on GDP growth is given by $\alpha_3 + \alpha_{8*} X_2$ outside the MIT and by $\alpha_3 + (\alpha_5 + \alpha_8)_* X_2$ inside the MIT. They both vary with X_2.

[42] The estimation results are available on demand.

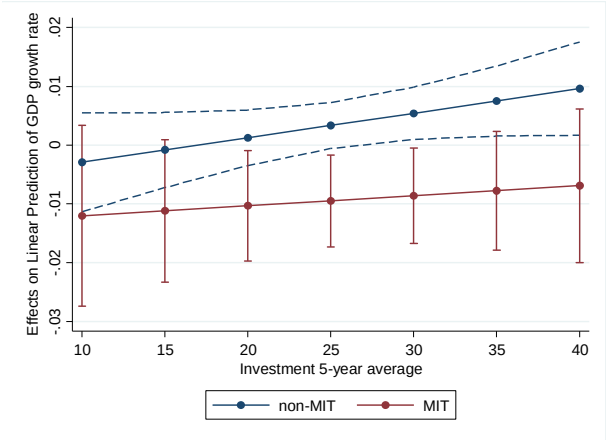
[43] Outside of the MIT, the impact of a one standard deviation increase of the population growth rate would lead to a 0.15 to 0.40 standard deviation increase of the GDP growth rate after the investment rate grows from 25 to 40%. Inside the MIT, the same increase of the investment rate would lead to only a slight worsening from -1.0 to -1.2 percentage point of the adverse growth impact of population expansion (respectively 0.40 to 0.45 standard deviation).

[44] Similar computation of the marginal growth impact of the dependency ratio at different levels of investment rate shows that the positive cumulative impact only holds outside the MIT and for very high levels of investment rate (30% and higher) corresponding to the top 5% of the extended reference sample (composed of higher income countries and middle-income countries not trapped).

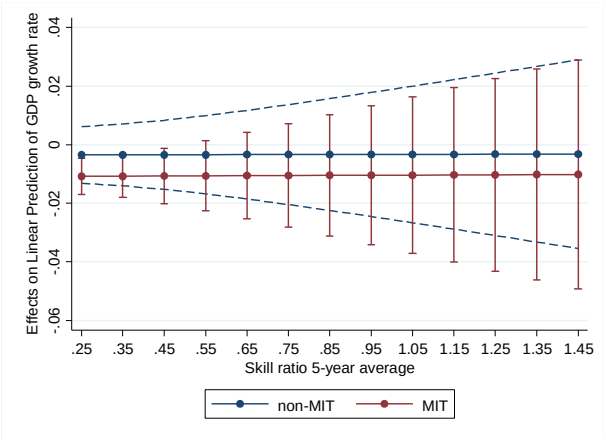
model (panel c). Taken together, these different findings suggest that the larger availability of skills, and not of physical capital, might, to some extent, improve the growth contribution of population expansion inside and outside the MIT.

Figure 1.2 Predicted impacts of population growth for various levels of the investment rate (1a) and of the skill ratio (1b): MIT versus non-MIT

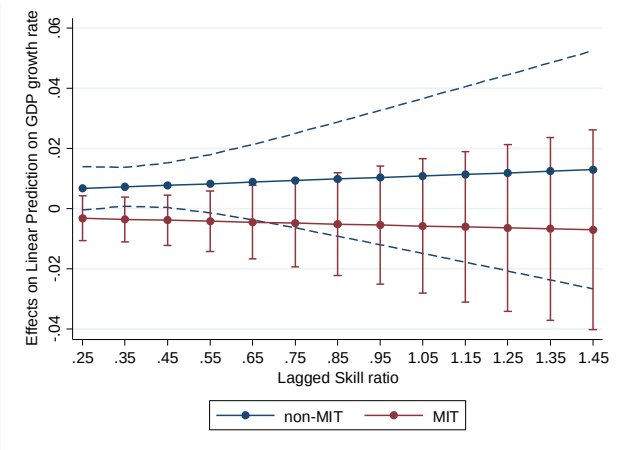
a. Population growth*investment rate (simultaneous model - extended sample)



b. Population growth*skill ratio (simultaneous model - restricted sample)



c. Population growth*skill ratio (lagged model - restricted sample)



Source: Author's computations.

Our findings in this section suggest that the MICs that fail to modify the extensive pattern of growth substantially are more likely to face enduring spells of growth slowdown. The standard drivers of GDP growth are fairly differentiated, albeit to various extent, inside and outside the MIT. Capital accumulation proves more prominent inside than outside the MIT, and population growth acts as an actual drag on medium-run growth, probably because youth dependency plays more like a burden than as an opportunity. Our estimations in this section, therefore, suggest that the adverse impact of population expansion and dependency ratios on

economic growth characterizing countries in the MIT can be explained by their failure to capture the demographic dividende. The non-linear estimations presented at the end of the section support the assumption that this failure may be due to the dearth of human capital per worker. In the next section, we look more closely at the patterns of productive diversification inside and outside of the MIT and discuss additional indications of the skill misallocation issue.

5.2. Differentiated patterns of productive diversification: More on skill misallocation

The productive structure and its pattern of transformation is a crucial driver of medium-run growth in middle-income countries. Export diversification is a relevant indicator of the productive structure transformation as it measures the capacity of a country's firms to produce new products and to sell them competitively on external markets. However, we know that after a long phase of diversification, generally based on extensive margins and extensive growth patterns, both export and production need to concentrate, growth must become more intensive, competition more stringent and firms more productive if the MIC wants to catch-up with HICs (Cadot et al., 2011a; Imbs and Wacziarg, 2003) . According to the scissor effect, MICs will find it harder than other countries to switch from labor-intensive and resource-intensive specializations, on which they lost their comparative advantage to the benefit of low-wage countries, to skill-intensive and innovation-intensive specializations, on which their comparative advantage is still limited with respect to skill-rich and innovation-led economies (Gill and Kharas, 2007, 2015; Kharas and Kohli, 2011; Spence, 2011). MICs may, therefore, experience a growth slowdown before their transition from diversification to re-concentration is achieved (Hausmann and Rodrik, 2003).

Figure 1.3, plotting the overall Theil index of export concentration against the contemporary level of GDP per capita for the whole sample, confirms that export concentration first decreases and then increases during the course of economic development. A closer look at the panels b and c of Figure 1.4 also reveals that export concentration tends to be lower in the MICs in the MIT than in the rest of MICs, and that most countries in the MIT are still engaged in the diversification phase, characterizing the single LICs (panel a), while a substantial proportion of the MICs not trapped have reached the concentration phase characterizing HICs (panel d).

Figure 1.3 Scatter plots of Theil of concentration versus GDP per capita for the whole sample

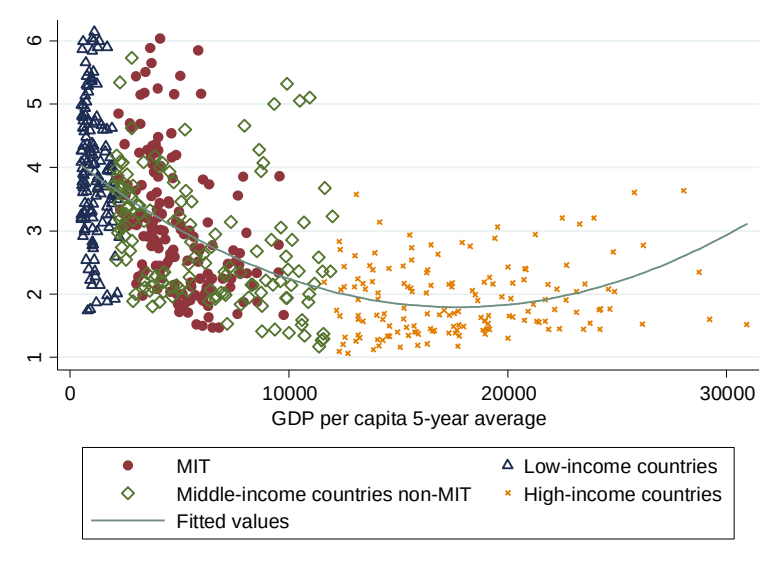
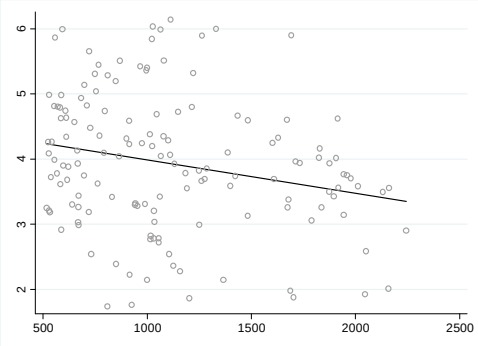
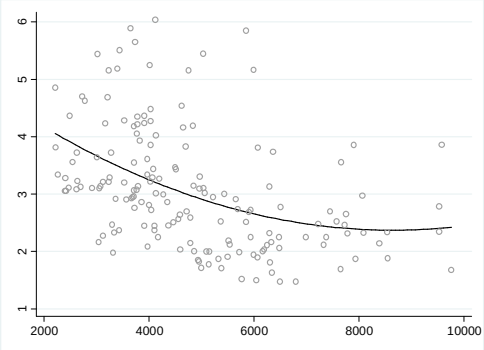


Figure 1.4 Scatter plots of Theil of concentration versus GDP per capita for the different subsamples

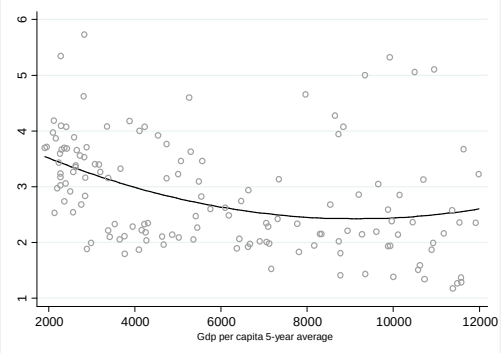
a. Low-income countries



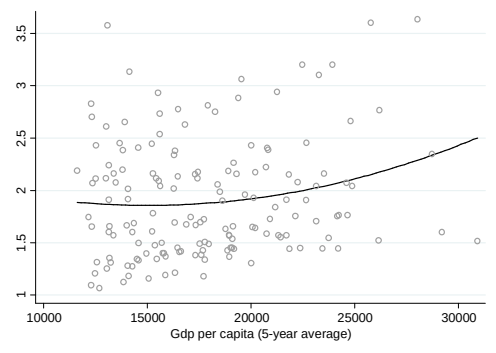
b. Middle-income countries MIT



c. Middle-income countries non-MIT



d. High-income countries



Source: WDI and IMF. Author's computations.

More importantly, average cross-period growth rates of the overall, extensive, and intensive indicators of export concentration reported in Table 1.4 show that neither the MICs, whether in the MIT or not, nor the lower-income countries did start concentrating their export during the period investigated in the present paper. Although the trend of diversification should be reversed, and the number of different lines of production should drop if the developing country wants to reap aggregate productivity gains from the survival of the best-fitted activities and firms (Hausman and Rodrik, 2003), only higher-income countries could achieve positive variations of the overall concentration index in our sample. In contrast, countries in the MIT have barely started to rationalize their production, and most of them are still diversifying their productive structure, notably on the extensive margins. This may explain why growth slows down there, as the output gains drawn from production and export diversification, notably along extensive margins, start to dissipate while the productivity gains drawn from concentration, along both extensive and intensive margins, are still absent. Put differently, countries in the MIT are therefore not engaged in the phase of export concentration that is necessary to converge toward more developed economies while they simultaneously exhibit a slower pace of diversification, other things set equal than the LICs.

Table 1.4 Levels and cross-period growth rates of the overall, extensive margins and intensive margins concentration index: Middle-income Trap, Middle-income not trapped, lower-income and higher-income countries

	MIT	MICs non-MIT	LICs	HICs
	Level			
Total concentration	3.07 (1.04)	2.85 (0.97)	3.93 (1.03)	1.92 (0.56)
Extensive margins	0.518 (0.41)	0.42 (0.35)	0.594 (0.568)	0.129 (0.155)
Intensive margins	2.55 (0.79)	2.43 (0.77)	3.33 (1.02)	1.80 (0.495)
	Variation (in%)			
Total concentration	-2.0 (0.79)	-2.4 (0.089)	-1.9 (0.086)	+2.5 (0.079)
Extensive margins	-7.4 (0.10)	-11.5 (0.33)	+0.5 (0.614)	-16.9 (1.66)
Intensive margins	+0.02 (0.49)	-0.5 (0.10)	+0.12 (0.091)	+2.8 (0.084)

Source: IMF. Author's computation.

In Table 1.5, we investigate whether the pattern of productive transformation is different inside and outside of the MIT for both the restricted and extended reference samples. The different indicators of export concentration (overall, extensive margins and intensive margins concentration) are regressed on a set of drivers, with country and time fixed effects being included, and on the set of their interaction with the MIT dummy. The set of drivers is now

standard in the literature on export diversification (Cadot et al., 2011b; Lectard and Rougier, 2018): the investment rate, the population growth rate, the skill ratio, the lagged level of GDP per capita and its squared value (in order to account for the hump shape (Cadot et al., 2011a) and trade openness.

Table 1.5 Drivers of productive transformation: Overall, intensive and extensive margins diversification, restricted, extended high and extended reference samples

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent :	Concentration index (Theil)		Extensive margins concentration		Intensive margins concentration	
	FE restricted	FE extended	FE restricted	FE extended	FE restricted	FE extended
MIT dummy	0.950*	0.007	0.620***	0.264*	0.334	-0.266
	(0.554)	(0.551)	(0.202)	(0.154)	(0.577)	(0.505)
Lagged GDP per capita	-0.00036***	-1.39e-05	-0.00015**	8.10e-07	-0.00021*	-1.42e-05
	(0.000115)	(4.07e-05)	(6.75e-05)	(1.83e-05)	(0.000108)	(3.77e-05)
Lag. GDP p.c. squared	2.35e-08***	2.20e-09*	1.27e-08***	8.96e-10*	1.08e-08	1.28e-09
	(7.76e-09)	(1.13e-09)	(4.11e-09)	(4.80e-10)	(7.37e-09)	(9.73e-10)
Skill ratio	0.704**	0.015	0.278**	0.002	0.426	0.014
	(0.318)	(0.030)	(0.106)	(0.009)	(0.333)	(0.029)
MIT*Skill ratio	-0.912***	-0.279**	-0.399***	-0.158**	-0.512	-0.120
	(0.327)	(0.124)	(0.128)	(0.075)	(0.344)	(0.139)
Trade openness	0.008**	0.0008	0.0004	-0.0005	0.008**	0.0012
	(0.0036)	(0.0019)	(0.0019)	(0.0006)	(0.0037)	(0.002)
MIT*Trade openness	-0.0038	0.0015	-0.0003	0.0003	-0.0036	0.0012
	(0.0032)	(0.0031)	(0.0018)	(0.0012)	(0.0037)	(0.003)
Investment rate	0.0026	-0.0058	-0.0071	-0.0066	0.0098	0.0006
	(0.0087)	(0.009)	(0.0064)	(0.004)	(0.0106)	(0.0093)
MIT*Investment rate	-0.012	0.006	0.0016	0.0045	-0.014	0.0014
	(0.012)	(0.013)	(0.008)	(0.006)	(0.012)	(0.012)
Population growth	-0.004	0.078	0.082	0.043	-0.086	0.032
	(0.074)	(0.063)	(0.070)	(0.030)	(0.080)	(0.063)
MIT*Population growth	-0.009	-0.050	-0.117	-0.067	0.107	0.019
	(0.079)	(0.089)	(0.085)	(0.051)	(0.099)	(0.092)
Constant	3.458***	2.648***	0.801***	0.483***	2.657***	2.183***
	(0.384)	(0.330)	(0.214)	(0.104)	(0.407)	(0.350)
Observations	256	404	256	402	256	402
Number of countries	49	64	49	64	49	64
Adj. R-squared	0.37	0.24	0.46	0.3	0.16	0.11
Country FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses; Restricted means that the comparison group is limited to MICs not in the MIT; *** p<0.01, ** p<0.05, * p<0.10, NS p>0.10

One essential difference between the MIT and the non-MIT comparison groups concerns the capacity of skills to trigger productive transformation through re-concentration. Whereas skills are crucial drivers of export concentration in the MICs not trapped, the skill ratio's impact on export concentration turns negative inside the MIT, as shown in columns 1 and 3.

Moreover, this negative impact of skills on productive change inside the MIT is mainly driven by the dynamics of diversification along the extensive margins, which is supported by skills inside the MIT, as can be seen in columns 3 and 4. From Table 1.5, we can infer that skills might be misused inside the MIT since, by feeding the pursuit of extensive diversification, they deliver lower growth dividend than if they were used to concentrate production on the most productive and competitive lines, as it is the case in MICs not trapped. The fact that inside the MIT, skills tend to support diversification along the extensive margins rather than concentration, of both extensive and intensive margins, points to the absence of a productivity-increasing rationalization of production in the MICs trapped. This may be another way to identify the issue of skill misallocation in the MIT.

The next stage consists in checking if this contrasted pattern of export concentration effectively helps explain the difference of medium-run growth rate inside and outside the MIT. Table 1.6 displays estimations of Equation 1.1 when the different dimensions of the productive diversification (overall export concentration, concentration along the intensive and extensive margins) are interacted with the MIT dummy. Columns 1 in Tables 1.6 and Appendix 1.4 first show respectively that while it has no impact on the group of MICs not trapped, a more concentrated set of exports slightly increases GDP growth in the reference group extended to higher-income countries (Appendix 1.4). The non-significant coefficient of the interaction term in the two columns indicates that the impact is not significantly different for the countries in the MIT, whatever the comparison subsample.

When time lags are introduced, however, export concentration does hamper growth for the countries in the MIT, whatever the reference group (columns 2 in Tables 1.6 and Appendix 1.4). Based on the lagged model estimation on the restricted sample of column 2, a one standard deviation increase of the overall concentration index leads to a 0.45 standard deviation decrease (1.1 percentage point) of the average GDP growth rate inside the MIT. By contrast, a one standard deviation increase of the concentration index leads to 0.3 standard deviation (0.7 percentage point) expansion of the GDP growth rate in the MICs non-trapped and HICs (based on estimations of Appendix 1.4's column 1).

Table 1.6 GDP growth and export concentration: Restricted sample, contemporaneous and lagged models

Dependent : five-year GDP growth	(1) Contemp.	(2) Lagged	(3) Contemp.	(4) Lagged	(5) Contemp.	(6) Lagged
Lagged GDP per capita	-1.2e-05***	-7.5e-06***	-1.2e-05***	-8.1e-06***	-1.2e-05***	-7.1e-06***
	(1.9e-06)	(1.9e-06)	(1.7e-06)	(1.8e-06)	(1.9e-06)	(2.0e-06)
Investment rate	0.0019***	-0.0011***	0.0019***	-0.0010**	0.0019***	-0.0011**
	(0.0003)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)
Skill ratio	0.0055	0.0050	0.0045	0.0056	0.0063	0.0056
	(0.0087)	(0.0059)	(0.0083)	(0.0058)	(0.0085)	(0.0059)
Trade openness	0.0003***	1.2e-05	2.7e-04***	-3.4e-06	2.8e-04***	2.5e-05
	(8.9e-05)	(8.7e-05)	(8.6e-05)	(8.3e-05)	(9.2e-05)	(8.9e-05)
Population growth	-0.0092**	0.0008	-0.0093***	-0.0003	-0.0095***	0.0006
	(0.0035)	(0.0036)	(0.0035)	(0.0036)	(0.0034)	(0.0037)
MIT dummy	-0.0171	0.0304	-0.0170***	-0.0075	-0.0387**	0.0145
	(0.0140)	(0.0201)	(0.0049)	(0.0090)	(0.0162)	(0.0192)
Export concentration	-0.0036	0.0051	-	-	-	-
	(0.0037)	(0.0041)	-	-	-	-
MIT*Concentration	-0.0017	-0.0143***	-	-	-	-
	(0.0038)	(0.0051)	-	-	-	-
Extensive margins	-	-	0.0102	0.0080	-	-
	-	-	(0.0077)	(0.0066)	-	-
MIT*Extensive margins	-	-	-0.0205**	-0.0215***	-	-
	-	-	(0.0086)	(0.0071)	-	-
Intensive margins	-	-	-	-	-0.0062	0.0032
	-	-	-	-	(0.0041)	(0.0046)
MIT*Intensive margins	-	-	-	-	0.0042	-0.0117*
	-	-	-	-	(0.0041)	(0.0062)
Constant	0.0491***	0.0609***	0.0368**	0.0757***	0.0552***	0.0682***
	(0.0165)	(0.0137)	(0.0147)	(0.0116)	(0.0141)	(0.0128)
Observations	256	250	256	250	256	250
Number of countries	49	49	49	49	49	49
Adj. R-squared	0.45	0.40	0.46	0.39	0.45	0.39
Country FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses; Restricted means that the comparison group is limited to MICs, not in the MIT; *** p<0.01, ** p<0.05, * p<0.10, NS p>0.10

The adverse growth impact of overall concentration is confirmed as far as extensive and intensive margins are considered. As for extensive margins concentration, Tables 1.6 and Appendix 1.4 (column 3-4) show that it tends to reduce growth inside the MIT while triggering growth in the non-trapped countries of the extended subsample and having a positive impact, albeit not significant, in other middle-income countries. The adverse impact inside the MIT is measured for both the contemporaneous and the lagged models on the restricted sample (columns 3 and 4, Table 1.4). Magnitudes of impact are significant as one standard deviation increase of export concentration along the extensive margins leads to 0.8 percentage point decrease (corresponding to 0.33 standard deviation decrease) of the average GDP growth rate for the countries in the MIT, while it leads to 0.6 percentage point increase

(corresponding to 0.27 standard deviation decrease) for the HICs and the MICs not trapped (computations based on Table 1.6's column 3). The impact is relatively close when based on computations of the lagged model. Column 6 of Table 1.6 shows that concentration along the intensive margins also tends to reduce growth rates inside the MIT notably in the restricted subsample. Magnitudes of impact are similar to extensive margins since, based on the lagged model's estimation, a one standard deviation increase of the index of concentration along the intensive margins causes a 0.36 standard deviation decrease (corresponding to a 0.9 percentage point decrease) of the five-year GDP growth rate in the MIT, while it has no growth impact outside the MIT. Table 1.6 and Appendix 1.4's results thus suggest that more concentrated exports tend to slow down medium-run GDP growth inside the MIT while having no or slightly positive impact outside the trap. This contradictory growth impact inside and outside the trap may be explained by the different nature of export concentration in the two groups of countries.

First, our data show that inside the MIT, productive transformation is essentially driven by productive diversification on both the extensive and intensive margins rather than on re-concentration. This pattern of productive change favors extensive growth, as the productivity-enhancing selection of firms and products has not started or has not delivered its effects. At an intermediate level of income, the structural change should increasingly rely on intra-industry factor mobility through the selection and survival of the most competitive firms (Melitz, 2003). Hausmann and Rodrik (2003:23) further state that "*for all economies except possibly the most sophisticated, industrial success entails concentration in a relatively narrow range of high-productivity activities.*" For MICs in the MIT, the transition to higher income levels would, therefore, require that more productive sectors and firms progressively replace the least productive ones. Second, as explained above, export concentration inside the MIT does not necessarily spur aggregate productive efficiency in the same way as it does so in higher-income countries. In MICs, export concentration may notably be prompted by low export survival rate consecutive to greater competitive pressure on inefficient domestic firms, as was put forward by Nicita, Shirotori, and Klok (2013) in the case of Least Developed Countries. Lastly, these results point to the scissor effect, MICs inside the trap finding it hard to compete with higher-income countries' exports as a consequence of their failure to modify their productive structure substantially, while the competitiveness on exports corresponding to their initial specialization has simultaneously vanished, notably to the benefit of poorer economies. Testing this more precisely on trade data would be useful.

6. What difference do distributive factors make? Estimation results

As we discuss in Section 2.2, the relationship between inequality, redistribution, and growth is very complex and, due to the plurality of the potential theoretical channels, the expected signs of each of our variables of interest could be either positive or negative. In an attempt to capture the interconnection that characterizes distribution dynamics, we follow the rationale of Ostry et al. (2014) and Berg et al. (2018), as portrayed in Figure 1.5. Their setting allows observing the direct effects of inequality as well as the combination of the direct and indirect effect of redistribution on growth. However, in this framework, redistribution is assumed not to affect market inequality. [45]

More precisely, in this chapter, we empirically test the direct effect of redistribution through incentives (line D) and of net inequality through human capital accumulation and political instability (line E). The indirect effect is the combination of the effect of redistribution on net inequality (line C) and the effect of net inequality on growth (line E). Finally, the total effect is the sum of the estimated direct and indirect effects. The difference with Ostry et al. (2014) is that we are primarily interested in assessing if there are differentiated patterns inside and outside the MIT as to these different links.

As already mentioned, net inequality corresponds to inequality after taxes and transfers (redistribution), and redistribution corresponds to the difference between market and net inequality. The specification is the same as in Section 5 with the difference that investment rates, population growth, skill ratio, political institutions, and trade openness are used as additional controls, while our focus is on the effects of inequality and redistribution. The first model we estimate in Equation 1.3 allows observing the direct effect of net inequality independent of the level of redistribution (line E) and the direct effect of redistribution independent of the level of net inequality (line D). The specification is as follows:

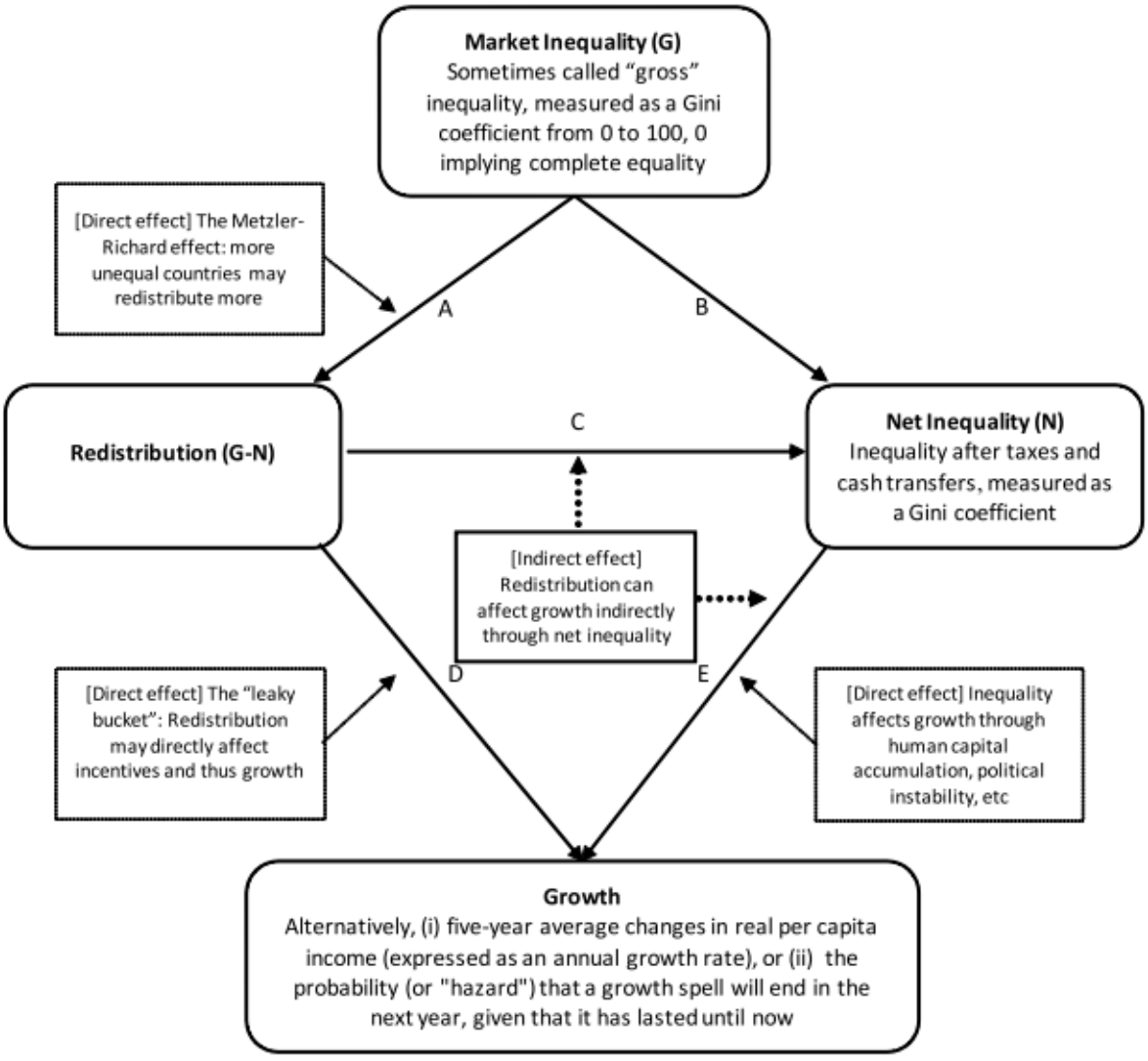
[45] As noted by Ostry et al. (2014), other arrows could be added in Figure 1.5, such as from growth back to inequality and redistribution and other channels that relate inequality, redistribution and growth, but this is beyond the scope of their paper and this chapter.

[Equation 1.3]

$$\text{GDP growth}_{i,t} = \alpha_1 + \alpha_2 * \text{MIT}_{i,t} + \alpha_3 * \text{Net Inequality}_{i,t} + \alpha_4 * \text{Redistribution}_{i,t} + \alpha_5 * \text{MIT}_{i,t} * \text{Net Inequality}_{i,t} + \alpha_6 * \text{MIT}_{i,t} * \text{Redistribution}_{i,t} + \alpha_7 * \text{Controls}_{i,t} + \mu_i + \nu_t + \varepsilon_{i,t}$$

Where the direct effect of net inequality inside the MIT, for a given level of redistribution is measured by $\alpha_3 + \alpha_5$, the direct effect of redistribution inside the MIT, for a given level of net inequality, is measured by $\alpha_4 + \alpha_6$

Figure 1.5 Interrelationships between inequality, redistribution and growth



Source: Ostry et al. (2014)

.

To observe the total effect of redistribution on growth, we estimate Equation 1.4 in which we control for market inequality instead of net inequality:

[Equation 1.4]

$$\text{GDP growth}_{i,t} = \beta_1 + \beta_2 * \text{MIT}_{i,t} + \beta_3 * \text{Market Inequality1}_{i,t} + \beta_4 * \text{Redistribution}_{i,t} + \beta_5 * \text{MIT}_{i,t} * \text{Market Inequality}_{i,t} + \beta_6 * \text{MIT}_{i,t} * \text{Redistribution}_{i,t} + \beta_7 * \text{Controls}_{i,t} + \mu_i + \nu_t + \varepsilon_{i,t}$$

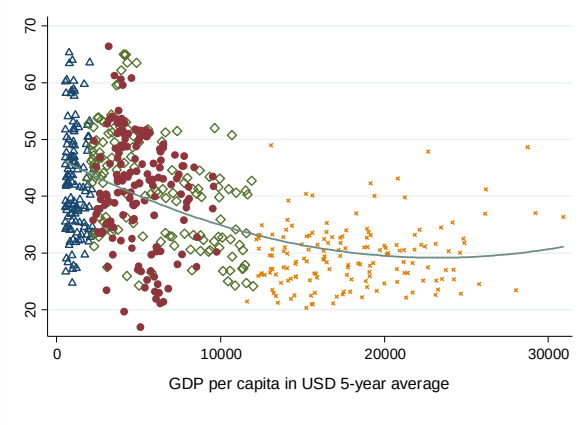
The total effect of redistribution, measured by $\beta_4 + \beta_6$, capture the sum of the indirect effect of redistribution through the reduction of inequality (through the channel of net inequality, line C) and the direct effect of redistribution on growth through its impact on incentives (line D).

6.1. Stylized facts on redistribution and inequality

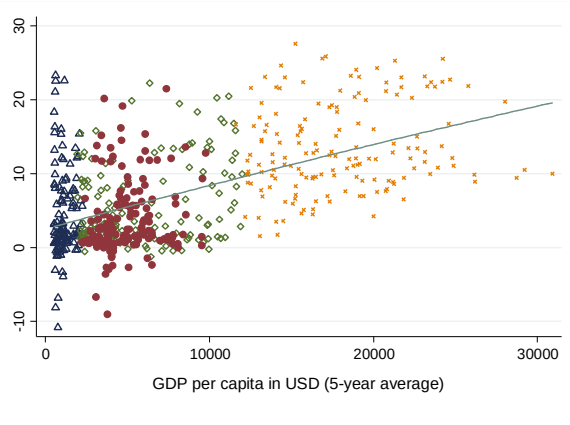
Before presenting econometric evidence, we first illustrate statistical interdependencies between the different dimensions of the growth-distribution nexus. Figure 1.6 plots the net inequality and redistribution against the contemporary level of GDP per capita for the whole sample.

Figure 1.6 Scatter plots of net inequality, redistribution, middle-class versus GDP per capita for the whole sample

a. Net inequality



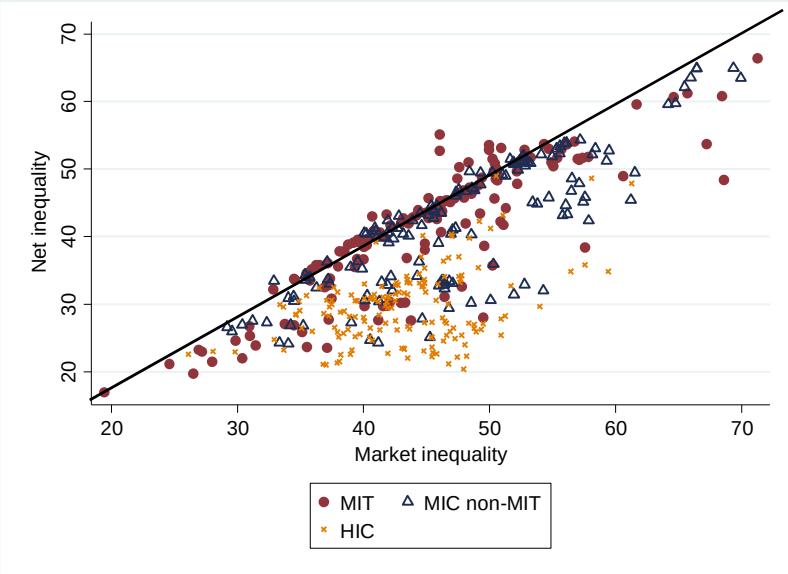
b. Redistribution



Source: Solt (2009) and Bolt and Van Zanden (2014). Author's computations.

We first note that we do not observe the non-linear pattern alluded by Banerjee and Duflo (2000) for either net inequality (Panel a, Figure 1.6) or market inequality (Appendix 1.5). However, the relationships of both net inequality and redistribution with the level of development go in the opposite directions: net inequality is negatively related with the income per capita level, with a slight reversal for the very rich countries (beyond USD 20,000 of GDP per capita), while the relationship with redistribution is strongly positive.[46] This can be related to the fact that, on average, these advanced countries featuring relatively high levels of market inequality (on average, higher than 30 points of Gini) tend to redistribute more (Ostry et al., 2014).

Figure 1.7 Market and net inequality by country



Source: Solt (2009) and Bolt and Van Zanden (2014). Author's computations.

Figure 1.7 plots the relationship between market and net inequality: the more the countries are distant from the line, the more they redistribute. We can see that most countries lie below the line implying some degree of redistribution, especially these HICs. However, there is a fair number of MITs countries located on (or slightly) above the line, indicating that they tend to redistribute less on average.

Table 1.7 reports the mean level and cross-period growth rates of each distribution variable. We run 2-group mean-comparison t-tests to analyze if there is a significant difference between the MITs and each of the remaining subsamples of countries. On average, except for

[46] However, the relationship between market inequality and GDP per capita is rather flat (if anything, slightly positive for the richest countries).

market inequality, there is a clear-cut difference between HICs and non-HICs, and in particular, the differences between HICs and MITs are significant regarding all indicators except for the variation in net inequality.

Table 1.7 Level and cross-period growth rate of net and market inequality, and redistribution by income group

	MIT	MICS non-MIT	LICs	HICS
	Level			
Net inequality	41.29 (9.71)	41.63 (9.80)	42.84 (9.21)	29.52 (5.48)
Market inequality	44.91 (9.02)	47.57 (8.73)	47.21 (10.28)	43.08 (5.62)
Redistribution	3.85 (5.01)	5.93 (5.59)	4.38 (5.99)	13.56 (6.01)
	Variation in %[(1)]			
Net inequality	0.70 (9.69)	1.12 (6.39)	0.30 (11.33)	1.04 (6.16)
Market inequality	-0.24 (10.28)	-0.11 (6.48)	-1.44 (11.41)	1.85 (8.41)
Redistribution	-7.92 (40.29)	-5.27 (37.48)	-24.02 (35.58)	4.68 (22.94)

Note: [(1)] In some cases, the growth rate of redistribution exceeded 100%. They are excluded in the calculation of the average growth rate by income group; [(2)] Standard deviation are in parenthesis.

Source: Solt (2009) and Bolt and Van Zanden (2014). Author's computations.

Although the differences among the non-HICs look marginal, MITs seem to lag behind the non-MIT as regards the level of redistribution, confirming the pattern we observe in Figure 1.7. Cross-period growth rates shed light on a progressive pattern as to the evolution of the different indicators of distribution, with the MITs being distinct from the LICs and the MICs non-MIT. On the one hand, the results of the t-tests indicate that the MITs are significantly distinct from the LICs for all indicators except redistribution and net inequality variation. On the other hand, the only significant differences with the MICs non-MIT are related to the average level of market inequality and redistribution.

6.2. Differentiated patterns of distributive change

In Table 1.8, we analyze the correlation between inequality and redistribution inside and outside the MIT for the restricted sample. We first use a parsimonious specification in which redistribution is regressed on market inequality, initial GDP per capita, country, and time fixed effects. Then, we include other variables of control (population size, trade openness, education, and political regime).

Market inequality is positively related to redistribution in all models suggesting than more unequal societies tend to redistribute more, which is consistent with Ostry et al. (2014), but there is no differentiated effect inside the MIT (column 5 to 8). Results for the extended

sample, reported in Appendix 1.6, are quite similar and the coefficients are greater due to the influence of HICs. When we include additional controls, the positive effect remains, but the amplitude of the coefficient is smaller than in the parsimonious specification suggesting that part of the effects of inequality on redistribution is channeled through some of the control variables.

Table 1.8 Redistribution and market inequality: Restricted sample, contemporaneous and lagged models

	(1) Contemp.	(2) Lagged	(3) Contemp.	(4) Lagged	(5) Contemp.	(6) Lagged	(7) Contemp.	(8) Lagged
MIT	-	-	-	-	3.912	3.498	-2.386	-1.900
	-	-	-	-	(3.533)	(3.631)	(1.912)	(1.728)
Market inequality	0.488***	0.495***	0.133**	0.0951**	0.539***	0.536***	0.108**	0.0787*
	(0.0580)	(0.0568)	(0.0554)	(0.0465)	(0.0623)	(0.0628)	(0.0473)	(0.0411)
Market ineq*MIT	-	-	-	-	-0.0651	-0.0544	0.0502	0.0391
	-	-	-	-	(0.0776)	(0.0805)	(0.0561)	(0.0532)
Lagged GDP per capita	-4.5e-05	-0.000123	-0.00053*	-0.0005	-2.6e-05	-9.9e-05	-0.00026	-0.0003
	(0.00016)	(0.00019)	(0.00031)	(0.00031)	(0.00015)	(0.00019)	(0.0003)	(0.0003)
Constant	-17.66***	-16.93***	0.612	3.690	-20.68***	-19.71***	0.750	3.946
	(3.149)	(3.202)	(3.551)	(3.310)	(3.259)	(3.492)	(4.169)	(4.455)
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Observation	297	289	235	230	297	289	235	230
Number of countries	58	49	58	49	58	49	58	49
Adj. R-squared	0.574	0.584	0.169	0.216	0.578	0.588	0.188	0.229
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

(1) Robust standard errors in parentheses; Restricted means that the comparison group is limited to MICs not in the MIT; (2) Significant at *** p<0.01, ** p<0.05, * p<0.10, NS p>0.10

We now check if differentiated patterns inside and outside the MIT emerge when we try to explain medium-run growth. Table 1.9 shows the results of the relationship between medium-run growth, net inequality, and redistribution on the MIT (Equation 1.3), using the contemporaneous and the lagged models for the restricted sample. The results on the extended sample are reported in Appendix 1.7. We test various specifications: 1) with controls for initial income only; 2) with controls for investment rate, population growth, education, political regime, and trade openness; 3) with additional control for diversification. In most cases, we find that net inequality is positively associated with medium-run growth for countries inside the MIT, but the inclusion of the full set of controls reduces the effect, suggesting that some of them are potential channels through which inequality affects growth.

Table 1.9 GDP growth, net inequality and redistribution: Restricted sample, contemporaneous and lagged model

	GDP per capita		Without export concentration		With export concentration		GDP per capita		Without export concentration		With export concentration	
	(1) Contemp.	(2) Lagged	(3) Contemp.	(4) Lagged	(5) Contemp.	(6) Lagged	(7) Contemp.	(8) Lagged	(9) Contemp.	(10) Lagged	(11) Contemp.	(12) Lagged
MIT	-	-	-	-	-	-	-0.0223*	-0.0608***	-0.0344***	-0.0707***	-0.0361***	-0.0766***
	-	-	-	-	-	-	(0.0113)	(0.0216)	(0.00875)	(0.0217)	(0.00852)	(0.0218)
Net inequality	6.72e-05	0.000201	0.000369	-2.91e-05	0.000397	-3.52e-05	0.000136	-0.000347	0.000105	-0.000494	8.58e-05	-0.000553
	(0.000523)	(0.000517)	(0.000431)	(0.000539)	(0.000429)	(0.000559)	(0.000580)	(0.000583)	(0.000497)	(0.000570)	(0.000504)	(0.000581)
Redistribution	-0.000260	-0.000959**	-0.000308	-0.00126***	-0.000303	-0.00114**	-0.00165**	-0.00176***	-0.000864*	-0.00179***	-0.000899**	-0.00172***
	(0.000313)	(0.000384)	(0.000342)	(0.000460)	(0.000341)	(0.000468)	(0.000728)	(0.000599)	(0.000449)	(0.000578)	(0.000432)	(0.000600)
MIT*Net inequality	-	-	-	-	-	-	-0.000315	**0.000927***	0.000176	**0.00110****	0.000241	**0.00122*****
	-	-	-	-	-	-	(0.000316)	**(0.000466)**	(0.000232)	**(0.000438)**	(0.000254)	**(0.000438)**
MIT*Redistribution	-	-	-	-	-	-	0.00199	0.00146	0.000714	0.00119	0.000779	0.00130
	-	-	-	-	-	-	(0.000853)	(0.000932)	(0.000531)	(0.000771)	(0.000531)	(0.000781)
Lagged GDP per capita	-1e-05***	-1.1e-05***	-1.3e-05***	-1.e-05***	-1.2e-05***	-9.3e-06***	-1e-05***	-1.1e-05***	-1.3e-05***	-9.3e-06***	-1.3e-05***	-8.3e-06***
	(1.85e-06)	(1.98e-06)	(2.33e-06)	(2.38e-06)	(2.35e-06)	(2.33e-06)	(1.87e-06)	(1.97e-06)	(2.13e-06)	(2.30e-06)	(2.15e-06)	(2.17e-06)
Political regime	-	-	0.000368	0.000236	0.000432	0.000200	-	-	0.000364	-0.000208	0.000428	-0.000274
	-	-	(0.000484)	(0.000545)	(0.000473)	(0.000549)	-	-	(0.000492)	(0.000520)	(0.000483)	(0.000516)
Export concentration	-	-	-	-	-0.00471	-0.00255	-	-	-	-	-0.00499	-0.00206
	-	-	-	-	(0.00386)	(0.00335)	-	-	-	-	(0.00413)	(0.00318)
Constant	0.0908***	0.0918***	0.0276	0.112***	0.0404	0.121***	0.111***	0.126***	0.0594**	0.145***	0.0752**	0.155***
	(0.0264)	(0.0267)	(0.0263)	(0.0287)	(0.0274)	(0.0299)	(0.0311)	(0.0296)	(0.0285)	(0.0281)	(0.0309)	(0.0302)
Controls	No	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Observations	257	247	246	231	241	226	257	247	246	231	241	226
Number of countries	49	49	49	49	49	49	49	49	49	49	49	49
Adj. R-squared	0.339	0.326	0.476	0.368	0.489	0.383	0.365	0.363	0.496	0.409	0.509	0.429
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Inequality MIT	-	-	-	-	-	-	NS	0.000927	NS	0.00110	NS	0.00122
Redistribution. MIT	-	-	-	-	-	-	-0.00165	-0.00176	-0.000864	-0.00179	-0.000899	-0.00172
Inequality non-MIT	-	-	-	-	-	-	NS	NS	NS	NS	NS	NS
Redistribution non-MIT	-	-	-	-	-	-	-0.00165	-0.00176	-0.000864	-0.00179	-0.000899	-0.00172

(1) Robust standard errors in parentheses; Restricted means that the comparison group is limited to MICs not in the MIT; (2) Significant at *** p<0.01, ** p<0.05, * p<0.10, NS p>0.10

The positive effect of net inequality seem more related to its initial level, that we observe in the lagged models, rather than to its contemporaneous variation since net inequality is not significant when we use the restricted sample (columns 6,8 and 10, Table 1.9), while being weaker when we use the extended sample (columns 8 and 10, Appendix 1.7). Interestingly, initial market inequality is found to affect economic growth positively only for middle-income countries inside the MIT (Appendix 1.8). Although redistribution has a significantly negative direct impact on economic growth in most models, and particularly for middle-income countries (Table 1.9),[47] countries inside the MIT are not significantly different from countries outside the MIT. We find similar trends as regards the total effect of redistribution when we use the restricted sample (Appendix 1.8), but no significant results when we use the extended sample (Appendix 1.9). Our findings seem to point towards the existence of a trade-off between equality-enhancing redistribution and economic growth. In other words, the distortionary effects of taxation which hampers economic growth, induced by higher redistribution, supersede the potential positive effect of a more equal distribution of income.

However, we must be cautious about these findings because the data are not entirely exempt from measurement issues (Berg et al., 2018). Besides, we note that some of our results differ with Ostry et al. (2014) and Berg et al. (2018). On the one hand, when we use the entire sample (including LICs, MICs, and HICs) and the extended sample (columns 1-6, Appendix 1.7) redistribution is not significant which is in line with their findings, but initial redistribution is negatively associated with medium-run growth when we use the sample of MICs (columns 1-6, Table 1.9). On the other hand, net inequality is not significant in any specification whereas Ostry et al. (2014) and Berg et al. (2018) find strong negative coefficients. The differences may be due to the time-span and estimation methods. As discussed by Banerjee and Duflo (2000), empirical evidence on the relationship between inequality and economic growth are sensitive to the estimation methods. Studies using time-series estimators (for instance, Forbes, 2000) tend to find a positive relationship, whereas studies using cross-sectional estimators (for instance, Alesina and Rodrik, 1994; Barro, 2000) tend to find a negative relationship. The differences may also stem from the size and compositions of the samples. Ostry et al. (2014) and Berg et al. (2018) do not run estimations on sub-samples of countries, so our results can also be evidence that the relationship between inequality and growth vary according to the level of development like in Barro (2000).

[47] The effects of redistribution are weaker when we use the extended sample in Appendix 1.7.

Our results indicate that while fiscal redistribution is similarly harmful to growth outside or inside the MIT, inequality is positively associated with growth only for the countries inside the trap. In addition, the countries inside the MIT redistribute on average less than the middle-income countries outside the trap and the high-income countries for a relatively similar level of market inequality. As we discussed in Section 2.2, the latter effect suggests that in MITs, inequality generates incentives to invest in human capital accumulation for the less financially constrained population, which contributes to the development of the modern sector. Another mechanism linking structural and distributive changes provides an alternative explanation. In Falkinger and Zweimuller (1997), long-run growth depends on labor productivity growth that takes place in three sectors (production, imitation and innovation activities) according to the structure of demand. Following Engel's law, the structure of demand depends on the distribution of income, and demand for innovative products is mainly driven by the wealthy individuals: a more unequal economy thus tends to bring about more diversified production. Falkinger and Zweimuller (1997) demonstrate that the mechanisms behind labor productivity growth determine the impact of inequality. In the case the driving force of labor productivity is an increase in average per capita income, the relationship is negative because the allocation of resources to create new goods and services (through imitation or innovation) hinders the production of consumer goods and consequently long-run growth. On the contrary, if labor productivity is driven by diversification, then income inequality would have a positive effect on economic growth. This seems to be the case for countries caught inside the MIT. As we evidenced in Section 5, diversification[48] remains a driving force behind growth inside the MIT. When we control for the distribution variables, the coefficient of export concentration ceases to be significant (Table 1.9, column 12), suggesting that its effect is channeled through inequality: rising inequality generates more demand for new products and contributes to economic growth.

However, higher market and net inequality lead to more demand for redistribution, which in turn, constrains savings and investment by taxing the wealthiest individuals. It seems that while not being equality-enhancing, redistribution adds further constraints on economic growth by generating distortions that hinder investment, which in turn reduces opportunities of employment. In light of our previous evidence we found on skill misallocation issues and imitation trap, our findings here suggest that some middle-income countries are stuck in-

[48] Export diversification is often used in studies on structural changes as a proxy for product diversification. At the very least, if the exports structure of a country does not reflect perfectly its productive structure, it captures the capacity of a country to produce diversified goods.

between two growth regimes where the lack of opportunities is cumulated with the lack of incentives to invest in human capital accumulation. At this stage of their development, the existence of earning inequality between the traditional and modern sectors provides incentives for investing in human capital (Agénor et al., 2012). At the same time, increasing inequality creates demand for more redistribution, which not only is not enough to address income disparities but also depresses private investments trapping the countries into a vicious circle. These findings are in line with the idea of "*inequality trap*" presented by Islam (2014).

Conclusion: What difference do better policies (related to productive change) shall make?

In this chapter, we tested empirically various potential drivers of the MIT: the regimes of growth and productive use of skills and other inputs, the patterns of diversification, productive, and distributive changes. They help explain why some middle countries undergo persistent growth slowdowns. Our estimations were not geared at making a hierarchy between the different drivers of middle-income countries' lingering growth slowdown spells, but rather at finding articulations between different candidate explanations. The dominant explanation of MITs is certainly a matter of context and cumulative causation (Han and Wei, 2017). In a nutshell, our findings point to labor and skill misallocation as a potential explanation of the slower pace of growth in the MIT, this impact being potentially due to the dearth of productive jobs in the industry for a large share of young workers insufficiently skilled. This is coupled with and complicated by inequality and redistribution issues. Our empirical findings in this chapter support the assumption that middle-income countries undergoing sustained growth slowdowns do face specific structural difficulties with upgrading their productive capabilities and efficiently using labor force and skills.

Our estimations thus point to the high relevance to middle-income countries of policies supporting (i) the shift from the extensive to the intensive growth pattern, and (ii) the move from extensive to intensive margins. There is also the need to evaluate and improve the efficiency of redistributive policies. As noted by Ostry et al. (2014), not all government expenditures are detrimental to growth. For instance, public investment in education and infrastructure in developing countries can be pro-growth. Across the board, productive change may be too slow in developing countries because public investment in the quality of

education, infrastructure provision, innovation support and improved access to finance is too scarce (Agénor, Canuto, and Jelenic, 2014; Aslund, 2013; Jankowska et al., 2012).

Regarding the skill misallocation issues, such form of redistribution may serve several purposes: (1) providing support and motivation to acquire high-quality education and skills for the large stock of dependent youth; (2) tackling to the lack of job opportunities issue by encouraging and supporting entrepreneurship; (3) reducing inequality and growth-disturbing distributive conflicts. Beyond insufficient wholesale trade and financial reforms, though, a variety of policy issues specific to middle-income economies would deserve more fine-grained investigation in the future. Doner and Schneider (2016) have recently pointed to the perpetuation of political economies supporting inadequate policies hindering productive transformation to explain MITs. Indeed, the survival of policies supporting labor-intensive production through subsidies or tax incentives might have hindered market entry and risk-taking in many middle-income countries, as emphasized by Nungsari and Zeufack (2009). Likewise, corruption and red tape might also distort the productive incentives delivered by markets and policies in heavily middle-income state-regulated economies (Aslund, 2013). Rougier (2016) recently highlighted how the combination of redistributive policies and authoritarianism had hindered productive diversification and sophistication in a sample of developing countries, including many economies in the MIT, and how this bad policy mix is sometimes backed by a political economy durably hindering any policy reforms towards the promotion of new industries and technological upgrading. As emphasized by Doner and Schneider (2016), the political dimension behind the MIT is complex since the pattern of economic transformation can breed inadequate policies that will eventually act as a drag on it, sometimes shaping a policy trap. Further empirical investigations of the complementary effects of productive and institutional structures would certainly help to identify and understand the crucial policy trade-offs faced by middle-income countries.

Chapter 2

The transmission channels of the effects of the middle-class size on economic development

Introduction

Over the past decade, the middle-classes of the emerging economies have been viewed as a potential replacement for the declining Western middle-class. In particular, it has been argued that the emerging Asian middle-class, particularly that of China, could fuel global demand, replacing its American counterpart to become the next “global consumers” (Kharas, 2010). The expression “global consumer” has been used repeatedly by international organizations in recent years (World Bank, 2007, 2013), catching the interest of marketing and private bank researchers (e.g., Cavusgil et al., 2018; Dobbs et al., 2012; Wilson and Dragusanu, 2008). The rise of the middle-class in developing countries has also been described and commented upon in several recent academic studies (Banerjee and Duflo, 2008; Birdsall, Graham and Pettinato, 2001; Birdsall et al., 2014; Ravallion, 2009). Various authors have emphasized that the middle-class could have a positive impact on economic growth through different channels, such as mass consumption, productivity increase consecutive to scale effects or learning externalities, human and physical capital accumulation, and demand for public goods. It is assumed that when the number of middle-income earners becomes sufficiently large, the aggregation of the behaviors of the individuals will have large-scale economic and political consequences. Landes (1998) considers England's large middle-class to have been a key

determinant of the country's first industrialization. Myint, Adelman, and Morris (1969) note that the middle-class is the engine of economic development in industrialized countries and remains important for contemporary low-income countries. Birdsall (2010) goes further, arguing that the increasing size (population share) and economic command (economic weight) of the middle-class is a signal that the underlying growth regime is inclusive and driven by wealth creation and productivity gains in the private sector.

There is an extensive empirical literature on the relationship between income inequality and growth, but scant empirical evidence concerning the size of the intermediate segments in income distribution (e.g., Panizza, 2002; Partridge, 1997, 2005; Voitchovsky, 2005). The analyses conducted by private or public institutions and regional development banks are generally descriptive and lack sound econometric analyses (Wietzke and Sumner, 2014). Building on Easterly (2001), the economic literature in the 2010s has been enriched by studies seeking empirical evidence of the macroeconomic implications of the growth of the middle-class (ADB, 2010; Chun, Hasan, Rahman and Ulubaşoğlu, 2017; Kodila-Tedika, Asongu and Kayembe, 2016; Loayza, Rigolini and Llorente, 2012; Shimeles and Ncube, 2015), though there remains considerable room for improvement.

Recent reevaluation of the poverty lines has been motivated by the World Bank's observation that "*the use of average assessments of basic needs in low-income countries is gradually becoming less relevant in many countries of the world*" (World Bank, 2018a: 68). In the context of a growing global economy, this challenges the view that middle-class begins where poverty ends. The inclination towards a higher threshold also stems from the growing consensus among scholars that the middle-class is characterized by economic security. Lower thresholds would bundle into the same group people who remain vulnerable to poverty and do not manifest many middle-class characteristics, including their aspirations and political inclinations (Birdsall, 2012).

Contrary to the pioneer studies that view the middle-class as people who are no longer poor, most studies on the "global middle-class" or the "global consumer" adopt a lower-bound that is above the poverty line to identify the middle-class. The World Bank (2018a) talks about a "consumer class," bundling together people with a daily income per capita of USD 5.5 and above, "*since they have enough income to cover daily expenses, absorb income shocks, and consume some amount of non-necessity goods and services*" (p.12). There is an inclination toward a lower-bound of USD 10 (Birdsall, 2007b; Birdsall, Lustig and Meyer, 2014; Kharas,

2010; Kharas and Gertz, 2010; Kochhar, 2015; Lopez-calva, Rigolini and Torche, 2012; World Bank, 2007 among others), based on the view that this level of income provides sufficient economic security to reduce the risk of falling back into poverty. Studies that rely on the estimation of threshold based on vulnerability to poverty, following such approaches as López-Calva and Ortiz-Juarez (2014) and Dang and Lanjouw (2017), tend to find values close to this threshold. There is less consensus on the upper-bound, though the trends oscillates between USD 50 (Birdsall, 2012; World Bank, 2007) and USD 100 (Kharas, 2010). Some researchers have chosen not to set an upper threshold, but rather to talk about an "upper group," comprised of the middle-class and the rich (Dang and Lanjouw, 2017; Loayza, Rigolini and Llorente, 2012; World Bank, 2018c). In line with Kochhar (2015), we discussed in the general introduction that an income-range up to USD 100 might be too large to be defined "middle-class" in developing countries; and we consider that the middle-class should be distinguished from the rich because they are likely to manifest different preferences, attitudes, and behaviors.

The contribution of this chapter to the literature is three-fold. First, the influential work of Banerjee and Duflo (2008) and many subsequent studies essentially depict the "vulnerable class." We thus provide evidence to test whether their hypotheses are also verified when higher thresholds are adopted. In addition, we propose an empirical investigation of various channels, including that of structural transformation through which the "global consumers" or the "global middle-class" affect economic growth, using methodologies that allow us to account for simultaneous effects and reverse causality. Second, other dimensions reflecting the internal heterogeneity and asymmetry of this income group may help to explain differences in terms of economic development across time and countries. We thus propose a measure of middle-class inequality and account systematically for the potential differentiated effects of two sub-groups within the broad middle-class income range. Finally, we construct two samples of low- and middle-income countries to examine how the middle-class impacts on economic development change with the country's level of development.

