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Review Article

Avoiding the Middle Income Trap: Evidence and Examination of Few Countries

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Abstract

The middle income trap is a spectre looming up in front of countries who have performed well to rise up to middle income level from the lower income level, and are hoping for a quick admission to upper income echelons. Unfortunately, the trap seems unavoidable for many middle income nations, as seen poignantly in the case of Argentina and even Brazil. This paper tries to pinpoint the performance parameters that distinguish countries such as Malaysia and Chile who have been successful in avoiding getting mired in the trap – and may be now even viewing it nonchalantly as just a mirage appearing during the development process. The parameters identified as probable positive forces include the pillars of the Global Competitive Index, in addition to the usual suspects appearing in economic growth theory and estimations. Estimation of coefficients was carried by cross-country regressions using a sample of seventy upper and lower income nations. ICT adaptation, innovative capabilities, health standards, and openness as represented by FDI and export ratios to GDP were identified as parameters identified as important in closing the per capita income gap towards high income nations.

Keywords: Middle Income Trap, Evidence.

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I. INTRODUCTION

In the Hollywood film "The Parent Trap", a married couple is seemingly permanently in a trap as their daughters enter teenage one by one. Just when they are breathing a sigh of relief after dealing with the complications created by their eldest daughter who has left the tumultuous teenage years behind her, the next one who has entered teenage marches into their ken with a provocative dress and behaviour.

It seems that some countries are similarly caught in a trap that seems unyielding, a middle income trap that does not permit them to leave and enter the high income club of countries. Argentina springs immediately to mind, but other major developing countries like Brazil, India and Indonesia may fit the bill too.

But the famous Hotel California song lines "you can check in, but you can never leave" do not make all middle income countries to pause in their tracks. Chile has blasted her way out of the middle income trap to be a high income nation, and Malaysia may be just about to do the same.

Just what is that separates these successful countries like Chile and Malaysia from the other "stagnating" lower and upper middle income countries? This paper makes an enquiry into this puzzling state of affairs, taking resort to a fairly large cross-section sample of middle income nations. The factors considered for success in leapfrogging the middle income trap includes the variables figuring in the Global Competitive Index (2013-14, 2018) as well as a host of other factors considered in the developing literature. Individual comparisons are made between

Chile and Malaysia and the developing group's behemoths, India, Indonesia and Brazil.

The next section highlights the literature on economic development which provides the background for the study. The subsequent section looks more specifically at the discussions carried on regarding the phenomenon christened the "middle income trap". Empirical results are provided in section IV. There is a final, concluding section.

II. The background and concepts of the study

The income and productivity catch-up literature models the rate of growth of per capita GDP as being positively related to the GDP per capita gap between the richest countries and countries with lower income levels (see, for instance, Lindbeck, 1983). That is, the poorest countries will be growing fastest to catch up with the richest. Thus, as countries become richer, as exhibited in higher GDP per capita ratios, their growth rate will fall. But this literature does not envisage economic growth freezing, grinding to a halt, as happens when mired in the middle income trap's quicksand.

The process of catch-up to income status presupposes that some underlying mechanisms are at work, driving economic growth; these are the factors discussed in the literature on growth. The most important lesson thrown up in the growth literature is that no one factor would be sufficient to ensure continued growth. Argentina stands out as an example in this regards, its natural resource-based growth strategy failing to take the country to developed, highincome status. Studies show that natural resources will contribute to sustained growth if combined appropriately with other factors such as capital and labour and intangible factors such as intellectual capital (Labra et al., 2012). Otherwise, natural resource endowment could actually throttle growth, as seen in countries such as Angola and Zambia, in contrast with resource-rich countries such as Australia and Canada that have successfully combined other growth-inducing factors with the resource base (see Sachs and Warner, 1995 2001; Bloomstrom & Kobbo, 2007). examples of countries that have experienced deindustrialization following natural resource exploitation also spring to mind (Corden & Neary, 1982).

The capital accumulation-based model of growth, as set out in the Harrod-Domar model, may not also lead all the way to the final stretch to high-income status. China is an example of this: exhibiting saving and investment rates of more than 40% of GDP, but still belonging home in the upper middle income club of nations. However, the opening up of the Chinese economy in the 1980s complemented the savings efforts and pushed up rates of growth.

