Examining the economic growth and the middle-income trap from the perspective of the middle class

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A R T I C L E   I N F O

Article history:
Available online xxx

Keywords:
Catch-up index
Economic growth
Emerging markets
Foreign direct investment
Innovation
Middle class
Middle-income trap
Productivity

A B S T R A C T

In recent decades, while some countries have been growing consistently, others were not able to keep high growth rates and got stuck in the “middle-income trap.” This study aims to explore the relationship between the middle class and the persistence of economic growth, and understand the role of the middle class in avoiding the middle-income trap which is a serious threat for many emerging markets, yet an understudied topic in the academic literature. Our findings suggest that the key growth factors including the middle class, innovation, productivity, and foreign direct investment have diminishing marginal effect on economic growth. Moreover, the middle class plays an important role in avoiding the middle-income trap. We also find regional differences in the middle-class growth and economic evolution of emerging markets over time. To our knowledge, this is the first study examining the relationships between the middle class, economic growth, and the middle-income trap.

1. Introduction

At the consumer level, the rise of the global middle class is a stimulating, and yet to be explored phenomenon of the recent decades. Along with the rise of the middle class, countries also rise in prosperity because middle class provides the key factors for growth such as consumption demand and labor supply. A substantial growth of middle-class consumers is happening in fast growing emerging markets that are going through the stages of economic development from low-income to high-income path. However, there is a threat to these fast-growing markets during their growth process in the middle-income stage. This threat is called the “middle-income trap.”

In recent years, many emerging markets such as China, Hong Kong, India, Singapore, Malaysia, Brazil, and Argentina have experienced considerable income growth. While some countries including Singapore, South Korea, and Hong Kong have shown consistently and extraordinarily increasing patterns of growth, others such as Malaysia and Thailand have stagnated or slowed down over time after transitioning from low-income to middle-income economy. As an illustration, Fig. 1 shows GDP per capita comparisons for Southeast Asian countries in 1970 versus 2011. While South Korea managed to grow about 80 times more from 1970 to 2011, Malaysia, which had much bigger GDP than South Korea in 1970, could only grow about 25 times more by 2011. At certain middle-income stages, economies with high growth rates struggle to keep that rate of growth and face with economic slowdown or stagnation (Cai, 2012b). These countries fail to transition to a high-income economy due to rising costs and declining competitiveness (Griffith, 2011). This phenomenon is explained by the middle-income trap.

Economic growth is not a linear function. As a country keeps growing from low to high-income stages, it gets harder to grow further. Fast growing countries can get stuck in the middle-income stage. Middle-income trap is a critical issue for middle-income countries which consist of many emerging markets with rising middle-class consumers. It is important to emphasize the escalating middle class in emerging markets, and the rising prosperity related to the middle-class growth. However, without the discussion of the middle-income trap, the discussion on the middle-class phenomenon would be narrow, insufficient, and somewhat optimistic. Middle-income trap is a real and serious concern for fast-growing emerging markets. Discussing the threats to the rising middle class in emerging markets in terms of the middle-income trap provides a broader perspective for understanding its implications. Our study completes the big picture by examining the expanding middle class in emerging markets from a cautious perspective at the country level.

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http://dx.doi.org/10.1016/j.ibusrev.2015.03.008
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Please cite this article in press as: Ozturk, A. Examining the economic growth and the middle-income trap from the perspective of the middle class. International Business Review (2015), http://dx.doi.org/10.1016/j.ibusrev.2015.03.008
In this study, our purpose is twofold: (i) to examine the relationship between the middle class and economic growth; (ii) to identify the role the middle class plays in avoiding the middle-income trap. First, we conceptually discuss the middle-class consumers, middle-income economies, and the middle-income trap. Then, we analyze the evolution of emerging markets along their economic growth path over time, and identify countries facing the risk of the middle-income trap. We also analyze the evolution of the middle class in emerging markets over time and across regions. Then, for an augmented set of countries (76 countries including those beyond emerging markets), we empirically show how the middle-class, along with other key growth factors such as innovation, productivity, and foreign direct investment (FDI) affects economic growth. Finally, we empirically demonstrate the role of the middle class in escaping the middle-income trap.

Our analysis on the economic development of emerging markets shows that there are 11 emerging markets that have stayed in the middle-income stage over 33 years. These 11 markets are identified as those facing the threat of middle-income trap. The subsequent analysis on the evolution of the middle class in emerging markets shows that the share of income belonging to the middle-class within the total income in a country (hereafter referred as the "middle-class income share") is converging across emerging markets over time. We also detect regional differences: Middle-class income share is increasing in Latin America, whereas it is mostly stable or decreasing in all other regions. In our empirical growth model, we find diminishing marginal effects of major growth factors (i.e., the middle-class income share, innovation, productivity, and FDI intensity) on economic growth. Our results confirm that as a country grows from low to higher income categories, it gets harder to grow further because of the diminishing marginal effects of the growth factors. Finally, we find that the middle-class income share is very effective in escaping the middle-income trap. A one percent increase in the middle-class income share increases the odds of moving up from middle to high-income economy by a factor of 4.95.

In investigating the middle-class phenomenon, this study contributes in two main areas: (i) in examining its relationship with economic growth, we demonstrate the diminishing marginal effects of the middle class on GDP growth; and (ii) in examining its role in the middle-income trap, we find that the middle class plays a key role by increasing the odds of escaping the middle-income trap. Our study also adds to the literature by conceptually examining the middle-income trap and empirically identifying those facing the trap, as well as analyzing the evolution of the middle class over time and detecting the convergence of middle-class income share across emerging markets over time.

This paper is organized as follows: In the next section, we provide a conceptual discussion on the middle-class consumers, middle-income economies, economic growth, and the middle income trap. In the empirical section, we first identify countries facing the risk of the middle-income trap. Then, we analyze the evolution of the middle class in emerging markets over time. In the subsequent analysis, we conduct a fixed effects regression to examine the effect of the key growth factors including the middle-class income share, innovation, FDI intensity and productivity on economic growth. In the final empirical analysis, we conduct a binary logit model to evaluate the effect of the middle class on escaping the middle-income trap. Finally, on the fourth section, we conclude with the contributions and implications of our study, followed by limitations and possible future research areas.

2. Conceptual discussion

2.1. The middle-class consumers, middle-income economies, and economic growth

The global middle-class phenomenon has recently started attracting the attention of scholars. It is generally studied through within-country analyses or compare-and-contrast approaches across countries. Yet, in order to understand the phenomenon thoroughly at the global level, a reflection of the middle-class consumers from consumer to country level would be helpful. For this purpose, we first define the “middle class” at the consumer level, and then define the “middle-income” at the country level.