The chapter is organized as follows. Section 1 explores the indirect influences of the middle-class through their consumption, investment, and public expenditure. Section 2 investigates the association between the middle-class and productive transformation.

Section 1. Middle-class, consumption, private investment, and public expenditure

When the middle-class becomes sufficiently large, the aggregation of its members' individual behaviors is likely to have a large-scale impact on the national economy. Theoretically, the middle-classes might prompt macroeconomic change via the aggregation of microeconomic changes, such as investment in human capital, entrepreneurship, and political participation. This first section deals with consumption, private investment, and demand for public expenditure. After briefly surveying the literature, we describe our empirical strategy and data and discuss the results of the empirical analysis.

1. Middle-class and economic growth: an indirect effect

1.1. Middle-class, consumption and investment

Middle-class consumers are often viewed as the support of demand for domestic manufactured goods and services. The middle-class has consumption levels and preferences that quantitatively and qualitatively alter the size of the domestic market (World Bank, 2007) and the structure of demand, having long-term effects on the sectoral composition of the economy and the pace of growth. According to Banerjee and Duflo (2008), middle-class people are willing to pay more for better quality goods and services that improve their living conditions, as well as for more "*frivolous*" consumption. The expansion of a class of people, located at the intermediate levels of the distribution and able to consume increasingly diversified goods, is a factor in industrialization through (Murphy et al., 1989b; Desdoigts and Jaramillo, 2014; UNIDO, 2018). The distribution of income matters because "*for [the] industrial market to expand, the composition of demand must concentrate buying power in the hands of consumers of manufactured goods*," and the middle-class plays a major role in this because it is the "*natural consumer of manufactured goods*" (Murphy et al., 1989a:1). The middle-class can thus support and boost domestic demand, as well as providing a source of opportunity and improvements for the industry. For Berliner, Thanh, and Mccarty (2013), the middle-class is a safety net for domestic demand, provided that it has substantial incomes and assets possession. The middle-class can act as a buffer in times of economic fluctuation and can stabilize the aggregate demand. As an illustration, Hugon, Nicet-chenaf, and Rougier (2013) explain how domestic markets helped to mitigate the effects of the economic crisis of

2008-2009 in emerging economies such as BRICS (Brazil, Russia, India, China, and South Africa) and the fast-growing East Asian countries.

Banerjee and Duflo (2008) note that the middle-class can be either a source of entrepreneurs (also contended by Castellani, Parent and Zentero, 2014), who boost employment and productivity,[49] or a source of "*inputs for the entrepreneurial class*," because of their inclination to invest in the accumulation of human capital and savings. This argument is related to the idea of a "*patient middle-class*" that favors future over present gains and is willing to invest in new technologies (Doepke and Zilibotti, 2005). Handley (2014) further argues that the middle-class can be a source of aspiration and indirectly "*galvanize*" the economy by inspiring the consumption and investment choices of other social classes. In the early theories of class, the middle-class was assimilated to the independent *bourgeoisie*, a class in-between the capitalists and the proletariat (Marx and Engels, 1967), or to the *petty bourgeoisie* (Wright, 1980). Most recent classifications of the middle-class also include entrepreneurs. For instance, Chunling (2013) identifies four groups within the Chinese middle-class: the capitalist class (private entrepreneurs), the former middle-class (small entrepreneurs and self-employed workers), the new middle-class, and the upper and marginal middle-classes (employees and other workers). Bonnefond, Clement, and Combarnous (2015) also identify four groups within the Chinese middle-class: a middle-class of retired and inactive people; a lower middle-class of skilled and unskilled workers; the former middle-class of small entrepreneurs; and the new middle-class (the upper-level wage earners, working primarily in the state sector). Since the middle-class agents are more likely to adopt anticipatory and forecasting behavior and are more inclined than the poor to save (Doepke and Zilibotti, 2005; Kharas, 2010), they accumulate financial resources that can provide a source of investment for the economy (Alesina and Perotti, 1996).

Handley (2014), however, notes that a higher propensity to save is not necessarily a universal attribute of the middle-class, but may be specific to countries where the financial system is not fully institutionalized and where people tend to rely on their savings rather than an inefficient credit system. Likewise, defining the middle-class in terms of entrepreneurial profile would be reductive (Kharas, 2010). For example, Banerjee and Duflo (2008), in their sample of developing countries, find that the small number of entrepreneurs is not statistically

[49] They base their argument on the model of Acemoglu and Zilibotti (1997).

representative of the middle-class.[50] In addition, the occupation profiles of this group are diverse and increasingly include skilled and technician workers. Moreover, the public and para-public sectors have, in past decades, been the primary provider of employment for the "middle-class" in most developing countries (Birdsall et al., 2001). Despite a decline in recent years, the "status" of middle-class is still largely associated with the public sector. For instance, in Nigeria 76% of the middle-class individuals surveyed worked in the public sector (Robertson, Ndebele and Mhango, 2011) and having a civil servant job is still considered a guarantee of economic security in Turkey (Combarnous et al., 2018).

1.2. Middle-class and public expenditure

Public expenditure may serve various purposes and have different implications for economic growth.[51] Redistribution can be growth-enhancing if the resources drawn from higher taxation are allocated to social spending in education and health or the improvement of infrastructure (Forbes, 2000; Ostry, Berg and Tsangarides, 2014). Although a rise in taxation may be detrimental to growth in the short-term, it pays off in the long-term if the funds are used to finance externality-generating investments – in education, for instance (Kucera, 2002). This is the case for all governmental labor market and transfer policies (Partridge, 2005).

The median voter hypothesis explains how the widening gap between mean and median income puts pressure on redistribution, since the median voter benefits more from such policies (Romer, 1975). As Benabou suggests, "*The idea is that by lowering the income of the median voter or the pivotal middle-class relative to the national average, greater inequality increases the pressure for redistribution*" (Benabou, 1996:16). The various theoretical models that emerged after the median-voter hypothesis proved inadequate to explain the patterns observed in some countries (primarily high-income countries) also pointed to more complex dynamics. For instance, Kristov, Lindert, and McClelland (1992) argue that support for redistribution depends on the "*social affinity*"[52] of the middle voters for the poor and the rich: it tends to decrease (increase) when their distance from the poor (rich) widens. Moene and Wallerstein (2001) conclude that support for redistribution varies depending on its target and the degree of inequality in high-income countries: when the beneficiaries are people with

[50] The middle-class is defined as households with income per capita between they observe between USD 4 and USD 20.
[51] The redistribution-growth nexus is discussed further in Chapter 1.
[52] In their framework, the idea that "*people care more about those more like them*" is interpreted as "*self-insurance against the possibility of ending up in their state*" and the "*social affinity*" of an agent *i* for agent *j* is defined as the "*assessment of the probable share of time she or her extended family will spend in j's situation*" (Kristov et al., 1992: 146).

wage earnings, they tend to be more supportive of redistribution when inequality increases; while the beneficiaries who are unemployed display the opposite attitude.[53]

Many studies contend that the middle-class are a source of political pressure on the state, as regards governance and the provision of public goods and services (Birdsall, 2012; Handley, 2014; World Bank, 2014). The expansion of the middle-class, by shifting the whole income distribution to the right, can change the profile of the median voter and shift the focus of economic policies from the preferences of the poor (Alesina and Rodrik, 1994) to those of the middle-income classes. According to the World Bank (2018c: 9), "*their push for better consumer safety regulations and better goods and services can benefit all households. For instance, recent food safety scandals in China have led to stronger regulations and better products for all*." Due to their forecasting behavior (Banerjee and Duflo, 2008; Birdsall, 2010; Doepke and Zilibotti, 2005), they are expected to favor growth-enhancing policies from which they and their children may benefit and to request better public goods, including infrastructure and spending on education, health, and security, which are ultimately equality-enhancing for society as a whole. This feature, however, also implies that to lower the future burden of taxation on their children, people expecting upward mobility tend to be less redistribution-prone in the present (Benabou and Ok, 2001). In their paper exploring the relationship between income class and values, Lopez-calva et al. (2012) note little significant evidence of distinct political and social orientations of the middle-class compared to the poor and the rich. However, they conclude, "*This does not necessarily imply that middle-classes do not bring change. They may still push for reforms that are beneficial for their own welfare and economic activities*" (p.15).

The role of the middle-class as the "median voter" also depends on its political weight in comparison to that of the elites (Birdsall, 2007a). Acemoglu and Robinson (2006) propose several models to describe the role and position of the middle-class in the distributional conflict and the process of democratization. Depending on its wealth and interests, it may switch sides and form coalitions with the poor or the rich. In their model, a large and affluent middle-class acts as a "buffer" between the poor and the rich, reducing internal conflicts and limiting the risk of repression or upheaval. In summary, if the middle-class, rather than the poor, is sufficiently large to become the major voter, and if it is "*relatively affluent, [it] (the median voter) would choose only limited redistribution. By ensuring that policies are not too*

[53] See also Benabou (2000) and Wietzke and Sumner (2014).

far from those preferred by the rich, it discourages the rich from using repression and makes democracy more likely" (p.258). In a non-democratic regime, the impact of middle-class expansion is often indirectly channeled through various forms of political, trades union, or civic participation. The latter promotes a kind of control or constraint on the executive that replaces the revolution-repression pattern, as the interests of the elites and the new middle-classes converge.

Furthermore, middle-class attitudes toward redistribution do not depend only on their affinity with the rich or the poor; rather, they also depend on the middle-class's perception of the reliability and role of the government. Wheary (2009) observes that people whose improved living standards resulted from government-backed policies and who depend on public infrastructures to sustain their livelihood are more likely to demand their maintenance and upgrading when needed. In contrast, as noted by Ferreira et al. (2013), in the case of Latin American and Caribbean countries, this group may lack the incentive to request equality-enhancing redistribution or public investment due to its distrust of the quality of public services and efficiency of public policies. Indeed, the authors explain that, because the Latin American middle-class tends to rely more on private services, it does not fulfill its role as leverage for the improvement of public goods that would benefit the population and the economy in general. To benefit from middle-class influence, it is thus essential to improve its "*perception of fairness in taxation and the redistributive effectiveness of public spending*" (Ferreira et al., 2013:13).

In summary, due to their higher purchasing power and preferences, middle-class agents are thought to boost mass consumption and support domestic demand. They may also boost private investment by providing inputs of physical and human capital for entrepreneurship. Finally, they put pressure on the government to provide more and better public goods and services, which help to sustain and improve their living standards. The following sections present the empirical verification of these hypotheses.

2. Empirical framework

The empirical estimators used in the literature range from pooled OLS (Partridge, 1997), fixed-effect estimators using GMM and the GMM system (Panizza, 2002; Loayza et al., 2012), to simultaneous equations (Alesina and Perotti, 1996; Easterly, 2001; Kodila-Tedika et al., 2016). Partridge (2005) tests various estimators (OLS, fixed and random effects and

between estimator) and encourages the examination of short- and long-term models for a complete picture of transitory and dynamic responses to changes in the distribution of income. In this section, our objective is to investigate the simultaneous influence of the middle-class on three determinants of economic growth.

2.1. Simultaneous equations

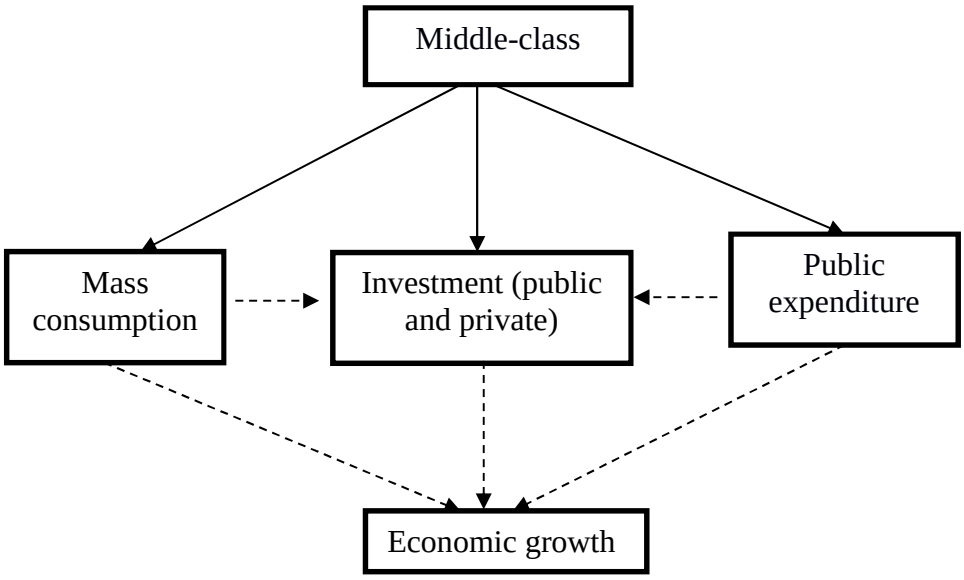
Analysis of the transmission channels of distributional changes to economic growth is not uncommon in the literature. For instance, finding no significant association between overall inequality and growth, De Gregorio and Lee (2003) consider the relationship between education quality, fertility, government expenditure, and institutional quality and policy (rule of law, democracy, inflation, trade openness). Berg et al. (2018) estimate the effects of inequality and redistribution on the channels of investment, population, education, life expectancy, fertility, and political regime. Our investigation is more in line with that of Alesina and Perotti (1996) and Easterly (2001), who focus on the indirect influences of the middle-class on growth via investment and various economic development indicators. Similarly, Chun et al. (2017)[54] investigate the association between the middle-class and economic growth in relation to factor inputs (human capital, savings, and labor force growth), using a panel of developing countries from 1985 to 2013. Kodila-Tedika, Asongu, and Kayembe (2016) implement a cross-sectional analysis using a sample of sub-saharan countries. They explore the impact of different "middle-class" groups, identified by the AFDB (2011), on a broad set of variables, including human capital, sector share of value-added, and institutional indicators. Adopting a cross-country approach, Loayza, Rigolini, and Llorente (2012) focus on the role of high-level income (USD 10 and above) in the improvement of institutions (polity score and corruption), the size of government, and some dimensions of economic freedom.

Figure 2.1 illustrates the interconnection between the size of the middle-class and economic growth through mass consumption, investment, and demand for redistribution. From our literature overview, we can conclude that the expansion of the middle-class may affect all three outcomes simultaneously due to their anticipatory behavior. For instance, by allocating a large share of their resources to consumption, middle-class agents save less, thereby reducing their opportunities for investment (Handley, 2014). Likewise, if they demand more

[54] Chun et al. (2017) use three alternate measures of the middle-class: the share of the population living on an income of USD 2-10 per day (in 2005 PPP dollars); the share of the total consumption expenditure accruing to the middle 60% of the distribution; and the share of population that has an expenditure of more than USD 2 per day and within 0.75-1.25 of the median expenditure of the country.

redistribution to improve their purchasing power or public infrastructure, aggregate consumption and public investment may increase, but higher taxation rates may depress private investment (Alesina and Perotti, 1996).

Figure 2.1 The effect of the middle-class through consumption, investment and public expenditure



*Source:*Author

Simultaneous equation models seem to be the most appropriate way of accounting for these interaction effects. Such models account for the simultaneity arising from the introduction of several equations with different dependent variables. The first estimator that comes to mind is the three-stage least squares (3SLS), in which the variables that are not determined within the systems are considered to be exogenous (Tavares and Wacziarg, 2001). The first inconvenience of 3SLS is that variables exogenous in one equation may be endogenous in another.[55] Moreover, a crucial assumption when using 3SLS is the validity of the instruments, yet the risk of rejecting the Hansen-Sargan test of overidentification increases with the number of parameters to be estimated. This often motivates the use of parsimonious specifications (including only one or two explanatory variables), which, however, are likely to overestimate the effects of the variables of interest. Our preliminary investigations using this estimator confirmed these limitations. Consequently, in this chapter, we choose to simplify

[55] To circumvent this issue, Wooldridge (2002) suggests the use of GMM, with different sets of exogenous instruments for each equation; but this procedure is computationally demanding when the parameters to estimate are numerous and it is rarely implemented in empirical works.

our model and limit the scope of our investigation to the relationships depicted by solid arrows in Figure 2.1. As we can see in Equation 2.1, the middle-class indicator (MC) is an explanatory variable in all three equations, resulting in the correlation of residuals. To estimate our model, we thus turn to the seemingly unrelated regressions (SUR) estimator (Zellner, 1962). The specification is as follows:

[Equation 2.1]

$$Cons_{i,t} = \alpha_1^1 + \alpha_2^1 MC_{i,t} + \alpha_3^1 X_{i,t}^1 + \mu_i + \nu_t + \varepsilon_{i,t}$$

$$Inv_{i,t} = \alpha_1^2 + \alpha_2^2 MC_{i,t} + \alpha_3^2 X_{i,t}^2 + \mu_i + \nu_t + \varepsilon_{i,t}$$

$$Exp_{i,t} = \alpha_1^3 + \alpha_2^3 MC_{i,t} + \alpha_3^3 X_{i,t}^3 + \mu_i + \nu_t + \varepsilon_{i,t}$$

Where:

Cons = Households consumption (as a percentage of GDP)

Inv = Private and public investment (as a percentage of GDP)

Exp = Public expenditure (as a percentage of GDP)

MC = Middle-class indicators

X^j (j=1…4) = Vector of additional control variables

μ_i and ν_t = region[56] and time fixed effects

$\varepsilon_{i,t}$ = error term

Each variable that appears only on the left-hand side is considered exogenous to the other two. Since we are mostly interested in the channel effects of the size of the middle-class, we omit the equation of GDP from our system.[57] By doing so, we reduce the risk of reverse causality that is not accounted for by the SUR estimator and limit the number of parameters to be estimated.

2.2. Model specification

2.2.1. Consumption

To measure consumption, we use the household's final consumption expenditure (as a percentage of GDP) from the World Bank. As discussed above, a larger middle-class should fuel mass consumption, regardless of whether it has homogenous tastes. However, since the

[56] To limit the number of coefficients to be estimated, we use region rather than country fixed effect. They are accounted for in the GMM estimations.

[57] This equation would be as follows: $GDP_{i,t} = Cons_{i,t} + Inv_{i,t} + Exp_{i,t}$.

middle-class has a higher propensity than the poor to save, we may find adverse and differentiated effects, depending on the indicator. Positive (negative) signs of the coefficients associated with the size of the middle-class would mean higher preferences for consumption (savings). In theory, a household's consumption depends on its purchasing power in relation to either its current (Keynes, 1936) or its permanent income (Friedman, 1957). Depending on the perspective, social transfers from the government may or may not affect consumption behavior. Ando and Modigliani (1963) reconcile these approaches by explaining how the individuals predict their long-term income and adjust their consumption using their savings or credits. Kharas (2010) explains that financial development in the U.S. enabled mass consumption to flourish. The purchasing power of the middle-class in rich countries has been unlocked, in part, by financial innovations that have enabled rapid growth of consumer credit, real estate loans, and mortgages for a larger segment of the population. We thus add a control for financial development. We also control for variation in consumer price. When the prices of goods rise (fall), households tend to consume less (more) of them. In Matsuyama (2002), the increasing affordability of consumer goods was found to encourage consumption by a large number of households. Consumption behavior, nonetheless, may depend on agents' perception and anticipation. Some would prefer to buy in the present if they expect their purchasing power to decrease further as inflation worsens.

2.2.2. Investment

From the literature overview, we expect the size of the middle-class to be positively associated with investment. Ideally, we would measure private investment, but a breakdown between public and private investment is available for only 48 countries. For this reason, we use total investment measured by the gross fixed capital formation (as a a percentage of GDP) in our main analysis. Furthermore, investment depends heavily on the political and economic environment. According to the accelerator effect, an increase in domestic production results in a more substantial increase in demand for investment. Investment should be greater (smaller) in times of strong economic growth (slowdown). Besides, as decisions are based on anticipation, uncertainty concerning the institutional environment can negatively affect the inclination to invest. More specifically, based on the conclusions of Alesina and Perotti (1994), we know that an increase in inequality is associated with increasing socio-political instability, if not managed by national institutions (such as democracy), which in turn impedes investment and thus economic growth. Consequently, we control for economic activity using

the GDP growth rate and for the institutional environment. We also control for the exchange rate using the real effective exchange rate from the WDI, because the capacity to buy advanced equipment (generally imported) may be affected if the value of the local currency depreciates (Serven and Solimano, 1992). Finally, financial development increases the liquidity of the banking sector and the financial market, allowing private banks to allocate more funds to private companies (Levine, 2005), thus alleviating financial constraints on productive investment in land or equipment (Benabou, 1996). For Samargandi, Fidrmuc, and Ghosh (2015), however, the relationship is non-linear, and financial development can become detrimental to growth past a certain threshold. As a proxy, we use the ratio of domestic credit to the private sector (as a percentage of GDP) from the WDI.[58]

2.2.3. Public expenditure

As previously discussed, we expect the size of the middle-class to have a positive impact on public expenditure. Our main indicator of public expenditure is the share of current government expenditure (as a percentage of the GDP), excluding public investment, which is part of the investment level in the second equation of our system. To complement our analysis, we use two alternative measures, available for fewer countries than in our main sample, that capture the share of transfers and subsidies and the share of health and education expenditure.[59] This latter indicator includes the current, capital, and transfers expenditure. Our set of control variables is standard in the literature. To capture the scale effect, we include population size. Some studies use the urbanization rate, but this variable is strongly correlated with our variable of interest, as is the initial level of income that we discuss further in section 2.3. As we discussed in the literature overview, the institutional environment may shape the attitudes of agents toward redistribution (Acemoglu and Robinson, 2006). As well as the political regime and governance effectiveness, the level of corruption affects both the efficiency of public policies and perception of the agents (Baqir, 2002). Likewise, the literature points to the importance of the burden of debt (Fosu, 2007), multilateral or bilateral aid (Okunade, 2005), and remittances (Yol, 2017) as a determinant of public expenditure, although the numerous missing values prevent us from including them.[60] Alternatively, we control for trade openness (Rodrik, 1998) and the fluctuation of economic activity (Ebeke,

[58] Market distortions should also have direct effects on investment (Barro, 1991; Alesina and Perotti, 1994), but we cannot control for these in the absence of data on investment deflators used in those studies.
[59] Data for transfers and subsidies are available for only 77 countries; and while data for health and education expenditure are available for 81 countries, there are many missing values.
[60] Including these variables would cause us to lose 152 observations.

2012), which in turn determine the level of public resources available for redistribution and investment using the GDP growth rate.

2.3. Sources of data and variables

We use data from PovcalNet to compute annual values of the middle-class indicators for the period of 1995-2014.[61] Since we are interested in the medium-term dynamics, and also due to the numerous missing values[62] in the distributional data, we compute the five-year average of each variable for four non-overlapping periods (1995-2000, 2000-2005, 2005-2010, and 2010-2014). For the sake of consistency, we use the same sample of 83 countries (Appendix 2.1) for all empirical investigations in Section 1. The challenge was to maintain a sufficiently large sample of countries for which we have as much data as possible on the variables of interest and the covariates for our various specifications. The number of observations may vary, depending on the coverage of the covariates. In some instance, however, to ensure a reasonable number of observations, we choose to exclude some controls from our models.

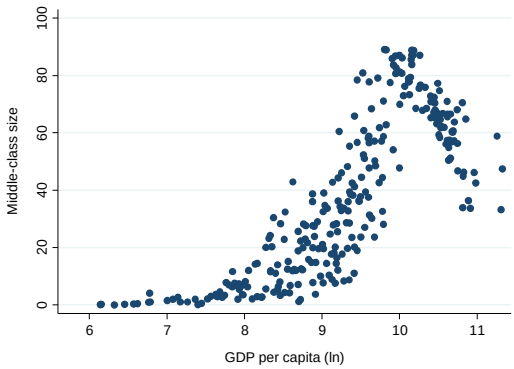
This chapter considers the theoretical mechanisms by which the expansion of the middle-class influences economic growth, identifying the extent of the mechanisms' empirical support when we focus on the "global consumer" income group (Kochhar, 2015; World Bank, 2007, 2018a). The size of the middle-class corresponds to the population with income per capita of USD 10-50 (in PPP 2011). To isolate the effect of the size of our income group of interest and to observe the difference between the two groups, the population share of the rich group (people with income per capita of more than USD 50) is controlled for in all specifications. Some studies set a lower upper-bound of USD 20 for the middle-class (e.g., Bussolo et al., 2008; Clément and Rougier, 2015; Milanovic and Yitzhaki, 2002). For a more disaggregated picture of the relationships, we thus follow Kochhar (2015) and split our middle-class bracket into two intervals: the lower middle-class (USD 10-20) and the upper middle-class (USD 20-50) and we control for the size of the poor (below USD 10), rather than the rich.

[61] The data from PovcalNet are aggregated or "grouped," and to compute the indicators, we apply the methodology described in Appendix 0.3. We calculate the weighted – by rural and urban population share – average of the indicators of middle-class for China, Indonesia, and India. For the following countries, due to availability issues, we choose to keep the urban distributional data: Angola, Columbia, Ecuador, Micronesia (Federal State), Honduras, and Uruguay.

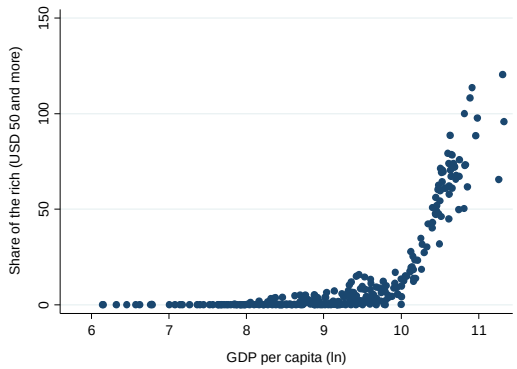
[62] We choose not to impute the missing values.

Figure 2.2 Relationship between the size of middle-class and the rich class (as a percentage of population) and GDP per capita (in logarithm)

a. Size of the middle-class



b. Share of the rich



Source: PWT (8.1) and PovcalNet. Author's computations.

As we can see in Figure 2.2, while the association with the size of the rich group is relatively flat and strongly positive beyond USD 40,000, the relationship between the size of the middle-class and GDP per capita has an inverted-U shape, with a turning-point around the same value of GDP per capita. However, the correlation is weaker at a lower level of development. As previously discussed, the impact of distributional changes may vary, depending on the level of development. Although controlling for the initial level of income is standard in studies on the determinants of economic growth, the degree of correlation with our variable of interest (the size of the middle-class [0.80]) prevents us from introducing both variables on the right hand-side of our empirical models.[63] However, the control for the share of the rich should help to capture part of this effect. In a sense, the evolution of the structure of the top of the distribution, the middle and the rich, can be a good predictor of economic development.[64]

[63] The initial level of GDP per capita is also correlated with other variables of control at 0.65 (institution and financial development indicators).

[64] Observing that the share of the top of the distribution (middle-class and rich, in our definition) carries the sign and significance of the GDP per capita in their model, Loayza et al. (2012:7) note, "*It is plausible that the beneficial effect that had been attributed to changes in GDP per capita actually corresponds to the evolution of the middle-class.*"

Table 2.1 Definition and sources of variables

Variables	Description	Source
Consumption	Household final consumption expenditures (as a percentage of GDP)	World Development Indicator (WDI)
Investment	Gross fixed capital formation (as a percentage of GDP)	World Development Indicator
Public expenditure	Government expenses (in percentage of GDP)	World Development Indicator
Middle-class size	Population share of people with daily income per capita between USD 10 and USD 50	Author's computation based on PovcalNet
Lower middle-class size	Population share of people with daily income per capita between USD 10 and USD 20	Author's computation based on PovcalNet
Upper middle-class size	Population share of people with daily income per capita between USD 20 and USD 50	Author's computation based on PovcalNet
Poor	Population share of people with daily income per capita below USD 10	Author's computation based on PovcalNet
Rich	Population share of people with daily income per capita over USD 50	Author's computation based on PovcalNet
Middle-class homogeneity	Middle-class Gini	Author's computation based on PovcalNet
Inflation	Inflation, consumer prices (annual variation)	World Development Indicator (WDI)
Economic activity	GDP growth rate	Author's computation based on Penn World Table (PWT) 8.1
Exchange rate	Real exchange rate	World development indicator and Penn World Table 8.1
Financial development	Domestic credit to the private sector (as a percentage of GDP)	World development indicator
Public education expenditures	Government expenditures in education (in percentage of GDP)	World Development Indicator
Public health expenditures in	Government expenditures in health (in percentage of GDP)	World Development Indicator and World Health Organization
Natural capital	Total natural resources rents (as a percentage of GDP)	World Development Indicator
Population size	Population (in logarithm)	Penn World Table 8.1
Institution	Government effectiveness	World Governance Indicator (WGI)
	Polity2	Polity IV project (Center of Systematic Peace)
Human capital	Average years of schooling	Barro and Lee (2013)
Openness	Exports and imports in percentage of GDP	World Development Indicator

An alternative method of controlling indirectly for a country's income level is creating sub-samples based on the distribution of GDP per capita (in PPP 2011 USD). By doing so, we are able to take a closer look at the dynamics in the middle-income countries. The countries' classification is determined by the quintiles of GDP per capita in the last period, rather than relying on World Bank classifications to ensure the same number of countries in each sample.[65] The first sample includes the low and lower-middle income countries (LLMIC) of the first and second quintiles, which have a GDP per capita of below USD 10,729. The second sample comprises the upper middle-income countries (UMIC) of the third and fourth quintiles, with a GDP per capita ranging from USD 10,729 to USD 35,381.

The definitions and sources of the dependent and explanatory variables used in this first section are reported in Table 2.1, and the descriptive statistics can be found in Appendix 2.12. As regards the indicators of institutions, "government effectiveness" from the World Governance Database is very interesting. This index captures the agents' perceptions of the quality of public services, the quality of the civil service and its degree of independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. However, this variable is strongly correlated with our variable of interest (correlation of 0.75), thus we choose the polity score index to control for the institutional environment and we run robustness checks using the government effectiveness indicator.

3. Empirical results

In this section, we discuss the results using the SUR estimator and implement additional analysis to complement our findings. For the sake of concision, we do not report the results of all estimations in either the main document or the Appendix.

3.1. The macroeconomic impacts of middle-class size using SUR

The first three columns in Table 2.2 report the results of our baseline specification.[66] First, consistent with the median voter hypothesis, the size of the middle-class is strongly positively associated with the level of public expenditure in all samples, the coefficient being greater for the low and lower middle-income countries (column 3). These effects are robust to changes in

[65] Some countries that would be classified as high-income by the World Bank (for instance, Spain) are included in the second sample of upper middle-income countries. The thresholds are quite high because the initial sample encompasses mostly middle- and high-income countries.
[66] All estimations include a constant term that is not reported.

the specifications (Appendix 2.2), and both polity score and government effectiveness are strongly significant and positive determinants of government expenditure.

The effect on investment is weak and significantly positive only in the total sample. Unsurprisingly, the coefficient is greater when we do not control for institutions, and the significant effect disappears when we substitute government effectiveness for polity score (columns 1, 2, and 3 of Appendix 2.2), thus suggesting that the middle-class may influence investment mostly through the channel of institutional change (Alesina and Perotti, 1996).

Table 2.2 SUR estimations of the impact of the middle-class size on consumption, investment and public expenditure

	Explanatory variables	(1) ALL	(2) UMIC	(3) LLMIC	(4) ALL	(5) UMIC	(6) LLMIC
Consumption	Middle-class size	**-0.241*** **	**-0.117** **	**-0.481***	-	-	-
		(0.0443)	**(0.0462)**	**(0.260)**	-	-	-
	Rich	-0.297***	-0.132	-3.043	-	-	-
		(0.0607)	(0.0924)	(2.616)	-	-	-
	Poor	-	-	-	0.0793	0.0323	0.00482
		-	-	-	(0.0616)	(0.0595)	(0.109)
	Lower MC	-	-	-	**-0.182** **	-0.103	-0.00387
		-	-	-	**(0.0899)**	(0.0754)	(0.568)
	Upper MC	-	-	-	**-0.190** **	**-0.140** **	-2.650
		-	-	-	**(0.0807)**	**(0.0670)**	(1.823)
	Private credit	0.0242	0.0552**	0.0193	-0.00920	0.0529**	0.0190
		(0.0254)	(0.0230)	(0.129)	(0.0257)	(0.0231)	(0.130)
	Inflation	-0.00590	0.0712	-0.0219	-0.000603	0.0672	-0.0189
		(0.0535)	(0.0939)	(0.0783)	(0.0569)	(0.0952)	(0.0786)
Investment	Middle-class size	**0.0278***	0.0237	0.0485	-	-	-
		(0.0151)	(0.0241)	(0.0797)	-	-	-
	Rich	-0.0174	-0.0447	0.776	-	-	-
		(0.0198)	(0.0457)	(0.755)	-	-	-
	Poor	-	-	-	**-0.0443** **	-0.0210	**-0.0741** **
		-	-	-	**(0.0189)**	(0.0303)	**(0.0304)**
	Lower MC	-	-	-	**0.0570** **	0.0265	-0.135
		-	-	-	**(0.0278)**	(0.0391)	(0.160)
	Upper MC	-	-	-	-0.0236	-0.0131	0.719
		-	-	-	(0.0255)	(0.0365)	(0.512)
	Growth rate	0.843***	0.665***	0.867***	0.831***	0.660***	0.844***
		(0.118)	(0.189)	(0.198)	(0.119)	(0.194)	(0.193)
	Exchange rate	0.000334***	0.000184	0.000456**	0.000351***	0.000191	0.000493**
		(0.000126)	(0.000337)	(0.000230)	(0.000127)	(0.000346)	(0.000224)
	Private credit	-0.00636	-0.0137	0.00372	-0.00798	-0.0144	0.00580
		(0.00826)	(0.0109)	(0.0430)	(0.00795)	(0.0110)	(0.0418)
	Polity2	0.237***	0.173	0.357***	0.222***	0.182	0.351***
		(0.0751)	(0.112)	(0.136)	(0.0749)	(0.116)	(0.131)

Table 2.2 (continued next page)

Table 2.2 (continued)

	Middle-class size	**0.146*** **	**0.133*** **	**0.372*** **	-	-	-
		(0.0225)	**(0.0400)**	**(0.0565)**	-	-	-
	Rich	-0.0416	-0.104	0.551	-	-	-
		(0.0321)	(0.0749)	(0.604)	-	-	-
	Poor	-	-	-	**0.0636****	0.0293	**0.0550****
Public expenditure		-	-	-	**(0.0301)**	(0.0497)	(0.0241)
	Lower MC	-	-	-	**0.189*** **	**0.149****	**0.301****
		-	-	-	**(0.0427)**	**(0.0622)**	**(0.127)**
	Upper MC	-	-	-	**0.174*** **	**0.115****	**0.784***
		-	-	-	**(0.0393)**	**(0.0577)**	**(0.412)**
	Growth rate	-0.538***	-0.515	-0.272	-0.545***	-0.550*	-0.273*
		(0.196)	(0.318)	(0.169)	(0.195)	(0.326)	(0.164)
	Natural rent	-0.0864	-0.171	0.0248	-0.0794	-0.151	0.0228
		(0.0611)	(0.105)	(0.0518)	(0.0613)	(0.108)	(0.0507)
	Trade openness	0.0332***	-0.0101	0.0344**	0.0286***	-0.00159	0.0356***
		(0.00991)	(0.0194)	(0.0138)	(0.00939)	(0.0196)	(0.0135)
	Polity2	0.533***	0.849***	0.234**	0.502***	0.831***	0.249***
		(0.121)	(0.201)	(0.0966)	(0.119)	(0.205)	(0.0939)
	Observations	247	109	90	247	109	90
	Countries	83	34	33	83	34	33
	Time FE	Yes	Yes	Yes	Yes	Yes	Yes
	Region FE	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors are in parenthesis. Significant at *** p<0.01, ** p<0.05, * p<0.10, NS p>0.10

The negative sign of the middle-class in the consumption models, which holds in all alternative specifications (Appendix 2.2), is consistent with the Keynesian absolute income hypothesis, as a more affluent middle-class has a greater preference for savings. Chun et al. (2017) find positive relationships with consumption per capita growth for their three indicators of middle-class in 2000-2013, but the variable in their model which is the closest to our definition is the control for "upper class" (those with expenditure per capita above USD 10), for which they find no significant results either for consumption or savings rate.[67] This result should be taken with caution, however, as the theory suggests that if a negative relationship between income and consumption is identified in the short- and medium-term, it tends to disappear in the long-term (Friedman, 1957; Kuznets, 1947).[68] We test this hypothesis by running estimations successively on 10-, 15-, and 20-year average panels: the dependent variable being the value of consumption in 2014, while the explanatory variables

[67] In their models, they control for the initial level of consumption per capita, which could explain the lack of significance of the "upper-class." In our data, consumption per capita, GDP per capita, and the size of the middle-class consumer are strongly correlated (0.8), suggesting that these three variables capture the same effect.

[68] For instance, analyzing medium- and long-term relationships with income distribution in 1960-2000, using U.S. state data, Partridge (2005) found a positive relationship between overall inequality and middle-class share and long-term growth, but no conclusive results regarding medium-term growth.

are either averaged over 10, 15, or 20 years, or their level in the beginning of the period.[69] The direction and significance of the relationship do not change, thus invalidating the hypothesis of a differentiated effect in the medium- and long-term. Nonetheless, a greater propensity to save does not necessarily preclude the middle-class consumption basket being more diversified and of better quality. Still, it should be borne in mind that the role of the middle-class as a consumer is somewhat in conflict with this alluded predisposition to save (Handley, 2014).

Table 2.3 SUR estimations of the impact of the middle-class size on consumption, private and public investment and public expenditure

Explanatory variables	Public investment		Private investment	
	(1)	(2)	(3)	(4)
Middle-class size	**0.0878*** **	-	**-0.0502** **	-
	(0.0224)	-	**(0.0255)**	-
Rich	-0.237***	-	0.169***	-
	(0.0436)	-	(0.0497)	-
Poor	-	0.0618***	-	-0.0827***
	-	(0.0226)	-	(0.0246)
Lower MC	-	**0.194*** **	-	**-0.112** **
	-	**(0.0411)**	-	**(0.0447)**
Upper MC	-	0.0194	-	-0.0532
	-	(0.0484)	-	(0.0525)
Control	Yes	Yes	Yes	Yes
Observations	119	119	119	119
Countries	48	48	48	48
Time FE	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes

Standard errors are in parenthesis. Significant at *** p<0.01, ** p<0.05, * p<0.10, NS p>0.10

The last three columns of Table 2.2 report the results when the middle-class range is broken down into two intervals: the lower group (USD 10-20) and the upper group (USD 20-50). We control for the population share of the poor, rather than the rich. Regarding consumption, the coefficients for the lower and upper middle-class are negative for the total sample (column 4) and the upper middle-income countries for the latter variable. Interestingly, while the lower middle-class is positively associated with investment in the whole sample (column 4), increasing poverty incidence is associated with decreasing levels of investment in low and lower-middle income countries (column 6) and in the total sample.

[69] The results are not reported.

In columns 4, 5, and 6 of Table 2.2, we see that while the population share of the rich does not contribute to explaining the heterogeneity of public expenditure, this is not the case for the poor and middle-class brackets. The magnitude of the effect for the lower middle-class is the greatest in the upper-middle income countries and the total sample. Conversely, in low and lower middle-income countries, the upper middle-class has a greater coefficient (although it is less significant). These findings indicate only that the income groups have differentiated influences on public expenditure and that, either separately or aggregated in a broad middle-class range, the effects tend to be more similar to those of the poor than of the rich.

For more disaggregated insights, we use the reduced sample of 48 countries for which we have data on private gross fixed capital formation (as a percentage of GDP) to test whether the effect of the size of the middle-class on investment is the same when we distinguish between the private and public components. Two interesting features are visible in Table 2.3.[70] Growth of the middle-class tends to be positively associated with public investment (as with public expenditure), but negatively associated with private investment. The negative relationship between the size of the middle-class and total investment noted in Table 2.2 thus seems to be driven by a negative effect on private investment. More precisely, it seems that these effects on private and public investment are due to the lower middle-class, as the upper middle-class is not significant in any model (columns 2 and 4). The coefficients of the rich group have the opposite signs, although they are not significant in our previous estimations (Table 2.2). Here again, these additional results suggest that the behavior and preferences of the lower middle-class in terms of private investment and public expenditure are closer to those of the poor than the rich.

3.2. The macroeconomic impacts of income-based identity using SUR

Bourdieu (1984) notes that, under similar conditions, agents who belong to the same social classes are likely to have similar interests and aspirations, which translate to similar positions and behaviors. In reality, the influence of the middle-class on social and political dynamics is difficult to identify because the profiles of the people in this group are more diversified than those of the poor and the rich. According to Handley (2014), though, the influence of the middle-class on the political and economic spheres depend on its "*collective identity*." Simply put, we talk about collective or class identity when individuals belonging to the same social

[70] As the results on consumption and public expenditure are not affected, we report only the results for investment.

class are aware of their common interests, as distinct from those of other classes, and seek to satisfy their common aspirations. This class identity brings members of this heterogeneous middle-class together and amplifies the economic and social effect of its expansion. A similar idea, applied to the economic definition of "social groups," is the concept of "*income-based identity*" (Birdsall, 2010).

"Income-based identity" can be found in the literature on polarization in the identification-alienation framework (Esteban and Ray, 1994; Duclos, Esteban and Ray, 2002), and in particular, in the concept of "*income polarization.*"[71] According to this, each individual is subject to two forces. First, individuals identify with people earning similar levels of income, considering themselves members of the same group. At the same time, individuals feel alienated from those belonging to other income groups (Duclos et al., 2002). Consequently, income polarization increases when the component of "alienation" - corresponding to inter-group inequality - increases, and/or when the component of "identification" increases, corresponding to a decrease in within-group inequality (Esteban and Ray, 2012).

There is a body of literature on the links between income polarization and economic growth (e.g., Brzezinski, 2013). We choose to focus on the "identification component," which is particularly relevant for understanding the implications of a middle-class larger than other groups. Following Birdsall (2010), we compute an indicator of "income-based identity," which is simply the Gini coefficient of the middle-class. According to the author, greater "income identity" simply means that there are no significant subdivisions within the middle-class income range. Lower middle-class inequality would thus indicate a more cohesive middle-class because the income range is sufficiently narrow that there are no subdivisions within the income group.

[71] Duclos et al. (2002) talk about three main concepts of polarization: pure social polarization, pure income polarization, and *social polarization with income-mediated identification.*

Table 2.4 SUR estimations of the impact of the middle-class cohesiveness on consumption, investment and public expenditure

	Explanatory variables	(1) ALL	(2) UMIC	(3) LLMIC
Consumption	MC Gini	-0.0784	**-0.656****	-0.103
		(0.230)	**(0.310)**	(0.532)
	GDP per capita t-1 (ln)	-16.10***	-12.24***	-17.93***
		(1.417)	(2.201)	(3.742)
	Private credit	0.0767***	0.0677***	-0.0630
		(0.0222)	(0.0210)	(0.106)
	Inflation	0.00185	0.0738	-0.0349
		(0.0496)	(0.0849)	(0.0760)
Investment	MC Gini	**0.226*****	0.174	0.0124
		(0.0827)	(0.164)	(0.165)
	GDP per capita t-1 (ln)	0.913*	-0.393	2.840**
		(0.552)	(1.343)	(1.247)
	Growth rate	0.795***	0.576***	0.929***
		(0.120)	(0.194)	(0.205)
	Exchange rate	0.000407***	0.000267	0.000483**
		(0.000127)	(0.000337)	(0.000226)
	Private credit	-0.0180**	-0.0148	0.0200
		(0.00818)	(0.0108)	(0.0383)
	Polity2	0.248***	0.222**	0.358***
		(0.0736)	(0.108)	(0.135)
Public expenditure	MC Gini	**0.240***	0.105	**0.418*****
		(0.138)	(0.276)	**(0.162)**
	GDP per capita t-1 (ln)	2.411***	3.022	1.923
		(0.893)	(2.247)	(1.172)
	Growth rate	-0.653***	-0.477	-0.421**
		(0.209)	(0.347)	(0.198)
	Polity2	0.583***	0.909***	0.277**
		(0.127)	(0.213)	(0.112)
	Natural rent	-0.0497	-0.184	0.112*
		(0.0659)	(0.115)	(0.0615)
	Trade openness	0.00865	-0.00487	0.0232
		(0.0119)	(0.0235)	(0.0164)
	Population (ln)	-1.059***	-0.825	-0.252
		(0.380)	(0.574)	(0.429)
	Observations	247	109	90
	Countries	83	34	33
	Time FE	Yes	Yes	Yes
	Region FE	Yes	Yes	Yes

Standard errors are in parenthesis. Significant at *** p<0.01, ** p<0.05, * p<0.10, NS p>0.10

In the absence of a correlation between the within middle-class Gini and GDP per capita, we control for the initial level of income in all equations. Unsurprisingly, the signs of the coefficients associated with the GDP per capita are similar to those found for the size of middle-class in section 3.1. The results for the other control variables are also stable. Regarding our variable of interest, we see in Table 2.4 that the coefficient is significant only

for the sample of upper middle-income countries for which an increase in middle-class inequality negatively affects the aggregated consumption. The effects are reversed for investment (for the entire sample) and public expenditure (entire sample and low and lower-middle income countries). In other words, a more concentrated distribution of income within the middle-class translates to higher levels of investment and public expenditure (in the entire sample). The latter effect is stronger in low and lower-middle income countries. Regarding consumption, levels decrease when the concentration of income in the middle-class rises, only in upper-middle income countries.

When significant, the effects of middle-class inequality are similar to those found in section 3.2 on size of the middle-class, which is an indication that our middle-class range is "too large" for its members to identify as a group with similar behaviors, and the impacts may be differentiated depending on the weight of a particular group within the middle-class broad income range, if not entirely driven by the top middle-class. These results may also simply mean that the middle-class Gini captures the effect of the class size indirectly because, by construction, within-group inequality is more likely to be small (great) when the income-range is narrow (large).

4. Causality and further analysis

One limitation of the simultaneous model we are using is that it does not correct for endogeneity bias due to potential reverse causality related to the middle-class and some of the explanatory variables. Indeed, the growth dynamics prompted by middle-classes may also favor the promotion of the middle-class; for example, when increased productivity or industrialization raises the skill premium and educational returns. According to Ravallion (2010), faster economic growth prompts faster expansion of the middle-class, and growth tends to be more pro-poor in developing countries exhibiting a larger initial middle-class. In addition, public policies can play a major role in the expansion of middle-class, either through direct redistribution in the form of a social safety net or through social spending and expenditure and investment in the improvement and maintenance of infrastructure necessary for business activities. For instance, changes in income distribution in most Latin American and Caribbean countries over recent decades have been driven by redistribution that improved the well-being of the poor (Azevedo and Atamanov, 2014). Ferreira et al. (2013) note that the state remains the main provider of social services and utilities and therefore has a large part in the improvement of the education and health systems, which in turn affect the general

population's well-being and opportunities for social promotion. Furthermore, it is generally assumed that consumption, investment, and public spending are dependent on their past values. The introduction of the lagged variable on the right-hand side of the equation justifies the use of an estimator that handles appropriately dynamic models. To identify whether our results can be interpreted as more than partial correlation, we use the two-step system GMM estimator proposed by Blundell and Bond (1998).[72]

Since the two-step estimation may produce downward biased results when using finite samples, we apply the Windmeijer (2005) correction for the variance-covariance matrix. We also adjust our estimations for heteroscedasticity. Two crucial assumptions must be met to ensure the validity of GMM: first, the instruments are exogenous (i.e., not correlated with the error terms); and second, if a negative first-order autocorrelation (AR1) in residuals is acceptable, we need to verify that there is no second-order autocorrelation (AR2). To test these assumptions, we report the Hansen test of over-identifying restrictions and the Arellano–Bond test for AR1 and AR2. There are no consensual rules regarding the choices of instruments, except that they must be of a smaller number than the groups (in our cases, countries) in the sample (Roodman, 2009).[73] It should be noted that when the sample size shrinks and fewer observations are available, the validity and relevance of a subset of instruments become questionable, which increases the risk of downward bias (Bond, Hoeffler and Temple, 2001). This is particularly pertinent here due to the short time-span of just four periods. We thus remain cautious in the interpretation of the results for the sub-samples of LLMIC and UMIC.

First, we do not find any significant result when we use "middle-class inequality" as our variable of interest.[74] Second, in Table 2.5, the effect of the size of the middle-class (column 1) and the upper middle-class (column 4) on consumption remains significant and negative for the whole sample only. There is no significant result for investment (Table 2.6). The results are the same when we remove the lagged dependent variable from the controls and when we use the reduced sample of 48 countries to examine the effect on public and private investment.

[72] This system estimator encompasses a regression equation in both differences and levels with their own specific set of internal instrumental variables, including 1) a set of equations in first-differences, and with adequately lagged levels as instruments; and 2) a set of equations in levels and variables, with adequately lagged first-differences as instruments.
[73] We use the option "collapse" so that the number of instruments is limited to 16-20 in all our models.
[74] The results are not reported.

Table 2.5 Two-step GMM estimation of the effect of middle-class size on consumption

	Dependent variable: consumption/GDP					
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)
	ALL	UMIC	LLMIC	ALL	UMIC	LLMIC
Middle-class size	**-0.256***	-0.0772	-0.306	-	-	-
	(0.143)	(0.136)	(0.401)	-	-	-
Rich	-0.141	0.0257	1.114	-	-	-
	(0.0865)	(0.413)	(2.275)	-	-	-
Poor	-	-	-	-0.0665	0.00963	-0.219
	-	-	-	(0.128)	(0.0818)	(0.339)
Lower MC	-	-	-	0.0472	-0.196	0.256
	-	-	-	(0.0931)	(0.0833)	(1.241)
Upper MC	-	-	-	**-0.179***	-0.192	-0.186
	-	-	-	**(0.0980)**	(0.108)	(3.122)
Consumption (t-1)	0.356	0.954***	0.0901	0.844***	0.730***	0.765**
	(0.387)	(0.170)	(0.916)	(0.251)	(0.119)	(0.305)
Control	Yes	Yes	Yes	Yes	Yes	Yes
Observations	264	113	103	264	113	103
Countries	83	34	33	83	34	33
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
AR(2)	0.325	0.808	0.246	0.828	0.486	0.833
Hansen (p-value)	0.477	0.314	0.281	0.594	0.953	0.662

Robust standard errors are in parenthesis. Significant at *** p<0.01, ** p<0.05, * p<0.10, NS p>0.10

Table 2.6 Two-step GMM estimation of the effect of middle-class size on investment

	Dependent variable: consumption/GDP					
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)
	ALL	UMIC	LLMIC	ALL	UMIC	LLMIC
Middle-class size	0.110	0.139	-0.338	-	-	-
	(0.0847)	(0.0708)	(0.221)	-	-	-
Rich	0.0255	-0.292	-1.774	-	-	-
	(0.0365)	(0.173)	(2.060)	-	-	-
Poor	-	-	-	0.134	0.0191	-0.0770
	-	-	-	(0.116)	(0.169)	(0.140)
Lower MC	-	-	-	-0.0488	0.113	-0.248
	-	-	-	(0.160)	(0.211)	(0.370)
Upper MC	-	-	-	0.159	0.0506	0.280
	-	-	-	(0.158)	(0.198)	(0.814)
Investment (t-1)	1.047***	0.610**	0.571	0.0778	0.279	-0.359
	(0.142)	(0.234)	(0.424)	(0.254)	(0.339)	(0.293)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	264	113	103	264	113	103
Countries	83	34	33	83	34	33
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
AR(2)	0.496	0.123	0.271	0.0500	0.390	0.514
Hansen (p-value)	0.213	0.307	0.994	0.156	0.208	0.276

Robust standard errors are in parenthesis. Significant at *** p<0.01, ** p<0.05, * p<0.10, NS p>0.10

Since, the lagged values of public expenditure are strongly correlated with our variable of interest (0.75), this generates multicollinearity when it is included in the right-hand side.[75] We thus choose not to use a dynamic model for the equation of expenditure (Table 2.7). The results are close to those from the SUR estimation for the size of the middle-class; but when we split the income range, only the upper group for the total sample (column 4) and the lower group for the upper-middle income countries (column 5) remain significant.

Table 2.7 Two-step GMM estimation of the effect of middle-class size on public expenditure

Explanatory variables	Dependent variable: consumption/GDP					
	(1) ALL	(2) UMIC	(3) LLMIC	(4) ALL	(5) UMIC	(6) LLMIC
Middle-class size	**0.254*** **	**0.476*** **	**0.490** **	-	-	-
	(0.0804)	**(0.154)**	**(0.194)**	-	-	-
Rich	0.108*	-0.165	-0.228	-	-	-
	(0.0601)	(0.312)	(3.265)	-	-	-
Poor	-	-	-	0.172	0.0903	0.125
	-	-	-	(0.144)	(0.199)	(0.0776)
Lower MC	-	-	-	0.150	**0.395** **	0.385
	-	-	-	(0.117)	**(0.157)**	(0.257)
Upper MC	-	-	-	**0.383** **	0.272	0.487
	-	-	-	**(0.183)**	(0.208)	(1.171)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	255	112	94	255	112	94
Countries	83	34	33	83	34	33
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
AR(2)	0.532	0.586	0.985	0.916	0.453	0.971
Hansen (p-value)	0.101	0.865	0.999	0.198	0.254	0.905

Robust standard errors are in parenthesis. Significant at *** p<0.01, ** p<0.05, * p<0.10, NS p>0.10

We run two additional robustness checks. First, we use two alternative measures of public expenditure: (1) transfers and subsidies and (2) health and education expenditure as a percentage of GDP (Appendix 2.3).[76] The size of the middle-class is found to be a positive determinant of health and education expenditure in the entire sample. The effect is consistent with the findings of Loayza et al. (2012). When the dependent variable is the share of transfers and subsidies, the coefficients of the middle-class are smaller, but they remain positive and significant. Interestingly, in low-income and lower middle-income countries, the

[75] We systematically run VIF (variance inflator factor) tests to check for this issue. The inclusion of two strongly correlated variables tends to increase VIF values, since they capture the same effect. When the lagged level of public expenditure is included, its VIF reaches 12 and the tolerance (1/VIF) is below 0.1 and the variable of interest is no longer significant. The results are not reported.

[76] Due to data coverage, the samples used in these estimations are reduced.

lower and upper middle-classes have reversed impacts on public transfers. The upper middle-class seems to share the attitude of the rich regarding the allocation of public expenditure (Appendix 2.3, column 3). This may be attributed to the fact that as the upper middle-class is likely to be smaller than the lower middle-class in less developed countries, the former tends to be closer to and bundled together with the rich.

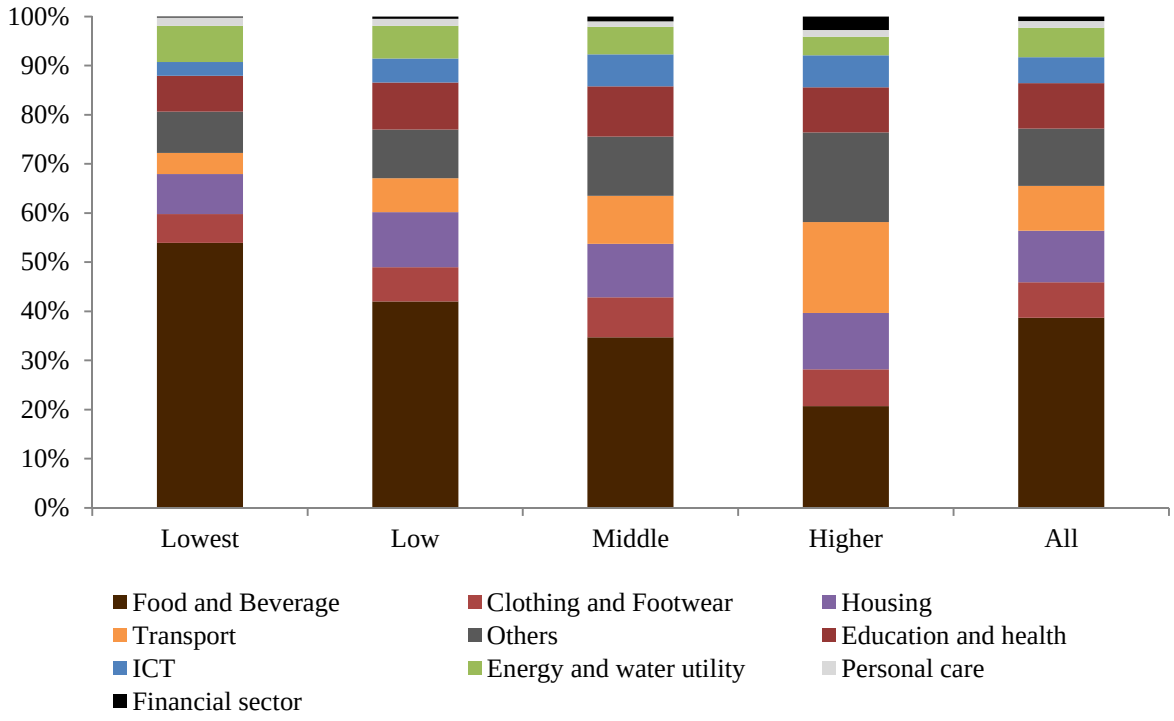
Second, our results suggest a preference of the middle-class for redistribution. As discussed in the literature overview, attitudes toward redistribution may vary depending on the efficiency of public policies and the weight of the middle-class compared to the "elites." To test this hypothesis, we generate a variable of "political regime," which takes the value of one when the country has a democratic regime (polity score superior to zero) and zero when the country has an autocratic regime (polity score inferior to zero). We then estimate a model including the interaction terms *Middle-class (all, lower or upper) size*political regime*. The interaction term and the share of the rich are not significant in any specification, and the results are similar when we do not dichotomize the polity score,[77] suggesting that the positive influence of a larger middle-class on redistribution is not affected by the level of democratization. Nonetheless, these results do not refute the proposition of Acemoglu and Robinson (2006) that the middle-class, through their attitude to redistribution, may influence a country's process of democratization, since our model is not geared toward testing the determinant of democratization unlike that of Loayza et al. (2012).