The lack of economic diversification, as exhibited in a growing importance of manufactured exports, could also arrest the growth momentum. Also, when productivity advances are limited to a modern pocket in the economy, without the structural adjustment envisaged in the Lewis dual sector model, the growth process can lose steam (Lewis, 1954).

The role of institutions and – in the more recent years – the knowledge economy is stressed in approaches such as in the development of the Global Competitive Index (2018). These are key driving factors even for the high income countries.

It may be mentioned here that the literature on convergence does not go into the issue of causation in any real depth. However, there is some evidence now that the "new economy" did contribute in some measure towards narrowing the income gap in the 1990s between the leading countries and the laggards within the OECD bloc. This motivates the question: did the ICT sector also play such a positive role within the developing – and emerging market – bloc of nations?

The income catch-up hypothesis basically postulates that countries with lower per capita income will grow faster than the leader with the highest income per capita in a group of trading nations. The rate of growth will be related to the income gap relative to the leading nation. Generally speaking, the hypothesis has been considered relevant only in explaining the catch-up process within the group of industrialized nations (Baumol 1986, 1994), among whom the process may have waned; but European economic integration may have provided a fresh impetus, as studies on aggregate trade seem to imply (Rose, 2000; Persson, 2001).

Testing of the catch-up hypothesis has not been limited to the use of the variable income per capita. The convergence processes with respect to labour productivity levels as well as total factor productivity have been the subject of scrutiny in recent years, and the processes are important in their own right as indicators of international competitiveness. Normally, convergence in income per capita would imply catch-up also in productivity terms, but there need not be a one to one correspondence. The importance of such a distinction can be seen in the observation that Buckley, et al., (2020), who show that labour productivity growth in IT-using and IT-manufacturing sectors has been stronger than in other sectors in the OECD countries. This is happening particularly in the U.S and in Australia, and may not have been reflected fully at the aggregate economic level (see Pilat, 2004; also Buckley. et al., 2020). Anyhow, there seems to be a clear case for distinguishing between IT-using and non-IT-using sectors.

Calmfors *et al.* (2006) do make such a distinction between IT and non-IT sectors; these authors

disaggregate the capital stock in EU nations into IT and non-IT capital and examine the effect of expansion of the "new economy" in a growth-accounting framework. They find that growth in IT capital has been more important (for output growth) than growth in conventional capital in the case of Finland, Sweden and the U.K. In contrast, growth in labour input has been the key factor for Spain. For both Spain and Greece, growth in non-IT capital has been also important. Batavia, Nandakumar and Wague (2006) examine income and productivity catch-up in the IT-using and non-IT-using manufacturing and services sector separately, and find evidence for convergence only in the IT-using sectors of OECD countries.

It is plausible that the impacts of human capital formation and the knowledge economy are felt broadly, and, accordingly, have been noted as playing a role in income convergence within the OECD. This fact is replicated for the case of developing countries also; for these nations, the debate has hinged mostly on whether export-oriented or inward-oriented countries have fared best (see Edward, 1993; Lee, 1993; Frankel and Romer, 1999). Indeed, these 'non-globalization related' factors, referred to above, may well be a prerequisite for the beneficial effects of globalization to materialize. In this context, it may be mentioned that Rodriguez and Rodrik (2000) had concluded that the effects of trade liberalization on growth depend on a country's policy environment and other characteristics, and are not given a priori.'

The success registered by countries such as Chile and Malaysia in emerging from the middle income trap quagmire is clearly due to a host of factors, not limited to the traditional growth theory variables and openness. The following sections are designed to throw further light on the way these countries stand out from the rest of the middle income nations.

III. The Middle Income Trap (MIT) What is it?

Quite simply, the middle income trap is the situation that countries in the upper middle income group, with a per capita income of \$3956 to \$12235 (real GDP per capita at base year prices and current nominal exchange rates, not at purchasing power parity) may find themselves in. When these countries are unable to graduate into the high income class of per capita incomes of \$12236 and above, they are referred to as stuck in MIT. These upper middle income countries may have performed superbly in lifting themselves out of the low income and low middle income (\$1006 - \$ 3955) categories. Then, obviously, something failed to click; what indeed, that is, is the prime objective of the present paper. We try to find the reasons for such stickiness of the per capita GDP movement.