There is not a consensus for the definition of the middle class. There are two main approaches in defining the middle class (The Economist, 2009): relative terms, and absolute terms. Relative approaches define the middle class in various ways such as people with income between 75 percent and 125 percent of the median income level in a country (Birdsall, 2010, p. 162; Birdsall, Graham, & Pettinato, 2000; Thirouw, 1986); those in the middle three quintiles of income (Easterly, 2001, p. 10); or households having one third of their gross income left as discretionary income (Parker, 2009). Similar to the relative approach, there are also various proposed classifications in the absolute approach. Some absolute definitions are based on the daily per capita income: e.g. between $12 and $50 in 2000 PPP (Milanovic & Yitzhaki, 2002); between $2 and $13 in 2005 PPP (Ravallion, 2010); between $10 and $100 in PPP (Kharas & Gertz, 2010). Since there is not a unique established definition of the middle class, the choice depends on the goal of the study.
research. Absolute definitions are limited in that they need to be revised periodically. Relative measures are consistent over time, thus, we adopt relative measures in this study.

This study focuses on country-level rather than consumer-level analysis. Similar to the middle class definitions, there are two main approaches in defining income categories for countries. The first one, Catch-Up Index (CUI), is a relative measure. CUI represents the relative percentage of the U.S. level of per capita GDP such that CUI is higher than 55 percent represents high-income countries, CUI between 20 percent and 55 percent represents middle-income, and that lower than 20 percent represents low-income economies (Athukorala & Woo, 2011). The second approach is an absolute measure developed by the World Bank. The World Bank defines country classifications based on gross national income (GNI) per capita, and revises it every year to determine the lending eligibility of countries. The latest income classification of World Bank is as follows: low income: $1045 or less; lower middle income: $1046 to $4125; upper middle income: $4126 to $12,745; and high income: $12,746 or more.1 We believe that relative approaches are more universal and consistent over time compared to absolute approaches. Therefore, we adopt the CUI approach in our study for defining the middle-income countries.

The link between the middle-class consumers and the middle-income economies can be explained through the levels of analysis. Both are driving engines for growth; but middle-class consumers represent the consumer level, and middle-income economies represent the country level perspective. Middle class fosters improvements in political, economic, and societal environments. Likewise, middle-income countries are the driving force for economic development in the world. Middle-income countries have positive spillovers to the rest of the world in driving poverty reduction, international trade, knowledge, and resource transfers, and financial stability (World Bank, 2013). Middle-income economies serve other developing economies through increased trade activities, capital flows, and shared knowledge and resources (Verbeke & Renard, 2011). For example, in the latest global financial crisis, middle-income economies helped the recovery of the world economy through well-developed trade relations with other developing nations (United Nations, 2011).

It is a widely accepted view that countries with a large size of middle class grow faster because the middle class breeds entrepreneurs, encourages accumulation of human capital and savings, generates market diversification and expansion due to its consumption power, and contributes to better governance (Banejje & Duflot, 2008; Chun, Hasan, & Ulubasoglu, 2011; Kharas & Gertz, 2010). As countries grow in terms of economic development, the middle-class consumers get larger in size and be more prosperous (Manrai & Manrai, 2001). Thus, along the economic development path of countries, middle class seems to be the answer to sustainable growth because of its contribution to consumption and factor inputs. As the middle class in a country prospers, it is more likely for that country to transition from low to middle-income growth path. Along with further rise of the middle class, a country should be likely to transition from middle to high-income economy relatively easily. On the other hand, the contribution of the middle class to economic growth may be different at different stages of development. For example, growth of the middle class can cause a fast transition from low to middle-income stages, but its effect may be less, similar or more when transitioning from middle to high-income stages.

There are two main economic growth models. The neoclassical growth theory (i.e. exogenous growth model) developed by Solow (1956), and the new growth theory (i.e. endogenous growth model) led by Romer (1986), Lucas (1988), and Barro (1990). The new growth theory permits nonlinear relationships between endogenous growth factors and economic growth (Herath, 2012). There are conflicting views on the shape of the curvilinear effect in these models: some assume diminishing returns (Cass, 1965; Koopmans, 1963; Ramsey, 1928); some assume constant returns (Uzawa, 1965); and some assume increasing returns (Romer, 1986) to capital and input. Considering the possibility of nonlinear relationships, we allow for curvilinear relationships in our empirical analysis. The returns to the middle class can be increasing because of the spillover effects and high rates of introduction of new goods and services (Romer, 1986). Or else, it can have constant returns with no differential effect at various income stages, indicating a linear relationship with economic growth. Finally, the returns to the middle class can be decreasing because of the tendency of low-income countries growing at high rates based on the convergence hypothesis (Barro & Sala-i-Martin, 1990). In the empirical section, we test these assumptions, and empirically show the relationship between the middle class and economic growth of countries at low, middle, and high-income stages.

2.2. The middle-income trap

In 2007, the World Bank published one of its reports on the East Asian economies, titled “An East Asian Renaissance: Ideas for Economic Growth.” The report was raising the issue of the “middle-income trap.” The findings included that the middle-income countries have grown less rapidly than rich or poor countries, and they have to do something different because they are caught between low-wage poor countries dominant in mature industries and innovative rich countries dominant in technology industries (Cai, 2012b; Gill, Kharas, & Bhattachari, 2007). Middle-income countries lack any comparative advantage while low-income economies have comparative advantage in labor-intensive industries, and high-income economies have comparative advantage in capital-intensive and technology-intensive industries (Garrett, 2004). Since the World Bank report was published in 2007, studies have started examining the issue of the middle-income trap. However, as a relatively recent topic, there is not a systematic research stream on middle-income trap in the scholarly literature (Cai, 2012b).

Middle-income trap has been studied through the framework of economic growth models (Cai, 2012b). Economic growth convergence hypothesis suggests that economic growth has many determinants such as investment ratio, human capital accumulation, government policies, and infrastructure conditions (Barro & Sala-i-Martin, 1995). In the lower economic development stages, improvement in these factors enforces economic growth. However, as the economic development stage advances, these elements may have a diminishing marginal effect. With the diminishing marginal productivity of capital, strategies based on factor accumulation will not have a positive effect on growth, which has been the case for many Latin American and Middle East countries for decades (Gill et al., 2007). At that point, strategies and policies different from the previous ones must be adopted for a transition from middle-income to high-income stage.

Among many factors that may generate the middle-income trap, government policies play a considerable role. A study demonstrates that strategic, pro-active, and coherent government policies for capability advancement are key factors in upgrading to a higher-income economy (Paus, 2012). Paus (2012) argues that only the development of technological capabilities can ensure growth and broad-based upgrading. This requires moving from commodity-production to knowledge-intensive and innovative activities (Caldentey, 2012; Paus, 2012).

1 http://data.worldbank.org/about/country-and-lending-groups.
Income inequality also plays a role in middle-income trap. In 1950s, a renowned economist Simon Kuznets proposed an inverted U-shaped relation between income inequality and economic growth, known as Kuznets Curve. He suggested that income inequality was a price to pay for rapid growth in the early stages of economic development (Berliner, Do Kim Thanh, & McCarty, 2013). As low-income countries evolve, shifting from agricultural to industrial sectors, income gap increases between the top and the bottom income groups. After reaching a certain middle-income stage, mass education and higher industrialization fosters reduction in income inequality. So, lingering income inequality during middle-income stages would pose problems for further growth. Egawa (2013) argues that a middle-income country cannot move further in the economic growth ladder if the equality structure of income distribution is worsening. For example, China, Malaysia and Thailand in East Asia are suffering from inequality in income distribution that may hinder their further economic growth. If government policies for income redistribution measures are not put in place, middle-income trap will be a more serious concern for these countries.