In summary, our findings indicate that the growth of the middle-class, as the "global consumer," goes hand-in-hand with an increasing supply of transfers (monetary or in nature) and/or public investment. The association with total investment is positive when we consider the entire sample but negative when the outcome is solely private investment. It seems that a larger lower middle-class does not have a strong influence on private investment, certainly weaker than that of the rich. The negative correlation with private investment may also capture reverse causality in the sense that private investment, by generating new opportunities for employment and revenues, contributes to the expansion of the top income group (the rich) and, through a composition effect, to a smaller middle-class. Our results are robust to various changes in specifications, dependent variables, and samples. We also find evidence of differentiated effects of two sub-groups of middle-class. We check the sensitivity of our

[77] The results are not reported.

results when we use an estimator (the two-step GMM) that controls for reverse causality, and the results for consumption and public expenditure are preserved. Nonetheless, the level of public expenditure and the size of the middle-class are strongly correlated, which prevents us from controlling for the effect of inertia with the lagged value of public expenditure. Although our results for consumption indicate that the middle-class have a stronger preference for savings in the medium-term, they are not informative with regard to the changes in their basket of consumption.

Figure 2.3 Share of consumption by sector and consumption segment (92 countries)



Note: **Lowest segment:** below USD 2.97 per capita a day; **low consumption segment**: between USD 2.97 and USD 8.44 per capita a day; **middle consumption segment**: between USD 8.44 and USD 23.03 per capita a day; and **higher consumption segment**: above USD 23.03 per capita a day.

Source: Global Consumption Database. Author's computations.[78]

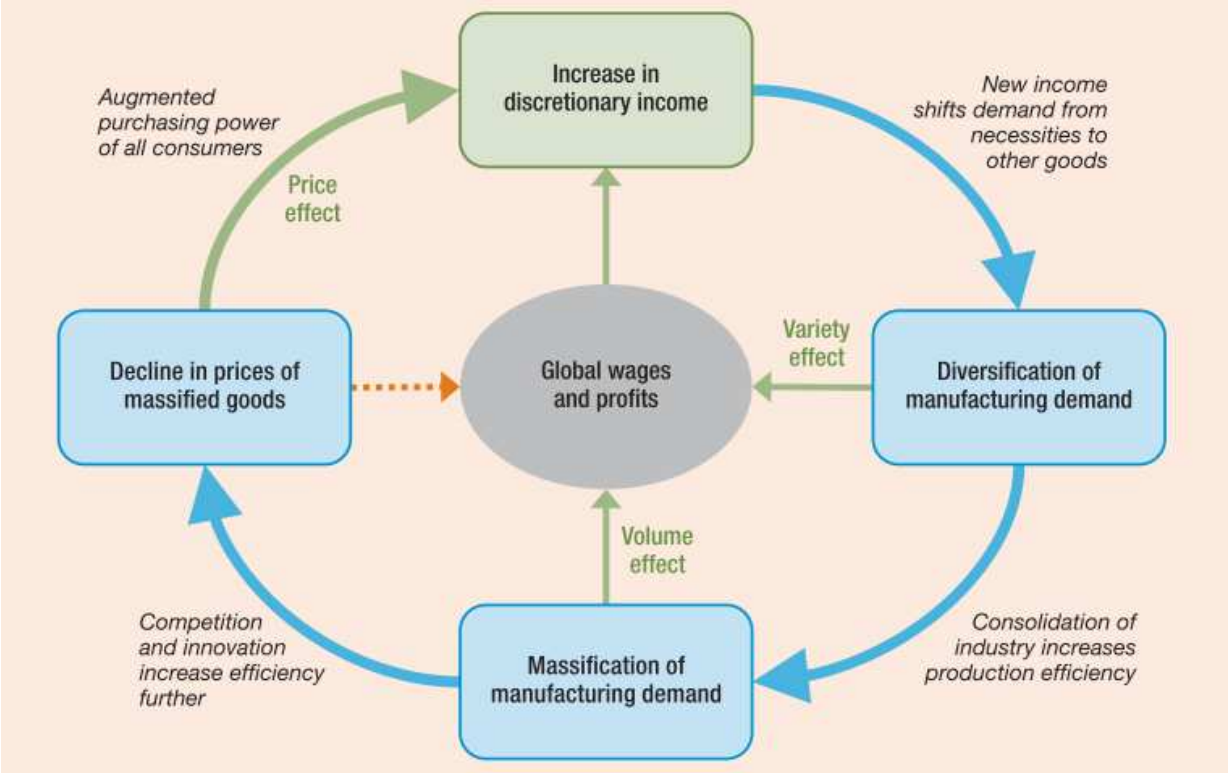
[78] We take advantage of the Global Consumption Database (GCD) compiled by the World Bank which is the most comprehensive data source to date on consumer spending patterns covering 92 developing countries, among which 58 are middle-income countries. The data are based on national household surveys, which collect information for a group of households' representative of the entire country. The surveys used in the database were conducted between 2000 and 2010 (except the one for Djibouti, which was conducted in 1996); most were conducted during the period 2007–10. All data presented in the GCD are as of 2010. When based on a survey conducted before 2010, the estimates were obtained by extrapolation**.** Unfortunately, the disaggregation of data is limited and we cannot specify the thresholds for classifying individual by income groups, but the World Bank propose four consumption segments based on global income distribution data, which rank the global population by income per capita.

Following the law of Engel, a more affluent middle-class should be more inclined than the poor to buy higher quality goods, thereby playing an essential role in the determination of domestic and global demand structures. As an illustration, Figure 2.3 portrays the consumption profile by income group of 92 developing countries, which we computed using data from the Global Consumption Database. The data are provided for four levels of consumption in each available country: lowest, low, middle, and higher. As we can see, the diversification of goods and products increases with the level of income. The share of food and beverages in total consumption decreases with the level of income, in contrast to shares of advanced technologies (ICT), clothing, financial services, transport, and other products and services. The latter sector includes primarily expenditure on leisure activities and goods or services for improving everyday comfort (e.g., domestic services, furniture and furnishings, social protection). However, average expenditure on health and education does not improve substantially. Additional insights on the role of the global middle-class can be gained from an in-depth analysis of the relationship between the middle-class and structural transformation.

Section 2. Middle-class and structural transformation: modernization, consumption, and human capital

UNIDO (2018: 274) describes a "*virtuous circle of manufacturing consumption in the global economy*." Figure 2.4 summarizes the process and mechanisms entangled in the diversification of demand and change in the industrial composition of an economy. As demand diversifies, it drives innovation and investment in manufacturing activities, resulting in higher incomes and lower prices. This enables the emergence of mass consumption and the broad-based diffusion of new and better goods. While producers benefit from the increase in employment opportunities and income; consumers gain from the reduction in relative prices, the expansion of affordable variety, and increasing quality, which contributes to improvements in their welfare in various ways. For instance, access to new technology can increase their productivity, and new medicines or processed foods can improve their health. The ensuing changes in preferences and habits can also orient the consumers toward more environmentally friendly goods, leading to more sustainable growth.

Figure 2.4 The virtuous circle of manufacturing consumption: The global economy



Source: UNIDO (2018)

From this perspective, the middle-class consumer has an essential place in industrial and economic development, which we will examine in the following sections. After we briefly survey the literature, we will describe our empirical strategy and data. We will then discuss the results of various empirical specifications.

1. Middle-class and structural transformation: an overview of the literature

McMillan, Rodrik, and Sepulveda (2017) make the distinction between structural transformation (industrialization) and fundamentals (investment in human capital and institution). Structural transformation can result directly from industrial policy measures or indirectly "*by making broad investments in human capital and institutions and hoping that these will trickle down to investment incentives in industry*" (P.8). In this framework, the effects of the size of the middle-class can be channeled either through human capital accumulation, resulting in the provision of skilled labor force and promotion of innovation, or

through the diversification of production, resulting from the modification of their consumption preferences.

The human capital and economic growth nexus has been extensively documented in the literature.[79] In Nelson and Phelps (1966), human capital is seen as a determinant of innovation and the capacity for adoption of new technologies and technical progress, which is a driver of structural transformation. The level, quality, and structure of human capital determines the capacity of an economy to follow up with technological changes. The literature contends that, depending on its level, education has different impacts on economic growth (Aghion and Howitt, 2006; Petrakis and Stamatakis, 2002; Vandenbussche, Aghion and Meghir, 2006). A low level of education, and thus unskilled human capital, supports growth in countries where industrialization still relies on technological imitation; while a higher level of education, and thus skilled human capital, is essential for the innovation-driven growth of countries closer to the technological frontier. Investment in tertiary education is thus likely to affect the ability to produce advanced technology, while primary and secondary education should influence imitation capacity. Since middle-class individuals generally have a higher level of education than the poor, they are more likely to be skilled workers, providing productivity gains and innovation. The middle-class can thus be considered a stock of skilled labor and a potential driver of technical progress.

Most studies converge on the contribution of the middle-class to human capital accumulation due to their anticipatory behavior (Doepke and Zilibotti, 2005). Intergenerational transmission of values, as in Turkey, for instance, can also explain their attitude toward education. In many descriptive papers, educational attainment and spending on education distinguish the middle-class from the poor or vulnerable groups (ADB, 2010; Birdsall et al., 2014; Clément and Rougier, 2015; López-Calva and Ortiz-Juarez, 2014 among others). For instance, Birdsall (2010) find that the middle-class has at least 10 years of education in most countries of her sample. The results of Easterly (2001) indicate a positive relationship between the size of the middle-class and indicators of human capital (including education). To improve their living standards and those of their offspring, middle-class households invest in higher quality private education (Banerjee and Duflo, 2008). As stated by Wietzke and Sumner (2014:14), "*income growth, in combination with accompanying demographic transformations, leads to changes in human capital investments among vulnerable groups that increasingly resemble the patterns*

[79] See, for instance, Lucas (1988) and Mankiw, Romer and Weil (1992).

commonly associated with middle-class development." This results in changes in their prospects for employment (Ferreira et al., 2013), reflected in the skill intensity of their occupations, compared to that of the poor and vulnerable (ADB, 2010; Bonnefond et al., 2015; Weber, 1995).

Regarding the demand-side approach, various studies model the relationship between income distribution, the middle-class, and productive transformation. Murphy et al. (1989a) propose a model that suggests industrialization requires, in addition to the productivity shock in the agricultural sector, that the increase in demand be concentrated in manufactured goods. In the presence of increasing returns, the authors show the importance of the existence of a middle-class sufficiently large to support mass consumption and spur the transfer of productive resources to industrial activities. Since middle-class consumers are motivated to pay a little more for better goods (Chun et al., 2017), this encourages the differentiation and creation of new goods. A sufficiently large and differentiated middle-class can support domestic demand for manufactured goods, enabling companies to cover their fixed costs (Kharas and Gertz, 2010). Indeed, their consumption of locally produced goods and services is more intensive, unlike that of rich households, which tend to have a strong preference for imported goods. The total profit of local industries, therefore, depends on the share of wealth held by the middle-class (its purchasing power), making it the major player in industrialization. However, the matter is complicated by the fact that productive and distributive changes tend to be simultaneously determined (Galor, 2011). The manner in which the middle-class affects productive diversification and modernization can thus be better described in an endogenous setting

On the one hand, structural change leads to significant changes in income distribution. It also changes the distribution of modern employment and opportunities for social mobility, as noted by Galor and Moav (2004, 2006). When access to education remains unequal, and capital is highly polarized (particularly in social groups with access to capital), income inequality can increase very sharply under the pressure of structural transformation. In contrast, in an economy where access to physical and human capital is more egalitarian, economic inequalities tend to decline, and opportunities for social mobility are greater. This context encourages the emergence of a middle-class with initial endowments and higher investments in human capital than other classes, which can be a driver of economic dynamism. Thus, the effect of structural change on inequality and the constitution of a

middle-class depends on the initial level of polarization of physical and human capital and on policies that can reduce the initial inequality in parallel with structural change.

Interestingly, Matsuyama (2002) describes the mechanism when there are two middle-class subgroups. Matsuyama (2002) concludes that the access of the upper classes to new goods gradually reduces prices and, consequently, increases the access of the lower-class groups to the market. At the same time, middle-class individuals tend to consume more sophisticated goods as they become affordable, without consuming less of the other goods. Therefore, the expansion of the middle-class, by fuelling the demand for increasingly sophisticated products, can spur the development of new industries. Furthermore, the consumers' tastes and perceptions of what is luxurious and what is necessary evolve. Following Engel's law, as the economy grows and overall income level rises, people tend to buy the goods that they previously considered luxury goods in the earlier stages of their development. As a result, households may spend less on food and more on modern services and manufactured goods. In line with the concept of food transition (Popkin, 2003), the demand for quality is also expressed through changes in eating habits and behaviors, as illustrated by Tschirley, Reardon, and Dolislager (2014) in the case of East and Southern African middle-classes.

Some models address the two-way relationship between income distribution and the structure of demand. Mani (2001) proposes three categories of goods, reflecting the skill intensity involved in their production: essential goods (unskilled labor), simple manufacture (medium-skill labor), and sophisticated manufacture (high-skilled labor). Since the acquisition of skill through education depends on financial constraints, and the poor are at a disadvantage because of their familial background and low access to credit, only the wealthiest agents can become highly skilled. In this context, when inequality is high – thus hampering the expansion of the middle-class – the majority of people are either too poor and consume only essential goods or too rich and consume only the most sophisticated goods. As a result, there is a lower demand for simple manufacture, lower demand for medium-skilled workers – whose wages thus fall, preventing them from investing in higher education for themselves and their offspring. In contrast, in the presence of low initial inequality, a large middle-class can support the simple manufacture sector, ensuring higher returns to its workers. In the process, even the poorest agents can afford higher education: "*The medium-skilled sector thus becomes the bridge over which agents who are poor today make it to the high-skilled sector of the wealthy in the long run; in the process, inequality declines as well*" (Mani, 2001:109).

In Desdoigts and Jaramillo (2017), the role of the middle-class is addressed in a learning-by-doing framework that illuminates the complex way in which middle-class-driven mass consumption and productive diversification are articulated. In this model, goods are produced using two types of technology: CSR (constant return to scale) and IRS (increasing return to scale). In addition, consumption is hierarchically structured, households are organized based on their skill level, and their income determines the diversity of their consumption basket. Learning takes place only in "*an intermediate range of sectors*" using the IRS technology, where there are still learning possibilities and the level of demand can sustain the process of learning. In parallel, when learning occurs in "*high higher-priority goods in the hierarchy of needs,*" the real income of the middle-class increases, and some goods become affordable to them. Thus, the duration of the learning process depends on aggregate economic growth, which determines the size and share of the total income of the middle-class, who fuel the demand for products. At the same time, aggregate economic growth depends on "*middle-class-led consumption*." In this framework, a middle-class that is large – both in size and as a share of total income – is thus essential to benefit from scale economies by providing more learning possibilities; whereas an unequal society in which wealth is confined to a small group of elite leads to stagnation in the learning process.

In summary, the middle-class agents, either through their skills or consumption, play an essential role in the development of some sectors, in particular manufacturing, and in the diversification and sophistication of production. The following sections investigate the extent to which these hypotheses are supported by empirical evidence.

2. Empirical framework

Our entire sample encompasses 91 countries[80] over four five-year periods between 1995 and 2014 (1995-2000, 2000-2005, 2005-2010, and 2010-2014). The sub-samples of low and lower middle-income (LLMIC) and upper middle-income countries (UMIC) each include 36 countries (Appendix 2.4). Due to limited data coverage, the samples are reduced to 77 and 90 when the dependent variables are the economic complexity index and indicators of imports.

Our specification follows UNIDO (2010), which builds on the works of Chenery and proposes a model that is more suitable for cross-country panel analysis. They advocate the

[80] We exclude countries with populations smaller than one million people, since the dynamics of structural transformation in these countries can be quite different.

inclusion of country-fixed effect to account for the invariant characteristics of countries that strongly affect their pattern of structural transformation. As mentioned previously, there is bidirectional causality between productive transformation and consumption (UNIDO, 2018). In the same vein, Hartmann et al. (2017) demonstrate that the relationship between productive changes and income distribution is not unidirectional, and the size of the middle-class can be both an input and an outcome of productive transformation (Desdoigts and Jaramillo, 2017). In addition, some other determinants of structural transformation (such as trade openness, institutions, and human capital) can also be endogenous. Consequently, to examine the causal effect of the size of the middle-class on productive transformation, we use the two-step GMM estimator discussed in Section 1, which can appropriately handle the reverse causality issue. Again, we ensure that the number of instruments does not exceed the number of groups (Roodman, 2009). Since the results from GMM can be unstable, we test the sensitivity of our findings to changes in the lags and the treatment of some variables (as exogenous or endogenous). Our general specification can be written as follows:

[Equation 2. 2]

$$PROD\_CHANGE_{i,t} = \alpha_1 + \alpha_2 MC_{i,t} + \alpha_3 X_{i,t} + \mu_i + \nu_t + \varepsilon_{i,t}$$

PROD_CHANGE is the indicator of productive transformation and *MC* is the size of the middle-class. As in Section 1, we use a five-year average panel. Our equation includes country and time-fixed effects and a set of additional control variables. We include the population share of the rich or the poor[81] when we break down the middle-class range to observe the effects associated with different income groups.

We systematically present the results for the following subgroups of middle-class: the lower (USD 10-20) and the upper (USD 20-50). If the skill and consumption preferences depend on the level of income, it is safe to assume that each middle-class subgroup may play a different role in the process of structural transformation: the lower middle-class supporting industrialization in its early stages, and the upper middle-class catalyzing further modernization.

[81] We also estimate the models with two sub-groups of middle-class by controlling for the size of the rich group. Since the results are similar to those obtained using the size of the total middle-class, we only report the results for the size of the poor to shed light on the differentiated effects of this group compared to the other two.

Table 2.8: Definition and sources of variables

Variables	Description	Source
Middle-class size	Population share of people with daily income per capita between USD 10 and USD 50	Author's computation based on PovcalNet
Lower middle-class size	Population share of people with daily income per capita between USD 10 and USD 20	Author's computation based on PovcalNet
Upper middle-class size	Population share of people with daily income per capita between USD 20 and USD 50	Author's computation based on PovcalNet
Poor	Population share of people with daily income per capita below USD 10	Author's computation based on PovcalNet
Rich	Population share of people with daily income per capita over USD 50	Author's computation based on PovcalNet
Productive structure	Sectoral share of value-added (agriculture, industry, manufacture, service)	UNCTAD
Sophistication	Economic Complexity Index	Atlas of Economic Complexity
Export concentration	Theil export diversification index	International Monetary Fund
	Herfindahl index on the exports of goods	UNCTAD
Export quality	Export quality index	International Monetary Fund
Import volume	Imports of goods and services (as a percentage of GDP)	UNCTAD
Imports dispersion	Herfindahl index on the imports of goods	UNCTAD
Urbanization	Urban population (as a percentage of total population)	World development indicator
Infrastructure	Phone coverage (Mobile cellular subscriptions (per 100 people)	World Development Indicator
Human capital	Average years of schooling	Barro and Lee (2013)
Foreign investment	Foreign direct investment (as a percentage of GDP)	World Development Indicator
Internal distance	Average distance between producers and consumers in a country	CEPII
Population size	Population (in logarithm)	Penn World Table 8.1
Institution	Polity2	Center of Systematic Peace
Trade openness	Exports and imports in percentage of GDP	World Development Indicator
	Freedom to trade	Fraser Institute

Regarding additional controls, we first add the population size (in logarithm), which is standard in studies on productive transformation, to capture the economies of scale and scale of domestic demand that may vary with country size (Syrquin, 1988; UNIDO, 2010). Larger

economies are more likely to accumulate knowledge and thus to produce better quality goods (Grossman and Helpman, 2006). The positive effect on sophistication has been empirically evidenced by, for instance, Hausmann, Hwang, and Rodrik (2007). We also control for international openness, since trade can affect structural transformation (Święcki, 2017) because it is a vector of technological diffusion, especially when countries can absorb the imported technology (Grossman and Helpman, 2006). The factor endowments of a country also determine its productive structure. UNIDO (2010) presents evidence that natural resources play a significant role in the process of industrialization, as suggested by Chenery (1960). We also control for infrastructure endowment, proxied by mobile network coverage (mobile cellular subscriptions from the WDI).[82] Infrastructure is a determinant of productive specialization and insertion in the global value chain because it directly affects the cost and duration of transport (Lectard, 2017). To isolate the influence of the middle-class on structural transformation through the structure of demand, rather than human capital and provision of skilled labor, we examine the effects of including and excluding level of education from the specifications. The definition and sources of data used in Section 2 are presented in Table 2.8, and the descriptive statistics can be found in Appendix 2.13.

3. Empirical results

3.1. Middle-class and the structure of production

In the most common definition, "structural change" refers to the long-term, durable modification of the sectoral composition of the economy (Syrquin, 1988; Montobbio and Rampa, 2005; Ngai and Pissarides, 2007 for instance). It is "*associated with modifications in the relative importance of different sectors over time, measured by their share of output or employment*" (Memedovic and Iapadre, 2009:3). Traditionally, in the first stage of structural change, the shift of the factors of production from the agriculture sector prompt the development of the manufacturing sector, whose share decreases in the second stage with the expansion of the service sector (Kuznets, 1955; Syrquin, 1988).

To capture these dynamics, we use data on value added from the UNCTAD. They provide a disaggregation of GDP by main economic activities (agriculture, industry, and services). We can also obtain the share of manufacturing in total value added. While most advanced

[82] We use this proxy in the absence of data on other infrastructures such as roads, rails and communication for our sample and period of analysis.

economies have entered this second phase after successfully developing their industries, the "tertiarization" of the economy has taken place prematurely in some developing countries, such as India. As a result, these economies do not rely on a broad and powerful manufacturing sector, but rather on importation. A sizeable tertiary sector share may also reflect the proliferation of weakly productive service activities, and this does not necessarily mean gains in aggregate productivity. Rather than the expansion of the whole service sector, the expansion of modern activities in the tertiary sector is key in the development process (McMillan and Rodrik, 2011). Additionally, to capture the modernization dimension, we turn to the share of the other services in the UNCTAD data. This category encompasses the most modern services (financial intermediation, real estate, and business activities, including research and development) and the services devoted to the well-being of the population (education, health, public administration, and defense). The disadvantage, however, is that some private household activities (personal and household services) that may differ significantly from modern activities are also included.

Our strategy is straightforward: when we do not control for education, the coefficients of the middle-class variables capture both the demand-side and skilled labor effects; but when we introduce the variable of education, we can isolate the effect of middle-class through consumption, at least to some extent. Table 2.9 reports the results for the entire sample. One striking result concerns the opposite sign of the coefficients for the size of the middle-class and the rich class, which holds whether we control for the level of education (column 1) or not (column 7). The magnitude of the coefficient is smaller when we control for education, suggesting that part of the overall effect of the size of the middle-class is indeed channeled through their provision of skilled labor. It seems that although a larger middle-class increases the share of the manufacturing sector in the economy, it has no significant impact on the shares of services – or, more specifically, modern services. In addition, there is no significant impact when we use a broader definition of the secondary sector to include manufacturing, construction, mining, and utilities.[83] This result is consistent with the argument that the middle-class both supports the demand for manufacturing goods (Murphy et al., 1989a) and is a source of skilled workers in this sector.

[83] In addition, when we disaggregate further the services and use the share of construction, trade and transport, and communication activities in total value added as dependent variables, we find no significant effect. The results are not reported.

Table 2.9 Two-step GMM estimation of the effect of the middle-class size on the productive structure for the entire sample

	With education						Without education					
	(1) Manufacture	(2) Service	(3) Modern service	(4) Manufacture	(5) Service	(6) Modern service	(7) Manufacture	(8) Service	(9) Modern Service	(10) Manufacture	(11) Service	(12) Modern Service
Middle-class	**0.217****	-0.156	0.0347	-	-	-	**0.256****	0.0785	0.00702	-	-	-
	(0.0928)	(0.228)	(0.107)	-	-	-	**(0.112)**	(0.149)	(0.163)	-	-	-
Rich	**-0.0899****	**0.148***	**0.202*****	-	-	-	**-0.0960***	**0.237*****	**0.233*****	-	-	-
	(0.0353)	**(0.0799)**	**(0.0524)**	-	-	-	**(0.0513)**	**(0.0714)**	**(0.0755)**	-	-	-
Poor	-	-	-	0.0609	-0.0759	-0.0253	-	-	-	-0.0529	**0.371*****	**0.247****
	-	-	-	(0.0645)	(0.133)	(0.0884)	-	-	-	(0.0469)	**(0.120)**	**(0.120)**
Lower MC	-	-	-	**0.247***	-0.0424	**-0.166***	-	-	-	**0.217****	-0.196	-0.133
	-	-	-	**(0.126)**	(0.175)	**(0.0988)**	-	-	-	**(0.0954)**	(0.254)	(0.207)
Upper MC	-	-	-	**0.210****	0.0700	0.0957	-	-	-	0.0246	**0.529*****	**0.532*****
	-	-	-	**(0.0902)**	(0.210)	(0.136)	-	-	-	(0.0692)	**(0.197)**	**(0.199)**
Education	-0.191	1.661	0.642	-0.833*	2.822***	1.246	-	-	-	-	-	-
	(0.416)	(1.080)	(0.705)	(0.495)	(1.032)	(0.930)	-	-	-	-	-	-
Population (ln)	-0.0164	1.475	1.321	1.731	0.475	1.978	6.361	-3.477	4.493	-0.681	7.384	7.606
	(1.954)	(4.308)	(1.852)	(1.584)	(4.279)	(2.347)	(8.694)	(4.101)	(8.443)	(1.695)	(5.269)	(5.277)
Natural rent	-0.164**	-0.466***	-0.246**	-0.152**	-0.618*	-0.463***	-0.198	-0.197	-0.372	-0.174***	-0.353	-0.286
	(0.0659)	(0.123)	(0.120)	(0.0647)	(0.370)	(0.175)	(0.177)	(0.427)	(0.267)	(0.0655)	(0.304)	(0.270)
Phone coverage	-0.0768**	0.105	0.0117	-0.0546	-0.0499	0.0108	-0.0964*	0.0126	0.0312	-0.0390	0.0189	-0.0288
	(0.0350)	(0.0847)	(0.0487)	(0.0379)	(0.0629)	(0.0253)	(0.0490)	(0.0675)	(0.0813)	(0.0296)	(0.0870)	(0.0714)
Trade openness	-0.0147	0.0622	0.0160	0.0150	-0.0110	0.0201	0.0280	0.0331	0.0374	-0.00231	0.0519	0.0489
	(0.0325)	(0.116)	(0.0487)	(0.0463)	(0.0670)	(0.0344)	(0.0735)	(0.0593)	(0.0851)	(0.0367)	(0.0859)	(0.0665)
Observations	291	291	291	291	291	291	291	291	291	291	291	291
Countries	91	91	91	91	91	91	91	91	91	91	91	91
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR(2)	0.706	0.700	0.114	0.428	0.191	0.107	0.877	0.284	0.311	0.802	0.198	0.497
Hansen (p-value)	0.885	0.272	0.604	0.573	0.182	0.246	0.984	0.303	0.854	0.719	0.178	0.416

Robust standard errors are in parenthesis. Significant at *** p<0.01, ** p<0.05, * p<0.10, NS p>0.10

When we disaggregate the middle-class into two subgroups, it appears that larger lower and upper middle-classes both positively affect manufacturing, while a larger lower middle-class (USD 10-20) negatively affects modern services (column 6). However, rather than a detrimental effect, this may simply reflect the household's consumption structure as regards the shares of goods and services: a larger lower middle-class is likely to be associated to a lesser extent with the consumption of modern services, which is consistent with the descriptive trends portrayed in Figure 2.3. On the other hand, when we do not control for education (column 11-12), we observe a positive relationship between the size of the upper middle-class (USD 20-50) and other services, suggesting that the upper middle-class role in the expansion of the tertiary sector goes through the provision of skilled labor to this sector. Finally, the positive signs of the coefficients associated with the population share of the poor and the rich give an indication of the heterogeneity of the levels of productivity in this sector's activities. In line with Mani (2001), we suppose that the rich agents contribute to the expansion of the most sophisticated tertiary activities through their consumption and high skills (columns 2, 3, 8, and 9), while the poor agents contribute to the development of the *essential* activities through their offer of unskilled labor.

To better account for the changes in the structure of production over the process of structural transformation, we compute the following ratios of sector value added: (1) the shares of manufacture (manu_agr) or industry (ind_agr) relative to agriculture in GDP; (2) the shares of service (serv_manu) or modern service (other_manu) relative to manufacture in GDP; and the shares of service (serv_ind) or modern service (other_ind) relative to industry in GDP. Our findings in Appendix 2.6 and 2.7 provide additional insights. A large middle-class seems to be a key determinant in the first phase of industrialization, where factor inputs shift from agriculture to industry (columns 1 and 7) but not in the second phase (columns 3 and 9); whereas the rich group plays a positive role all along. The patterns are essentially the same regarding the size of the two sub-groups of middle-class, notably with regard to the size of upper middle-class. Again, a larger lower middle-class has a negative effect on the development of the tertiary over the secondary sector (column 10).

We find similar patterns when we restrict the sample to the low and lower-middle income countries (columns 11 and 12, Appendix 2.8), though the rich group has no significant effect. One explanation may be that the preference of the rich for imported goods is stronger in the less developed countries, where the quality and sophistication of goods and services is

generally low. Since less developed countries have higher levels of inequality,[84] these results suggest that a large intermediate group (rather than the two extreme groups) is necessary to prompt their structural transformation, stressing the importance of the "*medium-skill*" workers and consumers (Mani, 2001) in the demand-driven learning process of Desdoigts and Jaramillo (2017).

We run additional robustness checks, slightly changing the specifications.[85] First, foreign direct investment allows a transfer of knowledge and technologies and contributes to the accumulation of human capital through training and acquisition of skills and know-how, as well as a transfer of managerial practices and the organization, which leads to increasing efficiency (De Mello, 1997). The inclusion of level of foreign direct investment in our models does not change the results. Second, sectoral shifts are related to the change in the location of economic activity, specifically urbanization. The Lewis development model depicts a structural change process associated with continually increasing urbanization, as traditional farmers leave rural areas for urban areas in which productivity has a positive trajectory. This variable is excluded from our main specification because of its strong correlation with the size of the middle-class (0.71). Furthermore, the institutional environment also matters. Good protection of property rights (Levchenko, 2007) and good institutions that favor inter-sectoral linkages (Martincus and Gallo, 2009) are required to develop sophisticated products. When these variables are successively introduced in the model, the size of the middle-class loses its significance, but the other coefficients hold – notably the influences of the rich group and the two sub-groups of middle-class on manufacturing and services.

3.2. Middle-class and export diversification

The share of manufacturing and services in total value added captures the volume of demand for manufactured goods and modern services or the effect of an increasing number of skilled workers that "seek opportunities" in these sectors (Chun et al., 2017). In the case of manufacturing, it would be particularly interesting to determine precisely whether the size of the middle-class matters more for higher quality products (more sophisticated) and whether this contributes to the diversification of production (Matsuyama, 2002). Due to the limited

[84] We run a mean-comparison t-test on the level of overall inequality measured by the Gini coefficient. We find that inequality is on average significantly higher in low and lower middle-income countries (41) than in the upper middle-income countries (39) of our sample. The median value of inequality for the LLMIC is 41, in contrast to 36 for the UMIC.

[85] The results on the entire sample are reported in Appendix 2.14 and Appendix 2.15.

coverage of data on the structure of production, however, most recent cross-country empirical studies have relied on international trade data to examine features such as diversification and sophistication. External market can be seen as an extension of the domestic market, and the quality of exported goods may reflect, to some extent, the quality of goods destined for the local market, as countries generally export the most competitive goods: "*the fact they do not export them suggests that they may not be very good at them*" (Hausmann et al., 2014: p.23).

Table 2.10 Two-step GMM estimation of the effect of the middle-class size on export concentration and export quality for the entire sample

	(1) IMF	(2) Quality	(3) UNCTAD	(4) IMF	(5) Quality	(6) UNCTAD
Middle-class size	0.0116	0.000307	-0.000564	-	-	-
	(0.0165)	(0.00125)	(0.00279)	-	-	-
Rich	0.00665	0.00115***	0.00168	-	-	-
	(0.00560)	(0.000314)	(0.00104)	-	-	-
Poor	-	-	-	-0.00632	0.000810	0.000193
	-	-	-	(0.0147)	(0.00233)	(0.00177)
Lower MC	-	-	-	0.00620	-0.00133	-0.00325
	-	-	-	(0.0160)	(0.00169)	(0.00232)
Upper MC	-	-	-	0.00637	0.000992	4.74e-05
	-	-	-	(0.0178)	(0.00321)	(0.00275)
Education	-0.187**	0.0135	-0.0172	-0.0999	0.0179	-0.000690
	(0.0721)	(0.00896)	(0.0153)	(0.108)	(0.0187)	(0.0183)
Population (ln)	-0.289	0.0233	-0.0556	-0.337	0.0142	-0.0616
	(0.386)	(0.0344)	(0.0382)	(0.228)	(0.0322)	(0.0382)
Polity2	-0.108*	0.00789	-0.0209***	-0.136***	0.00634	-0.0271***
	(0.0554)	(0.00638)	(0.00616)	(0.0417)	(0.00619)	(0.00531)
FDI	-0.0209	0.00186**	-0.00689**	-0.0157	0.00227**	-0.00503**
	(0.0133)	(0.000899)	(0.00262)	(0.0142)	(0.00110)	(0.00193)
Natural rent	0.0581**	-0.00305	0.00797	0.0420*	-0.00392	0.00561
	(0.0262)	(0.00245)	(0.00570)	(0.0235)	(0.00270)	(0.00450)
Phone coverage	-0.00313	0.000512	0.000399	-0.00323	0.000521	0.000469
	(0.00519)	(0.000575)	(0.00118)	(0.00415)	(0.000611)	(0.000770)
Trade openness	-0.00461	0.000272	-4.25e-05	-0.00929	0.000292	-0.000453
	(0.00768)	(0.000547)	(0.000975)	(0.00570)	(0.000592)	(0.000741)
Observations	288	291	291	288	291	291
Countries	91	91	91	91	91	91
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
AR(2)	0.864	0.115	0.107	0.636	0.178	0.133
Hansen (p-value)	0.300	0.670	0.177	0.245	0.300	0.442

Robust standard errors are in parenthesis. Significant at *** p<0.01, ** p<0.05, * p<0.10, NS p>0.10

To complete the picture of productive structure, we thus analyze the effects of the size of the middle-class on export concentration (from the IMF and UNCTAD) and export quality from the IMF. The IMF uses a gravity model to isolate the "quality" component of average trade

prices (observable for each product category). As discussed by Lectard (2017), the limitation of this indicator lies in the limited set of explanatory variables used in the estimation and in the fact that it does not capture the differentiated level of quality of a product. A better indicator would be the PRODY (HHR, 2005), based on the composition of the export basket and the countries' income level.[86] This dimension is captured by the economic complexity index we use in the following section.

As we see in Table 2.10, the size of the middle-class does not explain the concentration and quality of exports– rather, for the latter, only the size of the rich group matters. The size of the upper middle-class group has a weakly positive correlation with export quality in upper middle-income countries (Appendix 2.9, column 6). As, by definition, these indicators exclude non-exported goods, the absence of significant results may simply mean that middle-class-driven mass consumption essentially concerns production destined for the domestic market. The structure of distribution, in general, does not seem to have an effect on export diversification and only barely on export quality (at the top of the distribution). Consistent with the conclusions of Desdoigts and Jaramillo (2009), we can assume that export volume and structure are more affected by the world market size; thus, less by the size of the domestic middle-class and more by that of the world middle-class. In the next section, we analyze the relationship with the economic complexity index, which is a more comprehensive indicator of exports structure, to complement our findings.

3.3. Middle-class and economic complexity

The economic complexity index (ECI), available for a relatively large number of countries, integrates the dimensions of diversification and sophistication.[87] In other words, this indicator measures the knowledge in countries as expressed by the goods they produce and reflects the countries' capacity to produce sophisticated products, based on their productive know-how, especially the most complex and specialized of this. According to the Atlas of Economic Complexity,

> "*The economic complexity of a country is calculated based on the diversity of the exports a country produces and their ubiquity, or the number of countries able to produce them (and those countries' complexity). Countries that are able to sustain a*

[86] See Lectard (2017) for a comprehensive review and discussion of this literature and the indicators of export diversification and sophistication.
[87] Nevertheless, they are available for only 77 countries in our sample.

> *diverse range of productive know-how, including sophisticated, unique know-how, are able to produce a diverse range of goods, including complex products that few other countries can make*." [88]

Hausmann et al. (2014) argue that the ECI is not merely a measure of export diversification, but rather it reflects the embodied knowledge and know-how in a population, indirectly capturing the quality of its institutions. The ECI has been found to be a good predictor of current or future economic growth (Hidalgo and Hausmann, 2009) and income inequality (Hartmann, Guevara, et al., 2017; Hartmann, Jara-Figueroa, Guevara, Simoes and Hidalgo, 2017). Thus, integrating this variable into our analysis helps us to observe the contribution of the middle-class to the complexity of the economy through supply-side (skilled labor and innovation) and demand-side effects.

Table 2.11 presents the results of the regressions on ECI for the entire sample. The patterns are the same for the samples of low- and middle-income countries (Appendix 2.10). To verify whether the influence of the middle-class is channeled through human capital or institutional quality, we introduce these variables gradually. When we do not control for them, the size of the middle-class, specifically the upper middle-class, has a positive impact on economic complexity (column 1 and 2). The addition of the polity score, without education, gives the same results with a smaller magnitude (column 5 and 6); but the effect of the size of the middle-class vanishes when we control for the level of education, while the upper middle-class maintains its significance (column 3 and 4). No middle-class variable is significant for the full specification (columns 7 and 8), confirming that the effects of the size of the middle-class on economic complexity are channeled through their knowledge and know-how gained from education and necessary to promote innovation and support modernization. Chun et al. (2017) observe evidence of partial correlations between the middle-class, measured by the expenditure share of the middle 60%, and labor force growth, and argue that this could come from the skill levels associated with this group.

As previously discussed, the interconnection between skill endowment and consumption structure makes it difficult to perfectly disentangle the two-channels effect. The model of Desdoigts and Jaramillo (2017) suggests that a large middle-class spurs the learning process by stimulating the differentiation of domestic production, thereby gradually improving the capacity of all firms, domestic market-oriented and export-oriented ones, to produce more

[88] The data are available at http://atlas.cid.harvard.edu/rankings.

sophisticated and internationally competitive goods. The feedback effect of the industrialization process results in the improvement of the well-being of the middle-class and increased capacity to invest in higher education, which upgrades the skills it can offer in the labor market. Nevertheless, our strategy allows us to clarify some of the mechanisms proposed in theory.

Table 2.11 Two-step GMM estimation of the effect of the middle-class on the economic complexity index for the entire sample

			Education		Polity score		Education and polity score	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Middle-class size	**0.0193*** **	-	-0.00521	-	**0.0191** **	-	-0.00381	-
	(0.00698)	-	(0.0322)	-	**(0.00727)**	-	(0.0346)	-
Rich	**0.00644***	-	0.00457	-	0.00437	-	0.00378	-
	(0.00355)	-	(0.00466)	-	(0.00522)	-	(0.00507)	-
Poor	-	0.0140	-	-0.00310	-	0.0142	-	-0.00133
	-	(0.00919)	-	(0.00601)	-	(0.00885)	-	(0.00603)
Lower MC	-	0.00733	-	**0.0150***	-	0.0161	-	0.0115
	-	(0.0225)	-	**(0.00866)**	-	(0.0236)	-	(0.0109)
Upper MC	-	**0.0276** **	-	**0.0158***	-	**0.0322*** **	-	0.0148
	-	**(0.0114)**	-	**(0.00842)**	-	**(0.0114)**	-	(0.00962)
Education	-	-	0.172	0.123*	-	-	0.153	0.141*
	-	-	(0.120)	(0.0669)	-	-	(0.131)	(0.0741)
Population (ln)	-0.217	0.0109	0.166	0.262	0.0824	0.348**	0.303	0.313**
	(0.437)	(0.287)	(0.174)	(0.220)	(0.345)	(0.170)	(0.226)	(0.133)
Polity2	-	-	-	-	0.0279	0.0624	0.0403	-0.0189
	-	-	-	-	(0.0820)	(0.0497)	(0.0547)	(0.0411)
FDI	-0.0214	0.0203	-0.0227	-0.000138	-0.0112	0.0484	-0.0190	-0.00326
	(0.0180)	(0.0550)	(0.0453)	(0.0112)	(0.0176)	(0.0453)	(0.0512)	(0.00799)
Natural rent	-0.0203	-0.0415***	-0.0371**	-0.0453**	-0.0174	-0.0248	-0.0320**	-0.0574**
	(0.0135)	(0.0142)	(0.0146)	(0.0224)	(0.0296)	(0.0149)	(0.0134)	(0.0235)
Phone coverage	0.000868	0.00257	0.00973	-0.00132	0.000310	-0.00294	0.00796	-0.000163
	(0.00381)	(0.00881)	(0.0142)	(0.00286)	(0.00461)	(0.00841)	(0.0168)	(0.00388)
Trade openness	-0.00406	-0.000949	0.00439	0.00231	0.00207	0.00375	0.00650	0.00359
	(0.00858)	(0.00589)	(0.00896)	(0.00581)	(0.00713)	(0.00645)	(0.00877)	(0.00321)
Constant	0.392	-0.942	-2.773	-2.052	-1.109	-2.598***	-3.342*	-2.324***
	(1.938)	(1.298)	(2.118)	(1.270)	(1.918)	(0.942)	(1.991)	(0.788)
Observations	253	253	253	253	253	253	253	253
Countries	77	77	77	77	77	77	77	77
Sample	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR(2)	0.119	0.172	0.104	0.101	0.200	0.379	0.211	0.105
Hansen (p-value)	0.651	0.502	0.776	0.467	0.405	0.397	0.688	0.690

Robust standard errors are in parenthesis. Significant at *** p<0.01, ** p<0.05, * p<0.10, NS p>0.10

3.4. Middle-class and imports: volume and diversification

The role of the middle-class in mass consumption is not limited to the domestic market. Following the modification of the taste and consumption behavior of the middle-class, domestically produced goods may be insufficient to satisfy their needs (UNIDO, 2018). Furthermore, in developing countries, consumption behaviors and preferences are a marker of social class. For instance, in China, eating "global" foods is perceived as a symbol of prosperity, prompting local production and imports of "Western" foods, and the brands are essential determinants of consumption choices (Zhou, 2008). Tschirley et al. (2014) discuss the challenges in the provision of processed food products in Africa and the implications in terms of imports. Even if the middle-class preference for imported products may not equal that of the rich, in the context of an open economy, "*They become a component of demand for either the home good or the substitute produced abroad, depending on the level of international competitiveness*" (Desdoigts and Jaramillo, 2009: 249). The middle-class in emerging economies has often been viewed as a potential replacement for the shrinking Western middle-class (Kharas, 2010). Marketing-oriented studies and reports by private banks often emphasize the opportunities provided by the global middle-class in terms of market outlet (e.g., Cavusgil et al., 2018; Dobbs et al., 2012; Wilson and Dragusanu, 2008).

A straightforward way to verify these hypotheses is to regress the volume of imports on the middle-class size and an additional set of controls. We can also take advantage of the data provided by the UNCTAD on import diversification to assess the extent to which a large middle-class influences the structure of imports. The model specification includes population size, the share of industry in total value added, and trade openness – now measured by the variable "freedom to trade" from the Fraser Institute, which captures tariffs barriers that can undermine the flow of trade. This indicator encompasses a wide variety of restraints that affect international exchange: tariffs, quotas, hidden administrative restraints, and controls on exchange rates and the movement of capital. We omit the variables of institutions that are strongly correlated with this indicator. Following the standards in the literature on international trade, we also include the real exchange rate, whose value is a determinant of competitiveness (Chow and Chen, 1998; Jongwanich and Kohpaiboon, 2013), and internal distance from the CEPII, which measures the average distance between producers and consumers in a country (Head and Mayer, 2010).

Table 2.12 Two-step GMM estimation of the effect of the middle-class size on the volume and concentration of import

	Import volume		Import concentration		Import volume		Import concentration	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample	ALL	ALL	ALL	ALL	UMIC	UMIC	UMIC	UMIC
Middle-class	**0.296*** **	-	-0.000518	-	**0.827*** **	-	0.000520	-
	(0.108)	-	(0.000415)	-	**(0.270)**	-	(0.000889)	-
Rich	-0.109	-	-0.000274	-	-0.813	-	-0.000107	-
	(0.133)	-	(0.000259)	-	(0.940)	-	(0.00277)	-
Poor	-	-0.0356	-	-0.000265	-	-0.0992	-	**-0.00206*** **
	-	(0.416)	-	(0.00119)	-	(0.286)	-	**(0.000662)**
Lower MC	-	**0.465***	-	-0.000492	-	**0.781***	-	0.000869
	-	**(0.265)**	-	(0.000962)	-	**(0.443)**	-	(0.00123)
Upper MC	-	-0.0601	-	-0.000245	-	-0.00231	-	**-0.00241** **
	-	(0.540)	-	(0.00126)	-	(0.387)	-	**(0.00116)**
	1.007	0.197	0.00204	0.00362	2.150**	0.694	0.00133	0.000110
Industrial share	(0.706)	(0.735)	(0.00189)	(0.00238)	(0.986)	(1.087)	(0.00213)	(0.00295)
	-4.442**	-4.595**	-0.00238	-0.00268	-7.163*	-6.421	-0.0100	-0.00530
Population (ln)	(1.768)	(2.051)	(0.00612)	(0.00619)	(3.712)	(4.345)	(0.0118)	(0.0120)
Exchange rate	-0.00236***	-0.00152	-2.86e-06	-5.51e-06	-0.00344***	-0.00206	-2.80e-06	-1.34e-06
	(0.000883)	(0.00120)	(5.16e-06)	(6.86e-06)	(0.00122)	(0.00153)	(3.49e-06)	(5.57e-06)
	-0.0152*	-0.0133	-2.05e-05	-3.36e-05	-0.0159	-0.0151	3.59e-06	3.38e-05
Internal distance	(0.00882)	(0.00939)	(1.99e-05)	(2.70e-05)	(0.0103)	(0.0153)	(3.33e-05)	(3.65e-05)
	-0.603	1.603	-0.000316	-0.00661	0.676	0.322	0.00223	0.0136
Freedom to trade	(2.032)	(3.878)	(0.00643)	(0.00918)	(2.782)	(3.090)	(0.00581)	(0.00909)
Constant	27.86*	37.30**	0.105**	0.106*	-38.32	21.94	0.0533	0.0886
	(15.92)	(15.81)	(0.0475)	(0.0551)	(50.55)	(54.08)	(0.0929)	(0.130)
Observations	279	279	279	279	125	125	125	125
Countries	91	91	91	91	36	36	36	36
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Instrument	15	15	15	15	15	15	15	15
AR(2)	0.411	0.951	0.322	0.368	0.642	0.859	0.524	0.102
Hansen (p-value)	0.170	0.101	0.723	0.560	0.245	0.104	0.205	0.401

Robust standard errors are in parenthesis. Significant at *** p<0.01, ** p<0.05, * p<0.10, NS p>0.10

We observe significant results for the entire sample in Table 2.12. A larger middle-class is found to be a significant determinant of imports (column 1). The magnitude of the effect is even greater in upper middle-income countries (column 5). More specifically, the size of the lower middle-class is the most significant factor (columns 2 and 6), since the upper middle-class is not significant in any model. Similarly, the size of the rich group is not found to be significant.

We find no significant results for the sample of low and lower middle-income countries (Appendix 2.11). It is also noteworthy that, in the sample of upper middle-income countries, the size of the poor and the upper middle-class is negatively associated with import concentration, indicating that the middle-class is not the only group that consumes a relatively large variety of products. Since the poverty threshold in our framework corresponds to USD 10, this trend may also be driven by vulnerable groups.

Conclusion

The implication of a global middle-class is put neatly into words by Wheary (2009:16), who says,

> "*With basic needs cared for, the middle class is free to focus on larger pursuits – from trivial diversions to new purchases, from business ventures to political engagement. The result is a ripple effect that is felt around the world. Think of the emerging class as a self-perpetuating group. The more resources members have, the more products and services they buy. The demand for these products and services creates new jobs and business opportunities that allow others to enter the middle class. And so goes the cycle*."

This chapter provides empirical support on the implications of the expansion of the middle-class for socio-economic transformation. More specifically, we focus on the "global consumers," defined as people with an income of USD 10-50 per day. By splitting this income range into sub-groups of lower (USD 10-20) and upper (USD 20-50) middle-class, we gained a complementary perspective. The inclusion of the population share of the rich in our models was also informative, as the two income groups often display opposite tendencies.

In the first section, we analyze the relationship between the expansion of the middle-class, consumption, investment, and public expenditure. We find that a large middle-class is

associated with a higher demand of public transfers and subsidies and public investment. This effect seems to be driven specifically by the size of the lower middle-class in upper middle-income countries. We do not find any evidence of differentiated behavior depending on the political regimes. According to Birdsall et al. (2001), during the 1990s, public resources were mostly allocated to social programs benefiting poor households at the expense of services aimed at the middle-class, which then deteriorated due to a lack of public funding (for examples, in the Czech Republic, Egypt, Mexico, and Brazil). Our results indicate that a more prominent and thus influential middle-class may be able to reverse this trend. Our results on investment are weaker, significant only for the sample as a whole, and can only be interpreted in terms of partial correlation. It seems that a larger lower middle-class does not have a strong influence on private investment – and its influence is certainly weaker than that of the rich. Regarding consumption, as the middle-class expands, consistent with an increasing income, the share of its income allocated to consumption seems to decrease, which indicates that the middle-class has a stronger preference for savings.

The second section deals more specifically with the relationship between the expansion of the middle-class and structural transformation. We find robust evidence of opposing patterns for the middle-class and the rich. First, if the expansion of the middle-class and the rich prompt the shift from an agriculture-led to an industry-led economy, only a larger middle-class – by demanding more goods and providing relatively skilled labor – supports the development of the manufacturing sector. In particular, we find evidence that the upper middle-class plays an important role in the modernization of production through its knowledge and know-how gained from education. However, unlike the rich, the middle-class does not contribute substantially to the expansion of tertiary activities – in particular, the most modern ones. The global middle-class does not seem to influence the extent of the diversification of the basket of exports. However, our results on volume of imports suggest that they do indeed contribute to global mass consumption, especially the middle-class in upper middle-income countries. A more finely grained analysis, using disaggregated data for the structure of sector value added and on the structure of consumption and imports, would provide a more complete picture.

Chapter 3

The dynamics of middle-class in a middle-income country: characteristics and determinants of mobility in Turkey from 2010 to 2013

Introduction

The previous chapter has documented the macroeconomic-level implications of the middle-class in middle-income countries. However, despite the shared foundations, a microeconomic close-up seems necessary to grasp the context-dependent mechanisms related to this class. Nonetheless, in the growing literature, the welfare dynamics inside the middle-class range have received little attention, if not through more sociological and political economy perspectives. Empirical evidence still need to be provided to ascertain the validity of the many hypotheses raised in this literature. Poverty transition and mobility that allow people to escape poverty have been fairly widely investigated and provide some insights. One may argue that transitioning into middle-class and transitioning out of poverty are two sides of the same coin. Research on poverty dynamics are important and informative, but by bundling all people that escaped poverty in the group of “non-poor,” they only address partially the issues related to the well-being and dynamics of the middle-class. Recent studies have sought to deepen the understanding of the non-poor population structure and needs. They have started to part ways

with a bipolarized view of the distribution of income that assumes that the middle-class refers to those left in-between two extreme poles, namely the poor and the rich (Birdsall et al., 2014; Ravallion, 2010; World Bank, 2018a, 2018c). In chapter 2, we follow the same path by dividing the standard middle-class income range into two categories, and we find that each stratum of the "middle-class" matters in different ways for economic growth. Kodila-Tedika, Asongu, and Kayembe (2016) find that some macroeconomic variables do not have the same impacts depending on the category of middle-class and Shimeles and Ncube (2015) provide evidence that social stratification depends on individuals or households characteristics such as the level of education, the occupation, cultural background and their network.

In theory, the position of each individual in the distribution and the middle-class group they belong to can be subject to changes through time due to various exogenous and endogenous factors. This is where an analysis of the middle-class in terms of trajectory by mobilizing concepts such as economic mobility and transition comes in handy. The social desirability of economic mobility is debatable (Jäntti and Jenkins, 2013) because, on the one hand, economic mobility can be viewed as "positive" regarding the opportunity of climbing the social ladder. On the other hand, too much mobility can be an indicator of economic insecurity since it would indicate that many individuals are unable to stabilize their living standards in the short, medium or long-run.

For this study, we choose the case of Turkey, an upper middle-income country that figures among the countries that are experiencing a middle-income trap in Chapter 1. Combarnous et al. (2018) provide a very comprehensive monograph on the middle-class in Turkey. Relying upon previous studies and their statistical investigation, they emphasize the specificity of Turkey's middle-class within which two distinct groups can be identified. On the one hand, a well-established middle-class, economically stable, and sharing "superior" values such as the importance of ecological issues, originated from the Turkish political bourgeoisie. On the other hand, the new middle-class is composed of individuals characterized by typical behaviors of emerging countries' "new riches" and occupying jobs such as entrepreneurs or retail traders. Their consumption behavior tends to imitate the western way of life with a lot of ostentatious expenditures, mostly related to the new technology of information and communication. Although they are quite stable with regard to their aspiration (values and issues), they tend to be economically vulnerable since they depend on borrowing to sustain their living standards. The desire to climb the ladder is a common feature of those new

middle-classes. Even though such observations raise many questions related to the mobility across classes and the determinants of such social ascent, empirical studies on welfare dynamics in Turkey are limited in number.

This chapter attempts to contribute to this literature by analyzing those patterns within an essentially economic framework, focusing on medium-term mobility. We examine the patterns and determinants of economic mobility across the middle-class. Although the analysis of intergenerational mobility would have provided other insights, the short timeframe covered by our data does not allow such an analysis. Another originality of this study concerns the method of construction of classes and the focus on transitions into and within the middle-class rather than mobility in the entire distribution, positional changes captured by percentile changes, or determinants of exit from poverty. Even if we keep an economic definition of middle-class based on income thresholds, we turn to the concept of polarization, namely the framework proposed by Esteban, Gradin and Ray (1999) in an attempt to capture the "identity of class" and to reduce the degree of arbitrariness in the classification.[89] Such identity translates into a level of homogeneity in the aspiration and behavior of the middle-class significant enough to distinguish them from the rich and the poor (Birdsall, 2010).Using Turkey's Income and Living Conditions Survey panel data from 2010 to 2013, our investigation follows four steps. First, we identify four economic classes of households based on their total disposable income. Then, we use tools pertaining to economic mobility and transition to explore the changes occurring in the distribution of the Turkish middle-class during the period. We start with a descriptive analysis of the intragenerational economic mobility within and between the middle-class. Afterward, we analyze the socio-economic determinants of economic mobility and transition into the middle-class group.

The chapter is organized as follows. In section 1, we set the scene with a presentation of the context in Turkey and an overview of the literature. Then, we turn to the quantification of income mobility in section 2 in which we discuss the measures and methods. After presenting the data in section 3, section 4 provides a descriptive analysis of the middle-class and mobility. After section 5 presents the econometric methods, sections 6 and 7 discuss the empirical results. Finally, section 8 proposes some robustness checks before the last section concludes.

[89] See General introduction for a discussion on the middle-class definition and measurement.

1. Context and literature review

Before broaching the subject of economic wellbeing, it is essential to understand the context and economic structure of Turkey before and during 2010-2013 because they affect social stratification. The overview of the literature on the middle-class in Turkey provides an additional interpretative framework to the micro-level dynamics

1.1. Turkey's macroeconomic context

Turkey has become a lower middle-income country in the 1950s based on most international classification. According to our calculation,[90] Turkey has stayed at the lower middle-income level for 51 years starting in 1952. The economic emergence of Turkey started in the 1980s with its integration in the global economy following the reforms of Turgut Özal, but the change of regime in 2001 is the main turning point that led to a significant acceleration of economic growth that reached an average rate of 5% during 2002-2011 (World Bank, 2014). The major socio-economic transformations that were induced over the years resulted in the transition of the country into the upper middle-income category in the early 2000s. However, Turkey has suffered a slowdown since the mid-2000s, raising the worry that the country may be trapped at the middle-income level. The global economic crisis is partially responsible for the downfall, with a notable reversal of some pre-crisis positive trends in the income distribution. However, Acemoglu and Ucer (2015) note that the deterioration of the Turkish growth dynamics had started around 2007 before the global crisis attained its peak. They suggest that the reasons behind the economic fluctuations can be found mostly in the institutional dynamics.[91] The Turkey of 2010-2013 is thus a country with significant economic and social achievements, but still characterized by some enduring weaknesses, some of them worsened by the crisis.

The World Bank (2014) highlights eight principal areas to describe Turkey's economy. First, thanks to the trade policies implemented since the 1980s,[92] Turkey's integration in the global value chain has increased with the share in global imports (respectively exports) that has been

[90] We apply an adjusted classification of the World Bank to Maddison data. See Chapter 1 for the detail on the calculation.
[91] It includes the strengthening of the AK party's power and position without a strong-enough civil society and opposition to balance it and the deterioration of the relationship with the European Union.
[92] They include the trade liberalization of the 1980s, the Customs Union agreement of 1995, and the commercial diplomacy to expand Turkey's presence in new markets in the 2000s (World Bank, 2014).

multiplied by more than three (respectively by four) in 2011. Secondly, Turkey has a robust financial sector characterized by financial stability and better access to banking for the private sector. This, combined with an overall improvement in the business environment, has contributed to the dynamism of the private sector. In turn, private investment has helped upgrading connectivity, logistics (communication, transportation) and infrastructure that supported advancement in the other areas. In parallel with that, the fiscal consolidation in the early 2000s allowed the relocation of budget to health and education expenditures that have funded drastic reforms in the education and healthcare system, notably with the Health Transformation Program (2003 – 2013). Thanks to that, access to health service has improved; primary education is mostly universal, and the education outcomes have been better, as shown by the PISA scores (OECD, 2016).