Felipe (2012) of the Asian Development Bank has calculated that to prevent stagnation at the upper

middle income level, and to move up to the high income class in at least 14 years, a country has to push up its average per capita income growth rate to more than 3.5% per annum. Prior to this, an average per capita income growth rate of 4.7% per annum must have been attained for 28 years to move up from the lower middle income group to the upper middle income group. Higher rates of growth would make the transition time to higher income shorter: a per capita income growth of 7% would mean that the per capita income doubles every ten years.

Clearly, the growth rate occupies centre stage in predictions on avoiding the middle income trap. But the stage at which a country finds itself also seems to play a role. Eichengreen *et al.*, (2011, 2013) conclude that growth typically slows down at a per capita income range (before high income has been reached) \$10,000 - \$11,000. Thus, the growth slowdown and the resultant trap is an upper middle income phenomenon, in contrast to the position taken by Felipe (2012) and Felipe *et al.* (2012), identifying a lower middle income trap as well.

Let us see which countries have been earmarked as having been, or are currently, in the middle income trap. The countries originally allotted to this unfortunate bunch, but have managed to emerge up from the trap are not listed in what follows. Most of the studies, particularly the more recent ones (earlier studies list even current high income nations such as Portugal and Greece) point to Latin America and Asia, inclusive of West Asia. The article by Felipe et al., (2012) lists 35 countries, of which 5 countries, Turkey, Saudi Arabia, Uruguay, Venezuela and Malaysia are in the upper middle income trap, while the remaining 30, including Brazil, Philippines and Sri Lanka are in the lower middle income trap. Argentina, Chile and Indonesia figure in the trapped list of other authors (see Zhuang, et al., 2012). Of the countries in these lists, Chile and Uruguay have since then left for greener (higher!) pastures.

It may be emphasized that being low or middle income or experiencing a growth slowdown at some point in time does not in itself entail consignment to the trapped categories. The time factor is also important. Kharas and Kohli (2011) write that countries are caught in a middle income trap if they cannot make a "timely" transition from resource-driven growth using low-cost labour and capital to productivity-driven growth. Bulman *et al.*, (2014) deemed a country to be a 'non-escapee' and therefore stuck in the middle income trap if it did not manage to rise to high income status within the period 1960 to 2009, i.e., within almost 50 years.

In this paper we examine the 'escapee' status of some of the major developing countries, comparing them in this sense to countries like Chile and Malaysia who have eluded the middle income trap. But prior to doing that, an econometric analysis, with a large sample

of low and upper middle income countries is conducted to identify the factors that enable catch-up to high income status.

IV. Empirical analysis

The plethora of factors looming large in the literature on economic growth include the savings GDP ratio, FDI inflows, exports to GDP ratio, the percentage of manufactured exports in total exports, human capita endowment etc. In our income catch-up analysis, we study the influence of these factors, but also utilize the treasure chest provided in the Global Competitive Index (GCI) rankings of the World Economic Forum, the reason being that heightened competitiveness ought to

bode well for income growth leading to high income status.

The GCI rankings are based on twelve "pillars", namely, institutions, infrastructure, ICT adoption, macroeconomic stability, health, skills, product market, labour market, financial system, market size, business dynamism and innovation capability (see World Economic Forum, 2018). Of these, we take recourse to all these pillars of competitiveness except market size.

The sample used in the analysis consists of data from the following seventy middle income countries, listed in Table 1.

Table-1: Country Sample, Lower and Upper-Middle Income

Brazil	Seychelles	Kenya	
South Africa	China Benin		
Botswana	Colombia	Bolivia	
Serbia	Costa Rica	Lebanon	
Indonesia	Thailand	Lao People's Pepublic	
Russian Federation	Turkey	Cabo verde	
Honduras	Malaysia	Cambodia	
Guatamela	The Philippines	Cote de Iv'oire	
Paraguay	Mexico	Ethiopia	
Argentina	Chile	Morocco	
Namibia	Albania	Nicaruga	
Angola	Monte Negro	Vietnam	
Nigeria	Gambia, The	Nepal	
Ukraine	Azerbajan	Egypt	
Tunisia	Peru	El Salvador	
Algeria	Bosnia	Panama	
Pakistan	Burkina Faso	Ghana	
Bangladesh	Croatia	Georgia	
India	Iran	Moldova	
Tanzania	Kazakhstan	Sri lanka	
Senegal	Kyrgiz Republic	Cameroon	
Congo Republic	Dominican Republic	lic Congo Republic	
Jamaica	Ecuador	Bulgaria	
Jordan			