2.2.1. Middle-income trap in emerging markets

The global financial crisis in 2008 led to the downsizing of the middle class in advanced economies; whereas the growth trend was not affected as much in emerging markets. The global growth engine has started to depend more on the emerging markets. Most emerging market economies are at the middle-income stages of their growth phase. Therefore, it is important to understand the possibility of these emerging markets getting stuck in the middle-income trap. World Bank reports raise concerns regarding middle-income trap for emerging markets in East Asia because the middle-income trap has been a major problem for many Latin America and Middle East countries for decades due to the declining marginal productivity of capital, and the same issue may pose a threat for East Asian emerging markets such as China and India (Gill et al., 2007; World Bank, 2010). Some of these emerging markets (e.g. India and Indonesia) have not yet transitioned to the middle-income stage, but middle-income trap is relevant to them as well since these fast-growing low-income economies are very promising emerging markets leading the path to become middle income economies.

India has obstacles on its way to sustainable growth such as deficiencies in infrastructure, weak bureaucracy, social problems or regional instabilities. Yet, increasing international trade, rising investments in private sector and shrinking public debt generate optimistic views for the future growth of the country. A relatively more equal income distribution compared to China, and its sizable middle class are also indicators that India is likely to reinforce its economic growth in the future (Kharas, 2010).

On the other hand, even though China has higher per capita income than India, the size of its middle class is not big enough to support the economy in case of an economic slowdown (Kharas, 2010). Aging population and rising dependency rates, increasing labor costs, reducing comparative advantage cause concerns for an economic slowdown in China (Cai, 2012b). China’s economy depends heavily on exports, and if exports slow down, the economy will suffer considerably, and the country is likely to be trapped in the middle-income stage. Recently, China has started losing its edge on labor-intensive industries, but the country is argued to be not yet ready to compete on knowledge-intensive industries (Cai, 2012a). So, China is currently at a turning point. It has to consistently push for consumption, demand, and the technological advancements not to be stuck in the middle-income trap.

China’s current economic state looks like that of Brazil in 1970s in terms of income per capita. Considering that Brazil has been stuck in middle-income for decades, concerns over China’s middle-income trap increases. From 1960s to 1980s, Brazil showed a stable growth at an average 5.6 percent per capita per year, similar to the growth in South Korea (Kharas & Gertz, 2010). However, high income inequality combined with a small size of the middle class (29 percent of the country’s population) presented an obstacle for Brazil to transition into an innovation-based economy. Although South Korea had a similar growth rate with Brazil until 1980s, it was able to achieve an innovation-based economy with a significant size of the middle class (Kharas & Gertz, 2010). South Korea implemented the right policies for growth such as allowing foreign direct investments, joining the Organization for Economic Cooperation and Development (OECD), and privatizing the industries (World Bank, 2008). The case of South Korea shows that middle-income trap is not a phase that every country has to go through during their economic growth process. It can be avoided with the right policies and innovation-focused growth strategies.

Similar concerns also exist for Indonesia. The country has been performing well in terms of increasing demand, rising exports and foreign direct investments, and decreasing government debt since the 1990s. But it needs a structural transformation such as a large scale manufacturing industry and inclusive growth to be a high-income economy (Rhee, 2012).

In summary, sustainable economic growth of emerging markets is crucial for the global economic development. China poses the greatest concern regarding the middle-income trap. China is most vulnerable due to its labor-intensive export-driven economy. Therefore, it is especially important for China to transition into an innovation-driven economy.

3. Empirical analysis

In this section, we first analyze countries by their income categories. This first part is an analysis to understand the evolution of countries across income categories over time. Then, in the second part, we analyze the evolution of the middle class in emerging markets over time. In the third part, we test the relationship between economic growth and the middle class, and other key growth factors established in the literature including innovation, FDI, and productivity. We use a fixed-effects regression analysis to identify the effects of these key factors on the economic growth of countries. Finally, using a binary logit model, we test the effect of the middle class on the probability of a country moving up from middle to high-income level.

3.1. Identifying countries at the risk of the middle-income trap

We use panel data from the Global Market Information Database (GMID, also known as Euromonitor or Passport). The data consist of GDP at purchasing power parity (PPP) per capita of 76 countries between 1980 and 2012.

First, we analyze emerging markets only. We use a subset of data consisting of GDP at PPP per capita of 26 emerging markets from 1980 to 2012. These are the 26 countries identified as emerging markets by the globalEDGE of Michigan State University and the Economist.

We conduct a detailed examination of which income category each emerging market falls in. In order to classify their respective income categories, we calculate the Catch-Up Index (CUI) for each country. Countries with GDP per capita below 20 percent of the U.S. population are classified as low-income, countries with GDP per capita between 20 and 30 percent of the U.S. population are classified as lower-middle income, countries with GDP per capita between 30 and 70 percent of the U.S. population are classified as upper-middle income, and countries with GDP per capita above 70 percent of the U.S. population are classified as high-income.

Please cite this article in press as: Ozturk, A. Examining the economic growth and the middle-income trap from the perspective of the middle class. International Business Review (2015), http://dx.doi.org/10.1016/j.ibusrev.2015.03.008
GDP per capita is classified as low income; those above 55 percent of the U.S. GDP per capita are classified as high income; and those between 20 percent and 55 percent are classified as middle income. Fig. 2 shows the evolution of emerging markets across income categories between 1980 and 2012. Category 1 represents low income, category 2 represents middle income, and category 3 represents high income countries. 14 out of 26 countries have never transitioned from one category to the other, staying constantly in their income groups over these 33 years. An interesting finding from Fig. 2 shows that there are regional distinctions in country evolutions. East Asian countries are either accumulated around low-income category (China, India, Indonesia, Pakistan, Philippines, and Thailand), or have already crossed to high-income category (Hong-Kong, South Korea, Singapore). East European countries are mostly stable in the middle-income category with almost no transitions up or down over the 33 years (Czech Republic, Hungary, Poland, Russia, and Turkey). So, middle-income trap may be an ongoing concern for these East European countries. Latin American countries show high volatility between low and middle-income groups. Brazil, Chile, Colombia, and Venezuela were middle-income countries in early 1980s; however they all went back to low income, but in recent years, they transitioned back to the middle-income category. Mexico and Argentina are stable or potentially stuck in the middle-income category during this time period. This pattern supports our previous discussion on the stagnation and concern over the middle-income trap in Latin America in the last few decades.

A more detailed graph in Fig. 3 shows the CUI of each emerging market from 1980 to 2012. The graph shows the gap between the top performing Asian tigers (Hong-Kong, Singapore, South Korea), Saudi Arabia, Israel, and Czech Republic and the rest of the emerging markets in the middle and low-income categories that show mostly a volatile pattern. The graph shows that over a period of 33 years, only South Korea and Hong-Kong started as middle-income and ended up as high-income countries. Singapore and Czech Republic, although not transitioning to another income category, are very close to the border between middle and high income. In general, many middle-income countries have either stayed inside that level, or declined to low-income level. Very few were actually able to make the transition from middle to high income. This pattern confirms the reality of the middle-income trap and the rareness of overcoming the trap.