A key explanation to Turkey's transformation is the rapidity of urbanization, accompanied by structural changes that have drastically affected the living standards of the population. The reduction of the informal sector and job creation in the modern sectors of service and technology raised the number of opportunities as well as the quality of employment, and consequently the living conditions (housing, access to heating and electricity, better education). Turkey even managed to counter the detrimental effects of the crisis bringing its employment rate to 25% higher than the pre-crisis level (World Bank, 2014). This, coupled with the implementation of incentive policy measures, including reduction in the tax wedge and social security contribution, has contributed to the increasing participation of women in the labor market. For instance, the participation rate of women between 25-54 has increased from 29.3% in 2008 to 37.3% in 2012 (OECD, 2014).

The shift from agriculture to manufacturing and services has accelerated during the previous decades bringing the share of employment in manufacturing to 55% by 2011, and 49% of the new net employment generated during 2005-2011 was attributed to the private service sector (World Bank, 2014). However, the OECD (2014) reveals that most workforce in the segmented business sector is still concentrated in low-productive activities. They identify five types of firms with different performance, organization and working conditions. Of them, micro-enterprises and small and medium businesses account respectively for 45% and 35% of total business sector employment. The remaining 20% are located in large family firms (about 15%) and institutionalized corporations (less than 3%). The most sophisticated start-ups represent only 1% of employment.

Informality[93] fell from 53% to 44% between 2004 and 2008, and dropped to 37% in 2013 but remain rather high. Informal employment is characterized by lower wages and lack of protection excluding most households with informal work heads from the public social safety nets (World Bank, 2010). Young, older - mostly retired or past formal retirement - workers and women, especially the less educated ones, are the most affected. The decline in informality is mostly due to the migration of the workforce out of agriculture into more formal sectors in urban areas and the drastic measures against the informal sector implemented by the government in 2009. All in all, there is still room for improvement in each area if Turkey wants to measure up to more advanced economies.

The pre- and post-crisis decades have been characterized by the improvement of the living conditions of the poor, reducing the poverty rate and consecutively spurring the expansion of the "middle-class." Azevedo and Atamanov (2014) show that contrary to the redistribution-led change in the distribution of income in Latin America, the improvements in Turkey's end come from the performance in terms of inclusive growth. Between 2002 and 2011, the proportion of poor people living below a poverty line of USD 5 in PPP, has dropped from 44% to 22%, with 89% of this reduction driven by growth. This "middle-class" in turn has played a major role in supporting domestic demand and investment as well as in demanding better public policies and services (World Bank, 2014).

1.2. The middle-class in Turkey: stylized facts

If the interest in the case of Turkey has increased recently, there are still few empirical studies on its middle-class. However, there is a rich literature adopting historical, political-economic and sociological perspectives.[94] Even though our investigation does not adopt such an angle, Combarnous et al. (2018)[95] have skimmed through this literature and brought to light some interesting facts that could be helpful in understanding the profile of the middle-class in Turkey. Prior to the 1980s, the middle-class was mainly analyzed through the national bourgeoisie angle. During this period, the Committee of Union and Progress promoted the idea of a "Turkish bourgeoisie" that included the "middle-class" by consolidating the small businesses on the one side, and the bureaucrats and professionals on the other side (Ahmad,

[93] Informality is defined here as the proportion of workers unregistered for social security.
[94] There are also growing marketing studies trying to make a characterization of the new middle-class consumers in Turkey. See for instance Belbağ et al. (2019) and Uner and Gungordu (2016).
[95] Rather than making repeated references, we note that this section, as well as most references cited, is grounded on Combarnous et al. (2018).

2009). This new conservative bourgeoisie, which is still part of the current "middle-class," thus originated from the 1950's Democratic Party and the current AKP (The Justice and Development Party). Since 1980, Turkey has implemented a number of policies to further the integration of the country into the free market system that would, at the same time, benefit and penalize different groups in the society.[96] This process propelled the emergence of a group that has since been referred to as the "new middle-class" and is composed of people working in service activities, mostly college graduates that are well integrated into the global network and have new consumption preference and behavior.

From the late 2000s onwards, the studies on the middle-class either adopted a Weberian approach focused on the questions of status, income and consumption, or a more Marxian approach focused on the casualization of the middle-class labor and the labor-capital conflict. Studies of the latter category observe that there has been an increase in the size and the insecurity of the working class, without necessarily meaning an expansion of the middle-class. Kurtuluş (2012) stresses the existence of segregation within the so-called middle-class: on the one hand, the capitalist class benefits from job security, and on the other hand, the working class suffers from the consequences of labor market flexibility (casualization, job insecurity, and uncertainty on working conditions). Some empirical papers confirm the increasing earning and income inequality following the 1990 trade liberalization and the resulting skill and low-skilled divide (Elveren, Örnek, and Akel, 2012; Kizilirmak, 2003; Örnek and Elveren, 2010) [97], without specific evidence on the middle-class.

As regards their behaviors in terms of consumption and occupation, many researchers emphasize the existence of heterogeneity within the middle-class. For instance, Üstüner and Holt (2010) make the distinction between middle-class with inferior and superior cultural capital, which have a more western-like consumption preference. Within the new middle-class, Danış (2001) distinguishes those who are office workers, possess a college degree, and have adopted a western lifestyle, from the less educated businessmen, retail traders and entrepreneurs. More recently, using multidimensional classification, Combarnous et al. (2018)

[96] This motivated the emergence of new studies on the middle-class in the 1990s that investigated how the economic changes have impacted and disrupted the social (media, daily life, relationship and interaction between different groups) and cultural spheres.

[97] Kizilirmak (2003) found that the 1990 trade liberalization increased earning inequality between the skilled worker, more demanded on the labor market and with higher wages compared to the low-skilled workers. During 1980-2001, income inequality has also increased due to the decrease in real wages, changes in the fiscal policy favoring the rich, education inequality and abundant migration from rural to urban areas (Elveren, Örnek, and Akel, 2012).

identify four middle-class groups differentiated mostly by the occupation and education level of the household heads: a group of retirees and inactive; a group of household heads working in the farming business; a group of employees in the secondary and tertiary sectors; and a superior group of employers and managers. The first and fourth group echoes, to some extent, with the "old middle-class" while the second and third groups relate to the "new middle-class". They conclude that, at the very least, the Turkish middle-class has a dualist structure with one side including well-educated and qualified people often occupying intellectual profession; and another side composed of retail traders, artisans, employees and agriculture.

All these studies confirm the necessity of considering at least two groups of middle-class in Turkey with distinct socioeconomic characteristics. On the one hand, some of their behaviors, like their inclination toward ostentatious consumption (vehicles, houses, NTIC), may be the manifestation of their desire to distinguish themselves from lower social classes (Goux and Maurin, 2012). On the other hand, their characteristics and aspiration may shape their strategies as well as their political and economic behaviors in a way to secure or improve their position in the distribution of income. Such consideration raises questions on the determinants of changes in the social stratification of Turkey. From the previous sections, we can assume that those changes always went hand in hand with the transformations occurring in the economic and political structure. The successive governments designed policies that contributed to the promotion of different "middle-class" groups, ranging from the industrial and bureaucratic elite under the CHP in the 1920s (Keyder, 1989) to the actors in the private sectors in the 2000s under the AKP (Keyman, 2012).

Although the question can be tackled through a sociologic standpoint, we will adopt an economic approach in terms of economic mobility. We assume that social mobility in a country translates, to some extent, into changes in its distribution of income and the other dimensions (for instance, educational background, occupation, and gender) are viewed as potential determinants of such dynamics.

1.3. Economic mobility and welfare dynamics: an overview of the literature

There is neither a universal definition nor measure of economic mobility, thus the importance of clarifying the concept. Ferreira et al. (2013, p.24) give a rather complete yet straightforward definition. Economic mobility can be apprehended as "*the transformation of the vector of incomes (or some other measure of well-being or economic achievement) in an initial period into another income vector in a second period, and possibly onward to subsequent periods*." Baulch and Hoddinott (2000, p.6) define economic mobility as the "*long-term processes via which households change their relative rankings in the entire welfare distribution*." Jäntti and Jenkins (2013) provide the most recent review on the set of studies that deal with theoretical and technical aspects of economic mobility regarding the definition and measure of mobility as well as the methodological, empirical and data issues (see for instance Cowell and Flachaire, 2018; Dang and Lanjouw, 2013; Fields, 2000, 2006, 2010; Fields and Ok, 1999a, 1999b; Shorrocks, 1978). Some of those studies are assorted with simulation or empirical evidence on the evolution or drivers of welfare dynamics in one or more countries. Within the economic mobility framework, one can analyze changes in the position of individuals in the income distribution. As noted by Fields (2006), most studies do so through the mean number of quantiles moved, the mean upward jump, and the likes. There are also studies on poverty dynamics that examine the entry and exit from poverty using transition matrices (see, for instance, Baulch and Hoddinott, 2000; Dang and Lanjouw, 2013; Lee, Ridder, and Strauss, 2010).

Apart from that, mobility across classes has received limited attention in the economic field. The conceptual framework proposed by Dang and Lanjouw (2017) recently can be used to estimate two vulnerability lines, based on the poverty threshold and risk of falling into poverty, thus allowing the construction of three income groups. López-Calva and Ortiz-Juarez (2014) use a regression-based approach to estimate the income level associated with a low probability, lower than 10%, of falling into poverty. They then show that the middle-class delimited in this way has socioeconomic characteristics that significantly differ from the other categories. Castellani, Parent, and Zentero (2014) analyze the determinants of belonging to the middle-class defined in relative terms in several Latin American countries. However, to the best of our knowledge, only a few studies investigate the determinants of transition into (for instance, Shimeles and Ncube, 2015) and across the middle-class, and little is known on

mobility within this class either. To our knowledge, Schotte, Zizzamia, and Leibbrandt (2018) are the first and only ones to provide an assessment of the events that trigger entries in and exits from the middle-class.

Because the analysis of income mobility requires good quality data, applied researches on developed countries[98] are more common than on low and middle-income countries. In general, although such studies are context-specific and few are comparable due to the variations of the methodology, the empirical literature so far converges on the role of demographic and economic characteristics of the households and the household heads to explain mobility. For instance, using a multivariate analysis, Woolard and Klasen (2005) find that demographic and employment changes are the most important determinants of income mobility in South Africa between 1993 and 1998. Fields et al. (2003b), provide quite valuable evidence from the comparison of mobility in four middle-income countries of the mid-1990s, namely Indonesia, South Africa, Spain and Venezuela using longitudinal panel. Besides, they use non-parametric estimations to analyze more closely the relationship between initial position in the distribution and mobility. They find evidence of the convergence in income for the poorest households, and, based on estimated long-term income, that those with lower predicted income experienced as much income gains as those with higher predicted income except in Indonesia. Finding similar patterns in Viet Nam between 2004 and 2008, Brand-Weiner and Francavilla (2015) suggest that this reflects the absence of low-income traps since poor households can climb the ladder when favorable conditions are created. Their empirical assessment stresses the importance of household composition and changes in the household head's sector of activity and occupation as drivers of absolute economic mobility. They also reveal the existence of high dependence on private transfers that hinders the ability of households to move upward, as well as an ambiguous if no impact of education.

Building on their previous study, Fields et al. (2003a) run multivariate regressions on the difference of log income and then decompose the inequality of income changes in these four countries. They confirm their previous finding on the importance of initial income in explaining mobility together with the changes in the employment status of the household head, whereas human capital characteristics are found to account less for income changes. On a larger scale, Ferreira et al. (2013) rely on a large dataset covering 10-15 years, which they constructed using data from the Socioeconomic Database for Latin America and the

[98] There is quite an extensive literature on economic mobility in the United States for instance.

Caribbean (SEDLAC), to document in details mobility in Latin America with a particular focus on the middle-class.[99] They find limited intergenerational mobility, in contrast with an increasing intra-generational mobility. If the middle-class presents socioeconomic characteristics that are quite distinct from the other classes (high level of education, more urbanized, with formal employment, predominance of service activities), they suggest that this is not the case for their values and aspirations. As for the drivers behind the expansion of the middle-class, they attribute it mostly to initial conditions (initial level of inequality) and redistributive policies. Using a strategy that takes into account both the risks of falling into and (re-)escaping from poverty, Schotte et al. (2018) shed light on the stability of the vulnerable and middle-class[100] in urban South Africa between 2008, 2010 and 2012. Their findings suggest that better and stable jobs, increases in labor earnings, decreases in household size and changes from a female to a male household head are associated with a higher likelihood of entering the middle-class. On the other hand, increases in non-labor income (government grants and transfers, insurances, loans from banks) serve more as buffers against shocks and stabilize their position.

Studies on economic mobility and poverty dynamics in Turkey are relatively scarce. Using the Survey on Income and Living Conditions (ILCS) data covering 2005-2008, Şeker and Dayıoğlu (2015) quantify and analyze the transition rates of 8962 individuals out of poverty.[101] In their classification of the main sources of poverty transitions, changes in the earning of the household heads comes first followed by changes in other member's earnings, and then rental and property income. If the poverty rates and exit probabilities that they estimated are close to the average for European countries, the probabilities of re-entry are at least 10 percentage points higher for those who have stayed two years out of poverty.[102] They argue that the explanation for that can be found in the high turnover and low wages in the informal sector. The qualitative analysis undertaken by Combarnous et al. (2018) reveal that

[99] The middle-class is defined as those belonging to an income per capita per day range (USD 10-50).
[100] Using the parental backgrounds as instruments, they estimate and predict the probabilities of poverty exit and entry of initially poor versus non-poor individuals. The threshold separating the chronic from transient poor is defined as the probability of the initially poor to escape poverty (16.5%), while the threshold separating the vulnerable from the middle-class is defined as the probability of falling into poverty for those who were initially non-poor (25.9%).
[101] They set the poverty line at 60% of the median income
[102] Şeker and Dayıoğlu (2015) found that between 39 and 50% of people that have escaped poverty moved to an income class just above the poverty level. Using a non-parametric method, they estimate a probability of exiting poverty after two years (one year) of 47.9 (40.7)%. The probabilities of re-reentry are estimated at 35.5 (32.6)% after remaining one year (two years) out of poverty whereas the rates of re-entry after two years are practically cut in most European countries.

migration in urban areas and education figure among the determinants of intergenerational social mobility. However, they note that some urban middle-class individuals still maintain connections to their native villages and even have additional agriculture activities to help to sustain their livelihoods. The empirical and statistical analysis undertaken by Azevedo and Atamanov (2014) reveals positive trends in intragenerational mobility, even if the share of middle-class cannot still measure up with other countries at the same development level. During 2002-2011, Turkey has been characterized by a relatively stable middle-class,[103] strong upward mobility in urban areas, and welfare improvements even for those at the bottom 40% of the distribution. Using income poverty decomposition, they also quantify the contribution of different factors to changes in welfare across classes. In contrast with the limited contribution of women to poverty and inequality reduction, labor market dynamics and social assistance are found to be key drivers of mobility across class in Turkey. More recently, Tansel, Dalgıç, and Güven (2019), based on the ILCS data, are the first to provide evidence on wage mobility and wage inequality in Turkey across various socioeconomic groups over the period 2005-2011. Using a multinomial logit model to estimate the probability of year-to-year quintile change, they find more upward mobility among males, young and better-educated people, and those working in the service compared to the industry. They also find that despite the equalizing effect of wage mobility, the impact on wage inequality is still shallow. At the moment, much remains to be done in order to get a better understanding of welfare dynamics in Turkey.

This section sheds light on many intriguing dynamics concerning the social class dynamics in Turkey that have not yet been thoroughly investigated in the literature. As such, this chapter attempts to contribute to the later at many levels. First, to divide the income distribution into classes, we rely on a methodology that integrates the concept of class identity into an economic framework. Second, to the best of our knowledge, we provide the first evidence on the drivers of income mobility within the middle-class in Turkey during 2010-2013. By doing so, we also contribute to the literature on economic mobility and welfare dynamics in middle-income countries.

[103] Those with daily income per capita beyond USD 10 in PPP.

2. Methodology for constructing socioeconomic classes and measuring income mobility

After presenting the conceptual framework for income mobility analysis, this section introduces the methodology used to construct the classes drawing on Esteban, Gradin, and Ray (1999), and then the measures of economic mobility.

2.1. Conceptual framework for analyzing income mobility

As mentioned by Fields and Ok (1999b), before any analysis of such a complex process as economic mobility, it is essential to define what aspects of income mobility are going to be investigated. Thus, three points must be clarified: the domain, space, and concept of economic mobility.

The space of economic mobility refers to the variable that is going to be used to track the changes through time (for instance, current or permanent incomes, labor earnings, consumption expenditures, wealth, education achievement). In this paper, we choose the total disposable income as the vector of income and the household as the unit. As argued by Woolard and Klasen (2005), income is the most appropriate vector to analyze and decompose the sources of mobility, especially in short-term periods. More precisely, to account for differences in a household's size[104] and composition, the total household disposable income is divided by the number of "equivalent adults," using an equivalence scale. We use the OECD-modified scale; each member of the household is weighted as follows: 1.0 for the first adult; 0.5 for the second and each subsequent person aged 14 and over; 0.3 for each child aged below 14. The income vector used throughout the study is thus the equivalized total disposable income.[105]

Fields (2000) distinguishes six concepts of economic mobility, each one being associated with a set of measures that can be grouped into two categories: absolute mobility and relative

[104] We consider as members of the household during the reference year, people who are alive and living in the household permanently.

[105] A wide range of equivalence scale exists, but there is no consensus on the most appropriate one. Among the most used scales figure the Oxford scale (that assign a weight of 1 to the household head, 0.7 to the other adults and 0.5 to each child). The square root scale, which consists in dividing household income by the square root of household size, is used in recent papers from the OECD for cross-country comparison. The OECD-modified scale is the one mostly used in European countries and the one used by the Turkish Statistical Institute (Sefil, 2015).

mobility. The four concepts, that capture absolute changes in the individual's welfare over time, fall within the first category. First, mobility can refer to time dependence and measures the extent to which incomes at an earlier date can predict individuals' income at a later date. Second, mobility can be related to movement. In this case, mobility can be measured in terms of income fluctuations through share movement - when the share of an individual in total income changes over time -, non-directional income movement – measuring the extent of gross movement of income-, directional movement of income – when the direction of variation matters. There is also positional movement, but it falls under the category of relative approach since it captures the changes in the individuals' position in the income distribution. Distinctively from those two approaches, mobility can also be apprehended through its equalizing effect on long-term incomes: inequality at a particular point in time is compared to long-term inequality. Burkhauser, Nolan, and Couch (2012) make a rather comprehensive literature review on this matter.

The choices of the concept and the related measures are intricately related to the domain of mobility. There is a distinction between intergenerational mobility, focusing on movements across generations, and intragenerational mobility, focusing on movements of the same individual based on the changes in his income vector (be it a person or a household) over time. The former is generally associated with the concept of equality of opportunity as an equal society would be one where the improvement in the welfare of a generation would not be determined, at least to some extent, by the background of their parents (Roemer, 2004). This is best captured by the concept of time dependence that asks the question: "*to what extent is the income of the children determined by the income of their parent?*" [106]

As much appealing as intergenerational mobility is, especially in the context of Turkey, such a study requires long-term longitudinal data that we do not have at our disposal. Nevertheless, the concept of time-independence can also be applied to intragenerational mobility once the question is reformulated in the following way: "*to what extent is the income at time T determined by the income (for instance) at time T-5?*" (Fields, 2000)." This can be combined with the concept of movement that would allow assessing the amplitude and direction of the changes in the vector of income between *T-5* and *T*. As contended by Ferreira et al. (2013), in the same way equality of opportunity (across-generation mobility) is seen as a desirable

[106] Fields (2000) notes that « income » refers to any socioeconomic characteristic that one wants to analyze.

outcome at the social level,[107] income improvement (or income growth) can be seen as a desirable outcome at the individual level. The concept that best captures this notion of growth in the analysis of mobility is the directional movement. In complement, we also adopt the concept of positional movement since we are interested in the changes in the position of the households in the distribution of income, more precisely the *class* they belong to, between *T-5* and *T*.

In a nutshell, our framework applies the concept of time or origin-dependence to the analysis of absolute mobility in the sense of directional movement, and to relative mobility in the sense of inter-class movement. We present the corresponding tools and measures in section 2.3, but before that, we present the method for identifying the class in the distribution of income.

2.2. Identifying the middle of the distribution

We want to split the income distribution into four homogeneous groups of income. The choice of the number of groups is guided by the literature overview pointing to the existence of two groups of middle-class. To do so, we turn to the concept of polarization to "construct" income classes for several reasons. First, using this approach considerably reduces the degree of arbitrariness in the identification of classes. Besides, the concept of polarization is particularly relevant if one wants to capture the "class identity" aspect of social stratification since, as stated by Esteban and Ray (1994) it encompasses two basic features: identification, reflected by a high degree of homogeneity within each group, and alienation, reflected by a high degree of heterogeneity across groups. As they mention, such an approach makes the simplifying assumption that individual socioeconomic attributes, those creating differences or similarities between individuals, can be proxied by the differences in income. Esteban et al. (1999) make an extension of the Esteban-Ray polarization measure allowing to generate income cut-offs based on the distribution of income and to construct optimal "social" groups. More precisely, since this indicator measures polarization, the regrouping (or clustering) is not its purpose, but a prerequisite step. As explained by the authors, the population has to be regrouped in a way that captures the group identification structure of society. However, by doing so, initial information concerning the dispersion around the clusters will be lost, leading to a "measurement error" or "lack of identification" that must be corrected. Simply put, this

[107] Roemer (2004) further discuss the extent to which equality of opportunity is translated in terms of intergenerational mobility.

approach allows constructing homogenous income groups, whose number is determined *a priori*, by minimizing the within-group dispersion.

The extended polarization measure expression[108] is as follows:

[Equation 3.1]

$$P(f;\alpha,\beta) = ER(\alpha,\rho) - \beta\varepsilon(f,\rho)$$

Where $ER(\alpha,\rho)$ is the Esteban-Ray indicator of polarization with parameter α applied to the *n*-spike representation ρ,[109] f the density function, and β is a free parameter which measures the weight attached to the measurement error ε.

The grouping is done endogenously and consists in determining the appropriate *n*-spike representation ρ^* that minimizes that error, which means the representation that ensures within-group dispersion smaller than the dispersion in the overall distribution. Since the dispersion is measured by the Gini coefficient and "*an n-spike representation of a distribution function F is equivalent to transforming the original Lorenz curve into a piecewise linear Lorenz curve (with n pieces), the minimization of the error is equivalent to minimizing the area between the original Lorenz curve and the piecewise linear representation*" (Esteban et al., 1999: 6, 7). The error term can thus be written as follows:

[Equation 3.2]

$$\varepsilon(f,\rho^*) = G(f) - G(\rho^*)$$

Where $G(f)$ is the Gini coefficient of the original distribution and $G(\rho^*)$ the Gini coefficient of the appropriate *n*-spike representation ρ^*.

Once we have settled the number of spikes *i* (the number of groups), ρ^* is determined using the condition:

[Equation 3.3]

$$y_i^* = \frac{\pi_i^*\mu_i^* + \pi_{i+1}^*\mu_{i+1}^*}{\pi_i^* + \pi_{i+1}^*}$$

Which means that "*the dividing income between any two adjacent intervals (groups) has to be equal to the average income of these two intervals taken together*" (Esteban et al., 1999: 6).

[108] For detailed technical presentation of the polarization measure, see Esteban et al. (1999).

[109] The ER measure of polarization is expressed as follows: $ER(\alpha,\rho) = \sum_i \sum_j \pi_i^{1+\alpha}\ \pi_j|\mu_i - \mu_j|$, with $\pi_i = \int_{y_{i-1}}^{y_i} f(y)dy$ and $\mu_i = \frac{1}{\pi_i}\int_{y_{i-1}}^{y_i} yf(y)dy$ for all *i*=1… n and income y_i is comprised within an interval *[a,b]*.

2.3. Measures of income mobility

We measure absolute mobility with the Field-Ok index (hereafter FO), which measures the per capita aggregate change in the logarithm of household incomes. This indicator is the most commonly used in the literature due to the flexibility it offers in terms of computation and interpretation, and, as demonstrated by Fields and Ok (1999a), it is the only measure of income movement that satisfies all desirable properties.[110] Its formal expression is as follows:

[Equation 3.4]

$$\mathrm{FO} = \frac{1}{n}\sum_{i=1}^{n}(\log y_{i,t} - \log y_{i,t-1})$$

Where$y_{i,t-1}$, and $y_{i,t}$ are respectively the income of household *i* at period *t-1* and *t*. This index respects the decomposability axiom allowing us to determine the contribution of each group within the population to overall mobility. The decomposition is simply the population-weighted average of the Fields-Ok mobility for each group (Fields and Ok, 1999a). In other words, once the mobility within each group has been calculated, each value is multiplied by the group weight, which is the normalized population share of each group, to determine which one influences the most the level of overall mobility. When *FO* is inferior to zero, it indicates the preeminence of absolute downward mobility (negative average income growth), while a *FO* superior to zero indicates the preeminence of absolute upward mobility (positive average income growth) in a given sample.

One way of visualizing and exploiting this decomposability property is to use a matrix decomposition of mobility, [111] such as presented in Table 3.1, which can be used to analyze inter-class mobility in an origin-dependency fashion. The rows of this matrix are the income class of origin (the income class in the base year), and the columns are the corresponding income class of destination (income class in the final year). If transition matrices are standard in positional movement studies, we specifically borrow the framework used by Ferreira et al. (2013). We can display three indicators in this table: 1) the population share of mobile or

[110] This indicator satisfies the axioms of scale invariance (invariant to changes in scale, like doubling all incomes), the axiom of symmetry (which states that welfare-reducing and welfare-enhancing movements are equally mobile, but the distinction can be made by "directionalizing" the indicator), additivity or decomposability axiom. See Fields and Ok (1999a) for the detailed explanation and demonstration of those axioms.

[111] The matrix decomposition of mobility is presented in Ferreira and Lugo (2012), an unpublished paper of the World Bank. The presentation of this indicator is thus based on the explanations of Ferreira et al. (2013).

immobile households, 2) the average income gains or losses of each group, 3) the contribution of each group to the average growth rate of incomes over the period.

Table 3.1 Matrix decomposition of mobility

Origin (row) or destination (columns)	Poor	Lower middle-class	Upper middle-class	Rich
Poor	A	B	C	D
Lower middle-class	E	F	G	H
Upper middle-class	I	J	K	L
Rich	M	N	O	P

Source: Author's adaptation of Ferreira and Lugo (2012)

The cells in the same color can be interpreted in the same way. The four cells (A, F, K, and P) represent the "*immobile group*": households whose income changes have been insufficient to make them move to an upper or lower class. They stay poor (A), lower middle-class (F), upper middle-class (K), or rich (P). The "*upwardly mobile*", whose income changes allowed them to join the ranks of upper classes, are in the dark blue cells: those in the first row moved from being poor to lower middle-class (B), upper middle-class (C) or rich (D); those in the second row moved from lower to upper middle-class (G) or rich (H), and those in L moved from being upper middle-class to rich. Finally, the red cells represent the "*downwardly mobile*" whose income changes made them fall back to lower classes: those in the first column fell back to poverty from lower middle-class (E), upper middle-class (I) or rich (M); those in the second column fell back to being lower middle-class from upper middle-class (J) or rich (N); and those in O are rich that move down to upper middle-class.

Our main focus will be on the transitions involving the lower and upper middle-class namely: "*stayers*" in either group in cells F and K; "*climber*" in cells G, H and L; and "*sliders*" in cells E, I and J. Households in cells N and O are particular cases of entry into the lower and upper middle-class associated with the downward mobility of previously rich households.

3. Data and attrition issues

To conduct our investigation, we take advantage of the panel structure of Turkey's Income and Living Conditions Survey. After presenting the data, we address the issue of potential selective attrition.

3.1. Presentation of data

The Turkey's Income and Living Conditions Survey (ILCS) is conducted regularly each year. Concerning the geographical coverage, all settlements within the borders of the Republic of Turkey were included within the sample selection. The sample is representative at the national level, although some people are excluded, namely those living in elderly houses, prisons, military barracks, private hospitals, hotels, and childcare centers, together with the immigrant population. The questionnaire covers personal and households basic information, the economic activity and living conditions of the household, as well as the educational, health and occupational status of the members above the age of 15. The data are suitable for cross-sectional and panel analysis.

We specifically use the 2010-2013 panel data with a rotating sample design. This dataset encompasses 2941 households; however, we have information on income for only 2819 households and on the household heads for only 2678 households. The balanced sample comes down to 2591 households when all variables of interests, excluding the job market variables, are taken into consideration, and 1760 when we add the variables of occupation and sector of employment in our specification. We convert income and consumption data from current to constant TRY (Turkish Lira) values.[112]

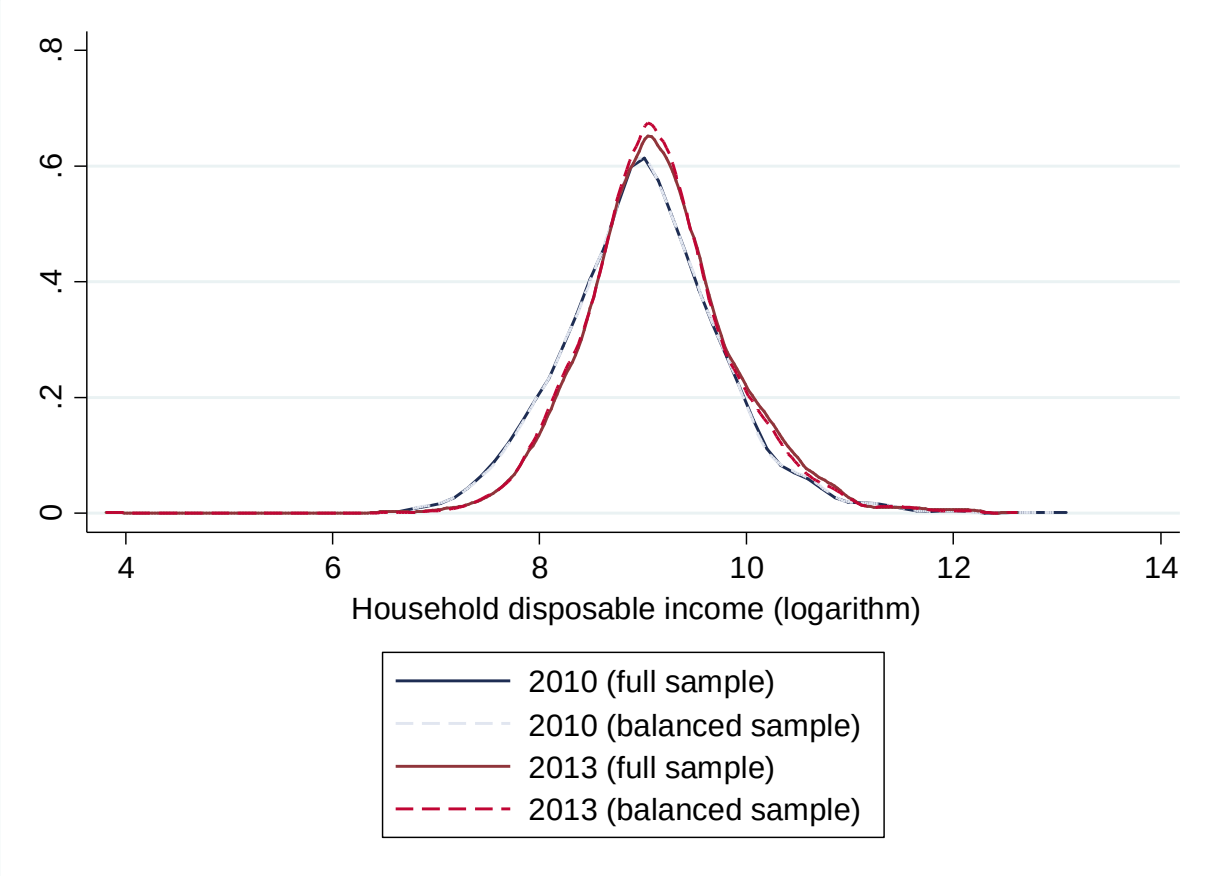
One major limitation of our data is the non-availability of the variable identifying the geographical location (region, address, rural, or urban area) of the households for the panel design. It prevents us from accounting for the urban-rural divide as well as the very intriguing interregional disparity of economic and welfare dynamics in Turkey. This work would definitely benefit from further investigations using a more extensive database.

[112] We use CPI index for 2013 retrieved from the World Bank database.

3.2. Potential selective attrition

The 2010 wave initially contained 3624 households, whereas the 2013 wave contained only 3303 households. The sample design consists of a rotating panel from 2010 to 2013 which implies that parts of the households in the sample are randomly renewed from one round to another. If the attrition is non-randomly distributed, the problem of selective attrition may arise and affect the results. To check for this issue, we proceed to compare the means and distributions of the outcome variable (household disposable income) between the cross-sectional sample and the balanced panel subsample. In the presence of selective attrition, the differences should be significant.

Figure 3.1 Distribution of household disposable income (full and balanced samples)[113]



Source: ILCS. Author's computations.

[113] Kernel density estimations of the household disposable income for the full and balanced samples using the Epanechnikov function and default bandwidth

Regarding the distributions of income (Figure 3.1), attrition does not seem to affect the balanced panel for both years since the curves for the balanced and full samples are almost perfectly overlaid on each other.

Table 3.2 Test of comparison of mean between cross-sectional and panel samples

Variable	N	Mean [(a)] (in TRY)	Standard error	Mean difference [(b)]
Disposable income full sample 2010	3056	11218.68	275.43	-33.00 (0.9342)
Disposable income balanced sample 2010	2819	11251.68	289.64	
Disposable income full sample 2013	3087	12760.85	270.41	449.33 (0.2360)
Disposable income balanced sample 2013	2819	12311.52	264.01	

Note: (a) Disposable income is in annual term; (b) In parenthesis, we have the two-tailed p-value computed using the *t* distributions. It is the probability of observing a greater absolute value of *t* under the null hypothesis of equality of means.

Source: ILCS. Author's computations.

The results of the test of comparison of mean in Table 3.2 indicate that the differences in mean between the samples are not significant for both years, confirming that selective attrition is not an issue.

4. A descriptive analysis of economic mobility in Turkey

This section begins with the construction of socioeconomic classes and goes on to make a descriptive analysis of mobility in Turkey using the conceptual framework and tools presented previously.

4.1. Socioeconomic classes in Turkey

We apply the methodology presented in section 2.2 to the distribution of equivalized incomes of 2010 and 2013. Table 3.3[114] displays the daily per capita cut-offs delimitating the four income groups. We observe that the distribution of income has slightly improved in general from 2010 to 2013, as shown by the increasing value of the median income and the relative poverty line. The upper bounds for the poor, are rather high (2010: TRY 16.9 and 2013: TRY

[114] To obtain the equivalent in USD PPP, we use the conversion rate of the OECD retrieved from https://data.oecd.org/conversion/purchasing-power-parities-ppp.htm . The conversion rates are 0.920 (2010) and 1.070 (2013).

20.52) compared to the commonly used poverty lines. That is even more accurate when we refer to the absolute poverty lines of USD 5.5 per day (TRY 5.05 in 2010; TRY 5.88 in 2013) set by the World Bank for upper middle-income countries. Still, even the relative poverty line is higher than the international threshold, especially in 2013 (USD 10.06), and the poverty headcount ratios associated with those computed thresholds are rather low (35% on average).

In the literature, the threshold that is commonly used as the lower bound for the middle-class in developing countries is USD 10 since it is associated with a lower probability (around 10%) of falling back into poverty (Dang and Lanjouw, 2017; Ferreira et al., 2013). Concerning the upper bound, there is even less consensus, but studies tend to locate it around USD 50 (López-Calva and Ortiz-Juarez, 2014; Stampini et al., 2015) or USD 100 (Kharas, 2010; Kharas and Gertz, 2010). People within the range (poverty line; USD 10) would thus be considered as vulnerable by such studies, but are considered as poor in our setup. However, our lower-bound for the middle-class is close to the "international" classification of the global middle-class proposed by the World Bank (2018b).

Table 3.3 Groups of income based on Esteban, Gradin, and Ray methodology (1999) [(a)]

	2010		2013	
	TRY	**USD PPP**	**TRY**	**USD PPP**
Median	21.91	23.82	25.62	23.94
Relative poverty line[(b)]	13.15	14.29	15.37	14.36
Esteban Gradin and Ray (1999) polarization groups[(c)]				
	Upper bound			
Poor	16.90	18.37	20.52	19.18
Lower middle-class	30.28	32.91	35.49	33.17
Upper middle-class	60.49	65.75	71.42	66.75
Rich	1171.10	1272.93	822.19	768.40
	Population share (%)			
Poor	35.20		35.00	
Lower middle-class	33.20		34.50	
Upper middle-class	23.00		21.90	
Rich	8.60		8.60	

(a) Thresholds are per day.
(b) 60% of the median income.
(c) We use the default specification for the parameters with alpha = 0.5 and beta = 1.

Source: ILCS. Author's computations.

Two options arise in the definition of classes depending on the way we apply the cut-offs, either using an absolute or a relative approach. As for the first option, the cut-offs are

computed using the 2010 distribution of income and then applied to the distribution of 2013; while the second one implies that the cut-offs, generated from each year's distribution of income, may change. The choice between the two approaches depends on whether we want to study the wellbeing trajectory of the middle-class households in 2010 throughout the period, or rather the statutory trajectory of those identified as middle-class in 2010, regardless of the improvement in their income level. Take, for instance, a household in 2010 that belongs to the middle-class because its income falls within the middle-class range. If the household income increases and goes beyond the upper-bound of this interval in 2013, it will be considered as rich in 2013 following the absolute approach. However, if the middle-class upper-bound is higher in 2013, which means that the distribution of income has shifted to the right, even though the income has improved, the household status will remain that of middle-class following the relative approach.

Table 3.4 Transition matrix using relative and absolute approach (as a percentage of total sample)

(a) Relative

		2013			
		Poor	Lower	Upper	Rich
2010	Poor	24.57	7.92	1.42	0.3
	Lower	8.81	18.48	6.65	0.67
	Upper	1.49	7.73	11.69	2.43
	Rich	0.11	0.34	2.17	5.23

(b) Absolute

		2013			
		Poor	Lower	Upper	Rich
2010	Poor	19.57	11.84	2.35	0.45
	Lower	3.77	19.16	10.34	1.34
	Upper	0.56	5.3	13.48	4
	Rich	0.07	0.15	1.31	6.31

(c) Difference

		2013			
		Poor	Lower	Upper	Rich
2010	Poor	5	-3.92	-0.93	-0.15
	Lower	5.04	-0.68	-3.69	-0.67
	Upper	0.93	2.43	-1.79	-1.57
	Rich	0.04	0.19	0.86	-1.08

Source: ILCS. Author's computations.

Table 3.4 presents the transition matrices based on both approaches (constructed based on the equivalized incomes), indicating the percentage of households that moved downward (below the diagonal), upward (above the diagonal), or stayed immobile (on the diagonal) between 2010 and 2013. As we can see, the differences are quite heterogeneous ranging from 0.04 to 5

percentage points (in integer terms). In general, the values of ascending mobility are higher following the absolute approach. According to the relative approach, 19.93% of the households managed to improve their status, whereas 30.32% of the households managed to join a higher group according to the absolute approach. The reverse is true for descending mobility and immobility. More households (20.65%) lost their higher relative status or did not move (59.97%), while only 11.16% of the households left their higher absolute group, and 58.52% did not move. This is in part related to the higher thresholds in 2013 compared to 2010, which means that the income requirements to obtain an upper-class status are harder to meet in 2013 (although the differences are smaller in USD PPP). Again, this is consistent with the shift of the distribution to the right during the period.

In the rest of the study, to take full advantage of the Esteban, Gradin and Ray (EGR) methodology and account for the changes in the distribution of income between the two reference years from a typical positional movement perspective, we choose the relative (statutory) approach. Consequently, in the remainder of the paper, relative mobility refers to the change in the socioeconomic status of the household.

4.2. Characteristics of middle-class households in 2010

Table 3.5 summarizes some features of the households belonging to each income class in 2010. Before starting, note that "employment status" in this table corresponds to the "self-defined employment status" of the questionnaire. Most interviewees identify as "being inactive (without specifying their activities)." We make two aggregations. First, we aggregate the original ISCO-88 classification used in the survey into four groups of occupation ranked by skills: "Managers" (code 1); "Intermediate profession" (code 2 and 3); "Skilled workers" (code 4, 5, 6 and 7); "Low skilled workers" (code 8 and 9). Secondly, we aggregate the original NACE classification into six sectors: "Agriculture" (code 1); "Industry" (code 2-5); "Private Service" (code 6-11 and 13); "Scientific and technical activities" (code 12 and 15); "Public administration" (code 14); "Social" (code 16-18). [115]

[115] Social includes private human and social work activities.

Table 3.5 Socioeconomic characteristics of households by income class in 2010

	Total sample	Poor	Lower middle-class	Upper middle-class	Rich
Gender					
Men	86.15	86.57	85.22	86.56	87.14
Women	13.85	13.43	14.78	13.44	12.86
Household composition					
Single adult	6.68	4.15	7.34	8.32	10.00
Couple	11.80	4.15	12.94	**18.08**	21.43
Couple retired	8.18	5.79	10.90	8.96	4.29
Single parent with dependent children	2.58	3.38	**2.70**	1.28	2.38
Family with dependent children[(a)]	59.45	75.44	**55.23**	47.52	43.81
Others[(b)]	11.31	7.10	10.90	**15.84**	18.10
Education[(c)]					
Illiterate	9.26	16.16	**9.39**	2.08	0
Literate (but not graduate)	6.80	10.37	**6.58**	4.16	0
Primary	55.00	63.86	**58.25**	47.68	23.81
Secondary	16.62	8.52	20.17	**24.16**	13.81
Tertiary	12.29	0.98	5.61	**21.92**	62.38
Occupation skill[(c)]					
Managers	19.43	5.63	12.82	**30.27**	68.32
Intermediate profession	14.66	11.61	18.55	16.38	7.45
Skilled worker	26.59	33.67	24.62	23.08	16.15
Low skilled worker	39.32	49.09	**44.01**	30.27	8.07
Status[(c)]					
Employed	65.31	65.07	63.65	64.32	76.67
Unemployed	3.58	8.30	1.08	1.60	0
Inactive	31.07	26.53	35.28	34.08	23.33
Sector					
Agriculture	15.27	35.66	**20.40**	15.63	6.21
Industry	17.48	29.52	27.82	23.33	19.25
Private service	20.24	25.7	32.38	33.50	37.27
Scientific and technical activities[(d)]	3.85	1.33	3.88	**9.93**	19.88
Public administration[(e)]	4.74	3.48	8.09	10.92	8.70
Social	4.14	4.31	7.42	6.70	8.70

(a) Are included in this category the households composed with 1) Two adults with at least one dependent children; 2) Other households with dependent children (as specified in the questionnaire; (b) This category includes all type of households which type could not be determined (as specified in the questionnaire; (c) Note that occupations and sectors are missing for 918 households head among which 22% are downwardly mobile, 59.04% immobile and 19.06 upwardly mobile. For education and employment status, we have one missing value corresponding to a household that has moved upward; (d) The subgroup "scientific and technical activities" includes section 12: "Professional, scientific and technical activities" and section 15:"Education" of the NACE classification used by Turkstat; (e) The subgroup "Public administration" is the section 14: "Public administration and defense" of this classification; (f) Values in bold mean that the test of mean-difference between both middle-classes is significant.

Source: ILCS. Author's computations.

Except for the low proportion of households with a female head that is common to all groups (less than 15%), both middle-classes have quite distinct features compared to the poor and rich groups. Compared to the poor, there are fewer families with dependent children, and there are more household heads with secondary or tertiary, and jobs as managers compared to low skilled workers. The proportion of unemployed heads is eight times smaller, and there are fewer who work in agriculture compared to the other sectors.

They are also quite distinct from the rich households that have at least three times more tertiary educated and more than half manager heads. Regarding the sectors of activity, the proportion of middle-class heads that work in agriculture is still much higher, and the proportion of those working in scientific and technical activities lower than the rich household's heads.

We run a 2-group mean-comparison t-test to analyze if there is a significant difference between the characteristics of both middle-classes. The tests show that the lower middle-class has significantly more families, with married or single parents, with dependent children (55.23 and 2.70%) compared to the couples without children and more peculiar families that are more frequent among the upper middle-class (18.08 and 15.84%).

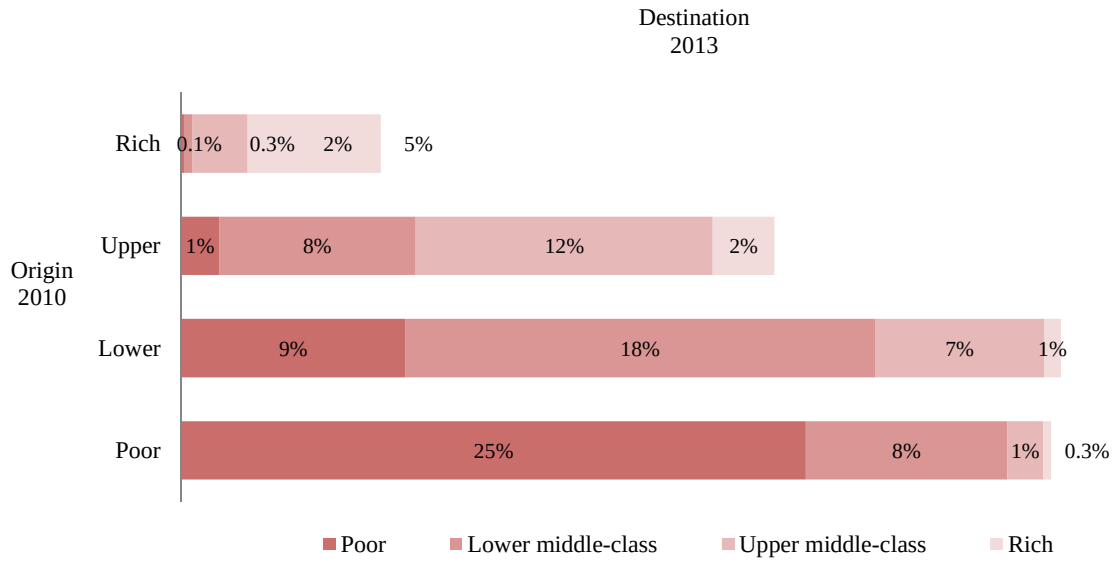
Regarding the job market characteristics of the household heads, the lower middle-class ones are more likely to work as low skilled workers (44.01%) and in the agricultural sector (20.40%) than the upper middle-class heads. Another noteworthy feature of the latter is that there are three times more of them having scientific and technical activities and almost as much as managers than the lower middle-class heads. There are also more of them working in public administrations (compared to the lower and the rich), but the tests are not significant.

The most distinction relates to the level of education of the household heads. The t-tests show that the shares of upper middle-class head with secondary and tertiary education are significantly higher than the lower middle-class's. Moreover, if 74.22% of the latter group's heads have completed primary education at most, this is the case for only 53.92% of the upper middle-class ones.

4.3. Matrix decomposition of mobility

Out of the 2678 households in the sample, 1606 did not change income class during the period, 516 were upwardly mobile, and 553 downwardly mobile. Among the 519 upwardly mobile, 212 became lower middle-class, 216 upper middle-class, and 91 rich. Among the 553 downwardly mobile, 279 became poor, 216 became lower middle-class, and 58 upper middle-class.

Figure 3.2 Transition between 2010 and 2013 (as a percentage of total sample)



Source: ILCS. Author's computations.

The focal points are the transitions in and out of the middle-class,[116] hereafter represented by the colored cells in the tables below. Panel (a) of Table 3.4 and Figure 3.2 report the population shares for each cell. We notice that more than half of the households (68% of them) belong to the poor and lower middle-class categories during both years. Unsurprisingly, providing the short time span between 2010 and 2013, there has been more immobility than mobility: there are more households whose position has not changed. Nonetheless, households belonging to the middle-classes, especially the households initially in the lower group, tend to be more mobile. This is in line with the findings of Ferreira et al. (2013) in Latin America and Caribbean, and is probably related to the fact that, although those at the bottom (top) of the

[116] Besides, the movements associated with the rich are quite marginal compared to the dynamics of poverty/middle-class.

distribution can only move up (down), those in the middle can move in both directions (Woolard and Klasen, 2005).

On the one hand, between 2010 and 2013, the population share of lower middle-class has not changed a lot. 18.48% of the group are *stayers* while the proportions of households that have climbed up or down to that group are quite close. On the other hand, the decreasing population share of upper middle-class (from 23.34% to 21.93%) is related to a higher mobility out of this group - of which 9.12% of downward mobility and 2.43% of upward mobility to the rich group -, while only 8.07% of the population from the poor and lower middle-class have joined this category.

Figure 3.3 Trajectory of middle-class households of 2010 (as a percentage of middle-class households)

Source: ILCS. Author's computations.

To complement the observations, we can see in Figure 3.3 that only 23% of the households that were initially part of the middle-classes have climbed down (18%) or up (5%) the ladder by 2013, and there has been more downward than upward mobility. Using an absolute definition of middle-class, as those living with more than USD 10 in PPP per day, the World Bank (2014), find that 98% of the households initially in the middle-class stayed in the middle-class, that being 10 percentage point higher than our findings.[117] This apparent "stability" at the middle-class level is questioned once we pay attention to the dynamics

[117] This difference may very well come from the difference in the definition of middle-class.

within the middle-class. Indeed, while half of the households that were initially lower or upper middle-class have not moved, there is more downward mobility among the latter group.

Of the upper middle-class of 2010, 33% became lower middle-class, and 10% managed to join the ranks of the rich in 2013. As for the lower middle-class of 2010, 25% became poor, while 19% became upper middle-class. In addition, there have been three times more "extreme" downward mobility (6% of reentry into poverty from upper middle-class), than "extreme" upward mobility (2% of entry into the rich group from lower middle-class).

Table 3.6 Average income growth (FO)

		Destination 2013				
		Poor	Lower middle-class	Upper middle-class	Rich	Total 2010
Origin 2010	Poor	0.22	0.79	1.31	2.05	0.41
	Lower middle-class	-0.23	0.15	0.62	1.34	0.16
	Upper middle-class	-0.81	-0.28	0.13	0.78	0.00
	Rich	-2.46	-1.06	-0.30	0.12	-0.08
	Total 2013	0.05	0.19	0.31	0.47	0.19

Source: ILCS. Author's computations.

In comparison to the previous observation, Table 3.6 shows that the poor households have been more absolutely mobile than both middle-classes (0.41-average income growth for the initially poor households). We also observe that households that have joined the lower and upper middle-class from poverty have experienced a considerable increase in their income (respectively 0.79 and 1.31).

The income gain is slightly lower for households that have moved up to the upper middle-class from the lower middle-class (0.62). Conversely, the total income loss (5.40) is lower than the total income gain (12.24) in absolute terms. The income loss experienced by the households that have experienced downward mobility from lower middle-class to poverty is lower (-0.23) than the loss associated with downward mobility from the upper middle-class to poverty (-0.81). The close to zero absolute mobility among the initially upper middle-class

means that the average loss experienced by the sliders compensates the average gain experienced by the stayers and the climbers.

Table 3.7 Decomposition of the Fields-Ok index (in percentage)

		Destination 2013				
		Poor	Lower middle-class	Upper middle-class	Rich	Total 2010
Origin 2010	Poor	5.41	6.26	1.86	0.62	14.03
	Lower middle-class	-2.03	2.77	4.12	0.9	5.88
	Upper middle-class	-1.21	-2.16	1.52	1.9	0.05
	Rich	-0.27	-0.36	-0.65	0.63	-0.63
	Total 2013	1.75	6.55	6.8	4.06	19

Source: ILCS. Author's computations.

Finally, Table 3.7 shows the decomposition of the Fields-Ok index. The decomposition is simply the population share multiplied by the average income growth for each cell. As we have already seen before, the average income growth measured by the Fields-Ok indicator from 2010 to 2013 is 0.19. We can see here that most of the growth is due to the formerly poor households (for 14.03%). However, when we look in terms of destination, the growth is mostly associated with households that have joined the lower middle-class (6.55%) and the upper middle-class (6.8%) by 2013.

4.4. Features of mobility between 2010-2013

To examine in more detail the nature of those movements, we calculate the Fields-Ok index for the entire distribution and the initial class in 2010 by socioeconomic subgroups in Table 3.8. We also aggregate the proportion of households that moved (or not) across social classes in Table 3.9. The classification is determined for 2010 while we focus on mobility between 2010 and 2013.

Table 3.8 Absolute mobility by socioeconomic groups from 2010 to 2013

	Total sample	Poor	Lower	Upper	Rich
Overall mobility	0.19	0.41	0.16	0.00[118]	-0.08
Gender					
Men	0.19	0.41	0.16	0.00	-0.1
Women	0.22	0.43	0.21	0.01	0.03
Household composition					
Single adult	0.06	0.11	0.1	-0.01	0.08
Couple	0.15	0.64	0.16	0.08	-0.05
Couple retired	0.14	0.42	0.16	-0.10	-0.23
Single parent with dependent children	0.46	0.58	0.4	0.21	0.45
Family with dependent children[(a)]	0.21	0.4	0.15	-0.03	-0.12
Others[(b)]	0.19	0.52	0.24	0.06	-0.16
Education[(c)]					
Illiterate	0.21	0.35	0.05	-0.28	
Literate (but not graduate)	0.30	0.52	0.14	-0.16	
Primary	0.19	0.41	0.15	-0.06	-0.28
Secondary	0.17	0.41	0.21	0.07	-0.3
Tertiary	0.14	0.87	0.32	0.12	0.04
Occupation skill[(c)]					
Managers	0.13	0.28	0.19	0.14	0.03
Intermediate profession	0.21	0.36	0.21	0.08	-0.01
Skilled worker	0.27	0.56	0.14	-0.05	-0.07
Low skilled worker	0.14	0.32	0.11	-0.07	-0.17
Status[(c)]					
Employed	0.19	0.40	0.15	0.02	-0.01
Unemployed	0.32	0.39	0.23	-0.09	
Inactive	0.18	0.45	0.19	-0.04	-0.34
Sector					
Agriculture	0.28	0.53	0.09	-0.07	-0.54
Industry	0.18	0.35	0.1	0.00	0.09
Private service	0.14	0.33	0.17	-0.03	-0.03
Scientific and technical activities	0.19	0.43	0.28	0.16	0.1
Public administration	0.22	0.17	0.28	0.22	0.08
Social	0.16	0.31	0.16	0.13	-0.08

(a) Are included in this category the households composed with 1) Two adults with at least one dependent children; 2) Other households with dependent children (as specified in the questioner); (b) This category includes all type of households which type could not be determined (as specified in the questioner); (c) Note that occupations and sectors are missing for 918 households head among which 22% are downwardly mobile, 59.04% immobile and 19.06 upwardly mobile. For education and employment status, we have one missing value corresponding to a household that has moved upward.

Source: ILCS. Author's computations.

[118] 0.0004919 if not rounded.

We first note that the patterns of absolute mobility go in opposite directions for the two middle-class groups. If the Fields-Ok index is positive at each socioeconomic breakdown for the lower middle-class, the values of the index are negative or close to zero for the upper middle-class with the exception of the single parent with dependent children (0.21), the households with a tertiary-educated (0.12) or executive (0.14) heads and those working in scientific and technical activities (0.16), public (0.22) or social (0.13) services.

The only times the upper middle-class average growth is superior, in absolute terms, is for the households with illiterate or literate (but not graduate) heads, and it is no good news since the indexes are negative (respectively -0.28 and -0.16). This at least confirms the previous observation in the transition matrix and is consistent with Fields et al. (2003a): while the top of the distribution (upper middle-class and rich) have gained the least during the period, those at the bottom of the distribution are catching up. However, this also suggests that it is all the more difficult to maintain the status of upper middle-class (even more the status of rich) for households with a less-educated head or a head working as an employee (their average income growth is -0.05 and -0.07) and the agricultural sector (-0.07). These households are more "vulnerable" in the sense that their employment status and their skills are not enough to secure their position in the distribution of income. Table 9 indeed confirms that households with such characteristics have more chances of falling into a lower class. The reverse is true when the household heads have tertiary education and work as managers or in scientific and technical activities.

Continuing on the sector of activity, upper middle-class people working in the private services have negative income growth on average, and their households have the highest chance (45%) of downward mobility. We already discussed in section 1 about the heterogeneity of the business sector and, thus, of the labor productivity and working conditions (OECD, 2014).

Table 3.9 Relative mobility by socio-economic groups from 2010 to 2013

	Poor		Lower			Upper			Rich	
	Immobile	**Up**	**Down**	**Immobile**	**Up**	**Down**	**Immobile**	**Up**	**Down**	**Immobile**
Gender										
Men	72.89	27.11	25.44	54.18	20.38	39.37	50.46	10.17	32.79	67.21
Women	65.04	34.96	25.55	48.91	25.55	40.48	47.62	11.90	37.04	62.96
Household composition										
Single adult	86.84	13.16	27.94	51.47	20.59	40.38	46.15	13.46	28.57	71.43
Couple	50.00	50.00	20.83	60.83	18.33	30.97	55.75	13.27	26.67	73.33
Couple retired	71.70	28.30	21.78	62.38	15.84	55.36	39.29	5.36	55.56	44.44
Single parent and dep. children	54.84	45.16	20.00	32.00	48.00	37.50	25.00	37.50	0.00	100.00
Family and dep. children[(a)]	73.81	26.19	27.73	52.54	19.73	42.42	48.48	9.09	31.52	68.48
Others[(b)]	63.08	36.92	22.77	46.53	30.69	31.31	58.59	10.10	47.37	52.63
Education[(c)]										
Illiterate	77.03	22.97	37.93	51.72	10.34	69.23	30.77	0.00		
Literate (but not graduate)	76.84	23.16	36.07	42.62	21.31	61.54	34.62	3.85		
Primary	71.79	28.21	25.56	54.07	20.37	48.66	44.97	6.38	56.00	44.00
Secondary	71.83	28.17	19.79	56.68	23.53	29.80	56.95	13.25	58.62	41.38
Tertiary	11.11	88.89	11.54	50.00	38.46	23.36	58.39	18.25	19.08	80.92
Occupation[(c)]										
Managers	67.65	32.35	25.00	38.16	36.84	23.77	57.38	18.85	18.18	81.82
Intermediate profession	67.14	32.86	20.00	60.91	19.09	33.33	51.52	15.15	33.33	66.67
Skilled worker	68.47	31.53	25.34	54.79	19.86	39.78	51.61	8.60	26.92	73.08
Low skilled worker	76.01	23.99	33.33	47.89	18.77	48.36	45.90	5.74	69.23	30.77
Self-defined employment status[(c)]										
Employed	72.15	27.85	27.80	50.85	21.36	36.57	51.49	11.94	24.84	75.16
Unemployed	82.89	17.11	10.00	60.00	30.00	60.00	30.00	10.00	33.33	66.67
Inactive	67.90	32.10	21.71	57.80	20.49	44.13	48.36	7.51	61.22	38.78
Sector										
Agriculture	72.56	27.44	29.75	52.89	17.36	42.86	52.38	4.76	50.00	50.00
Industry	71.91	28.09	32.12	49.70	18.18	36.17	55.32	8.51	25.81	74.19
Private service	72.90	27.10	29.69	48.44	21.88	45.93	42.22	11.85	21.67	78.33
Scientific and technical	37.50	62.50	21.74	39.13	39.13	22.50	62.50	15.00	18.75	81.25
Public administration	71.43	28.57	10.42	60.42	29.17	20.45	59.09	20.45	35.71	64.29
Social	73.08	26.92	20.45	54.55	25.00	22.22	55.56	22.22	21.43	78.57

Source: ILCS. Author's computations.