In the Global Competitive Index analysis, Malaysia occupies a higher ranking than Chile, but it is the latter that has broken through the glass ceiling to join the ranks of the privileged high income nations. Hence, when viewing the middle income trap, the search has to be widened beyond such conventional competitive analysis.

Accordingly, we model the income gap of middle income countries to the high income level as being dependent on conventional growth theory determinants as well as the pillars of the GCI approach

(only market size is omitted from among the GCI pillars. The income gap, the dependent variable of the cross-country regressions, is defined as the GDP per capita of the celebrated first break-through country, Republic of Korea, minus sample country GDP.

Several regressions were run, involving all of the GCI pillars as well as the other determinants, only few turning out significant. For the sake of brevity, we only supply results here, as follows, for the significant runs.

(1)
$$gdpcgap = 15494.2^{***} + 32.281infra + 3.4984 ICT^{**} + 39.122 health^{*}$$

Adj.
$$R^2 = 0.6093$$

(2)
$$gdpcgap = 15839.22*** + 60.099 ICT* + 41.80 health** + 22.624 skills$$

```
(3)\ gdpcgap = 15019.11^{***} + 59.143\ ICT^{**} + 47.289\ health^{**} \\ + 19.738\ product\ market + 8.586\ labour\ market \quad Adj.\ R^2 = 0.6176 (4)\ gdpcgap = 15720.25^{***} + 72.198\ ICT^{**} + 41.103\ health^{**} \\ + 13.602\ Financial\ System\quad Adj.\ R^2 = 0.5993 (5)\ gdpcgap = 15470.16^{***} + 61.35\ ICT^{**} + 41.719\ health^{**} \\ - 11.634\ Businsess\ dyn. + 38.698\ innovation^{**}\quad Adj.\ R^2 = 0.6287 (6)\ gdpcgap = 14401.65^{***} + 55.2777\ ICT^{**} + 44.563\ health^{**} \\ + 36.5148\ innovation^{**} - 14.5908\ expgdp\quad Adj.\ R^2 = 0.6279 (7)\ gdpcap = 15619.17^{***} + 56.221\ III^{**} + 41.71895\ health^{**} \\ + 33.9962\ innovation^{**} - 101.753\ fdigdp\quad Adj.\ R^2 = 0.6348
```

Three stars denote significance at 1% level, and descending order of significance at 5 and 10 percent are represented by two and one star respectively. The r-squared values of the estimations are good as far as cross-section runs go. It may be clarified that since the independent variables are rankings, and a low number denotes a high rank, a positive coefficient represents a fall in the high income to sample country gap when the variable value increases. For instance, when the coefficient of the health variable is positive, it means that when the health variable value falls, indicating a rise in the ranking, the income gap toward high income reduces - which is welcome!

What stands out in the estimation results is that none of the traditional determinants, savings to GDP ratio, FDI to GDP ratio, exports to GDP ratio or share of manufactured exports in total exports come out as significant determinants (all these insignificant results are not given above). Similarly, the level of financial development is also seen not to be crucial in advancing to high income status.

To come to the crux of the matter, the factors seen to influence the move towards high income status significantly are: ICT adaptation, health and innovation. These are the results obtained for the entire 70 country sample comprising of upper middle-income as well as lower middle-income countries.