The identification of whether a country is stuck in the middle-income trap is not well-established in the literature. Felipe, Abdon, and Kumar (2012) suggest that if a country is stuck in the lower-middle income for more than 28 years, or in the upper-middle income for more than 14 years, then the country is stuck in the middle-income trap. These thresholds represent the median number of years that the sample countries spent in their income categories. However, there are two major limitations to the thresholds that they set. First, taking the median of a limited set of countries is an arbitrary approach. For example, if the authors have taken the mean instead of the median, the threshold for the lower-middle income would have been 33 years instead of 28 years. Second, the sample has limited number of countries making the jump from one income level into another. The thresholds may differ considerably for other sets of countries.

In our augmented data, we obtained GDP at PPP per capita of 76 countries (including beyond the emerging markets) between 1980 and 2012. We identified the countries that have been in the same income category over this 33-year time period. Table 1 presents these countries across income categories. Although we cannot conclude that these countries are stuck within their income levels, this finding still suggests that it may be a serious concern for these countries if they could not achieve to move up from low to middle, or from middle to high-income levels for more than three years.

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Fig. 2. Income classifications of emerging markets from 1980 to 2012 based on CUI 1 = low income level; 2 = middle income level; 3 = high income level.
decades. There are 16 low-income countries, 11 middle-income countries, and 19 high-income countries that have never shown any transition across income categories from 1980 to 2012. These 11 countries that have stagnated in the middle-income stage over these 33 years are candidates for being stuck in the middle-income trap.

3.2. The evolution of the middle class

In this section, we focus on the 26 emerging markets for which we have consistent data between 1996 and 2012. We adopt the definition of middle class from Cavusgil and Kardes (2013). Based on a decile analysis, Cavusgil and Kardes (2013) define the 5th and 6th annual household disposable income deciles as the mass-middle class, and the 7th and 8th deciles as the affluent middle class. Our data consist of disposable income shares across deciles.

<table>
<thead>
<tr>
<th>Low income countries</th>
<th>Middle income categories</th>
<th>High income categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Countries that remain in the low-income category between 1980 and 2012</td>
<td>Countries that remain in the middle-income category between 1980 and 2012</td>
<td>Countries that remain in the high-income category between 1980 and 2012</td>
</tr>
<tr>
<td>Algeria, Bosnia-Herzegovina, Egypt, Georgia, Guatemala, India, Indonesia, Jordan, Kenya, Morocco, Nigeria, Pakistan, Philippines, Thailand, Tunisia, Uzbekistan</td>
<td>Argentina, Croatia, Czech Republic, Estonia, Hungary, Lithuania, Mexico, Poland, Portugal, Turkey, Venezuela</td>
<td>Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Netherlands, New Zealand, Norway, Singapore, Sweden, Switzerland, United Arab Emirates, United Kingdom, USA</td>
</tr>
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</table>

Accordingly, we operationalize the middle class by the disposable income share of the middle class within the total disposable income in a country. More specifically, the middle-class income share represents the disposable household income earned by the middle-class households as a share of the total disposable household income generated in the country. We calculate the middle-class income share by summing up the disposable income percentages of deciles 5, 6, 7 and 8. The sum of the values across all ten deciles is equal to 100.

Fig. 4 shows the evolution of the middle-class income share for the 26 emerging markets between 1996 and 2012. The graph suggests that the values are mostly stable with an apparent upward trend for some countries and slight downward trend for some other countries. An interesting insight is that there is a convergence across countries over time. The wide range of the middle-class income share across countries in 1996 reduces by 2012. This indicates a convergence in the middle-class income share across emerging markets over time. If we exclude South Africa and Colombia (from the bottom), and South Korea (from the top), the figure shows that the middle-class income share has decreased from the range of 30 to 44 percent in 1996 to the range of 33 to 41 percent in 2012. A closer look reveals two converging groups: The first group converges in the range of 33 to 36 percent; and the second group converges in the range of 38 to 41 percent. Overall, the middle class income share within the total income in a country never seems to go beyond the range of 26 to 44 percent between 1996 and 2012.

More insights can be obtained by breaking down the middle-class income share over time by regions. Fig. 5 shows this breakdown over four regions. The evolution of the middle-class income share across regions is strikingly different. Latin American countries all have an upward trend, except Mexico. This is because of the policy changes in many Latin American countries to improve the income distribution over the recent years. In Asian emerging markets, there is a slight downward trend or volatility in general. The only upward trend is observed for Philippines. Emerging markets in the Middle East and Africa are mostly stable or with a very slight downward trend. Eastern European emerging markets are also mostly stable. Turkey has an increasing trend, while Romania has a decreasing trend. Overall, Fig. 5 shows that the recent government policies in Latin America are successful in increasing the size of the middle class. This helps
with the convergence of middle-class income share across all emerging markets, because Latin American countries represent those at the bottom, while other regions are relatively at higher values in the middle-class income share, especially around mid-1990s.

3.3. Examining the relationship between the middle class and economic growth

The role of middle class in the economic growth of countries is not yet established in the literature. In this part, we test the effect
of the middle class, along with other key factors proposed in the literature, on economic growth of countries.

3.3.1. Economic growth models

In our analysis, we model the effect of the key growth factors, in particular, the middle-class income share, on the economic growth of countries. Major growth models are pioneered by Romer (1986) and Lucas (1988). A large number of explanatory variables have been suggested as determinants of economic growth in the literature. For the drivers of the economic growth, a seminal paper by Barro (1991) identified variables related to human capital (e.g. school enrollment rates), fertility, investment, government expenditures, political stability, economic system, market distortions, and regional variables (Barro, 1991). In another study, Barro (1996) examines a similar set of explanatory variables for growth, adding new variables such as the rule of law index, change in the terms of trade, and inflation rate (Barro, 1996).

The main challenge in the economic growth models is that since the growth models are not explicit enough, it is difficult to decide which variables to include in the model. Doppelhofer, Miller, and Sala-i-Martin (2003) chose to use 67 variables in their growth model and found 18 variables to be robustly partially correlated with the long-term growth and three variables to be marginally related (Doppelhofer et al., 2003). These variables include: initial GDP, primary schooling, life expectancy, regional variables, investment price, religions, and government consumption. Export trade and foreign direct investment (Lévy, 2007), corruption, and transparency in government policies are some other variables used in economic growth models (Seymour, 2006).

As a result, growth models in the literature have used multiple variables that are related to total factor productivity, human capital accumulation, and environmental variables. In this study, our data capture the key variables that have been used commonly in the economic growth literature, including variables such as innovation, productivity, investments, literacy rate, schooling, fertility rate, inflation, savings, and political and legal environmental factors.