Although Azevedo and Atamanov (2014) find that the retired population has the highest chance to join the middle-class, defined as those with daily income per capita over USD 10, it seems that this is not the case when the threshold is set higher. Even though the patterns are mostly similar for those initially lower middle-classes, three cases of "vulnerable" households having higher chances of upward mobility stand out: households with a female head (25.55%), an unemployed head (10%), and family with single parent (48%). Concerning the latter, it is probably related to the fact that more than half of those households have changed their composition between 2010 and 2013. In addition, social assistance measures targeting vulnerable households and more opportunities for employment for women, mentioned in Section 1, might be a key explanation. The case of unemployment is somewhat ambiguous, which may suggest that the various measures implemented by the government have been enough to propel some households out of poverty and the lower middle-class, but they are not enough to sustain the status of upper middle-class. Besides, the World Bank (2014) observes increasing expenditures on active labor market policies and unemployment benefits, but the coverage (11%) and amounts are still lower than the OECD average (coverage of 50%). Informality, which Şeker and Dayıoğlu (2015) suspect as being the reason behind the high re-entry into poverty rate they computed in Turkey, may also be the reason behind the downward mobility from lower middle-class (27.80%) and from upper middle-class (36.57%) among the households with employed heads.

In summary, the patterns of mobility within the initially lower and upper middle-class are quite dissimilar, the latter being characterized by negative average income growth and higher downward mobility compared to the former. The situation concerning the labor market and education of the household heads seem to be major differentiating characteristics. Nonetheless, this section remains descriptive and provides only two-dimensional pictures of mobility, and a multivariate analysis is required if we want to identify the main determinants of mobility once all characteristics of the households are accounted for.

5. Empirical strategy

To identify the microeconomic drivers of economic mobility, we need to take into account the interaction between the various characteristics described in the previous section. In this section, we present the econometric tools we mobilize for our investigation. For starter, we construct three subsamples based on the initial class in 2010. The samples encompass 916

initially poor households, 927 initially lower middle-class households, and 625 initially upper middle-class households. For absolute mobility, we use the two samples of middle-class households. We use the three samples to analyze the transition in and out of the middle-class.

5.1. Empirical model for absolute mobility

To investigate absolute income mobility, the model follows Woolard and Klasen (2005). The directional Fields-Ok measure is used as the dependent variable. The model specification is as follows:

[Equation 3.5]

$$\Delta \ln y_i = lny_{i,t} - lny_{i,0} = \alpha_1 + \beta_0 \ln y_{i,0} + \beta_1 X_i + \varepsilon_i$$

With:

- $y_{i,t}$: Equivalized household total disposable income in year t;
- $y_{i,0}$: Household income in the initial year;
- X_i : Vector of explanatory variables
- ε_i: Error term.

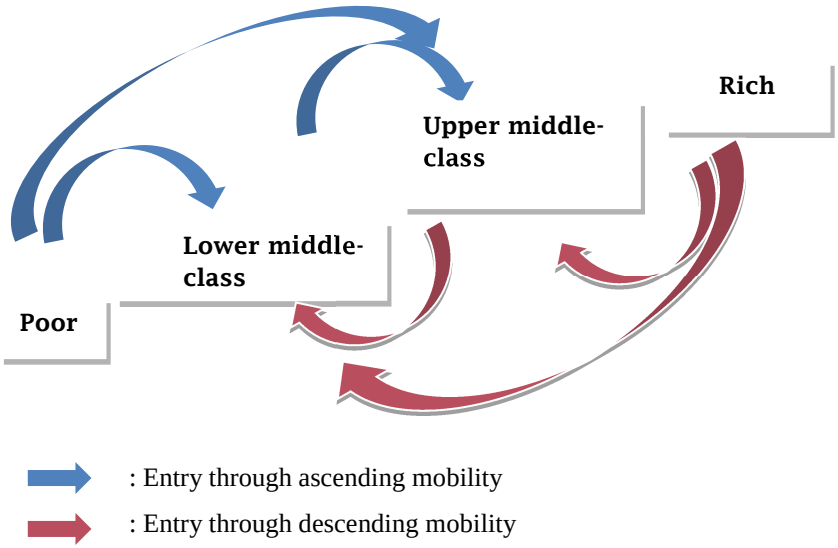
We estimate three models with the following dependent variable: total income change (overall mobility), income gain (absolute upward mobility), and income loss (absolute downward mobility).

5.2. Empirical model for relative mobility: estimating the probability of upward or downward transition

To assess the drivers of relative mobility, we turn to an analysis in terms of transition. Figure 3.4 is a schematic representation of the transitions. The arrows from above represent upward mobility, and the arrows at the bottom represent downward mobility. As we can see, households can join a class through ascending or descending mobility, and they can skip one or two classes in the process (for instance, a poor household that has joined the upper-middle class or the rich by 2013). Thus, transitions into the lower middle-class may be due to (1) upward transition from poverty, (2) downward mobility from the upper middle-class, (3) downward mobility from the rich. On the other hand, transitions into the upper middle-class may result from (4) upward transition from poverty; (5) upward transition from lower middle-class; (6) downward transition from the rich. To simplify the analysis, we discuss the

determinants of each transition from the perspective of the initial income class separately. Due to the number of observations and the limited relative mobility (Section 0), we choose not to use the sample of rich households and set the transitions (3) and (6) aside.

Figure 3.4 Ascending and descending transition



Source: Author

To disentangle the mechanisms behind entry in or exit out of the middle-class, we estimate three models with multinomial dependent variables, the income groups of destination being the possible outcomes. The first one is on the initially poor households, the dependent variable having four possible outcomes: not mobile (poor in 2013), lower middle-class, upper middle-class and rich. The second one is on the initially lower middle-class households; the dependent variable has four possible outcomes: poor, not mobile (lower middle-class in 2013), upper middle-class and rich. The last one is on the initially upper middle-class, the dependent variable having four possible outcomes: poor, lower middle-class, not mobile (upper middle-class in 2013), and rich. The outcome "*not mobile*" is taken as the reference outcome. The model specification is as follows:

[Equation 3.6]

$$\begin{cases} \Pr(income\_group = 1|X_i) = \frac{\exp(\beta_j X_i)}{1+\sum_{k=1}^{m}(\beta_j X_i)} \\ \Pr(income\_group = 0) = \frac{1}{1+\sum_{k=1}^{m}(\beta_j X_i)} \end{cases}$$

With:

- X_i: Vector of explanatory variables;
- β_j: Vector of coefficients to be estimated.

Due to the nature of the dependent variables, the most appropriate estimator is the multinomial logistic.

5.3. Estimation issues

Before running the estimations, we need to address some estimation issues pertaining to the Independence of Irrelevant Alternatives assumption (IIA) for the multinomial logit, and measurement errors of the outcome variable related to endogeneity issues and unobserved heterogeneity.

The IIA assumes that the odds ratios in a multinomial logistic model are independent of the other alternative. In other words, this means that adding or deleting alternatives should not affect the odds among the remaining variables. Tests for this independence assumption exist, but Long and Freese (2006) note that they are not totally reliable since their results are often contradictory, and some simulations (for instance, Cheng and Long, 2005) [119] demonstrated that they are not useful for assessing violations of the IIA property. Long and Freese (2006: 244) further state that "*care in specifying the model to involve distinct alternatives that are not substitutes for one another seems to be reasonable advice.*" In the end, we have to make sure that the alternatives are as dissimilar as possible and are not hierarchized.[120] After running the Hausman-McFadden (HM) and the Small-Hsiao (SH) tests on all our specifications, we indeed found that if the HM test validates the IIA of all models, only exceptionally did the SH turn similar results. In our case, we assume that the method used to construct our income classes (section 2.2), strongly rooted in the concept of group-identity, ensures that the four classes (alternatives) are distinct. Besides, our alternatives are not hierarchized, thus motivating the use of multinomial logistic.

[119] As cited by Long and Freese (2006).

[120] The alternatives would be hierarchized if the options are organized in a sequential way. This would be the case in the choice of public transportations with the following options: grey or green tramway, blue or red bus, subway. The first level of choice consists in choosing between tramway, bus and subway, and the second level of choice consists in choosing the type of tramway (grey or green) or bus (blue or red). The modelization of job market status is another example. The first step involves the distinction between particitpation and non-particiation in the job market, and in the second step, there are two options: formal or informal employment.

Measurement errors are nearly unavoidable in distributive analysis because the vector of welfare (income, consumption, earnings), dependent upon the declaration of the interviewees and imputation methods, cannot be measured perfectly. There is a risk that part of the mobility measured based on these variables is just mere statistical artifact. The measurement errors may also result in a spurious negative correlation and attenuation bias due to the fact that what is observed is not the *true* income but reported income (Fields et al., 2003b). Besides, endogeneity issues arise from the initial household income which is part of the explanatory variables in all estimations. To control for measurement errors and endogeneity issues, we follow Fields et al. (2003b), Woolard and Klasen (2005), and Brand-weiner and Francavilla (2015), among others, and use a two-stage least squares (2SLS) approach. The initial income is predicted using an identifying instrument (the equivalized household expenditure in 2010), and another exogenous variable, the size of dwelling in square meter. As noted by Fields et al. (2003b), no correction can perfectly get rid of measurement issues, but instrumentation at least corrects it partially.

The control function is the most appropriate for instrumentation in the presence of multinomial logistic models (Petrain and Train, 2010; Wooldridge, 2015), and when the relationship between the outcome and the endogenous variable is non-linear, or more precisely if its shape can be affected by unobserved factors, which may be the case between income mobility and initial income (Fields et al., 2003a). The control function approach consists in first running an OLS regression on the initial income using the set of predictors mentioned above. The predicted residual from this estimation is then integrated into the multinomial logistic equation. The instruments must respect the standard conditions of identification and independence with the residual of the mobility equation (Kuepie, Nordman, and Roubaud, 2009) in order to get consistent estimates. As an additional correction for the measurement errors, we bootstrap the estimation processes to compute robust standard errors.

5.4. Explanatory variables

According to the literature on economic mobility, the well-being of households is supposedly determined by two sets of factors: demographic and economic ones. In addition, they make the distinction between the initial level (during the year of origin) and the changes in these factors during the period generally referred to as demographic or economic events. The latter refers to the household's composition and characteristics (size, the proportion of dependent

members), and the characteristics of the household head (age, gender, education). The set of economic variables are grouped into the sources of income for the household (labor and non-labor sources of income) and the situation of the household head on the job market (employment, occupation and registration status).

Drawing on the literature on vulnerability allows us to enrich this setting. Hoddinott and Quisumbing (2008) survey the concept and quantitative tools for analyzing vulnerability. According to their paper, "vulnerability" can be defined as uninsured exposure to risk that translates into welfare losses or, in other words, into descending economic mobility. Those risks refer to various shocks that the households have to face and that contribute to deteriorating their well-being. Shocks can either be covariant with equal impacts on many households of a delimited perimeter (for instance, natural disasters or price increase) or idiosyncratic with impact restricted to a specific household (for instance, illness), though the distinction can be ambiguous. Accordingly, the possession of assets can be seen as a risk management mechanism. In this framework,[121] assets comprise the set of demographic and economic characteristics we mentioned above (physical, natural, financial, social, economic capital and labor). As pointed by Hoddinott and Quisumbing (2008), the rich specification used by Dercon and Krishnan (2000) in their empirical investigation of the impacts of shocks on the logarithm of consumption could befit our study. Unfortunately, the variables available in our dataset allow us to capture limited shocks compared to those mentioned in both papers, and only a limited set of demographic and economic features.

In the absence of solid literature foundations on the empirical determinants of mobility in Turkey, we choose to adopt an incremental approach, in which we start by estimating a baseline model and then test various sets of the potential determinants mentioned above. The baseline specification is as follows:

[Equation 3.7]

$$Y = \alpha_1 + \beta_0 \ln y_{i,0} + \beta_1 Demography_{i,0} + \beta_2 Emp\_status_{i,0} + \varepsilon_i$$

Where Y is either the variation in the logarithm of income in the estimation of absolute mobility Equation 3.5 or the probability of moving into a different class in 2013 in the estimation of relative mobility Equation 3.6; $Demograhy_{i,0}$ is the vector of demographic

[121] See Hoddinott and Quisumbing (2008) for the details on the setting and conceptual framework.

variables in 2010 (column 1 of Table 10); and $Emp\_status_{i,0}$ is the self-defined employment status in 2010.

The second specification, given by Equation 3.8, aims at identifying the importance of financial assets in middle-class mobility. To Equation 3.7, we add $Asset_{i,0}$ which is a vector of dichotomous variables on the use or access of the physical assets and private or public transfers in 2010 (column 2 of Table 10):

[Equation 3.8]

$$Y = \alpha_1 + \beta_0 \ln y_{i,0} + \beta_1 Demography_{i,0} + \beta_2 Emp\_status_{i,0} + \beta_3 Asset_{i,0} + \varepsilon_i$$

The third specification, given by Equation 3.9, focuses on the situation of the household head on the labor market. In this specification, $Emp\_status_{i,0}$ is replaced by a more disaggregated variable of employment status that allows us to make the distinction between self-employed, employees, and employers. $Job\_market_{i,0}$ is a vector of dichotomous variables that takes the value of 1 for the occupation and employment status, sector and type of activity in 2010 (column 2 of Table 10):

[Equation 3.9]

$$Y = \alpha_1 + \beta_0 \ln y_{i,0} + \beta_1 Demography_{i,0} + \beta_4 Job\_market_{i,0} + \varepsilon_i$$

In the fourth, fifth and sixth specifications, the explanatory variables are the changes in the situation of the households and the household heads that occurred during the period (for instance, whether the amount of private transfers has increased or decreased) rather than the initial "level" of these variables. In other words, $Demograhy_{i,0}$, $Asset_{i,0}$ and $Job\_market_{i,0}$ of Equation 3.7, Equation 3.8 and Equation 3.9 are respectively replaced by the changes in the demographic variables $\Delta\, Demograhy_{i,0}$, the use/access to assets $\Delta\, Asset_i$ and the changes in the job market situation of the household head $\Delta\, Job\_market_i$.

Finally, the seventh specification, given by Equation 3.10, introduces variables measuring the exposure to idiosyncratic shocks in 2010 $Shock_{i,0}$ and the changes in these variables $\Delta\, Shock_{i,0}$.

[Equation 3.10]

$$Y = \alpha_1 + \beta_0 \ln y_{i,0} + Demography_{i,0} + \beta_2 Emp\_status_{i,0} + \beta_3 + \beta_5 Shock_{i,0} + \beta_6 \Delta\, Shock_i + \varepsilon_i$$

In the end, conditioning on the data, our explanatory variables listed in Table 3.10 are grouped into three categories: i) demographic factors, ii) economic factors, and iii) variables measuring exposure to idiosyncratic shocks.

Table 3.10 List of explanatory variables available in the dataset

	Demographic factors	**Economic factors**	**Exposure to idiosyncratic shocks**
Households	**Demographic characteristics** - Size - Proportion of children below 7 - Proportion of children between 7 and 14 - Proportion of retiree - Proportion of active members	**Physical assets** - Possession of a mobile phone - Possession of a car - Access to private transfers - Access to social allowances - Use of credit	**Exposure to financial shocks** - Capacity to face unexpected financial expenses **Exposure to health shocks** - Number of members suffering from chronic illness or condition
Household heads	**Demographic characteristics** - Gender - Age - Age squared - Highest education attained	**Employment status** - Regular - Casual - Employer - Self-employed - Unpaid family worker **Occupation status** - Managers - Intermediate profession - Skilled worker - Low-skilled worker **Economic activity** - Agriculture - Industry - Service (private and public) - Academic - Social **Registration to social security status** - Registered - Not registered **Type of contract** - Unlimited duration contract - Limited duration contract - Work occasionally without a contract - Temporary job for students	**Exposure to financial shocks** - Loss of main job* **Exposure to health shocks** - Limitation in daily activities because of health problems ongoing for at least 6 months - General health status

* Its counterpart "Getting a job" can be seen as change in a variable of the economic factor "employment status" and is also added to the set of explanatory variables.

6. Main results on the determinants of absolute mobility

Being one of the very first studies that propose an empirical investigation of income mobility in Turkey, our approach aims at identifying among the aforementioned set of explanatory variables the determinants of the mobility of the middle-class in Turkey. Since we adopt an instrumental approach, we check the validity of the instruments for each estimation. Those tests are performed after each 2SLS-estimation on the non-bootstrapped models.[122] A significant p-value confirms that the model is not underidentified, while a non-significant statistic validates the absence of overidentification. After verification, we find that the instruments are robust to the tests of underidentification (Anderson LM statistics), weak identification (Cragg-Donald Wald F-statistic), and overidentification (Sargan's chi-squared) for the models of *overall* and *upward mobility*. The F-statistics on the explanatory power of our instruments for the models on *downward mobility* are generally small (inferior to 10) even if significant, and they sometimes pass the test of overidentification by a small margin.[123] We thus treat the associated results with caution, mostly for benchmark purposes, in contrast with overall and upward mobility. For the sake of concision, most regression outputs are in the Appendix. Like Fields et al. (2003b), there are not many significant variables.

6.1. Determinants of absolute mobility within the lower middle-class

The main outputs for this section are in Appendix 3.1. Due to a large number of estimations and explanatory variables, the results for $Demography_{i,0}$ and $Emp\_status_{i,0}$ are reported only in the baseline models. We first note that most variables are not significant in the estimations of downward mobility. Among the significant ones, the proportion of retired members, having a household head that is educated reduces income losses, while working in the industrial or private sector in the base year tends to increase income losses of the households.

Except for the initial income level, the effects of most variables on overall and upward mobility are as expected. For instance, the proportion of children below 14 has a negative effect, whereas the initial level of education of the household head (in comparison to not

[122] We use the Stata command *ivreg2* to perform these tests.
[123] This is further discussed in section 8.1.

having graduated) has a positive effect. This is consistent with the findings of Aristei and Perugini (2012) on the role of household composition in European countries. When significant, the coefficient of initial income is positive, suggesting that households with higher initial income get more income gains, which would cohere with the theory of cumulative advantage that says that it is easier for the richer agents to strengthen their position, while the poorer agents struggle to catch up. Most notably among the significant variables (only at 10%) in the estimations of overall and upward absolute mobility, having a female head has positive effects on income gains. Since the coefficients of initial income and gender are weak (significant at only 10%) and not stable, we keep this result in mind and come back to this latter.

Concerning assets, when the households use private transfers in the base year, the effect on mobility is negative, but the effect is reversed when the households get more private transfers. In a report on the effect of the economic crisis on the families in Turkey, TEPAV, UNICEF, and The World Bank (2009) note that most households, tend to rely on informal safety nets including borrowing from various sources (from family and friends) in the time of needs. In that sense, receiving such transfers in the base year is an indication of the vulnerability of the households, but as an additional source of income, they help to improve their welfare.

Regarding the job market variables, positive effects are observed for working in public administration (on overall mobility) and a positive change in the status of registration to social security indicating benefits from formal employment. However, household heads benefiting from social security registration in their job in the base year are not guaranteed to get income gains by the end of the period. Finally, the significant results on the exposure to idiosyncratic shocks are consistent. While good health conditions of the household heads and the members (the number of ill members) help in securing income gains, negative shocks such as losing a job or worsening health tend to be detrimental to the households.

6.2. Determinants of absolute mobility within the upper middle-class

The main outputs for this section are in Appendix 3.2. Few variables are significant for explaining absolute mobility in the upper middle-class. On the expected ones, the number of children between 10 and 14 years seems to have a negative effect on overall mobility within

the upper middle-class while getting a phone or car is associated with more potential income gains during the period.

The most noticeable results are the positive effect of initial income as well as tertiary-level education on overall and upward mobility similar to the results for the lower middle-class. The former, which we found on the lower middle-class sample too, is somewhat unusual regarding the literature (for instance, Aristei and Perugini (2012) find the opposite effect in European countries). We examine this further in section 8.1.

The effect of the proportion of retired members is quite puzzling. Indeed, it has a mitigating effect on income loss for the lower middle-class (e.g., in Appendix 3.1.1.), whereas in the present case for upper middle-classes, it has a mitigating effect on income gains (e.g., in Appendix 3.2.3). Maybe, the explanation has more to do with the system of pension in Turkey that has supported the bottom 40% of the population between 2002 and 2011 and explains why those between 50-65 years were more likely to become middle-class according to Azevedo and Atamanov (2014). It does help explain how an additional income from the retired members may help the lower middle-class, but since it is not a wage-like level of income, it is not enough to clear an additional income gain for those initially in the upper middle-class.

Results on the job market variables are somewhat weak (mostly with a significance of 10%). On the one hand, the variables "employer," "limited contract," and "get registration" have positive effects on upward mobility, and working in public administration increases the potential overall gain. On the other hand, having a regular job (in contrast with a casual one) has the opposite effect. Since no other sector variable is significant, it may just be driven by individuals who still work regularly in 2013 but in less lucrative jobs.

Finally, contrary to the lower middle-class, almost none of the variables of exposure to idiosyncratic shocks are significant. As noted by the World Bank (2014), the upgraded health system has made Turkey's population in better health and less vulnerable to "*catastrophic health events*." Thanks to thar, the upper middle-class are probably among the most well-endowed to face up such risks. An additional potential reason why those variables are not sources of mobility may lie in the Turkish households coping mechanisms. TEPAV et al. (2009) observe that in the aftermath of the economic crisis in 2008-2009, the households tended to deploy strategies that preserved their expenditures in health or education-related items, going as far as reducing their food consumption for instance.

7. Main results on the determinants of relative mobility

The base outcome that has been omitted and with reference to which we can interpret the sign of the coefficients, in all estimation, is "no mobility." To interpret the coefficients, we use the Relative Risk Ratios (RRR) that are quite intuitive. RRRs are obtained by exponentiating the coefficients. For instance, the coefficient for *secondary education* in column (1) of Table 3.13 is -1.641. If the RRR is superior (respectively inferior) to 1, it means that lower middle-class households with secondary-educated heads are more likely (less likely) to experience transition into poverty than the reference groups (households with illiterate or literate but not graduated heads) when the other variables are held constant. In our case, the RRR corresponds to $e^{-1.641} = 0.194$. Thus, lower middle-class households with secondary educated heads are 80.6% (1 – 0.194) less likely to experience transition into poverty than the households with non-educated heads. In comparison with the previous estimates, some effects are stronger in terms of significance and magnitude. For the sake of concision, only variables with significant coefficients are reported in the tables of this section.

7.1. From poverty to the middle-class

We start with the sample of initially poor households. Unsurprisingly, knowing the low transition rate from poverty to the rich group, no variables are significant in explaining this transition. Results in Table 3.11 indicate that coefficients for gender are positive again, and while they still are significant only at 10%, these results are stable in all specification: a poor household with a female head is at least 4 times more likely to become upper middle-class (column 1) compared to a poor household with a male head. We comment on this effect thoroughly in section 7.2.

Another recurring result relates to the positive effects of initial income we also find for absolute mobility in the middle-class. As we can see, the coefficients are strong (significant at 1% in almost all specifications) even if the magnitude of the effect is small: one unit increase in the logarithm of initial income would increase the likelihood of becoming lower middle-class by at most 0.11% points (column 1) and upper middle-class by at most 0.164% (column 4). Those results again seem to go against the idea of convergence in well-being for the poorest, that, for instance, Fields et al. (2003b) find on the whole sample and sub-samples of poor and non-poor households in Indonesia, Spain, South Africa and Venezuela. At the very

least, we can posit that origin-dependence may be more constraining for social ascension than for marginal variations in income. We discuss this further in section 7.3.

Table 3.11 Multinomial logistic estimates on the probability of exiting poverty and reaching Lower or Upper MC (reference= remain poor) – Demography, Assets

	Demography		**Assets**		**Change assets**	
	(1)	(2)	(3)	(4)	(5)	(6)
	Lower MC	Upper MC	Lower MC	Upper MC	Lower MC	Upper MC
Initial income	**0.00110*** **	**0.00135*** **	**0.000901*** **	**0.00128** **	**0.000986*** **	**0.00134***
	(0.000235)	(0.000493)	(0.000306)	(0.000622)	(0.000338)	(0.000696)
Household size	0.0426	0.235	-0.0284	**0.238***	0.0368	0.203
	(0.0630)	(0.165)	(0.0560)	(0.144)	(0.0761)	(0.220)
Children below 7	**-1.093***	-2.692	-1.199	**-2.755***	-1.205	-2.778
	(0.593)	(1.753)	(0.734)	(1.507)	(0.793)	(1.827)
Children10-14	-0.987	-2.710	-0.977	**-2.749***	-0.985	-2.557
	(0.636)	(1.654)	(0.630)	(1.554)	(0.615)	(1.725)
Proportion retired members	**-4.249** **	-1.484	**-4.149***	-1.462	-3.553	-1.560
	(2.128)	(2.341)	(2.421)	(3.100)	(2.210)	(2.448)
Gender	-0.467	**1.392***	-0.370	**1.513***	-0.460	**1.513***
	(0.368)	(0.779)	(0.399)	(0.822)	(0.392)	(0.841)
Proportion active	**1.057** **	1.317	**0.865***	1.407	**1.075** **	1.430
	(0.448)	(0.975)	(0.454)	(1.097)	(0.458)	(1.287)
Unemployed	**-1.170** **	-1.433	**-1.063** **	-1.421	**-1.147** **	-1.590
	(0.469)	(55.25)	(0.502)	(21.70)	(0.529)	(30.82)
Employed	**-0.821** **	-0.371	**-0.767** **	-0.296	**-0.885** **	-0.465
	(0.374)	(0.832)	(0.347)	(0.939)	(0.448)	(0.881)
Phone	-	-	**0.789***	-0.337	-	-
	-	-	(0.428)	(0.769)	-	-
Car	-	-	**0.729*** **	0.641	-	-
	-	-	(0.238)	(0.511)	-	-
Private transfers	-	-	-	-	**0.490** **	**1.252** **
	-	-	-	-	(0.219)	(0.631)
Allowances	-	-	-	-	**-0.620** **	-0.138
	-	-	-	-	(0.249)	(0.681)
No phone	-	-	-	-	**1.132***	0.738
	-	-	-	-	(0.687)	(27.95)
Constant	5.689***	-5.770*	7.135	8.192***	4.546	5.689***
	(1.513)	(3.456)	(278.1)	(1.510)	(3,183)	(1.513)
Observation	914	914	914	914	914	914

The standard errors in parentheses are bootstrapped. *** p<0.01, ** p<0.05, * p<0.1

On the one hand, as we already observed in the descriptive analysis, the initial size of the household does not hamper the exit from poverty, instead, one unit increase in the number of members multiplies the risk of becoming upper middle-class by a factor of 1.31 at least (column 4); but there is a reversal if the family becomes larger during the transition. The trends related to the household composition help in understanding this. When significant, the shares of dependent children (below 14 years) and of retired members are negatively associated with upward transition, whereas the proportion of active members amplifies the likelihood of climbing up to the lower middle-class. That gives us a glimpse of how important income sources are in the transition into the middle-class through upward mobility for Turkish households, as already noted by Şeker and Dayıoğlu (2015). This obervation is backed up by the coefficients of unemployment which decreases the probability of joining the lower middle-class by at least 65% (column 3).

On the other hand, most job market variables are not significant and some results are quite puzzling (Table 3.12). Whether the household head is employed or unemployed (with reference to being inactive), the probability of entering the lower middle-class is reduced. When we control for the type of contract and use more disaggregated employment status (being a regular worker, employer and being self-employed), none of these variables is significant.[124] On the contrary, with such controls, we find that poor households with an unlimited contractual head are more likely to become upper middle-class. Together with the negative coefficients of "employed" and "regular" (for transition into the upper middle-class), this result may suggest that although a regular source of income is necessary, not every kind of job provides sufficient earnings to transition into an upper class. Also unexpected, no education variable is significant to explain escape from poverty even if there had been more upward mobility among households with tertiary-educated households (Section 4.4).

Finally, household assets play rather important roles. Having a mobile phone or a car initially helps the household improve their position in the income distribution. The relationship with upward transition is reversed whether the households get more private transfers (positive) or more social allowances (negative for transition into lower middle-class). This may reflect different situations. On the one hand, private transfers may come in complement to the other income sources of some households and help them improve their welfare situation, while on the other hand, only the most vulnerable households receive social allowances enough for

[124] The results are not reported.

them to secure their living but not enough to propel them out of poverty. Romano and Penpecioğlu (2009) explain how, historically, informal networks have played a major role in upward mobility in Turkey by providing opportunities of employment and *protective mechanism* to the newcomers in the urban areas mostly in the 1980s. Even though the efficiency of such mechanisms has worn off since the 1990s, most "vulnerable" households resorted to them in the aftermath of the crisis (TEPAV et al. , 2009).

Table 3.12 Multinomial logistic estimates on the probability of exiting poverty and reaching Lower or Upper MC (reference= remain poor) – Job market, shocks

	Job market				**Change job market**		**Idiosyncratic chocs**	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Lower MC	Upper MC	Lower MC	Upper MC	Lower MC	Upper MC	Lower MC	Upper MC
Initial income	**0.0012*** **	**0.0016*** **	**0.0012*** **	**0.0015*** **	**0.0011*** **	**0.0013*** **	**0.0011*** **	**0.0014***
	(0.000261)	(0.000623)	(0.000289)	(0.000514)	(0.000304)	(0.00049)	(0.00023)	(0.00070)
Household size	0.0508	**0.304** **	0.0570	**0.267** **	0.0443	0.215	0.0506	**0.270***
	(0.0613)	(0.152)	(0.0616)	(0.125)	(0.0781)	(0.132)	(0.0755)	(0.154)
Children below 7	**-1.288***	**-2.969** **	-1.282	-3.093	-1.294	-2.599	-1.320	-2.924
	(0.666)	(1.497)	(0.869)	(1.883)	(0.805)	(1.715)	(0.963)	(2.037)
Children10-14	**-1.143***	**-2.940***	**-1.294***	-3.102	**-1.277** **	**-2.808***	-1.123	-2.759
	(0.655)	(1.785)	(0.677)	(2.122)	(0.549)	(1.638)	(0.750)	(1.739)
Proportion retired members	**-3.528** **	-0.624	**-3.350** **	-0.280	**-3.043** **	-0.0405	**-4.349***	-1.244
	(1.457)	(2.237)	(1.425)	(2.415)	(1.464)	(1.982)	(2.469)	(3.305)
Gender	-0.224	**1.457***	-0.141	**1.578** **	-0.108	**1.432** **	-0.469	**1.548***
	(0.329)	(0.791)	(0.361)	(0.788)	(0.374)	(0.687)	(0.397)	(0.909)
Proportion active	0.484	0.399	0.227	0.259	0.498	0.792	**1.047** **	1.541
	(0.417)	(0.919)	(0.423)	(1.007)	(0.367)	(0.884)	(0.497)	(1.231)
Unemployed	-	-	-	-	-	-	**-1.461** **	-1.496
	-	-	-	-	-	-	(0.585)	(9.758)
Employed	-	-	-	-	-	-	**-0.742***	-0.452
	-	-	-	-	-	-	(0.401)	(0.829)
Regular	0.230	**-17.30** **	-	-	-	-	-	-
	(2.688)	(7.761)	-	-	-	-	-	-
Unlimited contract	-0.305	**18.49** **	-	-	-	-	-	-
	(2.630)	(7.779)	-	-	-	-	-	-
Limitation	-	-	-	-	-	-	**0.435***	0.346
	-	-	-	-	-	-	(0.253)	(0.441)
Constant	-6.54***	-13.1***	-6.79***	-12.1***	-6.98***	-13.0***	-4.089**	-11.00*
	(1.696)	(4.961)	(1.708)	(3.147)	(1.609)	(3.586)	(1.697)	(5.738)
Observation	602	602	602	602	602	602	879	879

The standard errors in parentheses are bootstrapped. *** p<0.01, ** p<0.05, * p<0.1

7.2. Inter-class mobility of the lower middle-class

The results on the baseline model and with control for assets are reported in Table 3.13 below. Again, very few variables are significant to explain transition into the rich group. The three major effects discussed in section 6.1 on absolute mobility within the lower middle-class hold in every specification.

First, initial income increases the probability of upward mobility into the upper middle-class: the risk of becoming upper middle-class increases by a factor of 0.998 when the logarithm of initial income increases by one unit.

Secondly, the effect of gender is confirmed: having a female head indeed increases the risk of becoming upper middle-class by 117%. This recurring result seems counterintuitive knowing that the participatory rate of women on the job market has been low during the period and they are more concentrated in low-productive activities. In addition, Tanse et al. (2019) find that men are more likely to climb up the wage distribution.However, a closer look at the characteristics of the women in our sample reveals that most of them declared being inactive in the base year (without any precision on their activity) and most of them are either owner of their house (66.77%) or have rent-free accommodation (18.98%). The explanation seems not to be related to their labor earnings but rather to their "ownership status." Indeed, Combarnous et al. (2018) explain how the status of ownership can be a key differentiating factor between the classes in Turkey because it relieves the households from the expensive rental that would otherwise diminish their real income drastically.

Thirdly, education appears to have more of a mitigating effect on the risk of falling into poverty. For instance, households with tertiary-educated heads have at least 75% less risk of becoming poor compared to the households with non-educated heads. Even households with only primary-educated heads have at least 67% less risk of becoming poor compared with the latter ones.

We did not hold forth on the effects of household size and active members in the case of absolute mobility since the results were not strong and ambiguous, but they stand up more in explaining inter-class mobility. First, large initial size does not hinder the chance of moving upward, instead, those households are less likely to move downward, but these tendencies reverse if the size increases during the transition. Secondly, a one% increase in the number of active members translates into 2.26 times risk of becoming upper middle-class (column 5),

even into 12.54 times risk of becoming rich (column 6). This result coheres with the findings in the literature on the importance of earnings in explaining welfare in general (for instance, as evidenced by Brand-weiner and Francavilla (2015) in Viet Nam) and in Turkey. On the latter, Şeker and Dayıoğlu (2015) find that if the household head's earnings account for 43.5% of poverty exit in Turkey during 2005-2008, the other member's earnings come second with 21% share.

Table 3.13 Multinomial logistic estimates on the probability of exiting lower middle-class (reference = remain lower middle-class) – Baseline and assets

	Baseline			**Assets**			**Change assets**	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Poverty	Upper MC	Rich	Poverty	Upper MC	Rich	Poverty	Upper MC
Initial	-0.000513	**0.00198*** **	-1.84e-05	-0.000636	**0.00197*** **	-0.000372	-0.000661	**0.00194*** **
income	(0.000459)	(0.000534)	(0.000897)	(0.000564)	(0.000455)	(0.00119)	(0.000477)	(0.000422)
Household	-0.123	**0.196** **	-0.152	**-0.147***	**0.190***	-0.344	**-0.157***	**0.200***
size	(0.101)	(0.0823)	(0.215)	(0.0875)	(0.0984)	(0.248)	(0.0904)	(0.106)
Children 10-	**2.815*** **	-0.324	1.274	**2.920*** **	-0.377	2.341	**2.713*** **	-0.437
14	(0.724)	(0.878)	(1.910)	(0.729)	(0.954)	(2.845)	(0.764)	(0.741)
Gender	-0.465	**0.773***	-0.249	-0.532	**0.900***	-0.146	-0.808	0.855
	(0.491)	(0.434)	(2.890)	(0.417)	(0.547)	(1.388)	(0.518)	(0.529)
Tertiary	**-1.747** **	-0.507	1.360	**-1.603** **	-0.764	1.054	**-1.379***	-0.569
	(0.813)	(0.657)	(4.450)	(0.772)	(0.712)	(7.059)	(0.780)	(0.666)
Secondary	**-1.641*** **	-0.409	1.102	**-1.520*** **	-0.584	0.687	**-1.334*** **	-0.467
	(0.512)	(0.481)	(4.069)	**(0.501)**	(0.605)	(3.461)	(0.467)	(0.501)
Primary	**-1.211*** **	-0.0134	-0.832	**-1.181*** **	-0.167	-1.244	**-1.098*** **	-0.0737
	(0.397)	(0.420)	(3.890)	(0.451)	(0.463)	(3.364)	(0.374)	(0.443)
Proportion	0.217	**0.814***	**2.118***	0.338	**0.857***	**2.529***	0.225	0.886
active	(0.557)	(0.467)	(1.214)	(0.519)	(0.499)	(1.408)	(0.552)	(0.600)
Unemployed	-1.435	0.471	**-14.15*** **	-1.571	0.560	**-13.44*** **	-2.013	0.540
	(7.463)	(3.932)	(2.352)	(7.279)	(3.052)	(2.760)	(7.199)	(4.830)
Private	-	-	-	**0.000131*** **	1.89e-05	0.000203	**-0.727*** **	-0.00820
transfers	-	-	-	(3.80e-05)	(4.06e-05)	(0.000238)	(0.251)	(0.246)
No private	-	-	-	-	**-1.188***	0.301	0.380	0.0510
transfers	-	-	-	-	(0.694)	(5.586)	(0.254)	(0.273)
Allowances	-	-	-	0.361	-	-	**0.971** **	0.229
	-	-	-	(0.277)	-	-	(0.429)	(2.339)
Car	-	-	-	**-0.379***	**0.525** **	**1.672** **	0.225	**0.677*** **
	-	-	-	(0.195)	(0.253)	(0.668)	(0.312)	(0.248)
Constant	4.885	-18.47***	-1.737	10.72***	-17.42***	-10.41	5.296	-18.01***
	(3.753)	(4.538)	(9.995)	(2.563)	(2.627)	(10.85)	(4.590)	(3.746)
Observation	927	927	927	927	927	927	927	927

The standard errors in parentheses are bootstrapped. *** p<0.01, ** p<0.05, * p<0.1

The results in Table 3.13 corroborate the findings in section 6.1 regarding private transfers. However, if possessing a car was not found significant before, having a car in the base year multiplies the chances of upward transition into the upper middle-class (by 1.69 times, column 5) and into the rich group (by 5.32 times, column 6) as well as reduces the risk of falling into poverty. Getting a car is also positively associated with transition into the upper

middle-class. Furthermore, receiving more private transfers (during the transition) decreases the probability of falling into poverty while receiving less of them decreases the probability of becoming upper middle-class. This indicates that private transfers seem indeed to complement income and help households to maintain their living standard (or improve them in the case of the poor as seen previously), but that also show that households are relatively dependent on such transfers and make them more vulnerable in the long-run.

Table 3.14 Multinomial logistic estimates on the probability of exiting lower middle-class (reference = remain lower middle-class) – Job market and Shocks

	Job market		**Job market**		**Shocks**	
	(1)	(2)	(3)	(4)	(5)	(6)
	Poverty	Upper MC	Poverty	Upper MC	Poverty	Upper MC
Initial income	-0.000141	**0.00175*** **	-0.000152	**0.00179*** **	-0.000491	**0.00206*** **
	(0.000460)	(0.000506)	(0.000412)	(0.000536)	(0.000436)	(0.000433)
Household size	-0.00469	0.133	-0.0133	**0.145***	-0.124	**0.194****
	(0.124)	(0.140)	(0.105)	(0.0799)	(0.104)	(0.0978)
Children 10-14	**2.925*** **	**-2.262****	**2.541*** **	**-2.285****	**2.864*** **	-0.257
	(0.919)	(0.900)	(0.806)	(1.085)	(0.748)	(0.801)
Gender	0.511	1.224	0.705	**1.377***	-0.632	**0.909****
	(0.805)	(0.759)	(0.688)	(0.743)	(0.396)	(0.441)
Tertiary	**-2.754*** **	-1.102	**-2.546****	-1.055	-1.600	-0.417
	(1.064)	(0.933)	(1.053)	(0.736)	(1.024)	(0.659)
Secondary	**-2.511*** **	-1.243	**-2.442*** **	-1.224	**-1.523****	-0.255
	(0.624)	(0.854)	(0.757)	(0.760)	**(0.610)**	(0.494)
Primary	**-1.865*** **	-1.056	**-1.881*** **	-1.026	**-1.199****	0.0870
	(0.538)	(0.788)	(0.717)	(0.638)	(0.494)	(0.400)
Proportion active	0.161	-0.0727	0.581	-0.0816	0.222	0.649
	(0.842)	(0.797)	(0.768)	(0.744)	(0.563)	(0.440)
Unemployed	-	-	**16.73*** **	2.132	-1.140	0.737
	-	-	(3.798)	(19.16)	(8.053)	(5.006)
Industry	0.597	**1.416****	-	-	-	-
	(0.422)	(0.688)	-	-	-	-
Private service	0.722	**1.005****	-	-	-	-
	(0.459)	(0.507)	-	-	-	-
Scientific and technical	1.006	**1.660****	-	-	-	-
	(2.468)	(0.815)	-	-	-	-
Public administration	-0.390	**1.604****	-	-	-	-
	(17.37)	(0.709)	-	-	-	-
Registered	-0.450	**-0.759****	-	-	-	-
	(0.359)	(0.311)	-	-	-	-
Limitation	-	-	-	-	0.0423	**-1.019*** **
	-	-	-	-	(0.319)	(0.308)
Health status	-	-	-	-	**-0.346***	0.227
	-	-	-	-	(0.200)	(0.208)
Less ill members	-	-	-	-	-0.0365	**0.911*** **
	-	-	-	-	(0.271)	(0.316)
Less limitation	-	-	-	-	-0.0623	**1.410*** **
	-	-	-	-	(0.365)	(0.450)
Constant	1.938	-16.62***	1.519	-16.56***	5.950	-22.04***
	(4.305)	(4.816)	(3.886)	(4.472)	(4.174)	(4.056)
Observation	593	593	593	593	927	927

The standard errors in parentheses are bootstrapped. *** p<0.01, ** p<0.05, * p<0.1

The results on idiosyncratic shocks are consistent with the findings in section 6.1 (Table 3.14, columns 5 and 6). Regarding the job market variables, unemployment is found once again to be detrimental for upward mobility into the rich group; it even increases the risk of becoming poor. Interestingly, households with their head working in any other sector than agriculture in the base year are more likely to move into the upper middle-class even more so for the households whit their head working in scientific and technical activities (the risk is 5 times higher, Table 3.14, column 2). This result is reminiscent of the role played by urbanization and the subsequent structural change into the formation of the new middle-class we talked about in Section 1.

7.3. Inter-class mobility of the upper middle-class

The results are reported in Table 3.15 and Table 3.16 below. Interestingly, some variables that were significant for the lower middle-class like gender, household size and the possession of a car are not significant or ambiguous (like the proportion of children), whereas others that did not explain absolute mobility in section 6.2 turn out to be significant in explaining inter-class transitions for upper middle-class households. That is the case for some variables of occupation. The only significant variables here are the registration status and a switch into work in industry or services that reduce the risk of downward transitions while switching to a job in agriculture is detrimental for upward mobility into the rich group. Furthermore, like in the case of absolute mobility (section 6.3), the variables of exposure to idiosyncratic risks are not significant except the decrease in the number of ill members (Table 3.15).

We notice that the results on initial income, education level and proportion of active members results are strongly significant and corroborate the previous findings (Table 3.16). More so, not only does a higher level of initial income increases the probability of upward transition into the rich group, but it also prevents households from falling into poverty or the lower middle-class (even if the magnitude of the effect is pretty marginal). At the upper middle-income level, higher education of the family head reduces the risk of falling into the lower middle-class by at least 77% (tertiary education, column 6).

Table 3.15 Multinomial logistic estimates on the probability of exiting upper middle-class (reference = remain upper middle-class) –Job market and Shocks

	Job market			**Shocks**		
	(11)	(12)	(13)	(14)	(15)	(16)
	Lower MC	Lower MC	Rich	Poor	Lower MC	Rich
Initial income	**-0.000407***	**-0.000336**	**0.000996*****	**-0.00134****	**-0.000426****	**0.00111****
	(0.000220)	(0.000213)	(0.000329)	(0.000522)	(0.000208)	(0.000434)
Children below 7	**-2.124***	-1.576	-2.197	-0.731	**-1.851***	-1.905
	(1.243)	(1.121)	(1.787)	(3.266)	(1.124)	(1.971)
Proportion retired members	-0.603	-0.946	-1.278	-8.213	-0.544	-0.102
	(0.625)	(0.618)	(0.906)	(8.919)	(0.742)	(1.580)
Age	**-0.108****	**-0.121****	-0.0930	**-0.362****	**-0.110*****	-0.0744
	(0.0541)	(0.0529)	(0.0852)	(0.142)	(0.0390)	(0.0916)
Age squared	0.000768	**0.000800***	0.000715	**0.00314****	**0.000744****	0.000647
	(0.000487)	(0.000474)	(0.000829)	(0.00136)	(0.000356)	(0.000941)
Tertiary	**-1.691*****	**-1.579****	0.311	-0.856	**-1.661*****	0.470
	(0.605)	(0.623)	(6.639)	(4.920)	(0.552)	(6.573)
Secondary	**-1.737*****	**-1.708*****	0.700	-2.511	**-1.741*****	0.908
	(0.590)	(0.616)	(6.647)	(5.079)	(0.486)	(6.637)
Primary	**-1.093***	**-1.052****	1.214	-0.952	**-1.078****	1.470
	(0.586)	**(0.515)**	(6.712)	(4.830)	(0.483)	(6.614)
Proportion active	**-1.695*****	**-1.578*****	-0.212	-1.981*	**-1.546*****	0.370
	(0.493)	(0.541)	(0.671)	(1.152)	(0.571)	(0.753)
Employed	-	-	-	1.416	-0.563	-0.672
	-	-	-	(4.384)	(0.657)	(1.275)
Registered	**-0.661****	-	-	-	-	-
	(0.316)	-	-	-	-	-
Become agriculture	-	0.443	**-15.46****	-	-	-
	-	(5.104)	(7.233)	-	-	-
Become ind/serv.	-	-0.0323	-0.631	-	-	-
	-	(2.412)	(4.977)	-	-	-
Get job	-	-	-	**-16.61*****	-0.570	1.057
	-	-	-	(2.726)	(0.720)	(1.354)
Less ill members	-	-	-	0.733	0.411	**1.268****
	-	-	-	(0.890)	(0.314)	(0.510)
Constant	11.26***	11.33***	-14.90*	25.30**	12.22***	-14.96
	(3.731)	(4.031)	(9.043)	(10.10)	(3.854)	(9.795)
Observation	403	403	403	625	625	625

The standard errors in parentheses are bootstrapped. *** p<0.01, ** p<0.05, * p<0.1

While it favors upward mobility for the lower middle-class (Section 7.2), the proportion of active members in a household plays more in terms of securing the position for the upper middle-class. Indeed, the initial number of working members in a household reduces the risk of falling into lower middle-class by at least 75% (column 2); while having additional active members reduces the risk of falling into the former class by 67% and into poverty by 89% column 3 and 4). This substantiates the cumulative advantage hypothesis mentioned above. Combarnous et al. (2018) explain that education and occupation are cleaving features in Turkey, and through "social reproduction", people with better background tend to be better educated and have better jobs, these trends have been confirmed by the World Bank (2014), ensuring them a better social position as well. Even though an analysis of intergenerational

mobility would be necessary to unveil the intricate mechanism behind it, our results seem to step in that direction.

One noticeable difference with the lower middle-class is the significant effects of the proportion of retired members (Table 3.16). Nevertheless, the effect is weak, significant only in the baseline models (column 1 and 4). We notice that, like in the case of absolute mobility within the lower middle-class (section 6.2), the proportion of retirees reduces the risk of downward mobility. At the same time, there is a weak effect in terms of reducing the probability of upward transition into the rich similar to the findings on absolute mobility in Section 6.3. This may have to do with the divide within the retired population between the secure and "vulnerable" (Combarnous et al., 2018), which is another byproduct of the "social reproduction" discussed in section 6.3. The secure retirees generally benefit from the ownership of their home and support from the younger generations they "invested in" when they were still active, while the vulnerable retirees struggle with the payment of rents rendering them less economically stable.

Our results seem to indicate that households with more retired members tend to be stuck in their initial class (this is consistent with the results in section 7.1); with an income stable enough to secure their position thus protecting them from downward transitions, but not high enough to help them climb the ladder. The strong significant non-linear effect of age provides further support and also introduces elements that question the "stability" of the position of the retirees. Indeed, the results suggest that the elder the upper middle-class household heads, the less likely their households experience downward mobility (the risk of falling into the lower middle-class is reduced by at least 10% by the variable *Age*, column 2). However, this mitigating effect wears off past a certain age as suggested by the positive coefficients of Age^2. This may also be related to the insecurity of earnings for those that continue working in the informal sector past their retirement (World Bank, 2010), although this may be more accurate for the households at the lower middle-class level. We also said in Section 4.4 that pensions have helped many retired people to improve their welfare and cross the USD 10 poverty line between 2002 and 2011 (Azevedo and Atamanov, 2014), but they are not necessarily enough to secure the standards of living at the upper middle-class level.

Table 3.16 Multinomial logistic estimates on the probability of exiting upper MC (reference = remain upper MC) – Baseline and Assets

	Demography		**Change demography**		**Assets**			**Change assets**		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Poor	Lower MC	Poor	Lower MC	Poor	Lower MC	Rich	Poor	Lower MC	Rich
Initial income	**-0.00107****	**-0.000422***	**-0.000871****	**-0.000485*****	**-0.00104***	**-0.000428***	**0.00101*****	**-0.00111***	**-0.000497****	**0.000898*****
	(0.000513)	(0.000217)	(0.000350)	(0.000173)	(0.000618)	(0.000247)	(0.000315)	(0.000622)	(0.000235)	(0.000346)
Children below 7	-0.600	-1.865	**-7.073****	-3.194	-0.743	-1.938	-1.747	-1.637	-2.243	-2.119
	(2.207)	(1.251)	(3.402)	(2.062)	(2.938)	(1.423)	(1.939)	(2.767)	(1.418)	(1.849)
Proportion retired members	**-6.784****	-0.690	-0.431	**-1.717*****	-6.587	-0.630	0.00105	-6.790	-0.653	-0.650
	(3.390)	(0.660)	(1.163)	(0.620)	(5.798)	(0.991)	(1.746)	(4.836)	(0.805)	(1.254)
Age	**-0.280****	**-0.108****	**-0.295*****	**-0.0981***	**-0.251***	-0.0813	-0.0703	**-0.324****	**-0.124****	-0.0700
	(0.111)	(0.0540)	(0.0857)	(0.0536)	(0.141)	(0.0638)	(0.116)	(0.151)	(0.0548)	(0.110)
Age squared	**0.00248****	0.000744	**0.00252*****	**0.000811***	0.00204	0.000418	0.000477	**0.00287****	**0.000877***	0.000476
	(0.00105)	(0.000499)	(0.000805)	(0.000492)	(0.00130)	(0.000563)	(0.00120)	(0.00143)	(0.000493)	(0.00107)
Tertiary	-0.783	**-1.652*****	-	-	-0.211	**-1.478****	0.636	-0.816	**-1.662*****	0.473
	(7.012)	(0.483)	-	-	(5.979)	(0.683)	(7.225)	(5.490)	(0.637)	(7.186)
Secondary	-1.928	**-1.716*****	-	-	-1.463	**-1.598*****	0.931	-2.127	**-1.789*****	0.634
	(6.020)	(0.511)	-	-	(7.032)	(0.546)	(7.178)	(5.432)	(0.578)	(7.258)
Primary	-0.480	**-1.086****	-	-	-0.183	**-1.057****	1.372	-0.660	**-1.196****	1.094
	(6.063)	(0.435)	-	-	(5.868)	(0.501)	(7.124)	(5.563)	(0.504)	(7.148)
Proportion active	-1.705	**-1.496*****	**-2.182***	**-1.110****	-1.561	**-1.376*****	0.567	**-2.150***	**-1.603*****	0.397
	(1.194)	(0.533)	(1.166)	(0.504)	(1.273)	(0.504)	(0.731)	(1.216)	(0.528)	(0.956)
Employed	2.036	-0.430	0.289	**-1.098*****	2.407	-0.457	-1.048	2.322	-0.438	-1.355
	(4.800)	(0.595)	(5.484)	(0.344)	(5.120)	(0.542)	(1.306)	(4.416)	(0.799)	(1.174)
Credit	-	-	-	-	-0.403	-0.259	-0.526	0.765	**0.467***	**0.989****
	-	-	-	-	(0.506)	(0.246)	(0.353)	(0.612)	(0.273)	(0.425)
No private transfers	-	-	-	-	-	-	-	0.892	**0.680****	0.218
	-	-	-	-	-	-	-	(0.721)	(0.288)	(0.466)
Allowances	-	-	-	-	1.434	0.342	**-12.97*****	1.528	-0.689	0.628
	-	-	-	-	(2.568)	(0.766)	(1.900)	(8.975)	(12.15)	(9.389)
No allowances	-	-	-	-	-	-	-	1.032	0.241	**-13.46*****
	-	-	-	-	-	-	-	(1.194)	(0.692)	(1.107)
Phone	-	-	-	-	**-2.384****	**-1.186***	-0.236	1.707	1.215	1.605
	-	-	-	-	(0.972)	(0.618)	(6.873)	(6.400)	(2.746)	(8.460)
No phone	-	-	-	-	-	-	-	1.003	0.462	**-13.38*****
	-	-	-	-	-	-	-	(7.393)	(0.688)	(2.015)
Constant	21.46*	11.93***	-15.64*	18.53**	10.50***	-12.06**	22.21	12.72***	-14.77*	22.41*
	(12.71)	(3.765)	(8.952)	(7.383)	(3.083)	(5.259)	(14.71)	(4.400)	(8.703)	(12.86)
Observation	625	625	625	625	625	625	625	625	625	625

The necessity of a somewhat strong safety net to maintain or upgrade the status of the households at the upper middle-class level is confirmed by the findings on assets, starting with the mitigating effect of possessing a phone on downward transitions. Receiving social allowances in the base year reduces the probability of accessing the rich group (column 7), while the effect is the same for the households that were previously recipients of such assistance or private transfers but has got less of them during the transition (column 10). On the one hand, resorting to more credit is a factor of downward transition into the lower group (note that the effect is weak, significant only at 10%), probably related to the financial burden they represent in terms of repayment. On the other hand, households that have contracted more credit are 9.31% more likely to move up to the rich group. Although they seem contradictory at first, both effects align with the findings of Schotte et al. (2018) in South Africa and echo some observations of Combarnous et al. (2018). Through their qualitative investigation, they found that the new middle-class of Turkey tend to contract debt to sustain their living standard and maintain their status, thus exposing themselves to new financial burdens in the medium and long-run. Elfick (2011) also finds a correlation between the use of credit cards and middle-class consumption. Our results suggest that credits for the upper middle-class may also serve the purpose of social ascension because their regular incomes are not enough to propel them out of this class to the rich group.

8. Robustness checks

This section addresses several concerns about the robustness of our results. First, we discuss the case of "*initial income.*" We then propose alternative models to estimate absolute and relative mobility. Although we run the robustness checks for all specifications presented in section 5.4, we only report some results on the baseline specification for illustrative purpose. The robust results are recapitulated in Tables 3.21 and 3.22.

8.1. Initial income: Predicted versus reported income

We motivate the use of instrumentation in section 5.3 as an attempt to correct the potential measurement errors on the vector of income alluded in the literature. Using that approach, the 2SLS and control function regressions delivered the same positive coefficients of initial income when they are significant. Nevertheless, this result may seem suspicious regarding most results in the literature we surveyed in Section 1.3. Fields et al. (2003b) note that the

instrumental variable approach may produce upwardly biased and inconsistent estimations on the relationship between initial income and its variation. More precisely, *"This would occur if the component of initial income that is correlated with the instruments, conditional on the control variables, has a more positive relationship with income change than the component of true initial income that is orthogonal to the set of control variables and instruments"(p. 14).* They thus consider the predicted income and the reported income as alternative indicators of initial income with potentially very different results. Furthermore, the F-statistics for the *downward absolute mobility* model (section 6) are rather small, which would suggest that 2SLS is biased toward the Ordinary Least Squares (Stock, Wright, and Yogo, 2002).[125]

Table 3.17 OLS estimation on absolute mobility - Baseline specification

	Initially Lower MC		Initially Upper MC	
	Overall	Downward	Overall	Downward
Reported initial income	-3.97e-05***	1.84e-05*	-2.23e-05***	1.50e-05***
	(1.44e-05)	(9.54e-06)	(6.45e-06)	(4.98e-06)
Demography	Yes	Yes	Yes	Yes
Emp_status	Yes	Yes	Yes	Yes
Constant	0.477**	-0.0668	-0.157	0.732***
	(0.197)	(0.194)	(0.414)	(0.233)
Observations	593	210	625	314
R-squared	0.129	0.080	0.114	0.099

The standard errors in parentheses are bootstrapped. *** p<0.01, ** p<0.05, * p<0.1

On the one hand, when we re-estimate all models using OLS, we find for all specifications a negative relationship between reported initial income and absolute mobility (change in the logarithm of income), albeit the magnitude of the effect is still as small as with the 2SLS as we can see in column 1 and 2 of Table 3.17. We also run the estimations on the subsample of poor households, and the reported initial income is not significant regardless of the specification.[126] Woolard and Klasen (2005) mention that this can be a demonstrated effect of the measurement errors that tend to result in regressions toward the mean and can, in some instance, be "*mean-reverting*" (Bound, Brown, and Mathiowtez, 2000). On the other hand, we find the same association with relative mobility for both indicators that we identified in Section 7: positive coefficients on upward and negative coefficients on downward transitions (Table 3.18) advocating for the importance of cumulative advantage mechanism related to the economic situation in the base year for inter-class mobility.