The configuration of the sample for these runs has undoubtedly some bearing on the results obtained. We did some re-estimation using a sample composed only of upper middle income countries and countries very close to upper middle income level, a sample size of 46 countries. The following result was obtained:

```
(8) gdpcgap = 17272.3^{***} + 64.0611 \text{ ICT*} + 54.798
health* + 42.026 innovation
-75.629 expgdp* + 12.557 manufexp Adj. R^2 = 0.533
```

Thus, when the sample is only upper middle income countries, the exports to GDP ratio becomes significant; higher export ratios reduce the income gap to high income. The share of manufactures goods in

total exports did not turn out significant. The FDI variable was insignificant in most runs, but turned out significant in the following estimation:

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(9) gdpcgap = 16559.07*** + 57.9815ICT * + 39.143 health* + 31.4573 innovation* - 428.464 fdigdp* Adj. R<sup>2</sup> = 0.548
```

Hence, the overall results of the estimations can be summarized as follows:

- The determinants of the reduction of the income gap towards high income status were ICT adoption, health and innovation for the upper and lower middle-income countries considered as one whole group.
- For the upper middle income countries, in addition to ICT adoption, health and innovation, openness towards the external world, as captured by the exports to GDP ratio and the FDI ratio to GDP are also significantly positive factors.

These variables enumerated above would be, naturally, also key factors in the successful leapfrogging of the middle income trap. It seems that for the move from upper middle income to high income (as compared to the move from lower to upper middle income), a larger array of positive forces is required: openness is a facilitating condition.

Let us now compare the performance of the countries who have managed to reach high income status recently, Chile and Malaysia, with that of the major developing nations, Brazil, India, Indonesia and Mexico. Malaysia is at the threshold of entry to the rich man's club, and would be an interesting benchmark entity like Chile for making comparisons of this kind.

Table 2 compares the countries of interest referring to the factors found to influence the rise to high income status positively. The figures provided in the first three columns are the rankings stated in the Global Competitive Index analysis (World Economic Forum, 2018). The openness ratios (FDI and exports to GDP) are from the World Bank website.

Table-2: Rankings: High Income Debutants vs Aspirants

1 4 5 1 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
Country	ICT adapt.	Health	Innovation	FDI/GDP %	Exports/GDP%
Chile	49	30	53	4.2	28.2
Malaysia	32	62	30	2.5	65.2
Brazil	66	73	40	3.8	14.3
India	117	108	31	1.8	18.4
Indonesia	50	95	68	2.2	18.4
Mexico	76	56	86	2.3	38.8

Table 2 does give an indication of the areas in which the aspirant nations lag behind Chile and Malaysia. Brazil and India do reasonably well in innovative capability, but are way behind in ICT adaptation and health. These behemoths are also somewhat closed to the external world, with low exports to GDP and FDI to GDP ratios. In comparison, Chile has a very high FDI to GDP ratio while Malaysia has a very high export to GDP ratio - and also higher FDI ratio.

Indonesia follows the pattern traced by Brazil and India, except that her performance in ICT adaptation is better; but the other two countries have developed more innovative capability. The openness ratios are low for Indonesia as well.

Mexico has low ICT adaptation and innovative capability, but scores better on health than the other middle income nations in Table 2. The export ratio for Mexico is high and FDI ratio also higher than for the other aspirant nations. But Mexico trails behind Chile and Malaysia on all fronts (except for a higher exports ratio than what Chile exhibits).

In passing, let us also note that the GCI pillars have changed between years. For instance, consider the Global Competitive Index presentation for 2013-14:

First of all, it may be noted that in business sophistication, part of the GCI pillar, innovation sophistication, both India and Indonesia as well as Brazil are ranked higher than Chile. The rankings are: 54 for Chile, 42 for India, 37 for Indonesia and 39 for Brazil. Malaysia has the best ranking in this group, 20. It may be added that Malaysia outperforms Chile in all GCI 2013 indicators, except in institutions (marginally, 29 against 28), technical readiness, and education: health and primary, as well as higher.

Now, the innovative ability ranking in 2018 is higher for Chile, but in 2013 the group rankings for innovation are as follows: 43 for Chile, 41 for India, 33 for Indonesia, 55 for Brazil and 25 for Malaysia.

In the Efficiency Enhancement bunch, Chile has higher rankings than the laggard nations in higher education, goods market efficiency, labour market efficiency and technical readiness, but India does better in *financial development*, a ranking of 19 against

Chile's 20. But, as we have seen above, financial development is not s significant determinant of advancement to high income status.

Chile does not outperform the giant developing nations in a number of other factors highlighted as vital in growth literature. Thus, Chile's savings ratio and export of manufactured goods (as a percentage of total exports) are lower than that of Brazil, India and Indonesia. Malaysia has good figures, however, for these variables. But, Chile has relatively high FDI to GDP ratio, and overall exports to GDP ratio.