Furthermore, many of these variables are also relevant in the market selection literature as the key indicators for assessing the attractiveness of a market. For example, Cavusgil (1985) uses political (e.g. political stability), economic (e.g. foreign trade) and social/cultural (e.g. literacy rate) variables in assessing the market potential. Cavusgil (1997) includes other market potential indicators such as market consumption capacity representing the size of the middle class. In other market attractiveness studies, Sheng and Mullen (2011) consider foreign direct investment, Mullen (2009) adds income distribution, and Cavusgil, Kiyak, and Yeniyurt (2004) include life expectancy, literacy, education, political and economic freedom. Therefore, the variables used in this study have foundations in the economic growth literature as well as the market selection literature.

3.3.2. Data and estimation method

Again, we use balanced panel data obtained from the Global Market Information Database. Since this analysis is not restricted to the emerging markets only, 76 countries are represented over a period of 1996 to 2012.

Our dependent variable is GDP at purchasing power parity (PPP) per capita. We did a log transformation on the dependent variable because of the large differences in GDP values across countries. Key independent variables include:

- Middle-class income share: Percentage of household annual disposable income by middle class. Disposable household income earned by middle-class households (deciles 5 to 8) as a share of total disposable household income generated in the country.
- Patents (as a measure of innovation) or “Total Patents Grants”: Rights granted by EPO (European Patent Office) or USPTO (U.S. Patent and Trademark Office) to an applicant in exchange for the publication of the invention, measured in numbers. There are pitfalls in using the number of patents grants as a measure for innovation because it does not capture all innovative activity in a country. However, the number of patents grants is a commonly used proxy measure of innovation in the literature, and since the true rate of innovation is unobservable, patents provide a good proxy for innovation (Crosby, 2000; Stern, Porter, & Furman, 2000).
- FDI intensity: Inflows of foreign direct investment as percentage of GDP.
- Productivity: Labor productivity per person employed, defined as the real output (gross value added) of goods and services in the economy divided by the total employed population.

Following the literature, we include commonly used explanatory variables in the analysis. Control variables in our analysis include: literacy rate, life expectancy, number of secondary schools, fertility rate, regulatory quality index, control of corruption index, political stability index, inflation, savings, and government related environmental factors such as government efficiency and voice and accountability index.

Table 2 presents variable definitions and Table 3 presents the summary statistics of the data. There are three variables with a wide range in comparison to the others: patents ranging from 0 to 131,890; productivity ranging from 1058 to 172,403; and secondary schools ranging from 110 to 564,263. So, we rescaled these variables in the regression analysis by dividing them by 10,000. So, one unit of these variables in the regression analysis corresponds to 10,000 units of each variable.

Since we have panel data of 76 countries over 17 years, we estimate a fixed-effects regression model to account for the unobserved differences across countries. These unobserved differences across countries may cause OLS estimation to be biased. Thus, we use the fixed-effects estimation method which accounts for time-invariant unobserved heterogeneity across countries (Wooldridge, 2009).

Table 2

<table>
<thead>
<tr>
<th>Variable definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unit</strong></td>
</tr>
<tr>
<td>Country</td>
</tr>
<tr>
<td><strong>Time</strong></td>
</tr>
<tr>
<td>Years</td>
</tr>
<tr>
<td><strong>log(GDP at PPP)</strong></td>
</tr>
<tr>
<td>log of GDP measured at purchasing power parity</td>
</tr>
<tr>
<td><strong>Patents</strong></td>
</tr>
<tr>
<td>Total patents grants at the EPO and USPTO – number</td>
</tr>
<tr>
<td><strong>FDI intensity</strong></td>
</tr>
<tr>
<td>FDI intensity – % of total GDP</td>
</tr>
<tr>
<td><strong>Middle class</strong></td>
</tr>
<tr>
<td>income share</td>
</tr>
<tr>
<td>Percentage of household annual disposable income by middle class</td>
</tr>
<tr>
<td><strong>Productivity</strong></td>
</tr>
<tr>
<td>Productivity – USD per person employed</td>
</tr>
<tr>
<td><strong>Literacy rate</strong></td>
</tr>
<tr>
<td>Adult literacy rate – % of population aged 15+</td>
</tr>
<tr>
<td><strong>Life expectancy</strong></td>
</tr>
<tr>
<td>Life expectancy at birth: total population – years</td>
</tr>
<tr>
<td><strong>Secondary schools</strong></td>
</tr>
<tr>
<td>Secondary schools – number</td>
</tr>
<tr>
<td><strong>Fertility rate</strong></td>
</tr>
<tr>
<td>Fertility rates – children born per female</td>
</tr>
<tr>
<td><strong>Regulatory quality index</strong></td>
</tr>
<tr>
<td>Regulatory quality index – score</td>
</tr>
<tr>
<td><strong>Control of corruption index</strong></td>
</tr>
<tr>
<td>Control of corruption index – score</td>
</tr>
<tr>
<td><strong>Political stability index</strong></td>
</tr>
<tr>
<td>Political stability and absence of violence index – score</td>
</tr>
<tr>
<td><strong>Government effectiveness index</strong></td>
</tr>
<tr>
<td>Government effectiveness index – score</td>
</tr>
<tr>
<td><strong>Voice and accountability index</strong></td>
</tr>
<tr>
<td>Voice and accountability index – score</td>
</tr>
<tr>
<td><strong>Inflation – % growth</strong></td>
</tr>
<tr>
<td>Inflation – % growth</td>
</tr>
<tr>
<td><strong>Savings ratio</strong></td>
</tr>
<tr>
<td>Savings ratio – % of disposable income</td>
</tr>
</tbody>
</table>

Please cite this article in press as: Ozturk, A. Examining the economic growth and the middle-income trap from the perspective of the middle class. *International Business Review* (2015), http://dx.doi.org/10.1016/j.ibusrev.2015.03.008
3.3.3. Specifications of the model

In line with the economic growth models allowing curvilinear relationships, we estimate the quadratic model below.

\[
\log(\text{GDP at PPP per capita}_{it}) = \alpha + \beta_1 \text{MCincome}_{it} + \beta_2 (\text{MCincome}_{it})^2 + \beta_3 \text{patent}_{it} + \beta_4 (\text{patent}_{it})^2 + \beta_5 \text{FDI}_{it} + \beta_6 (\text{FDI}_{it})^2 + \beta_7 \text{productivity}_{it} + \beta_8 (\text{productivity}_{it})^2 + x_{it} + u_{it},
\]

where \(x_{it}\) stands for the other control variables: literacy rate, life expectancy, number of secondary schools, fertility rate, regulatory quality index, control of corruption index, political stability index, government effectiveness, voice and accountability index, inflation and savings.

3.3.4. Estimation results

Table 4 presents the results of the quadratic fixed effects regression. The model is statistically significant (\(F_{19,700} = 114.81, p < 0.001\)), and \(R\)-squared is high (\(R^2 = 0.757\)).