[125] As cited in StataCorp (2013).
[126] The results are not reported.

Table 3.18 Multinomial logistic estimation on relative mobility - Baseline specification

	Initially poor		Initially lower MC			Initially upper MC		
	Lower MC	Upper MC	Poverty	Upper MC	Rich	Poverty	Lower MC	Rich
Reported initial income	0.00032***	0.00029	-0.00037***	0.0003**	-1.34e-05	-0.00018**	-0.0002***	0.00016***
	(6.09e-05)	(0.00021)	(0.00011)	(0.0001)	(0.0004)	(8.54e-05)	(3.95e-05)	(5.00e-05)
Demography	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Emp_status	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-2.558**	-7.035**	-12.91***	-20.47***	-19.81**	7.642	7.751***	-1.249
	(1.283)	(3.132)	(1.764)	(2.861)	(9.738)	(8.470)	(1.940)	(6.806)
Observations	916	916	593	593	593	625	625	625

The standard errors in parentheses are bootstrapped. *** p<0.01, ** p<0.05, * p<0.1

A thorough investigation on the reported income data of the ILCS would be necessary to determine the specific type and impact of measurement errors in the data, but, at the very least, the effect of income on inter-class mobility is quite robust to the choice of income indicator and the specifications. With regard to the other determinants (education, status of employment, composition of the household, gender, assets), we find more strongly significant and greater coefficients when we use OLS without instrumentation (bootstrapped or not) suggesting that when the endogeneity of initial income and measurement errors are not controlled for, the effects of other variables on economic mobility tend to be overestimated.

8.2. Alternative model for absolute mobility

Instead of a linear model with the variation of the logarithm of income as the dependent variable, we can estimate the determinants of absolute mobility using a binary regression model. For this purpose, we transform the mobility index into a binary variable that takes the value of one if the average income growth is positive and zero otherwise. Equation 3.5 is changed as follows:

[Equation 3.11]

$$P(upward\_mobility = 1) = \alpha_1 + \beta_0 \ln y_{i,0} + \beta_1 X_i + \varepsilon_i$$

Table 3.19 reports the results of the logit estimations on the baseline specification. The sign of the reported income differs again from the predicted income, and some variables non-significant with 2SLS are significant using OLS. As regards the 2SLS, the magnitudes of the coefficients are not really comparable with those in Section 6 due to the different nature of the dependent variables. Dichotomizing a continuous variable leads to a loss of information:

instead of observing the determinants of a marginal change in the income level, all magnitude of variations, the slightest and the largest ones, are assimilated to "being mobile." Therefore, some effects are stronger or/and greater in magnitude compared to the results in Section 6, suggesting that the explanations behind marginal variation of incomes are not captured by our variables (for instance, natural disasters, loss, or death of a member of the household). Nevertheless, the significance and signs of our main explanatory variables, namely education (secondary and tertiary), initial and change in the status of employment, the proportion of dependent children and active members, the possession of assets, are similar to what we found earlier.

Table 3.19 Logit estimates on the probability of upward mobility - Baseline specification

	Instrumental		Non-instrumental	
	Lower MC	Upper MC	Lower MC	Upper MC
Reported initial income	-	-	-0.000252***	-9.25e-05***
	-	-	(6.00e-05)	(3.29e-05)
Predicted initial income	0.000732**	0.000304**	-	-
	(0.000357)	(0.000149)	-	-
Proportion children 7-10	-1.093	-0.167	-1.386**	-0.756
	(0.737)	(0.954)	(0.644)	(0.949)
Proportion children 10-14	-1.684***	-1.456**	-2.220***	-1.944**
	(0.565)	(0.703)	(0.557)	(0.876)
Proportion retired members	1.430*	0.102	1.112	0.136
	(0.760)	(0.809)	(0.814)	(0.705)
Tertiary	1.074*	1.918***	2.142***	2.402***
	(0.593)	(0.676)	(0.526)	(0.629)
Secondary	0.727**	1.707***	1.384***	1.854***
	(0.366)	(0.589)	(0.317)	(0.543)
Primary	0.453	1.107**	0.850***	0.920
	(0.292)	(0.530)	(0.267)	(0.570)
Proportion active members	0.306	1.229***	0.180	1.112**
	(0.429)	(0.392)	(0.467)	(0.478)
Unemployed	0.480	-1.970**	0.447	-1.991**
	(0.772)	(0.811)	(0.819)	(0.851)
Retired	-0.976*	-0.638	-0.889	-0.582
	(0.539)	(0.645)	(0.603)	(0.443)
Predicted residuals	-0.00102***	-0.000409***	-	-
	(0.000376)	(0.000150)	-	-
Constant	-6.717**	-8.313***	1.085	-2.051
	(3.276)	(2.581)	(1.281)	(1.599)
Observations	927	625	927	625

The standard errors in parentheses are bootstrapped *** p<0.01, ** p<0.05, * p<0.1

8.3. Alternative model for relative mobility

We advocate the use of multinomial logistic for the estimation of relative mobility in section 5.3, but due to the nature of our variables and the concerns regarding the IIA test, we propose an alternative model. Furthermore, the latter provides an additional robustness check on the relationship between predicted and reported initial income and inter-class mobility that we discussed in section 8.1.

By construction, our dependent variables (the class of destination) are ordered, which would justify the use of Ordinal Logistic Models (OLM). However, contrary to the multinomial logistic, they do not provide separate estimates on each alternative. We can identify the drivers of class ascension, but cannot observe the differentiated effects related to any specific class of destination simultaneously like in our preferred model. However, we can run separate estimations for each of the four transitions described in section 5.2 by using different subsamples. The formal specification of the ordinal logistic model (Williams, 2016) is as follows:

[Equation 3.12]

$$P(Y_i > j) = \frac{exp(\alpha_j + X_i\beta)}{1 + [exp(\alpha_j + X_i\beta)]}, j = 1, \dots M$$

Where X_i is the vector of explanatory variables, β the vector of coefficients to be estimated, and ε_i the error term, and *M* the number of outcomes (categories).

$$\Omega_{\leq j|>j} = \frac{P(y \leq j|X)}{P(y > j|X)} \text{ for } j = 1, \dots M$$

The ordinary logistic model basically compute the odds $\Omega_{\leq j|>j}$ that an outcome is less than or equal to *j* versus greater than *j*.

When *M=4* in Equation 3.12, we focalize on the odds of being in one-class higher in the final year for the households initially lower and upper middle-class. We use this model mostly to assess the robustness of the effect of initial income depending on the definition discussed in section 8.1. Nevertheless, it also provides more synthetic insights on the drivers of inter-class mobility. When *M=2* in Equation 3.12 with 1= "not mobile" and 2= "class of destination," we can detect the effects of each variable on the transition in and out of a precise class. It is

similar to estimating several binary regression models. This method is used to verify the consistency of the findings in section 7.

Table 3.20 Ordered logit estimates (M=4, odds ratio of being in one-class higher) - Baseline specification

	Control function				Without instrumentation			
	All sample	Poor	Lower MC	Upper MC	All sample	Poor	Lower MC	Upper MC
Reported initial income	-	-	-	-	**1.000*** **	**1.000*** **	**1.000*** **	**1.000*** **
	-	-	-	-	(1.72e-05)	(7.5e-05)	(4.6e-05)	(3.5e-05)
Predicted initial income	**1.000*** **	**1.001*** **	**1.002*** **	**1.001*** **	-	-	-	-
	(1.7e-05)	(0.00022)	(0.00031)	(0.00024)	-	-	-	-
Household size	1.002	1.082	1.205**	1.057	0.953	0.962	1.120**	1.019
	(0.0304)	(0.0689)	(0.0928)	(0.0883)	(0.0278)	(0.0546)	(0.0513)	(0.0732)
Proportion children 7-10	0.458**	0.179**	0.253**	1.603	0.248***	0.153**	0.187***	0.596
	(0.169)	(0.129)	(0.176)	(2.190)	(0.0781)	(0.136)	(0.0940)	(0.613)
Proportion children 10-14	0.294***	0.205***	0.132***	0.578	0.153***	0.185***	0.0747***	0.273*
	(0.116)	(0.118)	(0.0698)	(0.462)	(0.0510)	(0.119)	(0.0461)	(0.199)
Proportion retired members	1.941**	0.0699	3.474*	2.286	1.342	0.352	2.410	2.313
	(0.633)	(0.125)	(2.242)	(1.519)	(0.470)	(0.467)	(1.595)	(1.417)
Gender	1.523**	0.948	1.960**	1.143	1.442*	1.274	1.886*	1.415
	(0.305)	(0.400)	(0.628)	(0.391)	(0.299)	(0.386)	(0.618)	(0.521)
Tertiary	1.153	10.01***	2.081*	3.354***	8.616***	20.94***	7.189***	6.894***
	(0.391)	(6.912)	(0.882)	(1.439)	(1.834)	(14.40)	(2.655)	(2.262)
Secondary	2.476***	0.844	2.344**	4.359***	4.522***	2.127*	4.998***	5.327***
	(0.460)	(0.366)	(0.889)	(1.609)	(0.814)	(0.870)	(1.445)	(1.868)
Primary	1.631***	0.971	1.929**	2.742***	2.253***	1.585	3.050***	1.970***
	(0.212)	(0.289)	(0.570)	(1.039)	(0.350)	(0.448)	(0.808)	(0.471)
Proportion active members	2.563***	2.831**	1.673	3.808***	1.984***	2.406**	1.464	3.158***
	(0.461)	(1.208)	(0.684)	(1.949)	(0.450)	(0.986)	(0.483)	(1.292)
Unemployed	0.428***	0.290**	1.735	0.612	0.448***	0.312**	1.771	0.540
	(0.129)	(0.145)	(1.303)	(0.480)	(0.135)	(0.154)	(1.330)	(0.472)
Employed	0.735	0.461*	0.800	0.848	0.779	0.462**	0.803	0.923
	(0.164)	(0.214)	(0.323)	(0.422)	(0.182)	(0.168)	(0.334)	(0.434)
Predicted residuals	1.000***	0.999***	0.999***	0.999**	-	-	-	-
	(1.5e-05)	(0.00021)	(0.00032)	(0.00025)	-	-	-	-
Observations	2,676	914	927	625	2,678	916	927	625

The standard errors in parentheses are bootstrapped; *** p<0.01, ** p<0.05, * p<0.1

The results on the baseline model in Table 3.20 confirm the strong positive association of initial income (predicted and reported) with inter-class mobility. Moreover, we get confirmation that the significance and magnitude of the coefficients of the explanatory

variables vary conditioning on the class of origin. For instance, the odds of joining a higher class[127] are 10 times higher for poor households with tertiary-educated heads, whereas it is only 2 times higher for lower middle-class households (column 2). We also get a confirmation that although the factors behind marginal changes in income may not be captured by the variables at our disposal in the dataset, thus explaining the few significant variables in section 6, some households and household heads' characteristics (level of education, gender, composition, employment status, asset endowments and income sources) matter for bigger income leaps that lead to position (or class) changes.

Table 3.21 Summary of results – Descriptive analysis and absolute mobility

Descriptive analysis	
Lower middle-class	**Upper middle-class**
Absolute mobility	
Positive Fields-Ok at each socioeconomic breakdown	Negative Fields-Ok (only few exception): more income loss than gain
More upward: female, unemployed, families with single parents	More upward: tertiary education, managers, scientific and technical activities
	Downward: illiterate and literate; unemployed
Relative mobility	
More inter-class mobility	More downward mobility
More income gains (less than the initially poor)	Average income growth close to zero
More upward mobility for unemployed	More downward mobility than immobility in the private sector
Most stable/upward: public administrations	Most stable/upward: public administrations
Multivariate analysis - Absolute mobility	
Absolute mobility	
Reduce income loss: Proportion of retired members, educated	
Increase income gain: Female head, education, receiving more private transfers, good health status, public administration, getting registered (change)	Increase income gain: Education, having more assets (car, phone), work as an employer, having a contract, getting registered
Reduce income gain: Initial proportion of dependent children, access to private transfers, worsening health and job loss, being registered (base year)	Reduce income gain: Proportion of retired members, the initial proportion of dependent children, regular job

[127] The same odds apply for the following combination: 1) rich versus poor, lower and upper middle-class combined; 2) upper middle-class and rich combined versus poor and lower middle-class combined; 3) lower and upper middle-class and rich combined versus poor.

Table 3.22 Summary of results – Multivariate analysis - Relative (inter-class) mobility

		Destination			
		Poor	**Lower MC**	**Upper MC**	**Rich**
Origin	**Poor**		Positive: Initial income, gender, asset possession (phone, car), receiving more private transfers, unlimited contract Negative: Unemployment, employed head, regular job, less social allowances, physical limitation	Positive: Initial household size, gender, unlimited contract, more private transfers Negative: Initial share of dependent members, change in household size, regular job	
	Lower MC	Positive: Bad health status, private transfers base year, more social assistance (change) Negative: Education, possessing a car, more private transfers (change)		Positive: Initial income, initial household size, proportion of active members, good health status, receiving more private transfers, possession of a car, non-agriculture sector, female head Negative: Changes in household size, receiving less private transfers (change)	Positive: Proportion of active members, possession of a car Negative: Unemployment
	Upper MC	Negative: Initial income, proportion of active members	Positive: Age squared, more credit (change), registered (base year), switch to industry and private services Negative: Initial income, education, the proportion of active members, proportion of retired members, age, possession of a phone		Positive: Education, initial income, more credit (change) Negative: Proportion of retired members, social allowances in the base year, less allowance and private transfer (change), switch to agriculture, unemployment

Conclusion

The objective of this chapter was to draw a picture of income mobility in Turkey during 2010-2013, with an emphasis on inter-class mobility. Our approach was incremental, and the main findings are summarized in Table 3.20 and 3.21. Several results on absolute mobility confirm that the joint effects of economic and social transformations at the level of the country benefited many households: progress in the health system reducing their vulnerability to health shocks, a system of pension that propelled the older population out of poverty, urbanization granting better-paid jobs than in agriculture and, measures related to the formalization of employment that improved their working conditions. We did not find much evidence on the job market characteristics of the household heads, but the results indicate that, if employment is necessary, switching to non-agricultural jobs helps climbing up the ladder. Furthermore, formalization (the fact of getting a contract and registration with social security) has contributed positively to income gains of the concerned lower and upper middle-class households.

Throughout the study, recurring puzzling tendencies related to initial income, education, household composition, and transfers emerged. Woolard and Klasen (2005) find quite similar patterns and associate them with the concept of poverty traps. At the very least, our results provide evidence on such mechanisms of social reproduction and cumulative (dis)advantages that prevent some households from climbing up the ladder, while their characteristics raise concern on their ability to maintain their social position in the long-run.

First, if we cannot draw any definitive conclusion on the effect of initial income on absolute mobility, we find robust evidence that initial income is positively associated with inter-class mobility. Combined with the robust positive effect of the possession of physical assets (car, phone) and the education level of the household heads on upward transition, this evidence illustrates the importance of cumulative advantage in social stratification in Turkey. Indeed, those with higher education are more likely to obtain a better job associated with better wages capable of securing and upgrading their positions. There seems to be a pattern of intergenerational mobility through which children from well-educated parents tend to follow their step. The drawback is that people at the bottom of the distribution have more difficulty to catch up, and those without the former profile can hardly maintain their position at the middle-class level. Our findings indicate that this is even more complicated for households

that rely more heavily on social allowances and private transfers. What is more, negative fluctuations of these external sources of income can jeopardize their position. By contrast, for upper middle-class households, private transfers seem to complement credit as income sources to sustain their living standards and help with their social ascension. Our results thus suggest that private transfers play two different roles: an "assistance" role for poor and lower middle-class households, and a "leverage" role for upper middle-class households.

On the contrary, two groups stand out with regard to their capacity to remain in the middle-class position. On the one hand, households with a female head are more likely to join the middle-class. This is a rather unusual feature for a largely Muslim country and regarding studies on economic mobility in general, and would suggest the existence of mechanisms that promote such households. However, a close-up reveals that those women tend to live in free-rent or to be the owner of their accommodation. On the other hand, some households with older heads are more likely to move upward, at least until the upper middle-class level. The common feature of those groups is their status of ownership. Considering the expensive costs of living in urban Turkey, being exempted from the financial burden of rent plays a major role in securing their position. Nevertheless, looking at their stability through the angle of cumulative advantage and considering the importance of the proportion of active members in a household for the transition into the upper middle-class and the rich groups, the ability of both types of households to maintain their position in the long-run, without external support, is questionable. Indeed, most female heads are inactive and have at most secondary education, while part of the households with retired members (or head) depends on pension and informal wages. Without mechanisms that promote the education of women and their access to better jobs as well as improvements in the system of pension, those households may find it difficult to adapt to the continuing changes in the economic structure of Turkey with the risk of being left behind. Our findings call for further investigation using a larger and more detailed dataset that would allow us to disentangle the various effects we identified with our exploratory approach and to address the methodological limitations.

General Conclusion

Main findings and contributions

The objective of this thesis is to examine distributional changes and economic transformation in middle-income countries. Overall, our empirical approach aims to shed light on several aspects that have been the object of limited documentation so far, as well as to complement the existing literature and provide new insights that can be useful in the design of development policies. First, we focus on the persistent growth slowdown generally called "middle-income trap", by assessing the differentiating patterns of productive and distributive changes inside and outside the trap empirically. Second, we quantify the indirect impacts of the global middle-class on growth through various channels, including household consumption, investment, demand for public expenditures, and productive transformation. Finally, we evaluate the role of demographic and occupation features, assets endowments and exposure to idiosyncratic shocks in absolute and intra-class mobility of the middle-class in Turkey. In the first chapter, the main challenge was to navigate through various strands of growth and inequality literature to formulate plausible explanations and characterize the concept of middle-income trap. For the second chapter, much effort was put into data assembling and in choosing empirical frameworks that allowed us to observe the simultaneous effects and control for the endogeneity of the middle-class variables. Overall, the main challenge was to take a stance on the choice of concepts and measurement for our three main research objects: the middle-income countries, the middle-income trap and the middle-class. The same issue is raised with respect to the concepts and empirical analysis of economic mobility in the third chapter. The results and contributions of this dissertation are of both academic and private interest in several levels.

Chapter 1's originality lies in the consistency between the literature review and the empirical methodology used to characterize middle-income trap episodes and their determinants,

notably inequality and redistribution. We use a mixed approach to identify episodes of MIT in a five-year period panel of 132 countries covering 1960-2010. Our method consists in identifying episodes of MIT, defined as spells of persistent growth slowdown, and relies on conditions of intensity and duration of growth slowdown that are now standard in the literature. Based on this identification, we test empirically various explaining factors linked to productive and distributional changes by comparing the impact of various determinants on medium-run GDP growth inside and outside the MIT on a reduced panel of 78 countries over 1970-2010. We find that the demographic drag as well as the patterns of growth and diversification, and skill misallocation help explain why some middle countries underwent or are undergoing persistent growth slowdowns. We also find evidence that countries in the MIT are stuck between two growth regimes where the lack of opportunities acts as a drag on productivity increase and innovation, and earning inequality still provides incentives to accumulate human capital. Our findings point to cumulative effects relating skill misallocation to distributional issues, and to the high relevance of policies supporting the shift from the extensive to the intensive growth pattern, and the move from extensive to intensive margins in middle-income countries. There is also the need to evaluate the efficiency of the existing redistributive policies and to adjust them accordingly. This process can be based on incentives delivered by unbiased market competition (Acemoglu, Aghion, and Zilibotti, 2006) or by efficient incentives delivered by industrial policies (Aghion et al., 2015). Kharas, Zeufack, and Majeed (2010) also link policy failures to productive transformation. In the same vein, Jankowska et al. (2012) define a set of "*Productive Development Policies*" that should be used by middle-income countries to trigger structural transformation, with this set comprising public investment in the quality of education, infrastructure provision, innovation support and improved access to finance. The policies supporting productive transformation and the growth regime shift concern, therefore, various dimensions of regulation and intervention.

The macroeconomic effects of the global middle-class on economic growth are examined in Chapter 2. We first assess the relationship between the expansion of the middle-class, consumption, investment, and public expenditures. Our empirical frameworks take into consideration simultaneous effects and reverse causality issues. We find that a large middle-class is associated with a greater preference for savings, higher demand for public transfers and subsidies and public investment. In terms of causality, this effect seems to be driven explicitly by the size of the lower middle-class in upper middle-income countries. Our results

indicate that a more prominent and influential middle-class may indeed be able to influence the commitment to and content of public policies, as suggested in the literature (Acemoglu and Robinson, 2006; Loayza et al., 2012). Unexpectedly, we do not find robust evidence that the middle-class does incite private investment (Banerjee and Duflo, 2008), but this may mean that the positive effect is either mitigated by redistribution-driven distortions or channeled through institutional changes (Alesina and Perotti, 1996). To investigate further the extent to which the middle-class "mass consumption" and human capital are beneficial to growth, we further investigate the relationship between middle-class and productive transformation. Our findings are in line with theory (Desdoigts and Jaramillo, 2017; Murphy et al., 1989a) since a larger middle-class seems to help to the shift from an agriculture-led to an industry-led economy and supports the development of the manufacturing sector through both demand for goods and the provision of relatively skilled labor. The middle-class, especially the one in upper middle-income countries, fulfils also the role of global consumer through demand for imported products. In particular, the upper middle-class also plays an important role in the modernization of production through their knowledge and know-how gained from education.

Chapter 3 helps us tackle the limitations of macro-level empirical analyses in order to highlight the household-level drivers of middle-class formation and mobility between middle-class and other income groups. Our findings shed light on the extent and socioeconomic determinants of income mobility within and across the middle-class over 2010-2013 in Turkey. Throughout the study, a recurring observation is that initial income, assets endowment, education, household composition, and transfers both determine and constrain social mobility. This finding aligns with evidence from Woolard and Klasen (2005), who assimilate them to poverty traps. In our study, the difficulty to climb up the ladder for some households seems to be related to intergenerational mobility which is strongly conditioned by parental background. We also find that private transfers play two different roles: an "assistance" role for poor and lower middle-class households, with the risk of increasing dependency and insecurity (Brand-weiner and Francavilla, 2015), and a "leverage" role for upper middle-class households, in particular through formal loans from the financial system. Contrary to most studies on economic mobility, and in particular Schotte, Zizzamia, and Leibbrandt (2018), households with a female head and some with a retired head are more likely to join the middle-class in Turkey. Being the owner of their accommodation seems to help securing their position by easing their financial burden, at least in the short-run.

However, the ability of both types of households to maintain their position in the long-run, without external support, is questionable. Indeed, most female heads are inactive and have at most secondary education, while parts of the households with retired members or head depend on pension and informal wages. As contended by Azevedo and Atamanov (2014), Turkey still needs to continue and implement reforms that could benefit more to vulnerable households. This would include measures that support the education of women and their access to better jobs, improve the health and pension systems, formalization of employment, or at least measures that improve the working conditions (World Bank, 2014).

Overall our findings in this thesis stress the importance of taking into consideration the interconnection between distributional changes, productive structure, and economic transformation in the design of public policies for middle-income countries. As explained by McMillan, Rodrik, and Sepulveda (2017), sustainable development requires a combination of steady structural transformation and strong fundamentals. Alvaredo et al. (2018) argue that, under a "business as usual" scenario in which all countries follow the same pattern as the current advanced economies, the current prominent middle 40% of the global distribution would be squeezed, superseded by a huge rise in inequality at the top 1%. While some countries succeeded in sustaining fast-paced growth for some time, the recurrent slowdown episodes occurring in many middle-income countries are reminders that public policies and the taxation, coupled with fiscal, and social systems need some adjustment to tackle global inequality and promote inclusive and sustainable growth.

Our results suggest that diversification-driven growth in some middle-income countries is related to enduring inequality, which puts pressure on redistribution. However, not only is redistribution not sufficient to reduce inequality and increase opportunities, thus generating more frustration among the left-out population, but it also creates distortions that undermine investment and thereby economic growth. Nonetheless, we find that an affluent middle-class could influence the supply and quality of public goods and services and play a major role in the development of the manufacturing sector. It seems that measures promoting and consolidating the middle-class can benefit to industrialization because middle-class agents contribute to the development of the modern sectors as consumers and as skilled labor force. Such measures could also address the inequality-redistribution conundrum, since the middle-class is likely to ask for productivity-enhancing public investment. Turkey serves as an example of a country where economic transformation (urbanization, employment reforms,

improvement in health and education) has driven changes in the distribution of income during the past decades. Our findings, however, support the macroeconomic evidence that strengthening the fundamentals, by improving health, education, and social systems, labor market conditions, and political institutions, remains a priority to improve the well-being of the majority and circumvent the mechanisms of cumulative disadvantages that interfere with social mobility. Taking Nigeria as an example, Wheary (2009:79-80) states that "*the failure of the educational system to produce more skilled graduates casts doubt on whether the middle class can sustain itself*" and further argues that "*much of the fragility of the Nigerian middle-class comes from a lack of infrastructure and institutions that support their stability*". Birdsall et al. (2001) explain that the lack of public resources allocated to services aimed at the middle-class in the 1990s has contributed to their deterioration in several middle-income countries.

Furthermore, both cross-country and country-level analyses point out the importance of financial development. As stated by UNDP (2016), access to finance is a constraint to economic opportunities. Furthermore, "*standard theory typically predicts that financial development should decrease inequality, at least if we think of financial development as increasing the availability for previously credit constrained individuals to access capital*" (Roine, Vlachos, and Waldenström, 2009:976). In China, different measures, including *propaganda campaigns*, were implemented in the 1990s to increase personal loans, thereby stimulating household consumption (Elfick, 2011), and financial development helps to alleviate the financial constraints on productive investment in land or equipment (Benabou, 1996). Beck, Demirgüç-Kunt, and Levine (2007) provide evidence that financial development plays a major role in improving the well-being of the poor, alleviating poverty and reducing overall inequality.

Extensions and avenues of research

The findings of this thesis could benefit from several improvements and extensions. Our results in Chapter 1 call for additional empirical analyses to identify more precisely the underlying mechanisms emphasized by our results in each specific context. A more fine-grained analysis of the sectoral productivity gaps and input use across trapped and non-trapped countries would be useful. The next step for Chapter 1 would consist in using the data from the Global Consumption Database (Lahoti et al., 2016) to compute different measures of inequality and verify the consistency of our results considering other indicators of inequality.

This, however, implies that we depart from the framework of Ostry, Berg, and Tsangarides (2014) since it requires long-run data on both gross and net inequality. Additionally, to circumvent the arbitrariness of our identification strategy, we could test various definitions of the MIT. However, in the absence of any consensus on the definition and measurement of the concept, the choice of the methods to confront remains tricky (Robertson and Ye, 2013). Our next research project following this thesis will consist in a detailed empirical investigation of the patterns of structural transformation following Felipe, Kumar, and Galope (2014). We plan an in-depth analysis of the sectoral specialization and change in the level of sophistication of middle-income countries based on Lectard (2017). Moreover, due to conceptual and theoretical limitations with regard to the MIT and the middle-class, we purposely restricted the scope of our investigation to inequality and redistribution. The analysis in Chapter 3 helped us get a better understanding of the role of the middle-class in economic transformation, and the findings on inequality and redistribution in Chapter 1 could definitely be linked to the middle-class. Ozturk (2016), using a logit model on a panel of 76 countries from 1996 to 2012, found a positive correlation between the middle-class income share[128] and the probability for a country to move up from the middle-income to the high-income category when controlling for standard determinants of growth. A possible extension to Chapter 1 would thus be the integration of the size of the middle-class in a simultaneous framework with redistribution and structural change by using the 3SLS estimator.

An immediate addition to Chapter 2 would consist in replicating the estimations using middle-class indicators computed from the Global Consumption Database, which distinguishes between income and consumption data as well as extending the time-span. It would also be interesting to take advantage of detailed data on international trade from the UNCTAD or UN COMTRADE to complement the analysis. By combining them with the Product Complexity Index (PCI) from the Atlas of Economic Complexity, we would be able to calculate the level of sophistication of the basket of imports by mirroring the methodology of Hausmann, Hwang, and Rodrik (2007) on exports, and then detect the impact of a larger middle-class on the demand for more sophisticated imported goods. Another dimension worth exploring if data were to be made available consists in a global analysis of the middle-class measured using a multidimensional approach such as the one adopted by Burchi, Malerba, Rippin, and

[128] The middle-class is measured as the share of the share of the 5^{th}, 6^{th}, 7^{th} and 8^{th} deciles in the total disposable income.

Montenegro (2019). [129] It could also be interesting to borrow the framework of gravitational analysis to evaluate the extent to which the size of the market, driven by the size and purchasing power of the middle-class of trade partners, affects the volume of bilateral trade as suggested in the model of Desdoigts and Jaramillo (2009).

With regard to the analysis of economic mobility in Chapter 3, the short time-span of our dataset restricted us to the observation of short-run dynamics of mobility. The immediate next step would be an extension of our investigation in the long-run by mobilizing synthetic panel data techniques such as those used by Dang and Lanjouw (2013) and Ferreira et al. (2013). This would also allow for an analysis of the intergenerational mobility and equality of opportunity our findings for Turkey point to. Due to limited data, some issues were left unexplored. Among them is the consideration of rural/urban divide and regional disparities. For instance, Azevedo, Yang, Inan, and Montes (2016) compute mobility in and out of "chronic poverty" and found regional heterogeneity across regions in Turkey between 2006 and 2013, and the World Bank (2014) discusses in considerable detail the differences in dynamism between the Anatolian Tigers and the other regions that certainly have an impact on social stratification dynamics. In addition, the new middle-class is often presented as a byproduct of urbanization in Turkey, and tertiary education is not accessible to the majority. That raises concerns about the position and opportunities for rural households. It would also be interesting to investigate the place of religion in social stratification, in particular the dualism between the conservative and secular middle-class (Belbağ et al., 2019). Furthermore, the limited number of observations on the job market variables may be the reason why we found limited results on the role of occupation. It would be interesting to investigate further the effects and determinants of occupational choices or the joint relationship between income and occupational mobility such as done by Altonji, Smith, and Vidangos (2009).

[129] Burchi et al. (2019) use the International Income Distribution Database (I2D2), a standardized database encompassing demographic, socioeconomic, income and consumption variables across a large number of countries drawing on various nationally representative household surveys. Due to confidentiality issues, the dataset is not available to the public but only to the World Bank Staff.

General Appendix

Appendix to Chapter 0

Appendix 0.1 Measuring the middle-class: three economic approaches

In the literature, three main approaches for setting the middle-class income-range can be identified.[130] First, the relative approach defines the middle-class as the people that are in the middle of the income distribution. Birdsall et al. (2001) and Pressman (2006) for instance, retain individuals with incomes between 75% and 125% of median income. Easterly (2001) considers individuals belonging to the three middle-income quintiles of the distribution. Secondly, the mixed approach combines a relative threshold with an absolute one. For instance, some authors combine an absolute lower-bound - USD10 (Birdsall, 2010) and 10,000 yuan - in the case of China (Bonnefond et al., 2015)- with a relative upper-bound - the 95th percentile in both cases excluding the 5% wealthiest people. Birdsall (2010) note that this relative upper-bound should ideally be country-specific. Both approaches are mostly adapted to micro-level studies and become tricky for cross-sectional or comparative studies.

In the absolute approach, the income boundaries are common to all countries and are expressed in terms of purchasing power parity, which allows international comparisons. The poverty line (country-specific or international) is often used as a reference. Some studies adopt USD 2 as a lower boundary (ADB, 2010; Ravallion, 2010; Banerjee and Duflo, 2008), considering that middle-class begins where poverty ends. Some studies considering that the middle-classes are not just people that barely escaped from poverty adopt higher thresholds like USD 4 (for example, Clément and Rougier, 2015). The recent reevaluation of the poverty lines motivated by the observation that "*the use of average assessments of basic needs in low-*

[130] The references and cut-offs mentioned in the next paragraph are non-exhaustive.

income countries is gradually becoming less relevant in many countries of the world" (World Bank, 2018a: 68), and in the context of a growing global economy, however, challenges these classifications. Keeping the USD 1.90 as the extreme-poverty threshold for all countries, the World Bank (2018a) proposes three additional sets of poverty lines: USD 3.10 for non-low income countries in general, USD 3.20 for the lower middle-income countries, and USD 5.5 for upper-middle income countries. The World Bank notes that these thresholds, corresponding to the median values of poverty lines, reflect the assessment of basic needs in the two groups of middle-income countries.

The inclination towards a higher threshold also stems from a more and more consensual argument among scholars that the middle-class is characterized by economic security compared to a more vulnerable group at risk of falling back into poverty. Lower thresholds would bundle in the same group people that are still vulnerable and do not feature many of the middle-class characteristics like their aspiration and political inclination (Birdsall, 2012). Kochhar (2015) notes that the threshold of USD 10 has been gaining acceptance among economists over the last decade (Birdsall, 2007b; Birdsall, Lustig, and Meyer, 2014; Kharas, 2010; Kharas and Gertz, 2010; Lopez-calva, Rigolini, and Torche, 2012; World Bank, 2007 among others) because of the underlying idea that this level of income provides enough economic security to reduce the risk of falling back into poverty significantly. Studies that rely on the estimation of threshold based on vulnerability to poverty, following such approaches as López-Calva and Ortiz-Juarez (2014) or Dang and Lanjouw (2017), tend to find values close to that threshold. The World Bank (2018b) proposes an even higher lower-bound of USD 15 (in PPP 2011), in their five-group classification that includes a category of "economically secure" people (USD 5.5–15); and they choose not to set an upper-bound.

The issue regarding the upper-bound is even less consensual. The ADB (2010) and Clément and Rougier (2015) takes an upper-bound of USD 20; Birdsall (2012) and (Ferreira et al., 2013), USD 50 and Kharas (2010) USD 100. Milanovic and Yitzhaki (2002a) and Bussolo et al. (2008) consider all the households whose per capita income is situated between the average per capita incomes of Brazil and Mexico or between USD 10 and USD 20 a day in PPP 2005. Dang and Lanjouw (2017), Loayza, Rigolini, and Llorente (2012) and the World Bank (2018c) prefer talking about an upper group comprised of the middle-class and the rich. A way to tackle this issue is to go beyond a division of income distribution into three groups. In the case of the USA, for instance, Birdsall (2010) finds a high level of middle-class

inequality, making her assume that there may be at least two sub-categories of middle-class in the country. In the same vein, Ravallion (2010) could identify two-subcategories of middle-class households, one ranging from USD 2 to USD 9 and another from USD 9 to USD 13. In the case of Africa, the AFDB (2011) makes the distinction between three categories of middle-class and introduce the concept of "*floating class*" (PPP USD 1.90–4 per day) which echoes with the idea of "*strugglers*" (PPP USD 4–10 per day) in Latin America used by Birdsall (2012) to refer to the people that are no longer poor, but do not belong to the global middle-class yet. The World Bank (2018c) proposes a classification that define the middle class as people with PPP USD 15.00 and higher income per day, and breaks the bottom of the distribution in four: the extreme poor (less than PPP USD 1.90 per day), the moderate poor (PPP USD 1.90–3.10 per day), the economically vulnerable (PPP USD 3.10–5.50 per day), and the economically secure (PPP USD 5.50–15.00 per day). Kochhar (2015) choose to break the middle-income range in two: the middle-income (PPP USD 10–20) and the upper middle-income (PPP USD 20–50).

Appendix 0.2 Middle-income countries in the sample for the total distribution of income

We use the World Bank classification in 2012 to identify the middle-income countries. The GNI per capita thresholds (in current USD) are the following: low income (below USD 1,035); low-middle income (USD 1,036–4,085); upper middle-income (USD 4,086–12,615) and high income (over USD 12,615). According to this classification, 30 (37) countries are in the low (high) income category, while 96 (49 lower and 47 upper) are in the middle-income category in 2012. Out of them, we keep 79 countries due to the availability of data.[131] They represent 4.4 billion people (1998) and 4.9 billion people (2012) or 97% of middle-income countries population in both years. Our data cover more than 90% of the population in all regions except Europe and Central Asia, with almost 100% coverage in South Asia and East Asia and Pacific.

East Asia and Pacific	Europe and Central Asia	Latin America and the Caribbean	Middle East and North Africa	South Asia	Sub-Saharan Africa
China Rural	Albania	Argentina	Algeria	Bhutan	Angola
China Urban	Armenia	Bolivia	Djibouti	India Rural	Botswana
Fiji	Belarus	Brazil	Egypt, Arab Rep.	India Urban	Cabo Verde
Indonesia Rural	Bosnia and Herzegovina	Colombia	Iran, Islamic Rep.	Maldives	Cameroon
Indonesia Urban	Bulgaria	Costa Rica	Iraq	Pakistan	Congo, Rep.
Lao PDR	Georgia	Dominican Republic	Jordan	Sri Lanka	Cote d'Ivoire
Malaysia	Hungary	Ecuador	Morocco		Ghana
Micronesia, Fed..	Kazakhstan	El Salvador	Tunisia		Lesotho
Mongolia	Kosovo	Guatemala	West Bank and Gaza		Mauritania
Papua New Guinea	Macedonia, FYR	Honduras	Yemen, Rep.		Mauritius
Philippines	Moldova	Jamaica			Namibia
Solomon Islands	Montenegro	Mexico			Nigeria
Thailand	Romania	Nicaragua			Sao Tome and Principe
Tonga	Serbia	Panama			Senegal
Vietnam	Turkey	Paraguay			Seychelles
	Ukraine	Peru			South Africa
		Venezuela, RB			Swaziland
					Zambia

[131] The countries that are excluded are: Azerbaijan, Belize, Guyana, Kiribati, Lebanon, Samoa, Sudan, Suriname, Syrian Republic, Turkmenistan, Uzbekistan and Vanuatu.

Appendix 0.3 Methodology for constructing the distributions of income

1. Constructing the distributions of income

We need comparable distributional data covering as many countries and periods as possible. Our main source for distributional data is PovcalNet, which provides the largest coverage among developing countries. Distributional primary data are drawn from nationally representative household surveys, which are conducted by national statistical offices or by private agencies under the supervision of government or international agencies and obtained from government statistical offices and World Bank Group operational departments. The latest version of PovcalNet uses the PPPs from the 2011 ICP.[132]

With very few exceptions, household surveys for different years are based on either income or consumption data. Practices vary from one country/region to another as most surveys are expenditure-based in Africa and Asia while income-based in Eastern Europe and Latin America. Expenditure-based surveys tend to have a higher mean and lower inequality generating biases in the estimation of inequality. Most studies (for instance, Anand and Segal, 2015; Lakner and Milanovic, 2016a; Milanovic and Yitzhaki, 2002a) combine data on expenditures and income when it comes to constructing global distribution. The use of only one of those concepts being too constraining, the number of countries in the samples would have been substantially lower when only one concept is used. Despite the remarkable improvement in the availability of data on distribution, they are still under coverage for some developing countries and Middle-East and North African countries in particular. Consequently, to cover most developing countries, we choose to combine data on consumption and expenditure.

Example of grouped data

Percentile	0.10	0.30	0.50	0.60	0.90	1.00
Cumulative income shares	0.02	0.10	0.13	0.30	0.70	1.00

Source: Abdelkrim and Duclos (2013)

[132] The database, maintained by the PovcalNet team in the World Bank's Development Research Group, is updated several times a year as new survey data become available, and a major reassessment of progress against poverty is made about every three years until 2008, from 2010 onwards such major updates were made annually until 2013. As of 2019, PovcalNet has income or consumption distributional data from more than 1500 household surveys spanning 1979-2017 and 164 economies.
See http://iresearch.worldbank.org/PovcalNet/home.aspx for more information on the data, methodology.

PovcalNet data are "grouped" or "aggregated." Aggregate information is obtained from cumulative income shares (or Lorenz curve ordinates) at some percentiles, as we see in the table above for instance. Some studies keep the grouped data format or use a non-parametric approach to estimate the global distribution of income (see Milanovic and Yitzhaki, 2002; Milanovic, 2002; Sala-i-Martin, 2002; 2006). To give us more freedom in the computation of indicators, we choose to construct synthetic distributions based on the grouped data. This procedure called "ungrouping" consists in "*generating disaggregated data from aggregated distributive information*" (Abdelkrim and Duclos, 2013: 79). We use the "Ungroup" module of the DASP package developed by Araar and Duclos (2007). In the first stage, the "ungroup" module generates vectors of incomes and percentiles from the grouped data, and then, in the second stage, those generated distributions are adjusted to fit the aggregated data using the Shorrocks and Wan (2008) procedure. The next sections detail the step-by-step methodology we implemented to construct each country's distribution needed for the indicators of Chapter 2 and the total distribution of all middle-income countries (Figure 0.3).

2. Generating synthetic distribution of income by countries

Before the "ungrouping," we first have to assign a functional form to the disaggregated distribution among the log-normal, the Generalized Quadratic Lorenz Curve, the Beta Lorenz Curve, and the Singh-Maddala distribution. We choose the log-normal that has been used in many papers (see, for instance, Chotikapanich, Valenzuela, and Prasada Rao, 1997; Lakner and Milanovic, 2016; Milanovic and Yitzhaki, 2002). Indeed, Shorrocks and Wan (2008) find that among the aforementioned functional forms, and after adjustment, the lognormal fit produces more accurate results compared to the Singh-Maddala fit. As noted by Bresson (2009) and Boccanfuso et al. (2013), it would be better to choose the most appropriate functional form for each country-distribution. In their paper, they use goodness-of-fit tests to determine the functional form to be assigned to each distribution of income. Unfortunately, the "Ungroup" module cannot serve to estimate the sampling error, which prevents us from running such tests. Nonetheless, we check the generated distribution using the other functional forms, and just like Shorrocks and Wan (2008:21) note, when we use the Beta and General Quadratic Lorenz functions, many of the synthetic samples contain negative observations.

Shorrocks and Wan (2008) recommend choosing large samples because the lognormal function performs better with large samples (2,000 or above). We thus set the disaggregated

sample size at 5,000. In the first stage, the "ungroup" module generates vectors of incomes and percentiles from the grouped data, and then, in the second stage, those generated distributions are adjusted to fit the aggregated data using the Shorrocks and Wan (2008) procedure. This procedure corrects "*the initial vector of income to ensure that each mean income group has its original mean income and to smooth the inter-class distributions*" (Araar and Duclos, 2007: 81). Consequently, we generate 5,000 synthetic individuals for each country's grouped income distribution available between 1995 and 2014. After that, we compute aggregate measures such as the size of various income groups and inequality indicators we need in Chapter 2.

3. Other adjustments for the construction of the total distribution of income (Figure 0.3)[133] and the regional distribution of income (Appendix 0.4)

An important concern with regard to the construction of a "global" distribution relates to the use of household data alone to adjust the distribution data. Some studies scale up the income distribution using national account data as a proxy for household disposable income or expenditure (Berry, Bourguignon, and Morrison, 2006; Bourguignon and Morrisson, 2002; Chen, Datt, and Ravallion, 1994; Ravallion, Datt, and van de Walle, 1991). At first, it was justified by the lack of data on household surveys and survey biases. It is assumed that the information is more reliable since household survey data are often underestimated because interviewees tend to declare less or more of their accurate income when they are surveyed. However, the use of national data is widely criticized, especially the GDP, because it does not take into account home consumption, particularly in developing countries, and it includes undistributed profits or an increase in stocks that do not affect welfare directly. Moreover, the relationship between household survey income and GDP is not constant across countries (Milanovic, 2002). A strand of literature tends to use solely household survey data to get more accurate results. The first studies of the sort are Ravallion and Chen (1997) that focuses on world poverty, and Milanovic (2002) that focuses on world inequality. Following them, we choose to use household expenditure to adjust our data.

We choose 1998 and 2012 as reference years because of the great coverage of data. For the sake of representativeness, we start by completing the missing data of the PovcalNet dataset using WIID 3.4. The WIID 3.4 database provides aggregated income data from various sources for 182 countries, but, as mentioned in UNU-WIDER (2017), precaution must be

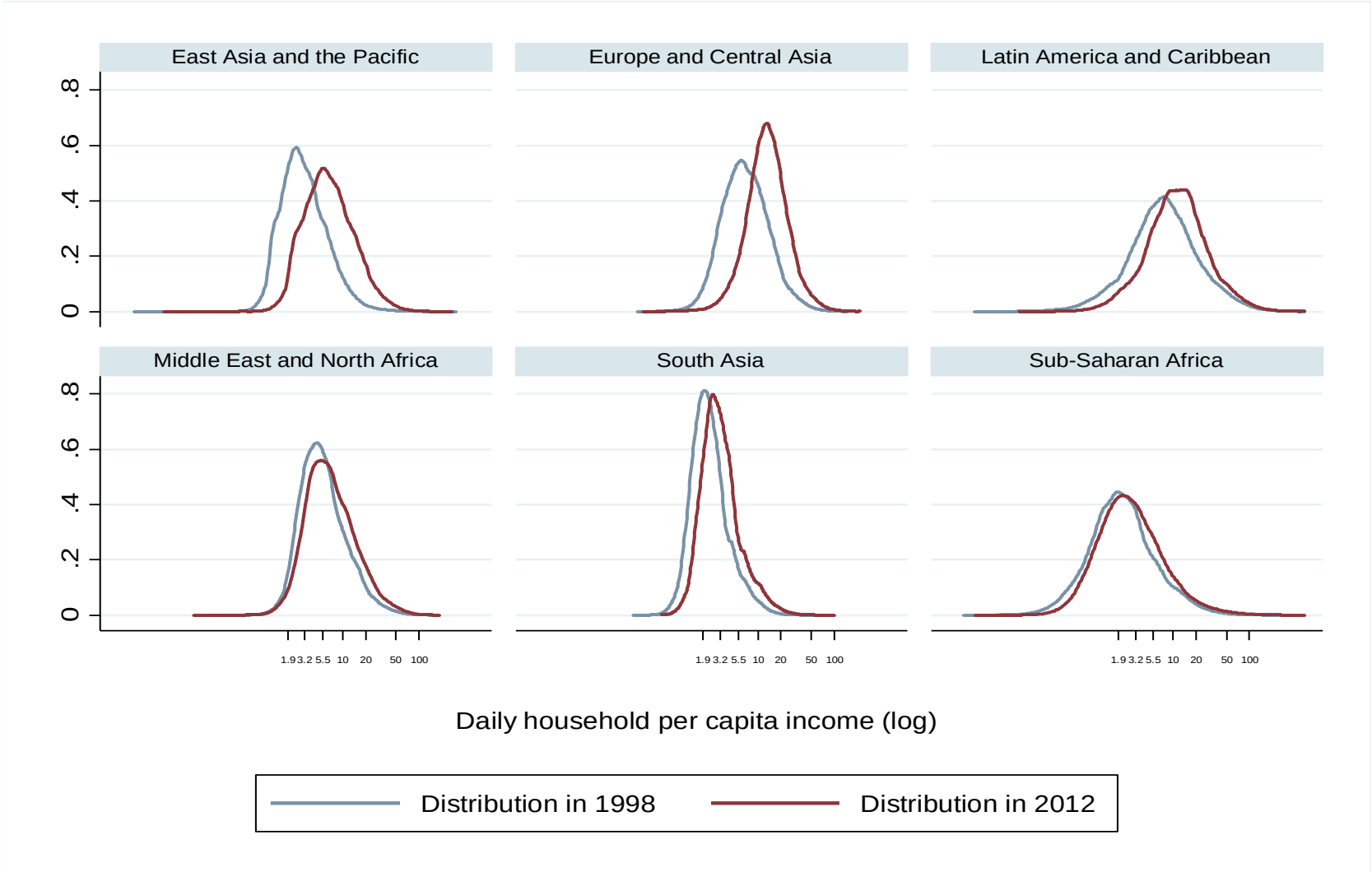
[133] For a review on the construction of global distribution, see Anand and Segal (2008; 2015).

taken if one wants to use several sources since the underlying concepts used to construct them may be tremendously different. We choose data having the same income definition and statistical unit as PovcalNet for the reference year when available, or for the surrounding years otherwise. This is the case for the following countries: Angola(2000), Armenia(1998), Bulgaria(1998), Djibouti(1996), India(2012), India(2012), Maldives(2010), Micronesia, Federated States of(2000), Namibia(2010), South Africa(2012), and Venezuela (1997, 2000, 2012).[134] Since Povcal provides separate information for rural and urban areas for China, India, and Indonesia, the estimations of rural and urban distribution are treated separately. It should also be noted that Povcal provides only urban data for Argentina. Due to data availability, we also choose to keep only data for urban Uruguay. For other countries such as Ecuador, Honduras, Micronesia, Angola and Colombia that have some urban or rural data at distinct year, we use only the national data (when available, otherwise the country is removed from the sample). We keep the countries with survey data for two non-overlapping periods: 1993 – 2004 and 2005 – 2016. For the remaining missing data, our strategy is as follows. For years between two surveys, the distribution data are assumed to evolve in relation to the GDP per capita. We thus use linear interpolation to estimate the data for our reference years. The last valid value before the missing value and the first valid value after the missing value is used for the interpolation. For years prior to (respectively after) the first (respectively the last) survey, the income deciles are assumed to remain constant, while GDP growth rates are applied to the first (respectively last) data on mean income. Exceptionally, the first survey available for the following countries are within the second period: Republic of Congo (2005), Iraq (2005), Mauritius (2006), Montenegro (2005), Solomon Islands (2005).

The "global" distribution or more appropriately in our case the income distribution of middle-income countries (Figure 0.3) is obtained by taking the distributions of each 79 countries together and weighting them by the population size.

[134] We use data from the International Comparison Program (ICP) to convert survey mean income when necessary.

Appendix 0.4 Income distribution by region in 1998 and 2012



Appendix to Chapter 1

Appendix 1.1 GDP growth drivers, capital and population growth: Fixed Effect estimations of the contemporaneous and lagged models on the extended sample

Dependent :	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
five-year av. GDP growth	Contemp.	Lagged	Contemp.	Lagged	Contemp.	Lagged	Contemp.	Lagged
Lagged GDP p. cap.	-5.7e-06***	-0.0019	-5.8e-06***	-0.008***	-5.4e-06***	0.0007	-5.9e-06***	-4.9e-06***
	(7.0e-07)	(0.0024)	(6.6e-07)	(0.002)	(6.8e-07)	(0.002)	(6.9e-07)	(4.2e-07)
Population growth	-0.001	0.004**	-0.0012	0.007**	0.0024	0.004**	-	-
	(0.0031)	(0.002)	(0.0031)	(0.003)	(0.0024)	(0.002)	-	-
Skill ratio	0.004**	7.4e-05*	0.0036**	1.1e-04**	0.0037**	8.0e-05**	0.0035**	0.004**
	(0.0017)	(4.1e-05)	(0.0015)	(4.8e-05)	(0.0017)	(3.9e-05)	(0.0017)	(0.002)
Trade openess	1.7e-04***	-5.3e-06***	2.0e-04***	-3.2e-06***	1.7e-04***	-5.1e-06***	1.7e-04***	7.1e-05*
	(5.9e-05)	(4.5e-07)	(5.6e-05)	(3.7e-07)	(5.5e-05)	(4.0e-07)	(5.6e-05)	(3.9e-05)
Investment rate	0.0014***	-0.0014***	0.0008**	-0.0017***	0.0014***	-0.0014***	0.0014***	-0.0015***
	(0.0003)	(0.0003)	(0.0004)	(0.0004)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
MIT dummy	-0.023***	-0.022***	-0.055***	0.004	-0.005	-0.006	-0.012	0.011
	(0.007)	(0.007)	(0.016)	(0.013)	(0.009)	(0.010)	(0.016)	(0.014)
MIT*Investment rate	-	-	0.0012**	-0.0007	-	-	-	-
	-	-	(0.0006)	(0.0006)	-	-	-	-
MIT*Population gr.	-	-	-	-	-0.0095**	-0.0071*	-	-
	-	-	-	-	(0.004)	(0.004)	-	-
Dependency rate	-	-	-	-	-	-	3.34e-04	6.31e-05
	-	-	-	-	-	-	(2.30e-04)	(2.02e-04)
MIT*Dependency	-	-	-	-	-	-	-1.70e-04	-4.55e-04**
	-	-	-	-	-	-	(2.37e-04)	(2.06e-04)
Constant	0.026***	0.095***	0.042***	0.093***	0.018*	0.088***	0.005	0.086***
	(0.008)	(0.007)	(0.011)	(0.010)	(0.009)	(0.008)	(0.016)	(0.015)

Appendix 1.1 continues next page

Appendix 1.1 (continued)								
Observations	411	405	411	405	411	405	411	405
Number of groups	65	65	65	65	65	65	65	65
Adj. R-squared	0.34	0.37	0.35	0.26	0.35	0.38	0.34	0.38
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES
Marg. impact (at means)[a]			X_1= Investment		X_1= Population gr.		X_1= Dependency	
MIT: X_1	-	-	**+.39**	-.33	**-.40**	**-.13**	NS	**-.34**
non-MIT: X_1	-	-	**+.17**	-.37	**NS**	**+.16**	NS	**NS**

Robust standard errors in parentheses; Restricted means that the comparison group is limited to MICs not in the MIT; Extended means that the restricted comparison group is extended to HICs; [a)] the marginal impact of the variable X interacted with the MIT dummy in the corresponding column measures the variation of the GDP growth rate (in terms of standard deviation) for a one standard deviation increase of X (at the mean value of all other regressors); in bold are reported the marginal impacts that are statistically different for the MIT and non-MIT samples ; *** p<0.01, ** p<0.05, * p<0.10, NS p>0.10

Appendix 1.2 GDP growth drivers: human capital, contemporaneous and lagged models, restricted sample

Dependent : five-year av. GDP growth	(1) Contemp.	(2) Lagged	(3) Contemp.	(4) Lagged	(5) Contemp.	(6) Lagged
Population growth	-0.008**	0.001	-0.008**	0.000	-0.008**	0.001
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Trade openness	3.0e-04***	-0.001**	3.2e-04***	-9.3e-04**	3.0e-04***	-0.001**
	(9.45e-05)	(4.3e-04)	(9.31e-05)	(4.3e-04)	(9.36e-05)	(4.3e-04)
Lagged GDP per capita	-1.2e-05***	5.2e-05	-1.3e-05***	5.3e-05	-1.3e-05***	4.1e-05
	(1.88e-06)	(8.4e-05)	(1.88e-06)	(8.3e-05)	(1.88e-06)	(8.4e-05)
Investment rate	0.002***	-8.2e-06***	0.002***	-8.4e-06***	0.002***	-7.9e-06***
	(0.000)	(1.9e-06)	(0.000)	(1.9e-06)	(0.000)	(1.9e-06)
MIT dummy	-0.022***	-0.024**	-0.019**	-0.019**	-0.023***	-0.022**
	(0.006)	(0.010)	(0.008)	(0.008)	(0.006)	(0.008)
Skill ratio	0.014	-0.004	-	-	-	-
	(0.020)	(0.015)				
MIT*Skill ratio	-0.012	0.015	-	-	-	-
	(0.022)	(0.017)				
Secondary schooling	-	-	1.0e-04	1.1e-04	-	-
			(4.1e-04)	(4.6e-04)		
MIT*Secondary school.	-	-	-3.2e-04	-1.5e-04	-	-
			(4.1e-04)	(4.6e-04)		
Tertiary schooling	-	-	-	-	3.1e-04	4.2e-04
					(0.001)	(8.1e-04)
MIT*Tertiary school.	-	-	-	-	-0.001	0.001
					(0.001)	(0.001)
Constant	0.033**	0.079***	0.037***	0.077***	0.037***	0.077***
	(0.014)	(0.012)	(0.013)	(0.012)	(0.012)	(0.011)
Observations	261	255	261	255	261	255
No of groups	49	49	49	49	49	49
Adj. R-squared	0.444	0.361	0.444	0.358	0.443	0.362
Country FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES

Notes: Robust standard errors in parentheses; *** p<.01, ** p<.05, * p<.10

Appendix 1.3 GDP growth drivers, human capital, contemporaneous and lagged models, extended sample

Dependent : five-year av. GDP growth	(1) Contemp.	(2) Lagged	(3) Contemp.	(4) Lagged	(5) Contemp.	(6) Lagged
Popul. growth	-0.001	-0.002	-0.001	-0.002	-0.002	-0.001
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)
Trade openness	1.7e-04***	-0.0015***	1.7e-04***	-0.0014***	1.8e-04***	-0.0015***
	(5.94e-05)	(2.9e-04)	(5.89e-05)	(2.9e-04)	(5.98e-05)	(3.0e-04)
L. GDP per capita	-5.7e-06***	7.4e-05*	-5.9e-06***	7.0e-05	-6.4e-06***	7.5e-05*
	(7.01e-07)	(4.0e-05)	(7.43e-07)	(4.3e-05)	(9.79e-07)	(4.2e-05)
Investment rate	0.001***	-5.2e-06***	0.001***	-5.2e-06***	0.001***	-5.3e-06***
	(0.000)	(4.4e-07)	(0.000)	(5.0e-07)	(0.000)	(4.6e-07)
MIT dummy	-0.023***	-0.024***	-0.015	-0.021***	-0.021***	-0.023***
	(0.007)	(0.008)	(0.010)	(0.007)	(0.006)	(0.007)
Skill ratio	0.004**	0.003*	-	-	-	-
	(0.002)	(0.001)				
MIT*Skill ratio	-0.001	0.009	-	-	-	-
	(0.008)	(0.007)				
Secondary	-	-	-1.8e-04	-3.6e-05	-	-
			(2.0e-04)	(2.0e-04)		
MIT*Secondary	-	-	-3.4e-04	-4.2e-05	-	-
			(3.3e-04)	(3.5e-04)		
Tertiary	-	-	-	-	0.0014*	8.9e-04*
					(7.7e-04)	(4.8e-04)
MIT*Tertiary	-	-	-	-	-0.002	0.001
					(0.001)	(0.001)
Constant	0.026***	0.095***	0.030***	0.095***	0.028***	0.094***
	(0.008)	(0.007)	(0.008)	(0.007)	(0.008)	(0.007)
Observations	411	405	411	405	411	405
No of groups	65	65	65	65	65	65
Adj. R-squared	0.338	0.373	0.340	0.370	0.346	0.378
Country FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES

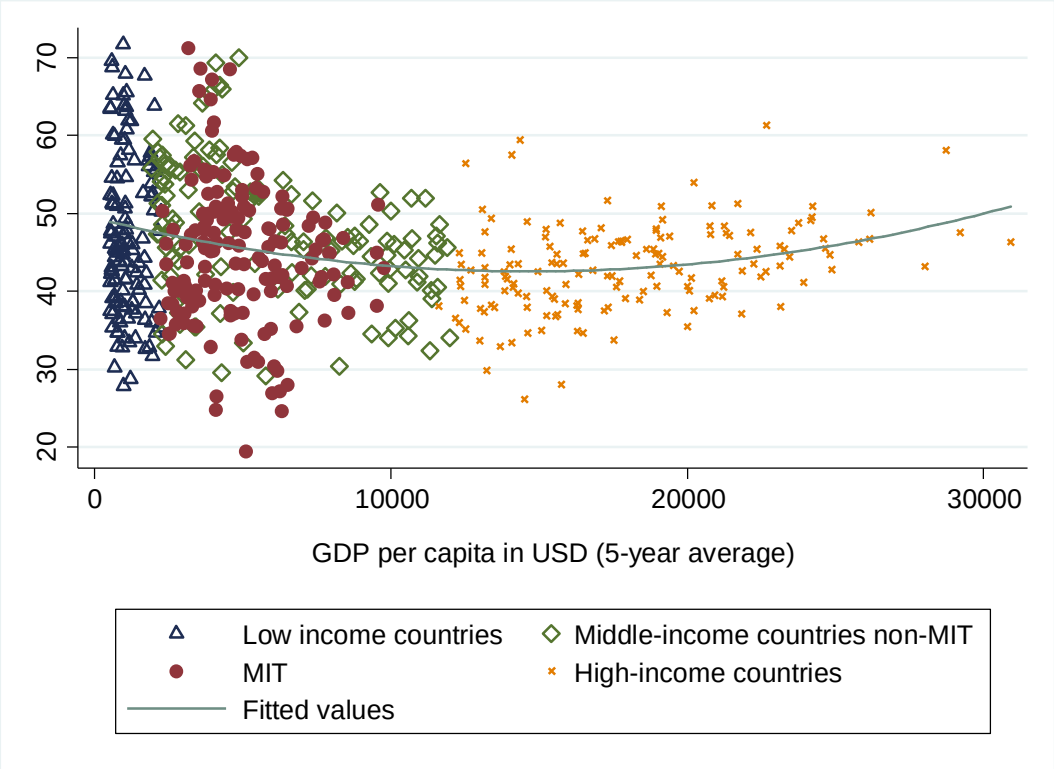
Note: Robust standard errors in parentheses; *** p<.01, ** p<.05, * p<.10.