In fact, looking at also some other countries such as Seychelles, which has reached higher income levels, it seems to be the case that export orientation (not necessarily exporting manufactures) is a key requirement for reaching high income status.

Consider now the positions – in or out of the trap - in which the major developing nations, Brazil, India, Indonesia and Mexico find themselves in.

Are India, Brazil, Indonesia and Mexico in a Middle Income Trap?

Let us now examine whether there are any grounds for stating (as is sometimes done at least in newspaper articles) that the major developing countries in Asia and South America find themselves in an unyielding middle income trap.

Felipe (2012), considers a country to have escaped the middle income trap if it rises to high income level within 42 years (28 years low middle to upper middle income, and another 14 years to high income. Bulman *et al.*, (2014), specifies the transition time as around 50 years.

India and the middle income trap

India reached lower middle income status in 2008, and so, as per Felipe (2012), should reach high income status by 2050 if she is to evade the middle income trap. Therefore, it is too early to make a judgement on the matter. What we can, however, state is that to reach a per capita income level of \$12236, an average yearly per capita income growth of 5.85 percent, from the current level of \$2099.6 (in 2019) will be needed for at least three next decades.

Does this seem feasible? Judging from the recent performance, it will be a tough egg to crack. 5.85 percent per capita growth requires an average total GDP growth of close to 8 percent, as population growth has to be factored in. The occurrence of Corona has in fact put a big question mark on these projections in general.

If we adopt Bulman *et al.*, (2014) criteria, the high income level has to be reached by 2058, 50 years after becoming a low middle income country. This required a per capita income growth rate of around 4.63%, or an average aggregate GDP growth rate of close to 7 percent will be required.

Hence, it is not a path strewn with roses ahead for India. To be free of the middle income trap, an average aggregate GDP growth rate of 7 to 8 percent (5 to 6 percent per capita GDP growth) will have to be maintained into the distant future, for more than thirty-odd years.

Is Brazil staring at the middle income trap?

Brazil must have reached low middle income status around 1977, and so, should reach high income status by 2019 to 2027 (by different definitions of he required time span) to be considered a middle income trap escapee. With a current per capita income of \$8717.2, an average per capita income growth rate of 5.9 percent up to the year 2027 is required to avoid the middle income trap.

But, according to Felipe (2012)'s definition, Brazil should have reached the high income level of \$12,236 by 2019, and is, hence, in the middle income trap.

Indonesia and the middle income trap

Indonesia was raised to the category of an upper middle income country by the World Bank in 2020. By Felipe's (2012) definition, she has to reach high income status by 2034 to leapfrog the middle income trap. To achieve this, an average per capita income growth of 8.08 percent is required. This does seem to be a difficult task, and Indonesia may have to be considered mired in the middle income trap.

Has MEXICO Evaded the MIT?

Mexico has been a middle income country for over four decades, transitioning to upper middle income about two decades ago. She should reach high income status at least by 2029 to circumvent the middle income trap. For this, a per capita income growth rate of 2.65 percent from the current year to year 2029 has to be maintained, which seems eminently feasible. But, by a different definition of the required time span (Felip, 2012), Mexico should have reached high income levels by 2021 itself. Nevertheless, a rise to the high income club looms ahead in the near future, so that she can be considered free of the middle income trap threat.

V. CONCLUDING REMARKS

The churning out of factors such as ICT adaptation, health and innovative capabilities - figuring prominently even in the Global Competitive Index analysis - by the cross-section estimations of the determinants of advancement to high income echelons did not come as a surprise. What was unexpected was the rejection of much-lauded growth performance parameters such as financial development and savings. The view that openness promotes income growth held its own against detraction, FDI and exports appearing as significant for the advancement from upper middle income level to high income status.

Individual country analyses we have conducted for a limited number of major developing nations. Unfortunately, the data do seem to convey the impression that Brazil is entrenched in the middle income trap. Indonesia has not done better than Brazil in succeeding to leapfrog the trap. India may be in a somewhat better position, but has to consistently grow at high rates of up to eight percent GDP growth to evade the trap. Mexico stands out in this regard, and is the only one in the group considered here which is likely to join Malaysia very soon as the latest entrant to the high income club.

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