The quadratic model results in statistically significant coefficients for all of the four key variables and their quadratic functions. All four variables (the middle-class income share, patents, FDI intensity, and productivity) have significant positive effects on GDP per capita. However, the negative significant effect of their quadratic terms show that they all have diminishing marginal effect on GDP per capita. It means that, at low levels of GDP per capita, all of these key factors contribute to its growth, however as GDP per capita grows, the marginal contribution of these key factors decrease. GDP per capita increases at decreasing rates. This result confirms the difficulty of a country moving up the growth stages. At low-income levels, it is easier for a country to grow, given an increase in the growth factors, however it is not as easy to grow with the same increase in the growth factors at the middle-income stage. These findings confirm the diminishing returns assumption of the convergence hypothesis in the economic growth models.

The positive coefficient of the middle-class income share (\(\beta_1 = 0.207, SE = 0.073\)) suggests that as the share of the middle-class income increases, GDP also increases. A one percent increase in the middle-class income share increases GDP per capita in a country by about 20 percent, all else constant. But the negative coefficient of the quadratic term (\(\beta_2 = -0.003, SE = 0.001\)) indicates that as the middle-class income share increases, the GDP increases at diminishing rates. It implies that, at higher levels of the middle-class income share, the contribution of the middle-class income share to GDP increase is not as high as its contribution at lower levels.

In terms of innovation, the results indicate that a one unit increase in the number of patents grants (i.e., 10,000 patents grants) is predicted to increase GDP per capita by about 19 percent, all else constant (\(\beta_3 = 0.190, SE = 0.060\)). The quadratic function of

<table>
<thead>
<tr>
<th>Table 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary statistics</td>
</tr>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>Log(GDP at PPP)</td>
</tr>
<tr>
<td>Patents</td>
</tr>
<tr>
<td>FDI intensity</td>
</tr>
<tr>
<td>Middle class income share</td>
</tr>
<tr>
<td>Productivity</td>
</tr>
<tr>
<td>Literacy rate</td>
</tr>
<tr>
<td>Life expectancy</td>
</tr>
<tr>
<td>Secondary schools</td>
</tr>
<tr>
<td>Fertility rate</td>
</tr>
<tr>
<td>Regulatory quality index</td>
</tr>
<tr>
<td>Control of corruption index</td>
</tr>
<tr>
<td>Political stability index</td>
</tr>
<tr>
<td>Government effectiveness index</td>
</tr>
<tr>
<td>Voice and accountability index</td>
</tr>
<tr>
<td>Inflation – % growth</td>
</tr>
<tr>
<td>Savings ratio</td>
</tr>
</tbody>
</table>

**Note:** Standard errors in parentheses.

- \(p < 0.1\)
- \(p < 0.05\)
- \(p < 0.01\)
patents has a significant negative effect ($\beta_4 = -0.008, SE = 0.003$), indicating a diminishing return of patents on growth.

FDI intensity is measured in percentage. The parameter estimate of FDI intensity ($\beta_5 = 0.011, SE = 0.003$) suggests that a one percent increase in FDI intensity increases GDP per capita by about one percent on average, all else constant, and again at diminishing rates ($\beta_5 = -0.0001, SE = 0.0001$). Finally, the coefficient of productivity ($\beta_6 = 0.180, SE = 0.014$) implies that as productivity increases by one unit (i.e., $10,000$), GDP per capita increases by about 18 percent on average, all else constant. The negative coefficient of the quadratic term for productivity ($\beta_6 = -0.009, SE = 0.001$). Again suggests diminishing effects of productivity on economic growth.

Most of the control variables have significant effects as expected, in line with the literature: e.g. literacy rate, life expectancy, secondary schools, fertility rate, political stability index, voice and accountability index (as a proxy for democracy), and savings ratio have significant positive effects on GDP per capita, whereas inflation rate has a significant negative effect.

In sum, the results of the quadratic fixed effects regression model support our arguments about the middle-income trap and confirm the diminishing returns assumption of the convergence hypothesis in the economic growth models. The positive coefficients of the first-order terms and the negative coefficients of the second-order terms imply the increased difficulty of economic growth for a country as the country moves from low to higher-income categories. The results imply that every improvement in an economic indicator pays off more at low-income levels compared to higher-income levels. Once a country moves up the economic growth ladder, it gets harder to move up further with the same amount of improvement in the growth factors. This explains the stagnation at the middle-income stages. So, countries should do radical improvements because every improvement brings growth but with diminishing returns in the course of the economic growth process.

3.3.5. Robustness checks

We have conducted two robustness checks. First, robustness test addresses the time lag effect of independent variables on the dependent variable. By using a time lag, this approach also addresses the endogeneity concern due to simultaneity. Second, robustness check is applied to compare the validity of the fixed effects approach over random effects approach.

In the first robustness check, we used a lagged regression. We regressed log of GDP per capita at time $t$ on the economic indicators at time $t-1$. Results in Table 5 are very similar to the findings in Table 4, strengthening the validity of our findings. The results still confirm the diminishing returns outcome. Middle class income share, patents, FDI intensity, and productivity at time $t-1$ exhibit diminishing marginal effects on log GDP at PPP per capita at time $t$.

In the second robustness check, we use the Hausman test to check if the fixed effects model is more appropriate than the random effects model. The Hausman test checks whether the difference in the coefficients of the fixed effects and random effects models is systematic. The result rejects the null hypothesis ($H_0$: difference in coefficients not systematic), concluding that the difference in coefficients is systematic ($\chi^2_{(15, N=778)} = 32.95, p < 0.01$). The key assumption of the random effects model is that the unobserved effect is uncorrelated with each explanatory variable. Rejecting the null hypothesis means that the key assumption of the random effects model is false (pp. 489–493).

As a result, random effects model provides inconsistent estimates. Therefore, fixed effects approach is more appropriate than random effects approach in this study.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficients</th>
<th>Standard error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle-class income share</td>
<td>0.199</td>
<td>(0.076)</td>
</tr>
<tr>
<td>Middle-class income share-square</td>
<td>-0.003</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Patents</td>
<td>0.210</td>
<td>(0.062)</td>
</tr>
<tr>
<td>Patents-square</td>
<td>-0.009</td>
<td>(0.004)</td>
</tr>
<tr>
<td>FDI intensity</td>
<td>-0.009</td>
<td>(0.003)</td>
</tr>
<tr>
<td>FDI intensity-square</td>
<td>-0.0001</td>
<td>(0.0001)</td>
</tr>
<tr>
<td>Productivity</td>
<td>0.150</td>
<td>(0.015)</td>
</tr>
<tr>
<td>Productivity-square</td>
<td>-0.008</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Literacy rate</td>
<td>0.010</td>
<td>(0.005)</td>
</tr>
<tr>
<td>Life expectancy</td>
<td>0.093</td>
<td>(0.007)</td>
</tr>
<tr>
<td>Secondary schools</td>
<td>0.010</td>
<td>(0.004)</td>
</tr>
<tr>
<td>Fertility rate</td>
<td>0.090</td>
<td>(0.050)</td>
</tr>
<tr>
<td>Regulatory quality index</td>
<td>0.052</td>
<td>(0.036)</td>
</tr>
<tr>
<td>Control of corruption index</td>
<td>-0.042</td>
<td>(0.031)</td>
</tr>
<tr>
<td>Political stability index</td>
<td>0.115</td>
<td>(0.027)</td>
</tr>
<tr>
<td>Government effectiveness index</td>
<td>0.033</td>
<td>(0.038)</td>
</tr>
<tr>
<td>Voice and accountability index</td>
<td>0.164</td>
<td>(0.040)</td>
</tr>
<tr>
<td>Inflation – 5 growth</td>
<td>-0.002</td>
<td>(0.0003)</td>
</tr>
<tr>
<td>Savings ratio</td>
<td>0.010</td>
<td>(0.002)</td>
</tr>
<tr>
<td>Constant</td>
<td>-2.328</td>
<td>(1.660)</td>
</tr>
</tbody>
</table>

Note: Standard errors in parentheses. * $p < 0.1$.
** $p < 0.05$.
*** $p < 0.01$.