Appendix 1.4 GDP growth and productive diversification: contemporaneous and lagged models, extended sample

Dependent : five-year GDP growth	(1) Contemp.	(2) Lagged	(3) Contemp.	(4) Lagged	(5) Contemp.	(6) Lagged
Lagged GDP per capita	-5.89e-06***	-5.38e-06***	-5.65e-06***	-5.30e-06***	-5.73e-06***	-5.23e-06***
	(6.98e-07)	(4.96e-07)	(6.78e-07)	(4.58e-07)	(7.29e-07)	(4.76e-07)
Investment rate	0.0015***	-0.00146***	0.0015***	-0.00146***	0.0015***	-0.00142***
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Skill ratio	0.0038**	0.0032**	0.0038**	0.0033**	0.0039**	0.0036**
	(0.0017)	(0.0016)	(0.0017)	(0.0015)	(0.0017)	(0.0016)
Trade openness	0.0001***	0.0001	0.0001**	0.0001	0.0002**	0.0001
	(0.0001)	(0.0000)	(0.0001)	(0.0000)	(0.0001)	(0.0000)
Population growth	-0.0026	-0.0023	-0.0024	-0.0024	-0.0024	-0.0027
	(0.0029)	(0.0021)	(0.0030)	(0.0022)	(0.0029)	(0.0021)
Concentration	0.0090**	0.0055	-	-	-	-
	(0.0038)	(0.0035)	-	-	-	-
MIT dummy	-0.0064	0.0232	-0.0156	0.0087	-0.0207**	-0.0112
	(0.0188)	(0.0188)	(0.0174)	(0.0183)	(0.0083)	(0.0075)
MIT*Concentration	-0.0048	-0.0125**	-	-	-	-
	(0.0043)	(0.0050)	-	-	-	-
Extensive margins	-	-	0.0172**	0.0084	-	-
	-	-	(0.0086)	(0.0059)	-	-
MIT* Extensive margins	-	-	-0.0152	-0.0183***	-	-
	-	-	(0.0094)	(0.0060)	-	-
Intensive margins	-	-	-	-	0.0063	0.0034
	-	-	-	-	(0.0044)	(0.0035)
MIT* Intensive margins	-	-	-	-	-0.0020	-0.0101
	-	-	-	-	(0.0048)	(0.0064)
Constant	0.0045	0.0815***	0.0132	0.0887***	0.0215**	0.0925***
	(0.0104)	(0.0093)	(0.0104)	(0.0087)	(0.0083)	(0.0067)
Observations	404	399	402	395	402	395
Number of idcountry	64	64	64	64	64	64
Adjusted R-squared	0.3546	0.4026	0.3514	0.3936	0.3532	0.3949
Country FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES

Note: Robust standard errors in parentheses; *** p<.01, ** p<.05, * p<.10, NS.

Appendix 1.5 Scatter plot market inequality versus GDP per capita for the whole sample



Appendix 1.6 Redistribution and market inequality: Extended sample, contemporaneous and lagged models

	(1) Contemp.	(2) Lagged	(3) Contemp.	(4) Lagged	(5) Contemp.	(6) Lagged	(7) Contemp.	(8) Lagged
MIT	-	-	-	-	6.417	6.503*	-2.046	-2.060
	-	-	-	-	(3.924)	(3.888)	(2.012)	(1.943)
Market inequality	0.544***	0.569***	0.180***	0.189***	0.603***	0.628***	0.147***	0.154***
	(0.0461)	(0.0455)	(0.0457)	(0.0441)	(0.0504)	(0.0510)	(0.0397)	(0.0376)
Market ineq*MIT	-	-	-	-	-0.117	-0.115	0.0776	0.0803
	-	-	-	-	(0.0789)	(0.0775)	(0.0605)	(0.0634)
Lagged GDP per capita	0.000132**	0.000157*	0.000183**	0.000232	0.000125**	0.000181*	0.000157	0.000178
	(5.83e-05)	(8.94e-05)	(8.81e-05)	(0.00015)	(6.18e-05)	(9.16e-05)	(9.69e-05)	(0.000120)
Constant	-18.64***	-18.97***	-2.555	-1.962	-21.69***	-22.61***	-1.417	-0.497
	(2.228)	(2.453)	(2.584)	(2.944)	(2.556)	(2.847)	(2.465)	(2.765)
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Observation	455	439	379	366	455	439	379	366
Number of countries	64	64	64	64	64	64	64	64
Adj. R-squared	0.590	0.606	0.154	0.157	0.598	0.614	0.177	0.182
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

(1) Robust standard errors in parentheses; Extended means that the comparison group includes MICs not in the MIT and HICs; (2) Significant at *** p<0.01, ** p<0.05, * p<0.10, NS p>0.10

Appendix 1.7 GDP growth, net inequality, and redistribution: Extended sample, contemporaneous and lagged model

	GDP per capita		Without export concentration		With export concentration		GDP per capita		Without export concentration		With export concentration	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Contemp.	Lagged	Contemp.	Lagged	Contemp.	Lagged	Contemp.	Lagged	Contemp.	Lagged	Contemp.	Lagged
MIT	-	-	-	-	-	-	-0.00444	-0.0553***	-0.0102	-0.0646***	-0.0101	-0.0671***
	-	-	-	-	-	-	(0.0113)	(0.0195)	(0.00662)	(0.0208)	(0.00617)	(0.0208)
Net inequality	0.000225	0.000885	0.000504	0.000791	0.000495	0.000812	0.000478	-0.000108	0.000677*	-0.000422	0.000684*	-0.000472
	(0.000436)	(0.000265)	(0.000364)	(0.000247)	(0.000369)	(0.000249)	(0.000395)	(0.000463)	(0.000376)	(0.000453)	(0.000380)	(0.000457)
Redistribution	0.000326	3.27e-05	0.000525	-0.000397	0.000470	-0.000411	-5.52e-05	-0.000504	0.000316	-0.000960***	0.000230	-0.000991**
	(0.000248)	(0.000277)	(0.000315)	(0.000272)	(0.000291)	(0.000289)	(0.000329)	(0.000309)	(0.000333)	(0.000360)	(0.000291)	(0.000374)
MIT*Net inequality	-	-	-	-	-	-	-0.000654	**0.000748***	**-0.000498*****	**0.000917****	**-0.000531*****	**0.000966****
	-	-	-	-	-	-	(0.000247)	**(0.000443)**	**(0.000177)**	**(0.000432)**	**(0.000172)**	**(0.000432)**
MIT*Redistribution	-	-	-	-	-	-	0.000995	0.000746	0.000530	0.000938	0.000565	0.00106
	-	-	-	-	-	-	(0.000599)	(0.000717)	(0.000588)	(0.000655)	(0.000551)	(0.000651)
Lagged GDP per capita	-5e-06***	-5e-06***	-6e-06***	-5e-06***	-6e-06***	-5e-06***	-5e-06***	-5e-06***	-6e-06***	-5e-06***	-6e-06***	-5e-06***
	(4.32e-07)	(4.43e-07)	(6.92e-07)	(5.46e-07)	(6.85e-07)	(5.75e-07)	(4.48e-07)	(4.63e-07)	(7.23e-07)	(5.56e-07)	(7.30e-07)	(5.45e-07)
Political regime	-	-	-0.000297	-0.000381	-0.000359	-0.000409	-	-	-0.000269	-0.000545	-0.000337	-0.000589
	-	-	(0.000354)	(0.000430)	(0.000365)	(0.000433)	-	-	(0.000363)	(0.000453)	(0.000373)	(0.000453)
Export concentration	-	-	-	-	0.00565	0.00181	-	-	-	-	0.00677*	0.000427
	-	-	-	-	(0.00385)	(0.00280)	-	-	-	-	(0.00374)	(0.00233)
Constant	0.0734***	0.0447***	0.0174	0.0815***	0.00904	0.0793***	0.0774***	0.0991***	0.0251	0.147***	0.0152	0.151***
	(0.0 168)	(0.0116)	(0.0178)	(0.0135)	(0.0183)	(0.0134)	(0.0166)	(0.0175)	(0.0183)	(0.0202)	(0.0182)	(0.0208)
Controls	No	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Observations	408	404	389	380	382	374	408	396	389	372	382	366
Nb countries	64	64	64	64	64	64	64	64	64	64	64	64
Adj R-squared	0.297	0.276	0.371	0.333	0.385	0.346	0.318	0.309	0.391	0.384	0.408	0.401
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Inequality MIT	-	-	-	-	-	-	NS	0.000748	0.000179	0.000917	0.000153	0.000966
Redist. MIT	-	-	-	-	-	-	NS	NS	NS	-0.000960	NS	-0.000991
Ineq. non-MIT	-	-	-	-	-	-	NS	NS	0.000677	NS	0.000684	NS
Redist. non-MIT	-	-	-	-	-	-	NS	NS	NS	-0.000960	NS	-0.000991

Appendix 1.8 GDP growth, market inequality, and total redistribution: Restricted sample

	GDP per capita		Without export concentration		With export concentration		GDP per capita		Without export concentration		With export concentration	
	(1) Contemp.	(2) Lagged	(3) Contemp.	(4) Lagged	(5) Contemp.	(6) Lagged	(7) Contemp.	(8) Lagged	(9) Contemp.	(10) Lagged	(11) Contemp.	(12) Lagged
MIT	-	-	-	-	-	-	-0.00886	-0.0602***	-0.0118	-0.0681***	-0.0263	-0.0726***
	-	-	-	-	-	-	(0.0595)	(0.0200)	(0.0295)	(0.0200)	(0.0299)	(0.0203)
Market inequality	-7.45e-05	0.000104	0.000387	-0.000103	0.000429	-0.000117	0.000168	-0.000268	0.000547	-0.000437	0.000346	-0.000478
	(0.000482)	(0.000352)	(0.000435)	(0.000380)	(0.000438)	(0.000394)	(0.00104)	(0.000418)	(0.000681)	(0.000395)	(0.000689)	(0.000404)
Redistribution	-0.000170	**-0.00098****	-0.00069	**-0.00122****	-0.000723	**-0.00110****	**-0.00173***	**-0.00181****	**-0.00145****	**-0.00160***	**-0.00130***	**-0.00148***
	(0.000583)	**(0.000423)**	(0.000477)	**(0.000487)**	(0.000526)	**(0.000500)**	**(0.000954)**	**(0.000865)**	**(0.000697)**	**(0.000831)**	**(0.000747)**	**(0.000818)**
MIT*Market inequality	-	-	-	-	-	-	-0.000528	**0.00101****	-0.000390	**0.00110****	-5.80e-05	**0.00119*****
	-	-	-	-	-	-	(0.00115)	**(0.000430)**	(0.000638)	**(0.000425)**	(0.000655)	**(0.000436)**
MIT*Redistribution	-	-	-	-	-	-	0.00244	0.000713	0.00116	-3.00e-05	0.000925	-9.19e-06
	-	-	-	-	-	-	(0.00132)	(0.00132)	(0.000793)	(0.00136)	(0.000845)	(0.00137)
Lagged GDP per capita	-1e-05***	-1e-05***	-1e-05***	-1e-05***	-1e-05***	-9e-06***	-1.1e-05***	-1.2e-05***	-1.3e-05***	-1e-05***	-1.3e-05***	-9.2e-06***
	(1.87e-06)	(2.03e-06)	(2.33e-06)	(2.40e-06)	(2.34e-06)	(2.36e-06)	(1.80e-06)	(2.03e-06)	(2.06e-06)	(2.31e-06)	(2.05e-06)	(2.22e-06)
Political regime	-	-	0.000367	0.000255	0.000431	0.000222	-	-	0.000390	-0.000161	0.000419	-0.000215
	-	-	(0.000481)	(0.000546)	(0.000469)	(0.000550)	-	-	(0.000471)	(0.000549)	(0.000465)	(0.000543)
Export concentration	-	-	-	-	-0.00485	-0.00250	-	-	-	-	-0.00472	-0.00362
	-	-	-	-	(0.00388)	(0.00337)	-	-	-	-	(0.00417)	(0.00383)
Constant	0.0967***	0.0954***	0.0267	0.115***	0.0394	0.124***	0.108**	0.128***	0.0410	0.145***	0.0644*	0.160***
	(0.0253)	(0.0226)	(0.0266)	(0.0255)	(0.0272)	(0.0261)	(0.0527)	(0.0248)	(0.0360)	(0.0232)	(0.0372)	(0.0227)
Controls	No	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Observations	257	247	246	231	241	226	257	234	246	220	241	215
Nb countries	50	50	48	48	47	47	50	49	48	47	47	46
Adj R-squared	0.339	0.325	0.476	0.368	0.489	0.383	0.365	0.363	0.496	0.393	0.508	0.417
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Inequality MIT	-	-	-	-	-	-	NS	0.00101	NS	0.00110	NS	0.00119
Redist. MIT	-	-	-	-	-	-	-0.00173	-0.00181	-0.00145	-0.00160	-0.00130	-0.00148
Ineq. non-MIT	-	-	-	-	-	-	NS	NS	NS	NS	NS	NS
Redist. non-MIT	-	-	-	-	-	-	-0.00173	-0.00181	-0.00145	-0.00160	-0.00130	-0.00148

Appendix 1.9 GDP growth, market inequality, and total redistribution: Extended sample

	GDP per capita		Without export concentration		With export concentration		GDP per capita		Without export concentration		With export concentration	
	(1) Contemp.	(2) Lagged	(3) Contemp.	(4) Lagged	(5) Contemp.	(6) Lagged	(7) Contemp.	(8) Lagged	(9) Contemp.	(10) Lagged	(11) Contemp.	(12) Lagged
MIT	-	-	-	-	-	-	0.00936	-0.00649	-0.00146	-0.0547***	-0.0599***	-0.0618***
	-	-	-	-	-	-	(0.0409)	(0.0261)	(0.0241)	(0.0193)	(0.0193)	(0.0193)
Market inequality	0.000103	0.000463	0.000447	0.000775	0.000632	0.000640	0.000480	0.000621	0.000683	0.000122	-0.000195	-0.000246
	(0.000402)	(0.000356)	(0.000361)	(0.000290)	(0.000253)	(0.000252)	(0.000545)	(0.000442)	(0.000428)	(0.000295)	(0.000280)	(0.000281)
Redistribution	0.000235	7.20e-05	3.41e-05	-0.000678	**-0.000965****	**-0.000970****	-0.000447	-0.000225	-0.000370	-0.000375	-0.000674	-0.000675
	(0.000481)	(0.000478)	(0.000461)	(0.000455)	(0.000456)	(0.000458)	(0.000591)	(0.000592)	(0.000550)	(0.000389)	(0.000435)	(0.000442)
MIT*Market inequality	-	-	-	-	-	-	-0.000828	-0.000465	-0.000607	**0.000856***	**0.000884****	**0.000915****
	-	-	-	-	-	-	(0.000769)	(0.000552)	(0.000525)	**(0.000456)**	**(0.000430)**	**(0.000424)**
MIT*Redistribution	-	-	-	-	-	-	0.00166*	0.000847	0.00101	-0.000144	-8.18e-05	1.44e-05
	-	-	-	-	-	-	(0.000925)	(0.000757)	(0.000706)	(0.00101)	(0.00109)	(0.00107)
Lagged GDP per capita	-5e-06***	-6e-06***	-6e-06***	-5e-06***	-4.9e-06***	-4.9e-06***	-5.2e-06***	-5.9e-06***	-6e-06***	-5e-06***	-5.2e-06***	-5e-06***
	(4.29e-07)	(6.97e-07)	(6.90e-07)	(4.74e-07)	(5.85e-07)	(6.16e-07)	(4.52e-07)	(7.27e-07)	(7.26e-07)	(4.77e-07)	(6.11e-07)	(6.01e-07)
Political regime	-	-0.000291	-0.000353	-	-0.000301	-0.000337	-	-0.000247	-0.000299	-	-0.000573	-0.000623
	-	(0.000354)	(0.000365)	-	(0.000465)	(0.000464)	-	(0.000360)	(0.000369)	-	(0.000484)	(0.000481)
Export concentration	-	-	0.00560	-	-	0.00155	-	-	0.00689*	-	-	0.000578
	-	-	(0.00385)	-	-	(0.00289)	-	-	(0.00375)	-	-	(0.00259)
Constant	0.0778***	0.0188	0.0108	0.0520***	0.0870***	0.0860***	0.0747***	0.0245	0.0121	0.0885***	0.137***	0.141***
	(0.0160)	(0.0179)	(0.0182)	(0.0116)	(0.0151)	(0.0143)	(0.0239)	(0.0222)	(0.0210)	(0.0129)	(0.0171)	(0.0164)
Controls	No	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Observations	408	389	382	384	362	356	408	389	382	378	356	350
Nb countries	64	64	64	64	64	64	64	64	64	64	64	64
Adj R-squared	0.296	0.370	0.385	0.273	0.324	0.338	0.315	0.388	0.405	0.296	0.362	0.380
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Inequality MIT	-	-	-	-	-	-	NS	NS	NS	0.000856	0.000884	0.000915
Redist. MIT	-	-	-	-	-	-	0.00166	NS	NS	NS	NS	NS
Ineq. non-MIT	-	-	-	-	-	-	NS	NS	NS	NS	NS	NS
Redist. non-MIT	-	-	-	-	-	-	NS	NS	NS	NS	NS	NS

Appendix 1.10 Countries in the sample

Europe and North America		Latin America and Caribbean	Middle East and North Africa	Sub-Saharan Africa	East Asia	South Asia
Austria	Australia	Argentina	Algeria	Botswana	China	Bangladesh
Belgium	Canada	Bolivia	Egypt	Cote d'Ivoire	Hong Kong	India
Bulgaria	New Zealand	Brazil	Iran	Ghana	Indonesia	Nepal
Denmark	United States	Chile	Israel	Kenya	Japan	Pakistan
Finland		Colombia	Jordan	Madagascar	Korea South	Sri Lanka
France		Costa Rica	Morocco	Malawi	Malaysia	
Germany		Dominican Rep	Tunisia	Mauritius	Philippines	
Greece		Ecuador	Turkey	Nigeria	Singapore	
Hungary		El Salvador		Rwanda	Taiwan	
Ireland		Guatemala		Sierra Leone	Thailand	
Italy		Honduras		South Africa		
Netherlands		Jamaica		Tanzania		
Norway		Mexico		Uganda		
Poland		Panama		Zambia		
Portugal		Peru				
Romania		Uruguay				
Spain		Venezuela				
Sweden						
Switzerland						
United Kingdom						

Appendix 1.11 Income category over 1950- 2010: Countries and duration (in years)

Country	Income category				Country	Income category			
	Low	Middle		High		Low	Middle		High
		Lower	Upper				Lower	Upper	
Algeria	17	42	0	0	Madagascar	59	0	0	0
Argentina	0	26	33	0	Malawi	59	0	0	0
Australia	0	0	17	42	Malaysia	17	28	14	0
Austria	0	12	10	37	Mauritius	0	39	11	9
Bangladesh	59	0	0	0	Mexico	0	51	8	0
Bolivia	15	44	0	0	Morocco	25	34	0	0
Botswana	31	28	0	0	Nepal	59	0	0	0
Brazil	6	53	0	0	Netherlands	0	3	14	42
Bulgaria	1	52	6	0	New Zealand	0	0	17	42
Canada	0	0	16	43	Nigeria	59	0	0	0
Chile	0	40	12	7	Norway	0	9	12	38
China	40	17	2	0	Pakistan	52	7	0	0
Colombia	0	59	0	0	Panama	3	56	0	0
Costa Rica	0	54	5	0	Peru	0	59	0	0
Ivory Coast	56	3	0	0	Philippines	25	34	0	0
Denmark	0	1	14	44	Poland	0	48	11	0
Dominican Rep	21	38	0	0	Portugal	0	26	15	18
Ecuador	8	51	0	0	Romania	10	49	0	0
Egypt	28	31	0	0	Rwanda	59	0	0	0
El Salvador	12	47	0	0	Sierra Leone	59	0	0	0
Finland	0	12	10	37	Singapore	0	26	9	24
France	0	8	10	41	Slovenia	0	18	13	28
Germany	0	8	12	39	South Africa	0	59	0	0
Ghana	59	0	0	0	Spain	0	21	16	22
Greece	0	20	26	13	Sri Lanka	31	28	0	0
Guatemala	1	58	0	0	Sweden	0	2	14	43
Honduras	48	11	0	0	Switzerland	0	0	4	55
Hong Kong	0	24	6	29	Taiwan	15	19	6	19
Hungary	0	50	9	0	Tanzania	59	0	0	0
India	51	8	0	0	Thailand	24	27	8	0
Indonesia	34	25	0	0	Tunisia	20	39	0	0
Iran	7	52	0	0	Turkey	2	51	6	0
Ireland	0	23	15	21	USA	0	0	8	51
Israel	0	17	12	30	Uganda	59	0	0	0
Italy	0	14	10	35	United Kingdom	0	1	19	39
Jamaica	3	56	0	0	Uruguay	0	42	16	1
Japan	0	16	6	37	Venezuela	0	1	57	1
Jordan	4	55	0	0	Zambia	59	0	0	0
Kenya	59	0	0	0					
Korea South	17	19	7	16					

Appendix 1.12 Descriptive statistics

Variable	Mean	Standard deviation	Minimum	Maximum
GDP per capita growth rate	0.02	0.03	-0.14	0.17
GDP per capita	7604.84	6906.53	517.66	30915.89
Population growth	1.62	1.13	-4.64	6.31
Dependency ratio	56.56	23.87	17.58	106.36
Tertiary education (Rate of completion)	4.99	4.95	0.06	26.36
Secondary education (rate of achievement)	16.40	12.04	0.03	51.15
Skill ratio	0.42	0.74	0.01	9.45
Trade openness ratio	62.51	47.03	8.04	418.91
Investment rate	21.64	5.86	3.96	43.94
Political regime	3.46	6.91	-10.00	10.00
Export concentration	2.93	1.16	1.07	6.14
Extensive margin	0.42	0.43	-0.04	2.70
Intensive margins	2.52	0.95	1.04	5.50
Market inequality	45.57	8.66	19.44	71.69
Net inequality	38.55	10.26	16.96	66.40
Redistribution	7.10	6.92	-10.82	27.59

Appendix to Chapter 2

Appendix 2.1 Countries in the sample by income-level – Section 1

High income	Low and lower middle-income		Upper middle-income	
Australia	Albania	Mali	Algeria	Jordan
Austria	Armenia	Moldova	Botswana	Kazakhstan
Belgium	Bangladesh	Mongolia	Brazil	Korea. Rep.
Canada	Bolivia	Morocco	Bulgaria	Malaysia
Denmark	Burundi	Namibia	Chile	Mauritius
Finland	Cameroon	Nicaragua	Costa Rica	Mexico
France	Central African Republic	Pakistan	Croatia	Poland
Germany	Congo. Dem. Rep.	Peru	Cyprus	Portugal
Ireland	Congo. Rep.	Philippines	Czech Republic	Romania
Luxembourg	Cote d'Ivoire	Senegal	Dominican Republic	Slovak Republic
Netherlands	El Salvador	Sierra Leone	Egypt. Arab Rep.	Slovenia
Norway	Ghana	Sri Lanka	Estonia	South Africa
Sweden	Guatemala	Tajikistan	Greece	Spain
Switzerland	India	Togo	Hungary	Thailand
United Kingdom	Indonesia	Ukraine	Iran. Islamic Rep.	Tunisia
United States	Jamaica	Vietnam	Israel	Turkey
	Liberia		Italy	Uruguay

Appendix 2.2 SUR estimations of the impact of the middle-class on consumption, investment and public expenditures: alternative specifications

		Government effectiveness			Polity score and population			Without institution			Without population and institution		
		(1) ALL	(2) UMIC	(3) LLMIC	(4) ALL	(5) UMIC	(6) LLMIC	(7) ALL	(8) UMIC	(9) LLMIC	(10) ALL	(11) UMIC	(12) LLMIC
Consumption	Middle-class	-0.240***	-0.116**	-0.448*	-0.241***	-0.118**	-0.491*	-0.241***	-0.117**	-0.474*	-0.241***	-0.117**	-0.463*
		(0.0444)	(0.0462)	(0.261)	(0.0443)	(0.0462)	(0.260)	(0.0443)	(0.0462)	(0.260)	(0.0443)	(0.0462)	(0.260)
	Rich	-0.298***	-0.133	-3.041	-0.297***	-0.132	-3.041	-0.298***	-0.133	-3.042	-0.298***	-0.133	-3.043
		(0.0607)	(0.0924)	(2.616)	(0.0607)	(0.0924)	(2.616)	(0.0607)	(0.0924)	(2.616)	(0.0607)	(0.0924)	(2.616)
	Private credit	0.0264	0.0549**	-0.0219	0.0243	0.0552**	0.0327	0.0261	0.0553**	0.0109	0.0260	0.0554**	-0.00332
		(0.0255)	(0.0230)	(0.130)	(0.0254)	(0.0230)	(0.129)	(0.0254)	(0.0230)	(0.129)	(0.0254)	(0.0230)	(0.129)
	Inflation	0.0103	0.0773	0.00799	-0.00476	0.0698	-0.0187	0.00411	0.0742	-0.0111	0.00318	0.0768	-0.0127
		(0.0550)	(0.0936)	(0.0808)	(0.0534)	(0.0939)	(0.0781)	(0.0540)	(0.0928)	(0.0794)	(0.0542)	(0.0927)	(0.0797)
	R-squared	0.390	0.392	0.196	0.389	0.392	0.193	0.390	0.392	0.195	0.390	0.392	0.195
Invesment	Middle-class	0.0235	0.0528	0.0457*	0.0276*	0.0237	0.0479	0.0407***	0.0373*	0.0585	0.0407***	0.0372*	0.0594
		(0.0175)	(0.0776)	(0.0272)	(0.0151)	(0.0241)	(0.0796)	(0.0146)	(0.0222)	(0.0816)	(0.0146)	(0.0222)	(0.0816)
	Rich	-0.0317	0.357	-0.0406	-0.0176	-0.0447	0.773	-0.0126	-0.0430	0.888	-0.0126	-0.0430	0.888
		(0.0225)	(0.761)	(0.0465)	(0.0198)	(0.0457)	(0.755)	(0.0199)	(0.0463)	(0.772)	(0.0199)	(0.0463)	(0.772)
	Growth rate	0.812***	0.823***	0.643***	0.843***	0.664***	0.867***	0.866***	0.634***	0.914***	0.867***	0.636***	0.913***
		(0.122)	(0.197)	(0.193)	(0.118)	(0.189)	(0.198)	(0.120)	(0.190)	(0.203)	(0.120)	(0.190)	(0.203)
	Exchange rate	0.000192	0.000283	6.35e-05	0.000344***	0.000188	0.000474**	0.000169	8.56e-05	0.000173	0.000159	8.17e-05	0.000175
		(0.000122)	(0.000204)	(0.000353)	(0.000125)	(0.000337)	(0.000230)	(0.000122)	(0.000338)	(0.000212)	(0.000123)	(0.000339)	(0.000212)
	Private credit	-0.00912	-0.0232	-0.00733	-0.00608	-0.0139	0.00517	-0.00237	-0.00839	-0.00640	-0.00254	-0.00820	-0.00752
		(0.00875)	(0.0429)	(0.0122)	(0.00825)	(0.0109)	(0.0430)	(0.00836)	(0.0114)	(0.0441)	(0.00837)	(0.0114)	(0.0441)
	Government effectiveness	1.148*	3.690***	-0.477	-	-	-	-	-	-	-	-	-
		(0.632)	(1.355)	(0.950)	-	-	-	-	-	-	-	-	-
	Polity2	-	-	-	0.239***	0.173	0.366***	-	-	-	-	-	-
		-	-	-	(0.0750)	(0.112)	(0.136)	-	-	-	-	-	-
	R-squared	0.387	0.497	0.341	0.381	0.360	0.470	0.371	0.344	0.447	0.371	0.343	0.447

Appendix 2.2 continued in next page

Appendix 2.2 (continued)

Public expenditures	Middle-class	0.160***	0.144***	0.331***	0.141***	0.127***	0.369***	0.172***	0.185***	0.382***	0.182***	0.195***	0.387***
		(0.0488)	(0.0285)	(0.0521)	(0.0225)	(0.0421)	(0.0557)	(0.0217)	(0.0419)	(0.0566)	(0.0216)	(0.0393)	(0.0576)
	Rich	-0.121	-0.0566	-0.000881	-0.0439	-0.104	0.468	-0.0248	-0.107	0.496	-0.0199	-0.107	0.595
		(0.0806)	(0.0383)	(0.565)	(0.0319)	(0.0749)	(0.597)	(0.0326)	(0.0802)	(0.609)	(0.0329)	(0.0802)	(0.620)
	Growth rate	-0.714**	-0.602***	-0.499***	-0.562***	-0.537*	-0.312*	-0.510**	-0.686**	-0.268	-0.476**	-0.655*	-0.220
		(0.339)	(0.205)	(0.160)	(0.195)	(0.321)	(0.168)	(0.201)	(0.340)	(0.171)	(0.203)	(0.337)	(0.172)
	Government effectiveness	1.781	1.629	5.292***	-	-	-	-	-	-	-	-	-
		(1.583)	(1.033)	(1.154)	-	-	-	-	-	-	-	-	-
	Natural rent	-0.419***	-0.111*	0.157***	-0.0880	-0.163	0.0185	-0.165***	-0.463***	0.00275	-0.169***	-0.476***	0.00952
		(0.108)	(0.0645)	(0.0536)	(0.0605)	(0.107)	(0.0509)	(0.0611)	(0.107)	(0.0519)	(0.0619)	(0.104)	(0.0530)
	Trade openness	-0.0360	0.0113	0.0173	0.0185	-0.0158	0.0272*	0.0115	-0.0303	0.0209	0.0297***	-0.0221	0.0281**
		(0.0254)	(0.0120)	(0.0130)	(0.0116)	(0.0226)	(0.0142)	(0.0121)	(0.0248)	(0.0144)	(0.0104)	(0.0212)	(0.0141)
	Population (ln)	-0.408	-1.069***	-0.680**	-0.854**	-0.289	-0.674*	-1.071***	-0.415	-0.739**	-	-	-
		(0.645)	(0.372)	(0.322)	(0.362)	(0.586)	(0.351)	(0.374)	(0.646)	(0.357)	-	-	-
	Polity2	-	-	-	0.492***	0.845***	0.208**	-	-	-	-	-	-
		-	-	-	(0.121)	(0.201)	(0.0962)	-	-	-	-	-	-
	R-squared	0.689	0.672	0.737	0.687	0.723	0.689	0.667	0.683	0.677	0.661	0.684	0.665
	Observations	247	109	90	247	109	90	247	109	90	247	109	90
	Countries	83	34	33	83	34	33	83	34	33	83	34	33
	Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Appendix 2.3 Two-step GMM estimation of the effect of middle-class on public expenditures: transfers and subsidies; education and health expenditures

	Transfers and subsidies						**Education and health expenditures**					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Sample	ALL	UMIC	LLMIC	ALL	UMIC	LLMIC	ALL	UMIC	LLMIC	ALL	UMIC	LLMIC
Middle-class	**0.205***	**0.312*****	**0.365****	-	-	-	**0.0414*****	0.0521	0.100	-	-	-
	(0.109)	**(0.0904)**	**(0.140)**	-	-	-	**(0.0153)**	(0.0404)	(0.0986)	-	-	-
Rich	0.0861	-0.259	-2.689**	-	-	-	0.0740***	0.105	-0.376	-	-	-
	(0.0597)	(0.158)	(1.088)	-	-	-	(0.0112)	(0.0708)	(0.966)	-	-	-
Poor	-	-	-	0.0783	0.132	0.0684	-	-	-	0.00395	-0.0515	0.0297
	-	-	-	(0.130)	(0.115)	(0.0786)	-	-	-	(0.0376)	(0.0354)	(0.0404)
Lower MC	-	-	-	0.115	**0.360*****	**0.659*****	-	-	-	0.0253	0.0265	0.0445
	-	-	-	(0.0880)	**(0.127)**	**(0.135)**	-	-	-	(0.0483)	(0.0331)	(0.155)
Upper MC	-	-	-	0.118	**0.268***	**-0.991***	-	-	-	0.0767	-0.0123	0.226
	-	-	-	(0.191)	**(0.143)**	**(0.514)**	-	-	-	(0.0491)	(0.0416)	(0.536)
Growth rate	1.031	-0.0947	-0.0690	0.184	-0.417	-0.146	0.263*	0.384	-0.0762	0.0593	-0.194	-0.339
	(0.833)	(0.637)	(1.151)	(0.591)	(0.665)	(0.470)	(0.147)	(0.353)	(0.312)	(0.425)	(0.339)	(0.299)
Polity2	-0.0241	0.0126	0.0930	0.000862	-0.0115	0.0914	-0.0305	0.0642	0.000242	-0.0561	-0.0772	-0.00370
	(0.156)	(0.349)	(0.175)	(0.122)	(0.253)	(0.107)	(0.0343)	(0.137)	(0.0688)	(0.0595)	(0.0862)	(0.0674)
Natural rent	0.0706	-0.0368	-0.0282	0.0535	-0.0123	-0.0136	-0.0106	-0.00527	-0.0125	-0.0159	-0.00219	0.0101
	(0.0771)	(0.0280)	(0.0597)	(0.0382)	(0.0249)	(0.0469)	(0.00817)	(0.0135)	(0.0332)	(0.0173)	(0.0127)	(0.0264)
Trade openness	4.504	-0.469	0.711	3.153	0.774	0.733	-0.687	-0.108	0.630	0.599	-0.418	0.142
	(5.946)	(2.895)	(2.678)	(2.249)	(2.692)	(1.684)	(0.672)	(0.445)	(1.881)	(0.972)	(0.390)	(1.099)
Population (ln)	0.660	-0.0131	0.701**	1.347	0.0205	0.287	-0.0283	0.208	0.257	0.117	-0.0538	0.0210
	(0.735)	(0.607)	(0.255)	(0.833)	(0.506)	(0.279)	(0.121)	(0.364)	(0.341)	(0.231)	(0.193)	(0.117)
Observations	236	106	81	236	106	81	204	85	78	204	85	78
Countries	77	32	29	77	32	29	81	32	33	81	32	33
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR(2)	0.985	0.865	0.780	0.463	0.820	0.743	N/A	N/A	N/A	N/A	N/A	N/A
Hansen (p-value)	0.527	0.733	0.255	0.278	0.441	0.598	0.435	0.0824	0.706	0.0502	0.142	0.559

Appendix 2.4 Countries in the sample by income-level – Section 2

High income	Low and lower-middle income		Upper-middle income	
Australia	Armenia	Morocco	Albania	Malaysia
Austria	Bangladesh	Mozambique	Algeria	Mauritius
Belgium	Benin	Nepal	Argentina	Mexico
Canada	Bolivia	Niger	Brazil	Mongolia
Denmark	Burundi	Pakistan	Bulgaria	Panama
Finland	Cameroon	Philippines	Chile	Peru
France	Cent. African Rep.	Rwanda	Croatia	Poland
Germany	Cote d'Ivoire	Senegal	Dominican Rep.	Portugal
Ireland	El Salvador	Sierra Leone	Ecuador	Romania
Israel	Ghana	Sri Lanka	Egypt. Arab Rep.	Russia
Italy	Guatemala	Sudan	Estonia	Slovenia
Japan	India	Syria	Gabon	South Africa
Netherlands	Indonesia	Tajikistan	Greece	Thailand
Norway	Jamaica	Togo	Hungary	Tunisia
Spain	Kenya	Uganda	Iran. Islamic Rep.	Turkey
Sweden	Liberia	Zambia	Jordan	Ukraine
Switzerland	Malawi	Zimbabwe	Kazakhstan	Uruguay
United Kingdom	Mali		Latvia	
United States	Mauritania		Lithuania	

Appendix 2.5 Two-step GMM estimation of the effect of the middle-class on the productive structure for the samples of UMIC and LLMIC – With control for education

	UMIC						LLMIC					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Manufacture	Service	Modern Service	Manufacture	Service	Modern Service	Manufacture	Service	Modern Service	Manufacture	Service	Modern Service
Middle-class	0.315	-0.0340	0.306	-	-	-	-0.0124	0.0482	-0.263	-	-	-
	(0.426)	(0.412)	(0.248)	-	-	-	(0.282)	(0.326)	(0.296)	-	-	-
Rich	-0.206	-0.0336	0.0855	-	-	-	-0.0950	1.543	3.307	-	-	-
	(0.383)	(0.578)	(0.430)	-	-	-	(1.081)	(1.941)	(2.044)	-	-	-
Poor	-	-	-	0.0676	0.0202	0.0789	-	-	-	-0.0777	-0.133	0.0130
	-	-	-	(0.129)	(0.137)	(0.0684)	-	-	-	(0.137)	(0.356)	(0.0841)
Lower MC	-	-	-	0.279	0.246	0.0888	-	-	-	-0.0318	-1.714	0.606
	-	-	-	(0.391)	(0.368)	(0.164)	-	-	-	(0.862)	(1.868)	(0.754)
Upper MC	-	-	-	0.209	0.223	**0.318****	-	-	-	0.0686	5.459	0.342
	-	-	-	(0.316)	(0.231)	**(0.153)**	-	-	-	(1.561)	(3.936)	(1.598)
Education	-0.513	-2.207	-0.869	-0.835	-2.629	-1.718	0.798	0.697	0.548	1.397	1.891	-1.708*
	(1.731)	(2.588)	(1.584)	(1.721)	(2.078)	(1.816)	(0.843)	(0.938)	(0.569)	(1.053)	(3.127)	(0.885)
Population (ln)	3.785	-6.494	1.995	1.611	0.258	0.877	2.000	-1.153	0.266	1.335	-2.804	3.199
	(4.641)	(4.974)	(2.613)	(4.509)	(5.779)	(3.140)	(1.453)	(1.526)	(3.345)	(1.494)	(3.687)	(2.122)
Natural rent	-0.204	-0.370	-0.219	-0.138	-0.443	-0.183	-0.289	-0.212	-0.0839	-0.258	-0.682	-0.0785
	(0.303)	(0.317)	(0.189)	(0.301)	(0.297)	(0.163)	(0.186)	(0.130)	(0.160)	(0.159)	(0.731)	(0.173)
Phone coverage	-0.111	0.0876	-0.0931	-0.0832	0.0614	-0.0154	0.0429	0.0583	0.0297	0.0328	-0.0903	0.0108
	(0.185)	(0.138)	(0.0981)	(0.179)	(0.168)	(0.0287)	(0.0648)	(0.0425)	(0.0613)	(0.0628)	(0.101)	(0.0901)
Trade openness	0.0361	-0.00167	-0.0461	0.0449	0.0481	0.00959	0.129	-0.155***	-0.0427	0.106	-0.194	0.0200
	(0.0788)	(0.0603)	(0.0573)	(0.0752)	(0.151)	(0.0453)	(0.0955)	(0.0410)	(0.0421)	(0.0932)	(0.178)	(0.0369)
Observations	128	128	128	128	128	128	106	106	106	106	106	106
Countries	36	36	36	36	36	36	36	36	36	36	36	36
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR(2)	0.584	0.364	0.0530	0.428	0.995	0.115	0.811	0.695	0.325	0.766	0.739	0.787
Hansen (p-value)	0.811	0.940	0.720	0.993	0.332	0.255	0.462	0.973	0.788	0.498	0.831	0.165

Appendix 2.6 Two-step GMM estimation of the effect of the middle-class on productive transformation: ratio of sector value added – Without control for education –Entire sample

	(1) manu_agr	(2) manu_agr	(3) serv_manu	(4) serv_manu	(5) other_manu	(6) other_manu	(7) ind_agr	(8) ind_agr	(9) serv_ind	(10) serv_ind	(11) other_ind	(12) other_ind
Middle-class	**0.0591***	-	-6.663	-	-2.475	-	**8.782****	-	**-2.998***	-	-1.589	-
	(0.0315)	-	(5.499)	-	(3.343)	-	**(3.756)**	-	**(1.778)**	-	(1.226)	-
Rich	**0.0821****	-	**3.420***	-	**2.833****	-	**18.27*****	-	**1.426***	-	**1.306****	-
	(0.0357)	-	**(1.948)**	-	**(1.178)**	-	**(3.459)**	-	**(0.807)**	-	**(0.518)**	-
Poor	-	0.0131	-	2.562	-	1.714	-	2.785	-	0.998	-	0.969
	-	(0.0216)	-	(2.017)	-	(1.567)	-	(4.261)	-	(0.918)	-	(0.683)
Lower MC	-	-0.0225	-	-7.484	-	-5.150	-	-4.824	-	**-2.542***	-	**-1.811***
	-	(0.0425)	-	(5.134)	-	(3.331)	-	(7.001)	-	**(1.351)**	-	**(0.963)**
Upper MC	-	**0.122****	-	1.568	-	1.926	-	**21.81*****	-	1.286	-	1.770
	-	**(0.0471)**	-	(3.492)	-	(3.006)	-	**(7.999)**	-	(1.396)	-	(1.149)
Population (ln)	0.205	0.438	-81.87	37.57	-4.220	52.19	218.1	88.44	36.71	45.40*	28.74	36.71
	(1.462)	(0.756)	(263.8)	(82.12)	(145.0)	(76.68)	(256.2)	(126.8)	(80.52)	(25.15)	(67.93)	(22.69)
Natural rent	-0.0125	-0.0573	1.515	1.775	1.016	-0.546	7.517	-2.268	-5.953***	-4.705***	-3.568**	-2.717**
	(0.0446)	(0.0571)	(4.695)	(3.977)	(2.318)	(3.495)	(7.630)	(7.684)	(1.725)	(1.311)	(1.570)	(1.275)
Phone coverage	-0.00721	-0.00170	2.884	1.105	0.948	0.534	0.0568	0.339	0.921	-0.196	0.403	-0.286
	(0.0162)	(0.0125)	(2.675)	(1.443)	(1.641)	(0.979)	(1.606)	(1.393)	(0.827)	(0.470)	(0.578)	(0.335)
Trade openness	-0.00193	0.0221	0.00166	-0.172	0.272	0.175	2.121	2.578	1.118	0.821*	0.699	0.514
	(0.0147)	(0.0298)	(3.406)	(1.767)	(1.986)	(1.259)	(3.250)	(3.593)	(1.005)	(0.488)	(0.740)	(0.383)
Constant	0.259	-1.360	598.8	297.2	211.1	82.71	-817.6	-244.3	71.38	85.96	20.44	16.91
	(5.240)	(4.166)	(1,078)	(391.3)	(596.3)	(316.1)	(1,043)	(588.8)	(301.5)	(109.7)	(253.3)	(98.93)
Observations	291	291	291	291	291	291	291	291	291	291	291	291
Countries	91	91	91	91	91	91	91	91	91	91	91	91
Sample	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR(2)	0.456	0.881	0.215	0.373	0.223	0.545	0.925	0.408	0.329	0.187	0.396	0.226
Hansen (p-value)	0.305	0.306	0.464	0.302	0.321	0.451	0.559	0.340	0.909	0.0999	0.973	0.205

Appendix 2.7 Two-step GMM estimation of the effect of the middle-class on productive transformation: ratio of sector value added – With control for education – Entire sample

	(1) manu_agr	(2) manu_agr	(3) serv_manu	(4) serv_manu	(5) other_manu	(6) other_manu	(7) ind_agr	(8) ind_agr	(9) serv_ind	(10) serv_ind	(11) other_ind	(12) other_ind
Middle-class	**0.0685****	-	-9.811	-	-5.672	-	**6.809****	-	-3.211	-	-1.758	-
	(0.0275)	-	(6.231)	-	(3.488)	-	**(3.412)**	-	(2.082)	-	(1.086)	-
Rich	**0.0677***	-	**3.943***	-	**3.286*****	-	**18.04*****	-	**1.215***	-	**1.145*****	-
	(0.0390)	-	**(2.016)**	-	**(1.189)**	-	**(3.590)**	-	**(0.647)**	-	**(0.384)**	-
Poor	-	0.0167	-	-2.957	-	-1.695	-	1.635	-	-0.353	-	-0.513
	-	(0.0209)	-	(3.496)	-	(1.971)	-	(4.038)	-	(1.276)	-	(0.828)
Lower MC	-	-0.0393	-	-5.415	-	-3.460	-	-8.542	-	**-4.000****	-	**-2.753****
	-	(0.0451)	-	(5.436)	-	(3.575)	-	(6.724)	-	**(1.823)**	-	**(1.146)**
Upper MC	-	**0.121*****	-	-6.429	-	-3.289	-	**17.05****	-	-1.815	-	-1.256
	-	**(0.0444)**	-	(5.491)	-	(3.622)	-	**(7.445)**	-	(2.288)	-	(1.518)
Education	0.0791	0.118	14.14	39.31	6.338	22.31	16.68	45.26	7.223	15.04	3.917	12.87
	(0.281)	(0.269)	(25.98)	(32.26)	(15.07)	(19.87)	(36.28)	(50.93)	(8.814)	(11.61)	(4.737)	(7.989)
Population (ln)	0.414	0.478	51.79	-59.11	46.72	-11.02	275.7	112.5	34.86	8.897	25.44	3.144
	(2.298)	(0.840)	(92.67)	(89.88)	(57.33)	(50.22)	(221.1)	(115.1)	(34.96)	(30.66)	(20.03)	(19.12)
Natural rent	-0.0242	-0.0346	0.319	1.280	-0.155	0.120	8.336	-0.903	-5.781***	-5.335***	-3.301***	-3.099***
	(0.0710)	(0.0618)	(3.796)	(3.197)	(2.342)	(1.957)	(7.706)	(8.943)	(1.220)	(1.113)	(0.902)	(0.798)
Phone coverage	-0.0103	-0.000461	4.087	1.060	2.288*	0.704	0.891	0.435	0.838	0.295	0.415	0.143
	(0.00954)	(0.0109)	(2.460)	(1.668)	(1.343)	(1.054)	(1.306)	(1.191)	(0.745)	(0.550)	(0.406)	(0.357)
Trade openness	-0.00209	0.0253	1.544	-1.083	1.164	-0.431	2.553	3.131	1.068	0.748	0.703	0.420
	(0.0252)	(0.0309)	(1.887)	(1.561)	(1.178)	(0.857)	(3.448)	(3.831)	(0.844)	(0.592)	(0.488)	(0.415)
Observations	291	291	291	291	291	291	291	291	291	291	291	291
Country	91	91	91	91	91	91	91	91	91	91	91	91
Sample	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR(2)	0.661	0.559	0.130	0.900	0.0983	0.616	0.905	0.168	0.397	0.426	0.366	0.552
Hansen (p-value)	0.444	0.395	0.737	0.0734	0.534	0.0181	0.718	0.194	0.885	0.105	0.938	0.0585

Appendix 2.8 Two-step GMM estimation of the effect of the middle-class on productive transformation (ratio of sector value added) on the sample of LLMIC – Without control for education

	(1) manu_agr	(2) serv_manu	(3) other_manu	(4) ind_agr	(5) serv_ind	(6) other_ind	(7) manu_agr	(8) serv_manu	(9) other_manu	(10) ind_agr	(11) serv_ind	(12) other_ind
Middle-class	**0.0344***	-6.427	-2.776	**9.105****	-5.455	-2.555	-	-	-	-	-	-
	(0.0201)	(15.19)	(9.284)	**(4.025)**	(4.533)	(2.251)	-	-	-	-	-	-
Rich	-0.0893	36.98	19.71	-25.09	-1.015	3.391	-	-	-	-	-	-
	(0.0960)	(93.16)	(56.07)	(28.65)	(43.86)	(21.73)	-	-	-	-	-	-
Poor	-	-	-	-	-	-	-0.00245	-1.887	-1.167	-0.148	**-1.829****	-0.911
	-	-	-	-	-	-	(0.00854)	(3.941)	(2.304)	(1.076)	**(0.851)**	(1.022)
Lower MC	-	-	-	-	-	-	0.0594	-28.09	-18.60	7.838	**-15.23***	**-13.09****
	-	-	-	-	-	-	(0.0747)	(29.55)	(22.89)	(8.521)	**(8.281)**	**(6.199)**
Upper MC	-	-	-	-	-	-	-0.0496	47.31	41.20	2.583	18.63	**23.04***
	-	-	-	-	-	-	(0.123)	(55.99)	(47.92)	(17.43)	(17.79)	**(11.51)**
Population (ln)	0.158	-147.9	-81.87	-14.20	-114.8	-53.98	0.159	-80.95	-24.46	25.92	-66.66*	-26.16
	(0.154)	(344.5)	(240.5)	(34.60)	(111.7)	(65.31)	(0.179)	(88.93)	(72.63)	(35.69)	(32.90)	(26.69)
Natural rent	-0.0266***	6.440	2.940	-3.440**	-4.403**	-2.332**	-0.0247**	5.491	4.005	-1.975	-3.243*	-1.590
	(0.00718)	(5.824)	(2.895)	(1.628)	(1.820)	(0.894)	(0.0104)	(4.408)	(3.915)	(2.185)	(1.739)	(1.689)
Phone coverage	0.00491	-1.377	-0.889	0.506	0.390	0.0298	0.00365	-0.0763	-0.730	0.763*	0.607	0.0131
	(0.00380)	(1.967)	(1.162)	(0.396)	(0.673)	(0.676)	(0.00456)	(2.116)	(1.449)	(0.444)	(0.653)	(0.610)
Trade openness	0.00538	-3.256	-1.403	0.410	-1.187	-0.640	0.00457	-3.383*	-1.269	0.514	-1.059**	-0.479*
	(0.00494)	(2.348)	(1.409)	(0.364)	(0.826)	(0.549)	(0.00526)	(1.786)	(1.212)	(0.520)	(0.445)	(0.282)
Constant	-0.397	1,169	622.6	95.12	706.3*	365.7*	-0.282	1,024**	494.3	-58.91	582.2***	305.8**
	(0.871)	(1,219)	(844.9)	(136.7)	(354.1)	(192.1)	(0.619)	(440.4)	(357.7)	(144.9)	(145.7)	(119.6)
Observations	106	106	106	106	106	106	106	106	106	106	106	106
Countries	36	36	36	36	36	36	36	36	36	36	36	36
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR(2)	0.380	0.491	0.797	0.0512	0.229	0.217	0.378	0.466	0.493	0.125	0.566	0.543
Hansen (p-value)	0.848	0.701	0.600	0.520	0.889	0.781	0.643	0.526	0.470	0.646	0.672	0.828

Appendix 2.9 Two-step GMM estimation of the effect of the middle-class on export concentration and quality for the samples of UMIC and LLMIC

	UMIC						LLMIC					
	(1) IMF	(3) UNCTAD	(2) Quality	(4) IMF	(5) UNCTAD	(6) Quality	(7) IMF	(9) UNCTAD	(8) Quality	(10) IMF	(12) UNCTAD	(11) Quality
Middle-class	-0.00508	0.00334	0.000999	-	-	-	0.00398	0.00752	0.00262	-	-	-
	(0.0198)	(0.00550)	(0.00229)	-	-	-	(0.0253)	(0.00629)	(0.00600)	-	-	-
Rich	0.00366	-0.00170	0.00496	-	-	-	0.0571	-0.0488	0.00773	-	-	-
	(0.0383)	(0.00876)	(0.00471)	-	-	-	(0.190)	(0.0369)	(0.0196)	-	-	-
Poor	-	-	-	-0.00382	0.000169	0.00142	-	-	-	0.00695	0.00247	0.00764**
	-	-	-	(0.0130)	(0.00272)	(0.00157)	-	-	-	(0.0233)	(0.00310)	(0.00323)
Lower MC	-	-	-	-0.0157	0.000531	-0.000342	-	-	-	0.00328	0.00839	-0.00845
	-	-	-	(0.0233)	(0.00460)	(0.00280)	-	-	-	(0.114)	(0.0211)	(0.0178)
Upper MC	-	-	-	-0.00577	0.00224	**0.00167***	-	-	-	0.00222	-0.0132	0.0442
	-	-	-	(0.0147)	(0.00189)	**(0.000886)**	-	-	-	(0.197)	(0.0411)	(0.0496)
Education	-0.0660	-0.00727	0.00139	0.00930	-0.00175	-0.00697	-0.121	-0.0282	0.0102	-0.115	-0.0449*	-0.0355
	(0.220)	(0.0219)	(0.0280)	(0.195)	(0.0182)	(0.0231)	(0.0722)	(0.0200)	(0.0168)	(0.101)	(0.0233)	(0.0355)
Population (ln)	-0.112	-0.0333	-0.00307	-0.0894	-0.0296	-0.00904	-0.0975	-0.0760	0.0431*	-0.0470	-0.0407	0.0907**
	(0.144)	(0.0264)	(0.0196)	(0.188)	(0.0199)	(0.0299)	(0.223)	(0.0553)	(0.0240)	(0.395)	(0.0644)	(0.0374)
Polity2	-0.0376	-0.0123***	0.00578	-0.0527	-0.0137**	0.00825**	-0.117***	-0.0197*	0.0129*	-0.115**	-0.0182	0.00987
	(0.0534)	(0.00379)	(0.00430)	(0.0400)	(0.00573)	(0.00404)	(0.0351)	(0.0105)	(0.00719)	(0.0498)	(0.0113)	(0.00796)
FDI	-0.0148	-0.00324	0.00897**	-0.00130	-0.00109	0.00303	-0.00228	-0.00328	0.00109	-0.000568	-0.00499*	0.000191
	(0.0385)	(0.00583)	(0.00401)	(0.0422)	(0.00676)	(0.00515)	(0.00605)	(0.00250)	(0.00193)	(0.00881)	(0.00293)	(0.00286)
Natural rent	0.0787***	0.0150***	-0.00524***	0.0746***	0.0139***	-0.00445*	0.0176	-0.000299	0.00106	0.0225**	0.00110	0.00335
	(0.0210)	(0.00168)	(0.00181)	(0.0146)	(0.00318)	(0.00223)	(0.0136)	(0.00387)	(0.00513)	(0.0102)	(0.00348)	(0.00794)
Phone coverage	0.00140	-0.000878	-0.00118	0.00250	-0.000335	-4.80e-05	-0.00442	-0.00183	0.000206	-0.00401	-0.00122	-0.00161
	(0.00806)	(0.00187)	(0.000877)	(0.00875)	(0.00190)	(0.000815)	(0.00736)	(0.00138)	(0.00108)	(0.00566)	(0.00191)	(0.00197)
Trade openness	-0.00392	-0.00110	0.000408	-0.00477	-0.000930	0.000494	0.00222	-0.000403	-1.14e-05	0.00294	0.000399	-0.000112
	(0.00277)	(0.000803)	(0.000443)	(0.00366)	(0.00107)	(0.000413)	(0.00419)	(0.00125)	(0.000515)	(0.00723)	(0.00137)	(0.00129)
Observations	128	128	128	128	128	128	106	106	106	106	106	106
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR(2)	0.956	0.938	0.619	0.686	0.819	0.657	0.900	0.407	0.114	0.902	0.357	0.751
Hansen	0.235	0.304	0.267	0.320	0.291	0.282	0.728	0.330	0.843	0.767	0.402	0.984

Appendix 2.10 Two-step GMM estimation of the effect of the middle-class on economic complexity for the samples of UMIC and LLMIC