3.4. Examining the role of the middle class in avoiding the middle-income trap

Apart from modeling the effect of the middle class on economic growth, we also model the effect of the middle class on the probability of a middle-income country to move up to the high-income level. We use a binary logit function in this analysis. For the estimation, we only include the countries that are stuck in the middle income (11 middle-income countries in Table 1) and those that have achieved to move up to high income (8 countries: Hong Kong, Ireland, Israel, Saudi Arabia, Slovenia, South Korea, Spain, and Taiwan). The reason to limit the sample to these two income groups is to compare the most relevant two groups in this analysis: countries stuck in the middle income versus those that could transition to high income. Since we are interested in how the growth factors affect the odds of going beyond the middle-income level, this estimation model will reveal the distinguishing effects of the growth factors in avoiding the middle-income trap.

3.4.1. Data and estimation method

We use the same dataset with a subsample consisting of 11 countries stuck in the middle income for the 33-year time period and 8 countries that could transition to high-income level. The dependent variable is a binary variable, coded 1 if the country has moved up to high-income level, and 0 if the country has been consistently ranked in the middle income.

The independent variables used in this analysis are the four key growth variables: the middle class income share, patents, FDI, and productivity. These four variables are the main remedies proposed by the middle-income trap literature to escape the middle-income trap. These remedies include: increasing the size of middle class (Kharas & Gertz, 2010); increasing investments (World Bank, 2010), investing on innovation and technology (Lee, 2013; World

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Bank, 2010); and improving the total factor productivity (Solow, 1956). Therefore, we capture these main remedies in our analysis using these four key growth factors.

3.4.2. Specifications of the model

We use a binary logit function to estimate the effect of the middle-class on the probability of a country moving up from middle to high-income level. The probability of a country moving up to high-income level and that of getting stuck in the middle-income trap (MIT) are:

\[
P_i(\text{Moving up}) = \frac{\exp(W_i)}{1 + \exp(W_i)}
\]

\[
P_i(\text{MIT}) = 1 - P_i(\text{Moving up})
\]

where for a country \( i \) and year \( t \):

\[
W_i = \alpha + \beta_1 \text{MCincome}_it + \beta_2 \text{Patent}_it + \beta_3 \text{FDI}_it + \beta_4 \text{productivity}_it
\]

The odds of a country moving up to high-income level can be written as:

\[
\text{odds}(\text{Moving up}) = \frac{P_i(\text{Moving up})}{1 - P_i(\text{Moving up})}
\]

The coefficients in the \( W \) function indicates the expected change in the log odds of a country moving up to high-income level for a unit increase in the corresponding predictor variable, holding the other predictor variables constant at certain value. To interpret our coefficients, we will look at the change in the odds ratios based on the following logit function.

\[
\log(\text{odds}(\text{Moving up})) = W
\]

\[
= \alpha + \beta_1 \text{MCincome}_it + \beta_2 \text{Patent}_it
\]

\[
+ \beta_3 \text{FDI}_it + \beta_4 \text{productivity}_it
\]

From the above discussion on the remedies proposed to avoid the middle-income trap, we expect that the probability of a country moving up from middle to high-income level will be positively related to all of these four key variables. So, we expect to find positive estimations for each of these four parameters (\( \beta_1, \beta_2, \beta_3, \) and \( \beta_4 \)).

3.4.3. Estimation results

The binary logit model estimates indicate the effect of growth factors on the probability of a country moving up from middle to high-income level. Table 6 shows the estimation results. The model is statistically significant (\( \chi^2(4; N=303) = 14.29; p < 0.001 \)). The coefficients are as expected, except \( \text{FDI intensity} \) which has an insignificant coefficient. One percent increase in the middle-class income share increases the log odds of a middle-income country moving up to high-income stage by 1.599; a unit increase in patents (i.e., 1 patent) increase it by 0.067, and a unit increase in productivity (i.e., $1 productivity) increases it by 0.0004. Alternatively, we can interpret the odds ratios in the second column of Table 6. It shows that a one percent increase in the middle-class income share increases the odds of a country moving up from middle to high-income economy by a factor of 4.946. Similarly, a unit increase in patents increases the odds of moving up the middle income by 1.069 times, and a unit increase in productivity increases it by 1.001 times. These results show that between the two sets of countries, those who are stuck in the middle-income trap and those who have reached from middle to high income level, the middle-class plays an important role in increasing the odds of a country escaping the middle-income trap.

4. Discussion and conclusion

In this study, we take a country-level perspective in examining the growth of the middle-class, the growth of economies, and the middle-income trap, and how these concepts relate to each other. This country-level perspective enriches the middle-class discussion by extending it to the global level. Without the discussion of middle-income trap, which is a serious concern for most of the emerging markets, the examination of the rising middle class in those markets would be insufficient. It is important to emphasize the rising middle class in emerging markets, and discuss their imperative role on the world stage. However, without a more cautious perspective of the middle-income trap which is a likely scenario for many fast growing emerging economies, the discussion of the rising middle class risks being narrow and insufficient. So, our study completes the big picture by examining the rising middle class in emerging markets from a cautious perspective at the country level, including risks and remedies for a sustainable global economic prosperity.

Our findings show that the middle class and other major growth factors including innovation, FDI, and productivity show diminishing marginal effect on economic growth. Literature includes conflicting views on the shape of the curvilinear effects between input and economic growth: diminishing, constant and increasing returns. Our findings are in conformance with the diminishing returns growth models. Thereby, the four growth factors add to the economic growth to a lesser extent as a country moves from low to middle to high income. However, the diminishing returns pattern does not mean that these factors do not add to further growth for middle-income countries. Our second analysis shows that the middle class proves to be very effective in increasing the odds of a country moving up from middle to high-income level.

4.1. Contributions

In this study, we contributed in four two main areas: (i) demonstrating the diminishing marginal effects of key growth factors, including the middle-class effect, on GDP growth; and (ii) quantifying the odds related to the middle class in moving a middle-income country to high-income level.