	UMIC				LLMIC			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Middle-class	0.0106	-	0.0321**	-	-0.00156	-	-0.0102	-
	(0.0181)	-	(0.0141)	-	(0.0513)	-	(0.0607)	-
Rich	-0.00274	-	-0.0217	-	0.240	-	0.155	-
	(0.0307)	-	(0.0178)	-	(0.532)	-	(0.338)	-
Poor	-	0.00623	-	-0.00600	-	-	-	0.00682
	-	(0.0123)	-	(0.00467)	-	-	-	(0.0150)
Lower MC	-	0.0269	-	-0.00136	-	-	-	-0.0181
	-	(0.0170)	-	(0.0119)	-	-	-	(0.131)
Upper MC	-	0.0210**	-	0.00482	-	-	-	0.178
	-	(0.00779)	-	(0.00887)	-	-	-	(0.235)
Education	-	-	0.00878	0.146	-	-	0.0771	0.170
	-	-	(0.126)	(0.0966)	-	-	(0.0613)	(0.113)
Population (ln)	0.196	0.284***	0.346***	0.269**	0.429**	0.389	0.417***	0.0958
	(0.165)	(0.0987)	(0.0938)	(0.113)	(0.154)	(0.247)	(0.107)	(0.330)
Polity2	0.0384	0.0435	0.0571*	-0.00934	-0.0577	0.0191	-0.0151	-0.0349
	(0.0873)	(0.0423)	(0.0311)	(0.0240)	(0.123)	(0.0296)	(0.0686)	(0.0880)
FDI	-0.00299	0.000523	-0.000218	0.00212	-0.373	-0.00592	0.0237	-0.135
	(0.0265)	(0.0180)	(0.0151)	(0.0119)	(0.243)	(0.0897)	(0.203)	(0.166)
Natural rent	-0.0166	-0.0369**	-0.0340***	-0.0530***	0.0584	-0.00209	-0.0411	0.0358
	(0.0532)	(0.0138)	(0.00913)	(0.0123)	(0.0612)	(0.0304)	(0.0542)	(0.0477)
Phone coverage	0.00183	-0.00651	-0.00969***	-0.000746	0.0101	0.000802	0.0151	-0.00164
	(0.00565)	(0.00726)	(0.00326)	(0.00337)	(0.00972)	(0.0105)	(0.0118)	(0.0108)
Trade openness	0.00602	0.00436	0.00316	0.00388*	0.0323	-0.00955	0.0113	0.00367
	(0.00383)	(0.00344)	(0.00277)	(0.00198)	(0.0207)	(0.0125)	(0.00934)	(0.0247)
Constant	-1.605	-1.619	-1.608*	-1.506	-4.149***	-2.878	-4.092***	-2.405
	(0.961)	(1.028)	(0.937)	(0.905)	(1.371)	(1.738)	(0.871)	(2.570)
Observations	126	126	126	126	70	70	70	70
Countries	35	35	35	35	23	23	23	23
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR(2)	0.644	0.717	0.419	0.121	0.424	0.999	0.613	0.671
Hansen (p-value)	0.336	0.707	0.818	0.676	0.707	0.985	0.586	0.999

Appendix 2.11 Two-step GMM estimation of the effect of the middle-class on imports volume and concentration for the sample of LLMIC

	Import volume		Import concentration	
	(1)	(2)	(3)	(4)
Middle-class	-0.793	-	-0.00370	-
	(0.822)	-	(0.00371)	-
Rich	1.779	-	-0.00386	-
	(5.000)	-	(0.0243)	-
Poor	-	-0.0315	-	-0.00134
	-	(0.433)	-	(0.00143)
Lower MC	-	-1.716	-	0.00128
	-	(4.396)	-	(0.0133)
Upper MC	-	0.700	-	-0.0190
	-	(8.576)	-	(0.0261)
Industry (% GDP)	1.104	1.799	0.00441	0.00786
	(1.094)	(2.230)	(0.00512)	(0.00670)
Population (ln)	-5.125**	-6.273	-0.000472	-0.00768
	(2.516)	(4.335)	(0.0145)	(0.0206)
Exchange rate	-0.00160	-0.00240	-2.67e-06	-3.52e-06
	(0.00172)	(0.00161)	(8.49e-06)	(8.99e-06)
Internal distance	-0.00964	-0.0249	-0.000103	-0.000174
	(0.0296)	(0.0414)	(0.000122)	(0.000134)
Freedom to trade	2.677	2.761	-0.00375	-0.00315
	(1.660)	(2.188)	(0.00986)	(0.00863)
Constant	18.07	12.32	0.115	0.0973
	(21.55)	(23.62)	(0.0993)	(0.106)
Observations	97	97	97	97
Countries	35	35	35	35
Time FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Instrument	15	15	15	15
AR(2)	0.235	0.440	0.310	0.477
Hansen (p-value)	0.344	0.451	0.919	0.997

Appendix 2.12 Descriptive statistics – Section 1

Variable	Mean	Standard deviation	Minimum	Maximum
Size middle-class (USD 10–50)	37.64	27.37	0.02	89.04
Size rich (over USD 50)	9.25	14.87	0	66.71
Size poor (below USD 10)	22.94	21.55	0.01	93.64
Size lower middle-class (USD 10–20)	16.79	13.31	0.02	59.94
Size upper middle-class (USD 20–50)	20.85	21.90	0	72.52
GDP per capita (ln)	9.23	1.17	5.71	11.32
Consumption (% GDP)	64.67	15.96	29.54	190.06
Inflation	9.00	25.42	0	309.38
Expense (% GDP)	26.42	11.03	6.63	58.56
Transfers and subsidies (% GDP)	42.49	18.12	1.98	80.73
Health expenditures (% GDP)	3.76	2.29	0.14	9.09
Education expenditures (% GDP)	4.48	1.52	1.05	9.72
Total investment (% GDP)	22.14	5.35	3.96	39.17
Private investment (% GDP)	15.62	5.57	0	28.86
Economic growth	2.49	2.83	-12.71	25.06
Credit to private sector (% GDP)	56.43	47.75	0.19	246.58
Polity score	6.11	4.97	-7.00	10
Government effectiveness	0.30	1.03	-1.80	2.24
Population (ln)	2.58	1.51	-1.30	7.14
Exchange rate (ln)	2.64	2.75	-1.65	9.92
Natural rent (% GDP)	5.25	8.60	0	51.86
Trade openness (% GDP)	82.86	42.68	17.32	344.70

Appendix 2.13 Descriptive statistics – Section 2

Variable	Mean	Standard deviation	Minimum	Maximum
Size middle-class (USD 10–50)	34.21	26.65	0.10	89.04
Size rich (above USD 50)	7.76	13.41	0	66.71
Size poor (below USD 10)	24.31	20.08	0.02	91.21
Size lower middle-class (USD 10–20)	16.09	13.02	0.10	51.51
Size upper middle-class (USD 20–50)	18.11	20.76	0	72.52
Manufacture (% GDP)	15.70	5.96	1.13	39.76
Industry (% GDP)	28.73	8.14	2.64	61.04
Service (% GDP)	57.22	12.10	17.78	80.46
Modern Service (% GDP)	33.27	10.56	5.63	56.06
Population (ln)	2.76	1.34	0.13	7.14
Exchange rate (ln)	2.64	2.67	-1.65	9.65
Internal distance	280.04	274.33	17.01	1554.24
Freedom to trade	7.06	1.35	1.08	9.73
Average years of schooling	7.71	3.00	0.93	13.18
Natural rent (% GDP)	6.09	8.08	0	41.07
Phone coverage	51.84	47.09	0	173.46
Trade openness (% GDP)	73.76	34.88	17.32	229.64
Import concentration	0.12	0.10	0.05	0.89
Export concentration UNCTAD	0.27	0.19	0.05	0.82
Export concentration IMF	3.00	1.13	1.31	5.98
Export quality IMF	0.83	0.15	0.30	1.04
Economic complexity index	0.20	1.01	-1.83	2.56

Appendix 2.14 Two-step GMM estimation of the effect of the middle-class on productive transformation: alternative specifications– With control for FDI, urbanization and institutions – Entire sample

	With foreign direct investment						With Polity score					
	(1) Manufacture	(2) Service	(3) Modern service	(4) Manufacture	(5) Service	(6) Modern service	(4) Manufacture	(5) Service	(6) Modern service	(7) Manufacture	(8) Service	(9) Modern service
Middle-class size	0.177**	-0.0913	-0.00952	-	-	-	0.156	-0.230	0.0115	-	-	-
	(0.0888)	(0.224)	(0.0992)	-	-	-	(0.110)	(0.245)	(0.114)	-	-	-
Rich	-0.0885**	0.135**	0.209***	-	-	-	-0.0721**	0.145*	0.210***	-	-	-
	(0.0353)	(0.0610)	(0.0471)	-	-	-	(0.0306)	(0.0796)	(0.0515)	-	-	-
Poor	-	-	-	0.0489	-0.0885	0.00366	-	-	-	0.0690	-0.0462	-0.0368
	-	-	-	(0.0763)	(0.130)	(0.0953)	-	-	-	(0.0641)	(0.165)	(0.0888)
Lower MC	-	-	-	0.242**	-0.115	-0.183*	-	-	-	0.256*	0.0162	-0.157*
	-	-	-	(0.108)	(0.176)	(0.107)	-	-	-	(0.134)	(0.361)	(0.0931)
Upper MC	-	-	-	0.191**	-0.0241	0.143	-	-	-	0.218**	0.0841	0.0927
	-	-	-	(0.0751)	(0.206)	(0.138)	-	-	-	(0.104)	(0.255)	(0.140)
Education	0.0571	1.493	0.707	-0.656	3.257***	1.032	-0.0823	1.917	0.819	-0.929	2.202	1.319
	(0.483)	(1.097)	(0.711)	(0.480)	(0.837)	(0.931)	(0.440)	(1.333)	(0.716)	(0.660)	(1.675)	(1.126)
Population (ln)	0.523	-0.493	0.806	1.478	2.267	2.265	0.777	2.077	0.686	2.172	1.418	1.516
	(2.046)	(4.378)	(1.911)	(1.873)	(4.265)	(2.959)	(2.197)	(5.430)	(1.859)	(1.747)	(4.309)	(2.546)
Natural rent	-0.185**	-0.39**	-0.228*	-0.148*	-0.735**	-0.422**	-0.179**	-0.492***	-0.287*	-0.133	-0.622*	-0.471**
	(0.0709)	(0.152)	(0.125)	(0.0752)	(0.311)	(0.180)	(0.0762)	(0.164)	(0.147)	(0.0855)	(0.347)	(0.181)
Phone coverage	-0.0692**	0.103	0.0392	-0.0567*	-0.0337	0.0142	-0.0541	0.130	0.0235	-0.0581	-0.0436	0.0108
	(0.0322)	(0.0764)	(0.0452)	(0.0340)	(0.0627)	(0.0270)	(0.0348)	(0.0876)	(0.0539)	(0.0374)	(0.0978)	(0.0269)
Trade openness	-0.000478	0.00635	0.0219	0.0127	0.0324	0.0358	0.00914	0.0840	0.0173	0.0192	-0.00436	0.0158
	(0.0311)	(0.0984)	(0.0441)	(0.0415)	(0.0961)	(0.0547)	(0.0503)	(0.146)	(0.0483)	(0.0450)	(0.0767)	(0.0360)
FDI	0.0365	-0.273*	-0.136	0.00271	0.106	-0.0865	-	-	-	-	-	-
	(0.0581)	(0.157)	(0.0983)	(0.0500)	(0.206)	(0.0985)	-	-	-	-	-	-
Polity score	-	-	-	-	-	-	-0.0338	0.0425	-0.199	0.111	0.157	-0.0811
	-	-	-	-	-	-	(0.251)	(0.795)	(0.311)	(0.320)	(0.976)	(0.336)
Constant	15.17	42.69*	20.09**	12.00	35.44*	19.97*	14.23	27.27	21.71**	10.06	44.37***	23.16***
	(9.369)	(22.83)	(9.137)	(9.438)	(20.33)	(10.96)	(11.15)	(28.64)	(9.399)	(8.285)	(15.24)	(8.142)
Observations	291	291	291	291	291	291	291	291	291	291	291	291
Countries	91	91	91	91	91	91	91	91	91	91	91	91
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR(2)	0.639	0.403	0.176	0.445	0.144	0.0888	0.582	0.930	0.135	0.413	0.233	0.110
Hansen (p-value)	0.962	0.405	0.873	0.629	0.385	0.198	0.681	0.389	0.712	0.675	0.197	0.310

Appendix 2.15 Two-step GMM estimation of the effect of the middle-class on productive transformation: with control for urbanization – Entire sample

	(1) Manufacture	(2) Service	(3) Modern service	(4) Manufacture	(5) Service	(6) Modern service
Middle-class size	0.0974	-0.165	-0.0257	-	-	-
	(0.0812)	(0.176)	(0.126)	-	-	-
Rich	**-0.0802*** **	0.0705	**0.150** **	-	-	-
	(0.0290)	(0.0883)	**(0.0593)**	-	-	-
Poor	-	-	-	0.0468	-0.141	-0.0163
	-	-	-	(0.0640)	(0.157)	(0.0686)
Lower MC	-	-	-	**0.230***	-0.119	**-0.172** **
	-	-	-	**(0.121)**	(0.187)	**(0.0822)**
Upper MC	-	-	-	**0.182** **	-0.174	0.0629
	-	-	-	**(0.0840)**	(0.274)	(0.102)
Education	-0.0521	1.290	0.433	-0.590	2.433***	0.543
	(0.413)	(1.078)	(0.716)	(0.589)	(0.799)	(0.896)
Population (ln)	0.296	-0.973	0.525	1.649	-1.926	1.383
	(1.959)	(3.892)	(2.103)	(1.504)	(5.873)	(2.100)
Natural rent	-0.206***	-0.620***	-0.341***	-0.146**	-0.697***	-0.545***
	(0.0764)	(0.183)	(0.126)	(0.0669)	(0.241)	(0.143)
Phone coverage	-0.0402	0.0779	0.00771	-0.0474	-0.0379	-0.00461
	(0.0264)	(0.0742)	(0.0566)	(0.0345)	(0.0595)	(0.0204)
Trade openness	0.0144	0.0120	0.00298	0.0169	-0.0430	0.0269
	(0.0408)	(0.106)	(0.0556)	(0.0440)	(0.0929)	(0.0346)
Urbanization	0.0448	0.176	0.172	-0.0223	0.292	0.205*
	(0.0710)	(0.164)	(0.115)	(0.0570)	(0.254)	(0.111)
Constant	13.21	42.20**	19.83*	11.50	47.79**	19.25**
	(8.331)	(20.96)	(10.85)	(8.054)	(19.56)	(7.612)
Observations	291	291	291	291	291	291
Countries	91	91	91	91	91	91
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
AR(2)	0.514	0.320	0.133	0.427	0.0769	0.101
Hansen (p-value)	0.743	0.466	0.859	0.615	0.641	0.379

Appendix to Chapter 3

Appendix 3.1 Determinants of absolute mobility within the lower middle-class

Appendix 3.1.1 2SLS estimations on absolute mobility - Baseline model

	Initial			**Changes**		
	(1) Overall	(2) Upward	(3) Downward	(4) Overall	(5) Upward	(6) Downward
Household characteristics						
Initial income	0.000121	8.37e-05	7.82e-06	0.000147	**0.000117***	-6.66e-06
	(7.40e-05)	(5.54e-05)	(3.45e-05)	(9.27e-05)	(6.95e-05)	(4.72e-05)
Household size	**0.0271***	0.0197	-0.00809	**-0.124*****	**-0.0799*****	0.00496
	(0.0152)	(0.0138)	(0.0100)	(0.0304)	(0.0270)	(0.0324)
Children below 7	**-0.420*****	**-0.310****	0.147	0.204	0.231	-0.0199
	(0.143)	(0.126)	(0.138)	(0.369)	(0.364)	(0.205)
Children 10-14	**-0.432*****	-0.163	0.182	0.102	0.0650	-0.0913
	(0.137)	(0.132)	(0.131)	(0.223)	(0.205)	(0.129)
Proportion retired	0.0867	-0.0411	**-0.336****	0.0456	-0.0433	0.0251
	(0.185)	(0.170)	(0.139)	(0.112)	(0.0931)	(0.108)
Proportion active	-0.0463	0.0261	0.0760	**0.287*****	0.120	-0.0116
	(0.110)	(0.0700)	(0.0583)	(0.0855)	(0.0805)	(0.0616)
Household heads characteristics						
Primary	**0.135****	0.0813	-0.0614	0.0252	-0.0166	**-0.0258***
	(0.0634)	(0.0698)	(0.0445)	(0.0313)	(0.0223)	(0.0154)
Secondary	**0.200****	0.127	**-0.0907***	-	-	-
	(0.0920)	(0.0791)	(0.0549)	-	-	-
Tertiary	**0.241****	0.0882	**-0.175*****	-	-	-
	(0.120)	(0.0982)	(0.0633)	-	-	-
Unemployed	-	-	-	-	-	-
	-	-	-	-	-	-
Employed	-0.101	-0.0672	0.0494	-0.0775	-0.0469	**0.0711***
	(0.131)	(0.0953)	(0.0883)	(0.0589)	(0.0621)	(0.0388)
Retired	-0.138	-0.0375	0.157	**-0.0883***	-0.0627	-0.00306
	(0.141)	(0.118)	(0.0980)	(0.0484)	(0.0516)	(0.0303)
Constant	-0.764	-0.188	0.162	-1.053	-0.502	0.185
	(0.636)	(0.490)	(0.348)	(0.642)	(0.524)	(0.376)
Observations	926	613	313	895	585	310
R-squared	0.228	0.160	0.081	0.326	0.304	0.034
Weak identification	16.70	11.53	7.476	14.15	10.3	6.723
Underidentification (p-value)	0.000	0.000	0.000	0.000	0.000	0.000
Overidentification (p-value)	0.270	0.678	0.0557	0.101	0.644	0.0823

Appendix 3.1.2 2SLS estimations on absolute mobility - Physical assets

	Initial			**Changes**		
	(1)	(2)	(3)	(4)	(5)	(6)
	Overall	**Upward**	**Downward**	**Overall**	**Upward**	**Downward**
Initial income	0.000129*	8.36e-05	-2.81e-06	0.000120	8.55e-05	1.45e-05
	(6.76e-05)	(7.92e-05)	(4.58e-05)	(7.31e-05)	(5.47e-05)	(9.60e-05)
Demography	Yes	Yes	Yes	Yes	Yes	Yes
Employment Status	Yes	Yes	Yes	Yes	Yes	Yes
Credit	0.0430	-0.0128	-0.0166	-0.0104	-0.0273	0.00553
	(0.0356)	(0.0344)	(0.0283)	(0.0385)	(0.0442)	(0.0397)
No credit	-	-	-	0.0758	0.0432	0.0133
	-	-	-	(0.0489)	(0.0470)	(0.111)
Private transfers	**-2.15e-05****	4.21e-07	**1.36e-05****	**0.0896*****	0.0471	-0.0158
	(9.23e-06)	(9.60e-06)	(6.76e-06)	(0.0341)	(0.0375)	(0.0470)
Not private transfers	-	-	-	-0.0676	0.0403	0.0434
	-	-	-	(0.0553)	(0.0420)	(0.0673)
Allowances	-0.0787	-0.0164	0.0635	-0.0687	0.0340	0.171
	(0.0538)	(0.0531)	(0.0454)	(0.0959)	(0.0948)	(0.135)
No allowances	-	-	-	-0.0530	0.0193	0.0383
	-	-	-	(0.0649)	(0.0762)	(0.0381)
Phone	0.0706	0.00572	-0.0373	-0.0640	0.115	0.0258
	(0.0561)	(0.0587)	(0.0338)	(0.0785)	(0.104)	(0.0996)
No phone	-	-	-	0.164	0.0630	0.0197
	-	-	-	(0.154)	(0.127)	(0.0412)
Car	0.0556	0.0114	0.0103	**0.0677***	0.0706	0.0215
	(0.0379)	(0.0488)	(0.0318)	(0.0396)	(0.0447)	(0.0520)
No car	-	-	-	0.0861	0.0961	-0.000243
	-	-	-	(0.0777)	(0.0633)	(0.0818)
Constant	-0.686	-0.174	0.169	-0.707	-0.300	0.0899
	(0.578)	(0.558)	(0.375)	(0.584)	(0.456)	(0.780)
Observations	926	613	313	926	613	313
R-squared	0.226	0.159	0.122	0.181	0.147	0.139
Weak identification	14.51	9.544	6.718	15.98	11.74	5.742
Underidentification (p-value)	0.000	0.000	0.000	0.000	0.000	0.000
Overidentification (p-value)	0.569	0.638	0.107	0.385	0.654	0.0637

Appendix 3.1.3 2SLS estimations on absolute mobility - Job market variables

	Initial level						**Changes**		
	(1) Overall	(2) Upward	(3) Downward	(7) Overall	(8) Upward	(9) Downward	(4) Overall	(5) Upward	(6) Downward
Initial income	5.38e-05	0.000101	7.82e-06	7.41e-05	0.000120	5.66e-07	5.41e-05	0.000103	1.98e-05
	(6.5e-05)	(8.95e-05)	(4.4e-05)	(6.5e-05)	(0.00011)	(5.(e-05)	(6.1e-05)	(6.8e-05)	(4.1e-05)
Demography	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Employment status	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regular	0.0954	0.198	0.0871	0.116	0.256	0.0326	-	-	-
	(0.189)	(0.187)	(0.158)	(0.224)	(0.213)	(0.172)	-	-	-
Employer	0.0665	0.0647	0.110	0.0611	0.0180	0.0489	-	-	-
	(0.103)	(0.111)	(0.118)	(0.0981)	(0.101)	(0.0965)	-	-	-
Self-employed	0.0624	0.0902	0.140	0.0322	0.0252	0.0989	-	-	-
	(0.0738)	(0.123)	(0.102)	(0.0909)	(0.109)	(0.0769)	-	-	-
Industry	0.0976	0.123	**0.144***	-	-	-	-	-	-
	(0.0795)	(0.0966)	(0.0779)	-	-	-	-	-	-
Private Service	0.0875	0.138	**0.113***	-	-	-	-	-	-
	(0.0693)	(0.0848)	(0.0626)	-	-	-	-	-	-
Scientific and technical	0.112	0.106	0.154	-	-	-	-	-	-
	(0.103)	(0.133)	(0.124)	-	-	-	-	-	-
Public Service	**0.197****	0.101	-0.0272	-	-	-	-	-	-
	(0.0907)	(0.0952)	(0.0773)	-	-	-	-	-	-
Social	0.0494	0.0394	0.148	-	-	-	-	-	-
	(0.0927)	(0.0941)	(0.0941)	-	-	-	-	-	-
Registered	-0.0481	-0.0837	-0.0787	-0.0362	**-0.0888***	-0.0783	-	-	-
	(0.0548)	(0.0533)	(0.0608)	(0.0613)	(0.0538)	(0.0501)	-	-	-
Unlimited contract	0.00991	-0.153	-0.0565	0.00132	-0.204	0.0210	-	-	-
	(0.217)	(0.217)	(0.198)	(0.250)	(0.213)	(0.223)	-	-	-

Appendix 3..1.3 continued in next page

Appendix 3.1.3 (continued)									
Limited contract	-0.0873	0.0167	0.189	-0.0996	-0.0179	0.231	-	-	-
	(0.131)	(0.176)	(0.208)	(0.160)	(0.188)	(0.179)	-	-	-
Get contract	-	-	-	-	-	-	-0.0644	0.103	0.00224
	-	-	-	-	-	-	(0.125)	(0.128)	(0.143)
Lose contract	-	-	-	-	-	-	0.0352	0.111	0.103
	-	-	-	-	-	-	(0.0861)	(0.0745)	(0.0745)
Get registered	-	-	-	-	-	-	0.0878	**0.117****	0.0197
	-	-	-	-	-	-	(0.0713)	(0.0570)	(0.0607)
Not registered	-	-	-	-	-	-	0.0511	0.0187	0.0192
	-	-	-	-	-	-	(0.101)	(0.0954)	(0.0750)
Become agriculture	-	-	-	-	-	-	0.0127	-0.0824	-0.0490
	-	-	-	-	-	-	(0.133)	(0.110)	(0.149)
Become ind/serv	-	-	-	-	-	-	-0.0167	-0.0543	-0.0614
	-	-	-	-	-	-	(0.113)	(0.107)	(0.152)
Get skilled job	-	-	-	-	-	-	0.0278	0.0639	**0.0998***
	-	-	-	-	-	-	(0.0640)	(0.0522)	(0.0602)
Manager	-	-	-	-0.0215	0.0967	**0.163***	-	-	-
	-	-	-	(0.0845)	(0.0888)	(0.0877)	-	-	-
Professional	-	-	-	-0.0315	-0.0914	0.0602	-	-	-
	-	-	-	(0.0632)	(0.0875)	(0.0622)	-	-	-
Skilled	-	-	-	0.00687	-0.0361	-0.0326	-	-	-
	-	-	-	(0.0465)	(0.0544)	(0.0352)	-	-	-
Constant	-0.627	-0.562	-0.131	-0.708	-0.524	0.0631	-0.468	-0.457	-0.0925
	(0.430)	(0.578)	(0.392)	(0.440)	(0.747)	(0.374)	(0.481)	(0.552)	(0.335)
Observations	593	383	210	593	383	210	593	383	210
R-squared	0.204	0.126	0.144	0.195	0.115	0.106	0.246	0.129	0.141
Weak identification	15.67	11.39	5.792	16.32	12.14	6.343	14.69	11.10	4.996
Underidentification (p-value)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Overidentification (p-value)	0.433	0.589	0.0609	0.244	0.729	0.0850	0.382	0.562	0.0606

Appendix 3.1.4 2SLS estimations on absolute mobility - Exposure to idiosyncratic shocks

	(1) Overall	(2) Upward	(3) Downward
Initial income	**0.000111***	**9.68e-05***	1.37e-05
	(6.70e-05)	(5.75e-05)	(4.54e-05)
Number ill members (2010)	-0.00467	**-0.0485****	0.00557
	(0.0287)	(0.0244)	(0.0286)
Fewer ill members (change)	0.0831	**0.105*****	0.0391
	(0.0511)	(0.0378)	(0.0421)
Lose job (change)	-0.0899	0.0113	**0.107****
	(0.0643)	(0.0538)	(0.0476)
Get job (change)	**0.147****	0.0910	0.0727
	(0.0700)	(0.0722)	(0.101)
Physical limitation (2010)	**-0.151*****	**-0.205*****	0.0166
	(0.0558)	(0.0428)	(0.0412)
Health status (2010)	**0.0555****	**0.0625****	0.00654
	(0.0217)	(0.0278)	(0.0250)
Worse health (change)	**-0.0727***	**-0.0641****	-0.0115
	(0.0384)	(0.0325)	(0.0314)
Less limitation (change)	**0.232*****	**0.211*****	-0.0392
	(0.0779)	(0.0637)	(0.0625)
Constant	-1.201**	-0.919**	0.0683
	(0.578)	(0.457)	(0.394)
Demography	Yes	Yes	Yes
Employent Status	Yes	Yes	Yes
Observations	926	613	313
R-squared	0.158	0.150	0.121
Weak identification	16.61	10.04	9
Underidentification (p-value)	0.000	0.000	0.000
Overidentidfication (p-value)	0.149	0.621	0.0501

Appendix 3.2 Determinants of absolute mobility within the upper middle-class

Appendix 3.2.1 2SLS estimations on absolute mobility - Baseline model

	Initial			**Change**		
	(1) Overall	(2) Upward	(3) Downward	(4) Overall	(5) Upward	(6) Downward
Households characteristics						
Initial income	**0.000118****	**6.75e-05****	-7.19e-05	**0.000127****	**6.16e-05***	-8.96e-05
	(-6.00e-05)	(-3.23e-05)	(-9.42e-05)	(-5.57e-05)	(-3.25e-05)	(0.000174)
Household size	0.0123	0.0150	0.0226	-0.0362	**-0.112*****	-0.0324
	(0.0241)	(0.0272)	(0.0226)	(0.0586)	(0.0375)	(0.0525)
Children below 7	-0.322	-0.323	-0.00595	0.662	**-0.784***	-0.158
	(0.263)	(0.272)	(0.274)	(0.509)	(0.441)	(0.667)
Children 10-14	**-0.513****	-0.232	0.0390	0.286	**-0.640****	-0.284
	(0.199)	(0.153)	(0.251)	(0.306)	(0.282)	(0.340)
Proportion retired	-0.0978	-0.163	0.0203	**0.290***	0.00512	-0.0128
	(0.185)	(0.158)	(0.185)	(0.160)	(0.168)	(0.205)
Proportion active	-0.114	-0.120	0.221	**0.422*****	-0.114	-0.274
	(0.190)	(0.110)	(0.268)	(0.135)	(0.145)	(0.380)
Household heads characteristics						
Gender	-0.0239	-0.0884	-0.0170	-	-	-
	(0.0887)	(0.106)	(0.0999)	-	-	-
Age	0.0132	-0.0113	**-0.0207***	0.0205	-0.00832	-0.0200
	(0.0151)	(0.0126)	(0.0114)	(0.0154)	(0.00940)	(0.0157)
Age2	-0.000111	6.47e-05	0.000149	-0.000179	4.23e-05	0.000144
	(0.000132)	(0.000118)	(-9.88e-05)	(0.000138)	(-8.64e-05)	(0.000140)
Primary	**0.275****	0.0387	-0.143	0.00156	-0.0565	0.00986
	(0.121)	(0.139)	(0.128)	(0.0530)	(0.0377)	(0.147)
Secondary	**0.334*****	-0.0399	-0.146	-	-	-
	(0.109)	(0.162)	(0.118)	-	-	-
Tertiary	**0.311****	-0.105	-0.0911	-	-	-
	(0.130)	(0.175)	(0.141)	-	-	-
Unemployed	0.00679	0.263	-0.316	0.177	0.308	-0.296
	(0.273)	(0.428)	(0.322)	(0.240)	(0.393)	(0.400)
Employed	-0.0316	-0.170	-0.124	0.0901	-0.0803	-0.0390
	(0.141)	(0.156)	(0.219)	(0.0897)	(0.111)	(0.141)
Retired	-0.204	-0.174	0.0263	-0.0626	-0.0763	0.0286
	(0.187)	(0.183)	(0.162)	(0.0834)	(0.0976)	(0.115)
Constant	-2.239**	0.0537	2.120	-2.512***	-0.223	2.291
	(0.965)	(0.618)	(-1.552)	(0.912)	(0.551)	(-2.639)
Observations	625	311	314	608	299	309
R-squared	0.651	0.267	0.694	0.796	0.240	1.047
Weak identification	10.7	10.27	3.571	10.5	9.605	5.449
Underidentification (p-value)	0.000	0.000	0.000	0.000	0.000	0.000
Overidentidfication (p-value)	0.535	0.885	0.511	0.420	0.386	0.187

Appendix 3.2.2 2SLS estimations on absolute mobility - Physical assets

	Initial			**Changes**		
	(1)	(2)	(3)	(4)	(5)	(6)
	Overall	Upward	Downward	Overall	Upward	Downward
Initial income	**0.000129***	**6.72e-05***	-9.13e-05	**0.000104***	**5.99e-05****	-7.49e-05
	(6.84e-05)	(3.44e-05)	(0.000104)	(5.34e-05)	(2.83e-05)	(7.78e-05)
Demography	Yes	Yes	Yes	Yes	Yes	Yes
Employment status	Yes	Yes	Yes	Yes	Yes	Yes
Credit	0.0477	-0.000554	0.00500	-0.0171	0.0303	0.0310
	(0.0478)	(0.0588)	(0.0444)	(0.0579)	(0.0768)	(0.0822)
No credit	-	-	-	0.111	0.0743	-0.0327
	-	-	-	(0.0783)	(0.0784)	(0.0931)
Private transfers	-1.57e-05	8.72e-06	1.19e-05	-0.0196	-0.00439	-0.00147
	(1.08e-05)	(1.01e-05)	(1.05e-05)	(0.105)	(0.0636)	(0.126)
No private transfers	-	-	-	-	0.0504	0.116
	-	-	-	(0.0854)	(0.0535)	(0.104)
Allowances	-0.190	0.166	0.0882	-0.0774	0.303	0.192
	(0.156)	(0.174)	(0.123)	(0.351)	(0.373)	(0.241)
No allowances	-	-	-	-0.149	0.142	0.0386
	-	-	-	(0.173)	(0.170)	(0.134)
Phone	0.147	-0.113	-0.109	0.0582	**0.265****	-0.0843
	(0.105)	(0.172)	(0.0887)	(0.149)	(0.115)	(0.150)
No phone	-	-	-	-0.108	-0.106	-0.132
	-	-	-	(0.154)	(0.235)	(0.116)
Car	-0.0664	**-0.0825***	0.0765	0.0738	0.13**0***	0.0164
	(0.0957)	(0.0483)	(0.105)	(0.0874)	(0.0705)	(0.115)
No car	-	-	-	-0.168	-0.0760	0.115
	-	-	-	(0.106)	(0.0988)	(0.127)
Constant	-2.313**	-0.00682	2.295	-1.997**	0.00364	2.041**
	(1.010)	(0.468)	(1.482)	(0.892)	(0.646)	(1.037)
Observations	625	311	314	625	311	314
R-squared	0.741	0.238	1.020	0.443	0.153	0.676
Weak identification	11.33	10.51	4.683	10.899	10.87	4.382
Underidentification (p-value)	0.000	0.000	0.000	0.000	0.000	0.000
Overidentidfication (p-value)	0.897	0.881	0.916	0.546	0.974	0.554

Appendix 3.2.3 2SLS estimations on absolute mobility - Job market variables

	Initial level						**Changes**		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Overall	Upward	Downward	Overall	Upward	Downward	Overall	Upward	Downward
Initial income	**0.000104****	**7.52e-05*****	-5.71e-05	**0.000105****	**6.70e-05****	-5.50e-05	**0.000111****	6.29e-05	-7.34e-05
	(4.06e-05)	(2.63e-05)	(6.01e-05)	(4.56e-05)	(2.93e-05)	(7.44e-05)	(5.20e-05)	(4.16e-05)	(9.24e-05)
Proportion retired members	-0.218	**-0.276****	0.0479	**-0.239***	**-0.271***	0.0723	**-0.308****	**-0.216***	0.119
	(0.139)	(0.112)	(0.133)	(0.142)	(0.143)	(0.140)	(0.135)	(0.114)	(0.221)
Demography	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Employment status	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regular	-0.0569	**-0.332****	-0.0747	0.0174	-0.300	-0.179	-	-	-
	(0.211)	(0.166)	(0.240)	(0.257)	(0.189)	(0.302)	-	-	-
Employer	0.129	**0.258****	-0.0386	0.100	0.208	0.0246	-	-	-
	(0.158)	(0.111)	(0.187)	(0.168)	(0.160)	(0.136)	-	-	-
Self-employed	0.0253	0.0503	-0.00350	0.00123	0.0256	0.0732	-	-	-
	(0.109)	(0.114)	(0.143)	(0.132)	(0.128)	(0.166)	-	-	-
Industry	0.00576	-0.0743	0.0993	-	-	-	-	-	-
	(0.120)	(0.113)	(0.149)	-	-	-	-	-	-
Private Service	-0.00421	-0.0459	0.101	-	-	-	-	-	-
	(0.117)	(0.110)	(0.120)	-	-	-	-	-	-
Scientific and technical	0.0499	-0.179	-0.0134	-	-	-	-	-	-
	(0.156)	(0.133)	(0.161)	-	-	-	-	-	-
Public Service	**0.267***	0.0352	-0.110	-	-	-	-	-	-
	(0.147)	(0.157)	(0.165)	-	-	-	-	-	-
Social	0.0604	-0.0800	-0.0409	-	-	-	-	-	-
	(0.142)	(0.126)	(0.131)	-	-	-	-	-	-
Registered	0.0462	-0.0174	-0.0299	0.0663	-0.0295	-0.0276	-	-	-
	(0.0913)	(0.101)	(0.0658)	(0.101)	(0.104)	(0.107)	-	-	-
Unlimited contract	0.0952	0.243	-0.0738	0.0421	0.197	0.104	-	-	-
	(0.221)	(0.159)	(0.272)	(0.285)	(0.194)	(0.310)	-	-	-

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Appendix 3.2.3 (continued)

Limited contract	-0.0735	**0.230***	-0.182	-0.0897	0.134	-0.0955	-	-	-
	(0.186)	(0.119)	(0.245)	(0.231)	(0.167)	(0.306)	-	-	-
Get contract	-	-	-	-	-	-	0.0493	**0.264***	0.105
	-	-	-	-	-	-	(0.198)	(0.156)	(0.243)
Lose contract	-	-	-	-	-	-	-0.127	-0.0467	-0.0809
	-	-	-	-	-	-	(0.166)	(0.222)	(0.127)
Get registered	-	-	-	-	-	-	-0.00107	-0.0380	0.0744
	-	-	-	-	-	-	(0.218)	(0.133)	(0.229)
Not registered	-	-	-	-	-	-	0.122	0.226	0.139
	-	-	-	-	-	-	(0.149)	(0.217)	(0.128)
Become agriculture	-	-	-	-	-	-	-0.100	-0.203	0.0878
	-	-	-	-	-	-	(0.186)	(0.213)	(0.263)
Become ind/serv	-	-	-	-	-	-	0.0966	0.0600	-0.229
	-	-	-	-	-	-	(0.178)	(0.238)	(0.237)
Get skilled job	-	-	-	-	-	-	-0.0205	-0.0151	-0.0434
	-	-	-	-	-	-	(0.0929)	(0.111)	(0.110)
Manager	-	-	-	0.00510	0.0264	0.0897	-	-	-
	-	-	-	(0.100)	(0.0964)	(0.123)	-	-	-
Professional	-	-	-	0.0583	-0.105	-0.0506	-	-	-
	-	-	-	(0.0869)	(0.0919)	(0.122)	-	-	-
Skilled	-	-	-	0.0404	-0.0277	-0.108	-	-	-
	-	-	-	(0.0651)	(0.0838)	(0.0819)	-	-	-
Constant	-2.144***	0.0724	1.607*	-2.204***	0.184	1.712	-2.173**	-0.0534	1.895
	(0.782)	(0.664)	(0.845)	(0.807)	(0.591)	(1.050)	(0.877)	(0.694)	(1.484)
Observations	625	311	314	625	311	314	625	311	314
Rsquared	0.485	0.283	0.402	0.583	0.197	0.722	0.508	0.211	0.368
Weak identification	10.223	10.388	4.559	11.675	10.53	4.357	11.370	11.251	4.330
Underidentification (p-value)	0.000	0.000	0.0651	0.000	0.000	0.0833	0.000	0.000	0.0842
Overidentidfication (p-value)	0.843	0.906	0.961	0.582	0.929	0.769	0.663	0.860	0.646

Appendix 3.2.4 SLS estimations on absolute mobility - Exposure to idiosyncratic shocks

	(1) Overall	(2) Upward	(3) Downward
Initial income	0.000125***	5.23e-05*	-8.93e-05
	(-4.61e-05)	(-2.76e-05)	(-0.000393)
Number ill members (2010)	-0.0267	-0.0270	-0.0462
	(-0.0394)	(-0.0388)	(-0.306)
Fewer ill members (change)	0.0538	0.147*	0.0982
	(-0.0863)	(-0.0788)	(-0.277)
More ill members	0.0212	0.00709	0.00870
	(-0.0584)	(-0.0675)	(-0.230)
Unexpected expenditures	0.0170	-0.00524	0.0269
	(-0.0704)	(-0.0517)	(-0.368)
Lose job (change)	0.00979	0.124	0.0736
	(-0.118)	(-0.0880)	(-0.137)
Get job (change)	0.321	0.312*	-0.117
	(-0.196)	(-0.162)	(-0.145)
Physical limitation (2010)	-0.0869	0.0829	0.113
	(-0.0830)	(-0.116)	(-0.212)
More limitation	0.0526	-0.0827	-0.0960
	(-0.0732)	(-0.0805)	(-0.183)
Less limitation (change)	0.113	-0.0790	-0.121
	(-0.106)	(-0.143)	(-0.177)
Health status (2010)	-0.0298	-0.0529	0.0108
	(-0.0452)	(-0.0440)	(-0.192)
Worse health (change)	0.00918	0.0245	0.0481
	(-0.0731)	(-0.0747)	(-0.397)
Better health	0.0491	-0.122**	-0.0648
	(-0.0724)	(-0.0562)	(-0.652)
Constant	-2.159**	0.0482	1.917
	(-0.890)	(-0.784)	(-6.052)
Demography	Yes	Yes	Yes
Observations	625	311	314
R-squared	0.666	0.092	1.001
Weak identification	12.970	12.24	2.301
Underidentification (p-value)	0.000	0.000	0.000
Overidentidfication (p-value)	0.513	0.982	0.377

Résumé en français

Les travaux de recherche en économie du développement ont eu tendance à se concentrer sur les pays à revenu faible et les problématiques de pauvreté plutôt que sur les pays à revenu intermédiaire. Bien que ces derniers soient assez hétérogènes, ils présentent certaines caractéristiques communes les distinguant des pays pauvres et avancés. De manière générale, les pays à revenu intermédiaire ont de l'avance sur les plans humain, social et économique par rapport aux pays pauvres, mais demeurent en retard par rapport aux pays avancés en raison de nombreuses lacunes structurelles. En effet, bien que le régime d'accumulation qui les a propulsés hors de la pauvreté ne parvienne plus à soutenir leur trajectoire de croissance, leur capacité d'innovation reste encore limitée. Certes, leur production est diversifiée, mais les secteurs sont inégalement compétitifs. Bien que leurs institutions soient de meilleure qualité que celles des pays à revenu faible, ils n'ont pas encore achevé leurs transitons institutionnelle et démographique. Par ailleurs, les transformations économiques qui leur ont permis de rejoindre la catégorie des pays à revenu intermédiaire ont entraîné un déclin considérable de la pauvreté. Parallèlement, elles ont catalysé l'émergence d'une catégorie de consommateurs aux aspirations et aux comportements progressivement mondialisés qui remettent en question les politiques publiques existantes. Enfin, le bien-être de leur population s'est amélioré, mais les inégalités verticales et horizontales persistent et la croissance inclusive reste un défi pour ces pays.

Bien que certains pays à revenu intermédiaire aient pu rejoindre les rangs des pays riches grâce à une croissance soutenue, nombre d'entre eux sont restés durablement dans la catégorie des pays à revenu intermédiaire. En effet, de nombreux pays ayant connu une croissance économique rapide dans les années 1990 ont vu leur croissance ralentir au cours des deux dernières décennies. Certains pays sont également exposés au risque de tomber dans une phase durable de stagnation qui compliquerait leur transition vers la catégorie de revenu élevé. Selon la Banque mondiale (2013), seuls 13 des 101 pays qui ont réussi à échapper à la pauvreté dans les années 1960 sont devenus riches en 2008. Gill et Kharas (2007) ont introduit le concept de « *trappe à revenu intermédiaire*» (TRI) pour qualifier ce phénomène.

La trappe à revenu intermédiaire (TRI) peut être décrite comme un équilibre stable se produisant au niveau de revenu intermédiaire et combinant croissance faible, changement

structurel lent et transitions politiques difficiles. Malgré l'intérêt croissant que suscite cette question auprès des banques de développement régionales et internationales et de la sphère académique, la définition, les mesures et les déterminants de la trappe à revenu intermédiaire sont encore au cœur des débats. Han et Wei (2017) ont récemment souligné le manque de fondements théoriques dans la sélection des déterminants de la TRI et dans la manière dont leur combinaison donne lieu à différentes situations de trappe. Certains travaux ont pu identifier un ralentissement persistant de la croissance dans diverses régions en développement (par exemple, Aiyar et al., 2013; Robertson et Ye, 2013) ; tandis que d'autres ont émis des doutes sur l'existence réelle de la TRI en mettant en exergue les nombreux problèmes statistiques (Im et Rosenblatt, 2013; Pritchett et Summers, 2014). D'autres études soutiennent que les épisodes de ralentissement de la croissance observés dans les pays à revenu intermédiaire ne doivent pas nécessairement être interprétés comme des trappes, mais plutôt comme le résultat de la convergence des revenus sur le long terme (Alias, Hussein et Mohamad, 2013) ou de la transition d'un niveau de développement économique faible à un niveau supérieur (Bulman, Eden et Nguyen, 2017). Rodríguez (2008) ou Bloom et al. (2006) soulignent également l'absence d'une distinction théorique claire entre les modèles d'équilibres multiples – que l'on peut qualifier de modèles de trappe à pauvreté – et le concept d'état stationnaire tiré de la théorie de la croissance. Néanmoins, malgré cette absence de consensus comme le soutient Agénor (2017: 775), « *le concept de trappe à revenu intermédiaire est utile pour comprendre l'expérience des pays et les défis politiques que le ralentissement de la productivité et la transition vers le statut de revenu élevé représentent pour eux.* »

Diverses études ont répertorié une série de symptômes communs à des pays piégés dans des épisodes de stagnation de la croissance (Agénor, 2017; Bulman et al., 2017), dont la plupart sont liés à des schémas productifs ou politiques empêchant la transition vers un modèle de croissance fondé sur l'innovation. Ces symptômes incluent les rendements décroissants du capital, l'épuisement de la main-d'œuvre bon marché et des gains de l'imitation, la qualité insuffisante du capital humain, la distorsion des incitations, le manque d'accès aux infrastructures avancées et aux financements, ou encore le mauvais appariement sur le marché du travail. Jusqu'à présent, les dynamiques distributives ont rarement été discutées dans le contexte de la trappe à revenu intermédiaire, même si elles sont liées aux problématiques de la transformation productive. Pourtant, il existe une littérature abondante sur la relation entre

inégalité et croissance économique. Si les travaux antérieurs traitaient principalement du lien de causalité allant de la croissance aux inégalités à la suite de l'article influent de Kuznets (1955), à partir des années 1990, la littérature s'est intéressée aux mécanismes par lesquels les changements dans la distribution des revenus affectent le développement économique. En ce qui concerne le canal de l'économie politique, les arguments tournent autour des conflits de redistribution - soulignant les distorsions que la taxation génère au regard des incitations à investir - et de l'instabilité politique née de la frustration des électeurs majoritaires (Acemoglu et Robinson, 2006; Alesina et Rodrik, 2006). 1994; Benabou, 1996; Perotti, 1992; Persson et Tabellini, 1994, entre autres). D'un point de vue économique, l'effet des inégalités peut être analysé à travers le canal des imperfections du marché financier, contraignant les investissements productifs (Banerjee et Newman, 1993; Galor et Zeira, 1993; Piketty, 2000), et le canal de la fécondité, lié aux transferts financiers ou de capital humain (Dahan et Tsiddon, 1998; Kremer et Chen, 2002).

Plusieurs travaux théoriques ont également mis l'accent sur l'interconnexion entre la distribution des revenus et la croissance économique, en accordant une place centrale aux marchés domestiques et au rôle de la «classe moyenne» (Murphy, Shleifer et Vishny, 1989a ; Falkinger et Zweimuller, 1997; Jamarillo, 1995). Comme le résume Ehrhart (2009: 11), « *le degré initial d'inégalité des revenus, en établissant la structure de la demande attendue, détermine la structure de l'offre effective future. Ainsi, la répartition initiale du revenu national peut également influer sur le taux de croissance à long terme de l'économie en modifiant la taille et la composition de la demande intérieure.* » Dans les pays aux premiers stades de leur développement, la redistribution permet la constitution d'une large « classe moyenne» qui alimente la demande intérieure en produits manufacturés. Cependant, «la *coexistence d'une petite classe supérieure peut soutenir le processus d'innovation en initiant ou en encourageant la production de nouveaux biens et services qui seront achetés ultérieurement par une large classe de consommateurs à revenu moyen* » (Ehrhart, 2009: 15).

Ces arguments sont d'autant plus pertinents dans le contexte des pays à revenu intermédiaire qui ont connu une expansion sans précédent du milieu de la distribution des revenus, contrairement aux pays occidentaux au cours des deux dernières décennies. Ravallion (2010) estime que la «classe moyenne»[135] est passée de 1,4 milliard à 2,6 milliards d'individus entre

[135] La «classe moyenne» est définie ici comme la population vivant avec un revenu journalier par tête comprise en 2 et 13 dollars (en PPA de 2005).

1990 et 2005 et représente 48,5% de la population mondiale en 2005 contre 32,7% en 1990. Cette proportion atteint plus de 40% de la population locale en Afrique du Nord, en Afrique du Sud, mais aussi dans des pays d'Afrique subsaharienne tels que le Gabon, le Botswana ou le Kenya. Le même critère absolu appliqué dans les principaux pays d'Amérique latine en 2006 affecte entre 55,5% (Argentine) et 76,6% (Pérou) de la population dans la classe moyenne (Castellani et al., 2014). Le mode de la distribution des revenus des pays à revenu intermédiaire s'est nettement déplacé vers la droite entre 1998 et 2012, avec une augmentation du nombre de personnes percevant un revenu journalier par tête compris entre 3,2 et 50 dollars (en PPA 2011).

Les enjeux liés à l'émergence de la «classe moyenne» dans les pays à revenu intermédiaire sont multiples tant au niveau national que mondial. Le phénomène ainsi que les mécanismes à l'origine de l'émergence de la «classe moyenne» dans les pays en développement ont été mis en évidence dans plusieurs articles récents (Banerjee et Duflo, 2008; Birdsall, 2012; Birdsall, Graham et Pettinato, 2001; Brandi et Büge, 2014; Chun, 2010; Chun, Hasan, Rahman et Ulubaşoğlu, 2017; Kharas, 2010; Ravallion, 2009, entre autres). S'appuyant sur la littérature consacrée au lien croissance-inégalités, certaines études expliquent notamment comment des changements dans la distribution des revenus, et notamment l'expansion de la «classe moyenne», peuvent stimuler la croissance économique par le biais de la consommation de masse et de divers mécanismes liés à l'accumulation de capital humain et l'investissement (Desdoigts et Jaramillo, 2014; Mani, 2001; Matsuyama, 2002). La «classe moyenne» est supposée soutenir et rechercher la stabilité et l'efficacité des institutions politiques et économiques (Wheary, 2009). Par conséquent, une «classe moyenne» aisée et homogène peut avoir plus de poids politique que les pauvres, leur permettant d'influencer le contenu et la portée des politiques publiques (Birdsall, 2010) et de stimuler les réformes institutionnelles en exigeant une meilleure gouvernance (Loayza et al., 2012; Banque mondiale, 2014). De même, étant plus nombreux que les riches, l'agrégation de leurs comportements individuels peut générer des effets sur l'ensemble de l'économie. Cette thèse s'insère alors dans la suite de cette branche de la littérature. À cette fin, nous utilisons le terme «classe moyenne» pour désigner un groupe de personnes à revenu moyen qui sont économiquement stables, présentent peu de risque de redevenir pauvres, et peuvent subvenir à leurs besoins essentiels tout en conservant une partie de leur revenu disponible pour d'autres types de consommation ou pour l'épargne (Handley, 2014). Nous avons choisi l'approche monétaire, en fixant des

bornes absolues, pour mesurer la classe moyenne, puisque cette approche convient le mieux aux comparaisons internationales.

En résumé, la transformation économique, les changements productifs et les changements distributifs, tels que l'expansion de la classe moyenne, sont interconnectés. Pour que les pays à revenu intermédiaire puissent soutenir leur développement et relever le défi de la croissance inclusive, il est nécessaire de mieux comprendre ces mécanismes. Des preuves empiriques qui pourraient aider à orienter les politiques publiques sont d'autant plus nécessaires pour que les impacts théoriques de la classe moyenne au niveau tant national que global se matérialisent. Cette thèse contribue à la littérature encore bourgeonnante en examinant dans quelle mesure les changements productifs et distributifs permettent d'expliquer la performance économique des pays à revenu intermédiaire et en étudiant la dynamique de formation de la classe moyenne. Notre thèse s'articule autour de trois principales questions. Les deux premières questions sont traitées dans un cadre macroéconomique, tandis que le dernier chapitre adopte une perspective microéconomique pour approfondir le cas de la Turquie.

Le chapitre 1 analyse comment les effets des facteurs de production, de la structure productive, des inégalités et de la redistribution sur la croissance économique diffèrent pour les pays qui sont dans la trappe à revenu intermédiaire. Nous utilisons une approche mixte pour identifier les épisodes de TRI pour un panel de 132 pays de 1960-2010. Notre méthode consiste à identifier les épisodes de TRI, définis comme des périodes de ralentissement durables de la croissance, en se basant sur des conditions d'intensité et de durée de ralentissement de la croissance qui sont désormais des critères standards dans la littérature. Sur la base de cette identification, nous testons empiriquement divers facteurs explicatifs liés aux changements productifs et distributifs en comparant l'impact de divers déterminants sur la croissance de moyen terme à l'intérieur et à l'extérieur de la TRI sur un panel réduit de 78 pays de 1970 à 2010. Nous avons constaté que la lenteur de la transition démographique, le régime de croissance, le schéma de diversification et le mauvais appariement sur le marché du travail permettent de comprendre, dans une certaine mesure, les ralentissements économiques subis par certains pays à revenu intermédiaire. Nos résultats suggèrent également que les pays dans la TRI sont pris entre deux régimes de croissance. D'une part, le manque d'opportunités freine la productivité et l'innovation, et d'autre part, les inégalités donnent des incitations à investir dans l'accumulation de capital humain. Ainsi, les politiques favorisant le passage d'une croissance extensive à une croissance intensive et le passage à la diversification sur les

marges intensives semblent être particulièrement pertinentes dans les pays à revenu intermédiaire. L'efficacité de leurs politiques de redistriibution doit également être évaluée afin de les adapater aux besoins de la population et permettre une croissance inclusive et durable. Spécifiquement, un marché concurrentiel (Acemoglu, Aghion et Zilibotti, 2006) ainsi que des politiques industrielles adaptées (Aghion et al., 2015) pourraient générer les incitations nécessaires au bon déroulement de ce processus. Kharas, Zeufack et Majeed (2010) remettent également en cause l'effet négatif des défaillances des politiques publiques sur la transformation productive. Dans le même esprit, Jankowska et al. (2012) définissent un ensemble de politiques qui devraient permettre aux pays à revenu intermédiaire de catalyser la transformation structurelle. Ces mesures comprennent les investissements publics dans la qualité de l'éducation, la fourniture d'infrastructures, le soutien à l'innovation et l'amélioration de l'accès au financement.

Les effets macroéconomiques de la classe moyenne globale sont examinés dans le chapitre 2. Plus précisément, nous analysons les canaux par lesquels la classe moyenne émergente génère des transformations économiques propices à la croissance Nous évaluons d'abord le lien entre l'expansion de la classe moyenne, la consommation, les investissements et les dépenses publiques. Notre stratégie empirique prend en compte la simultanéité des effets sur ces agrégats ainsi que les problèmes de causalité inverse. Nous avons observé qu'une large classe moyenne est associée à une préférence accrue pour l'épargne, à une demande accrue en transferts, en subventions et en investissements publics. En termes de causalité, cet effet semble être spécifiquement lié à la taille de la classe moyenne inférieure dans les pays à revenu intermédiaire de la tranche supérieure. Nos résultats semblent indiquer qu'une classe moyenne plus influente pourrait effectivement modifier le contenu des politiques publiques comme le suggère la littérature (Acemoglu et Robinson, 2006; Loayza et al., 2012). Par contre, nos résultats sur l'investissement privé ne sont pas robustes, mais cela peut simplement signifier que l'effet positif est atténué en raison de distorsions induites par la redistribution, ou qu'il passe plutôt par le canal des changements institutionnels (Alesina et Perotti, 1996). Par ailleurs, afin de mieux comprendre dans quelle mesure la consommation de masse portée par la classe moyenne et le capital humain peuvent être bénéfiques pour la croissance, nous nous sommes intéressés à la relation entre expansion de la classe moyenne et les changements productifs. Nos résultats sont conformes à la théorie (Desdoigts et Jaramillo, 2017; Murphy et al., 1989a), dans la mesure où une classe moyenne plus large semble

contribuer au passage d'une économie basée sur l'agriculture à une économie basée sur l'industrie. Nos résultats indiquent que la classe moyenne soutient le développement du secteur manufacturier domestique à travers la demande en biens de consommation et l'offre de travail relativement qualifié, et elle constitue également un débouché important sur le marché mondial. En particulier, la classe moyenne supérieure, par ses compétences et son savoir-faire, joue un rôle important dans la modernisation de la production.

Enfin, le chapitre 3 se penche sur les déterminants socioéconomiques de la mobilité économique de la classe moyenne en 2010-2013 en Turquie. Nous avons pu observer que le niveau initial de revenu du ménage, la dotation en actifs, le niveau d'éducation du chef de ménage, la composition du ménage et les transferts déterminent et limitent la mobilité sociale. Trouvant des résultats similaires sur la mobilité économique, Woolard et Klasen (2005) les assimilent aux mécanismes de la trappe à la pauvreté. Dans notre étude, la difficulté pour certains ménages à gravir l'échelle sociale semble être liée à la mobilité intergénérationnelle, fortement conditionnée par la reproduction sociale. Nous avons également constaté que les transferts privés jouent deux rôles différents: (i) un rôle de « soutien » pour les ménages pauvres et certains ménages de la classe moyenne inférieure, avec un risque de dépendance et d'instabilité (Brand-weiner et Francavilla, 2015), et (ii) un rôle de «levier» pour les ménages de la classe moyenne supérieure, en particulier les prêts formels contractés auprès d'organismes financiers. Contrairement à la plupart des études sur la mobilité économique, et en particulier à celle de Schotte, Zizzamia et Leibbrandt (2018), nos résultats montrent que certains ménages dirigés par une femme ou par des personnes retraitées ont plus de chances de rejoindre la classe moyenne. Le fait de posséder leur logement, en allégeant leurs charges financières, semble contribuer à sécuriser leur position, du moins à court terme. Cependant, la capacité de ces deux types de ménages à maintenir leur position à long terme, sans aide extérieure, est discutable. En effet, la plupart des femmes cheffes de famille sont inactives et ont au mieux complété des études secondaires ; alors que certains des ménages dirigés par des retraités dépendent de pensions et des revenus d'emplois informels. Comme Azevedo et Atamanov (2014) le soutiennent, la Turquie doit encore poursuivre et mettre en œuvre des réformes susceptibles de profiter davantage aux ménages vulnérables. Celles-ci devraient inclure des mesures favorisant l'éducation des femmes et leur accès à de meilleurs emplois, l'amélioration des systèmes de santé et de retraite, la formalisation de l'emploi ou au moins l'amélioration des conditions de travail (Banque mondiale, 2014).

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