First, we examined the relationship between the middle class and the economic growth. We conducted fixed effects regression to evaluate how the middle-class income share and the key factors commonly proposed as remedies against the middle-income trap influence the economic growth. The results show the diminishing marginal effects of the middle-class income share, innovation, FDI, and productivity on economic growth. These findings confirm the significance of the threat of the middle-income trap, especially for emerging markets. The growth of the middle class or other factors

---

Table 6

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficients</th>
<th>Odds ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle-class income share</td>
<td>1.599</td>
<td>4.946</td>
</tr>
<tr>
<td></td>
<td>(0.958)</td>
<td>(1.739)</td>
</tr>
<tr>
<td>Patents</td>
<td>0.067</td>
<td>1.069</td>
</tr>
<tr>
<td></td>
<td>(0.031)</td>
<td>(0.033)</td>
</tr>
<tr>
<td>FDI intensity</td>
<td>-0.142</td>
<td>0.868</td>
</tr>
<tr>
<td></td>
<td>(0.411)</td>
<td>(0.357)</td>
</tr>
<tr>
<td>Productivity</td>
<td>0.0004</td>
<td>1.001</td>
</tr>
<tr>
<td></td>
<td>(0.0002)</td>
<td>(0.0003)</td>
</tr>
<tr>
<td>Constant</td>
<td>-90.214</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>(38.613)</td>
<td>(0.000)</td>
</tr>
</tbody>
</table>

Observations 303 303
Number of groups 19 19
Wald \( \chi^2(4) \) 14.29 14.29
p-Value 0.006 0.006

Standard errors in parentheses.
* \( p < 0.05 \)
* \( p < 0.1 \).
will not contribute to economic growth in a linear fashion, but their positive contribution will decrease during the growth process. So, it is crucial for the middle-income countries to develop radical formulas for sustainable growth.

Second, we conducted an additional analysis to quantify by how much the middle class increases the probability of moving up from middle-income to high-income levels. Although the middle class has a diminishing marginal effect on economic growth, it still proves to be very important in avoiding the middle-income trap. Our results show that a one percent increase in the middle-class income share increases the odds of moving up the middle income level by a factor of 4.95. The middle class proves to be a very powerful remedy in avoiding the middle-income trap in comparison to the other key factors.

We have also contributed to the literature by analyzing the evolution of the middle class in emerging markets over time, and identifying a converging pattern in the middle-class income share. We found an overall contraction in the middle-class income share in emerging markets. It may be due to higher increase in the disposable income share of upper class than that of the middle class. So, researchers should be careful not to attribute the consumption surge in emerging markets to the middle-class growth because it may also be due to the rising income share of upper class. The findings also revealed differences across regions. Middle-class income share has been increasing in Latin America, whereas it is mostly stable or slightly decreasing in other regions.

Finally, we provided a comprehensive examination of the middle-income trap. Middle-income trap is a recently emerging phenomenon, so there is a gap in the scholarly literature on this topic, particularly on empirical studies. In this paper, we discussed the potential reasons and remedies for the middle-income trap, examined the threat for emerging markets, and identified emerging markets which are faced with the risk of the middle-income trap.

4.2. Policy, managerial, and theoretical implications

The implications of highly growing emerging markets getting stuck in the middle-income trap are substantial for the world. If the growing markets and the growing middle-class in emerging markets cannot sustain the growth, there will be adverse consequences such as health problems (e.g. lack of clean water) or infrastructure problems (e.g. security and transportation). The global economic prosperity depends on keeping the middle class and the middle-income momentum going in emerging markets.

Middle-income trap does not have to be gone through by growing economies if right policies are applied. South Korea, Singapore, Taiwan, and Hong Kong made the transition smoothly from middle-income to high-income economies (Cai, 2012b). Some proposed remedies in the literature for mitigating the risk of the middle-income trap include implementing government policies towards increasing the size of middle class or reducing income inequalities within countries (Khasra & Gertz, 2010). The World Bank identifies two remedies to overcome the middle-income trap: investments to embody new technologies, and innovation-conducive policies (World Bank, 2010). The Solow neoclassical growth model suggests that the key to maintaining a sustainable economic growth is only through improving the total factor productivity (Solow, 1956). Schumpeterian approach also advocates for innovation as the key solution to the middle-income trap problem. Lee (2013) suggests innovative systems at the firm, sector and country levels, promoting technology investments as the key factors for a sustainable growth.

Our findings show that each of these remedies (i.e. innovation, investment, productivity) along with the middle class contribute to the economic growth of a country, however, with diminishing returns. So, in order to mitigate the risks of the middle-income trap, governments need to put constructive policies in place. They should go beyond innovation, productivity, investment, and the middle-class growth to sustain a rapid economic growth. Stability and consistency of constructive policies may increase the effectiveness of these factors in avoiding the middle-income trap.

Although these growth factors have diminishing marginal effects, they still contribute substantially to economic growth in transitioning to knowledge-based economic levels. These key factors need to be improved consistently. Nations must also look for sources of comparative advantage beyond middle-class growth, FDI, productivity, and innovation. They should constantly aim to improve education, human talent, skilled labor and management know-how, as well as intensify R&D expenditure, support research institutes, and foster technology in order to sustain a continued economic growth.

Managerial implications of this study include catering to the needs of the changing middle-class landscape. Fig. 5 demonstrates a convergence around mid-levels in the middle-class income share in emerging markets. Managers can identify which income deciles have the most potential for their businesses, and track the evolution of these target groups. Practitioners can also use the findings to assess the attractiveness of their target markets that would help with their market selection decisions. Markets which exhibit consistent improvements on the key growth factors, and especially on the middle class growth, are likely to present attractive market opportunities for businesses.

For the scholarly implications, researchers should consider that income increase worldwide does not necessarily mean the growth of the middle class because the middle-class income share may actually be decreasing due to the higher prosperity benefited by the upper class. Researchers should be clear in drawing the line between the middle-class and the upper-class consumers. Also, assuming that the economy of a country grows in a linear fashion with the growth of the middle class would be a wrong assumption. Diminishing returns model proves to be more relevant than the constant or increasing returns models for the middle class and other key determinants of the economic growth.

4.3. Limitations and future research

It is inherently difficult to have a unique definition of the middle-income trap. Although our study has identified countries facing the risk of the middle-income trap (Table 1), our classification does not provide a definitive answer to which countries are actually in the middle-income trap and which are not. There may be a gray area in defining the middle-income trap. A deterministic approach to characterize the middle-income trap may not be right because its definition may even be country-specific. Future studies on the middle-income trap are needed to clarify issues such as how long it takes for a country to be stuck in the trap, or whether the duration varies by country.

Another future extension of this study can examine the middle-class consumers, middle-income economies, middle-income trap, and their relationship at the city level. Especially in emerging markets, there is a wide gap between the advanced metropolitan areas (e.g. coastal cities in China such as Tianjin, Beijing, and Shanghai), and rural areas that still lack the benefits of fast growth in those countries (e.g. Guizhou and Gansu in China). Examining the middle-class and the middle-income phenomena at the city level will give a greater breakdown and more detailed perspective on the topic. A city-level analysis will also provide more customized policy insights for a better solution of the middle-income trap problem.

Please cite this article in press as: Ozturk, A. Examining the economic growth and the middle-income trap from the perspective of the middle class. *International Business Review* (2015), http://dx.doi.org/10.1016/j.ibusrev.2015.03.008
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