

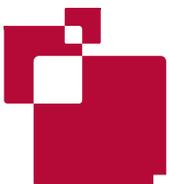
WILL INCOME INEQUALITY CAUSE A MIDDLE-INCOME TRAP IN ASIA?

AKIO EGAWA*

Highlights

- The Asian economy is expected to realise favourable growth during the first half of this century, but there is no guarantee. There is a discussion about a 'middle-income trap', which refers to a country that has realised rapid growth to become a middle-income country but is unable to grow further. A middle-income trap could occur not only if there is a delay in shifting the economy toward a productivity-driven structure, but also if there is a worsening of income distribution. We consider this in line with the theories of development economics and through a quantitative analysis. The relationship between income inequality and the trap can be explained by the Kuznets hypothesis and the basic-needs approach. Our quantitative analysis supports the Kuznets hypothesis, and indicates that, although a low-income country can accelerate its economic growth with the worsening of income distribution as an engine, a middle-income country would experience a decreasing growth rate if it fails to narrow the income gap between the top and bottom income groups. The results also show that the basic-needs approach is also applicable in practice, and imply that the improvement of access to secondary education is important.
- A sensitivity analysis for three Asian upper-middle-income countries (China, Malaysia and Thailand) also shows that the situation related to a middle-income trap is worse than average in China and Malaysia. These two countries, according to the result of the sensitivity analysis, should urgently improve access to secondary education and should implement income redistribution measures to develop high-tech industries, before their demographic dividends expire. Income redistribution includes the narrowing of rural-urban income disparities, benefits to low-income individuals, direct income transfers, vouchers or free provision of education and health-care, and so on, but none of these are simple to implement.

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Will income inequality cause a middle-income trap in Asia?

Akio Egawa

1. Introduction

Many Asian countries have reached the status of middle-income countries (MICs) after achieving rapid growth (see Annex Table 1), and are expected to grow further in the first half of this century. The Asian Development Bank's (2011) main scenario for Asia's economic growth up to 2050, known as the "Asian Century" scenario, is that Asia's share of world GDP will become 50.6 percent (up from 27.4 percent in 2010) and Asia's per-capita GDP will exceed the world average in 2050.

The attractiveness of Asia's current and future economy comes not only from its high economic growth rate. As the current MICs in Asia have large populations, their future buoyant economic growth will offer a larger and growing market to the world economy. Buoyant economic growth in Asian "dinosaurs" has expanded the ranks of those who earn enough to boost consumption of non-necessary goods and services – the middle-income class. I estimated (Egawa, 2012a) that the population of the middle-income class¹ in 10 Asian countries² grew from 170 million in 2000 to 1.64 billion in 2011, and would become 2.4 billion (73 percent of total population) in 2020. This offers a great investment and sales opportunity for final consumption goods and services from around the world, and also provides an additional engine for economic growth, generating more stable and solid longer-term growth for the country concerned. Furthermore, Asian countries are trying to integrate into one economic region with a large population and economic share by improving logistical connectivity and by concluding and upgrading free trade agreements. These efforts will facilitate a move up the value chain and further reduce the total cost of production in multinational supply chains in which Asian countries are involved.

However, this does not mean that Asia's strong economic growth is without risk. ADB (2011) also provides a risk scenario for Asia's economic growth towards 2050, called the "middle-income trap" scenario. It estimates that Asia's share of world GDP would be 32 percent under this scenario, only a small increase from 27.4 percent in 2010. This paper analyses the causes of a middle-income trap and how countries can avoid or overcome one. We focus in particular on upper-middle-income countries (UMICs) in Asia, ie Malaysia, China and Thailand. In addition, we argue via a cross-country quantitative analysis that income inequality, which is present in most countries in Asia and is considered a by-

¹ The middle-income class is defined as member of households with annual disposable incomes of between \$5000 and \$35000 (fixed at 2011 exchange rates and prices).

² China, Hong Kong, India, Indonesia, Korea, Malaysia, Philippines, Singapore, Thailand and Vietnam.

product of rapid growth, can play a role in triggering the trap. Our analysis shows that income inequality is a significant factor in reducing the economic growth rate and potentially leading to a middle-income trap.

2. What is a middle-income trap?

A middle-income trap refers to a situation in which an MIC falls into economic stagnation and becomes unable to advance its economy to a high-income level for certain reasons specific to MICs. The first comprehensive discussion about the problem of a middle-income trap appeared in Gill *et al* (2007). Gill *et al* regard some Latin American countries as having fallen into the trap, reasoning that they realised fast growth to become MICs by extracting and exporting their natural resources, but fell into a long-term stagnation thereafter. Gill *et al* apply this observation to four countries in Asia (Indonesia, Malaysia, the Philippines and Thailand), and suggest that they should upgrade their economic structures.

A middle-income trap in Asia is usually discussed as a future risk, whereas in Latin America it is seen as a past event and is considered solely as a delay or failure to change economic structures in a timely way. Asian MICs do not have abundant natural resources, but, as Gill *et al* (2007) and ADB (2011) discuss, their cheap and abundant labour forces are regarded as a resource. However, even in the ADB's middle-income trap scenario, Asia's economy would grow a little faster than the world average. So, it has become difficult to judge if the country concerned falls into a trap or not because we no longer have a common understanding of the numerical criterion of the trap. This sometimes makes the discussion complicated. For example, some argue that the recent decline in economic growth rates in Asian upper-middle income countries has to be regarded as a symptom of falling into the trap, while others think that it marks a soft landing of the economy from a bubble-like situation.

A middle-income trap is recognised as the risk of (1) long-term economic stagnation, which (2) MICs suffer from as a consequence of their economic and social structures that are unique to MICs. It is generally agreed that a delay or failure to change the economic structure from an input-driven growth model into a productivity-driven growth model is a factor in triggering the risk of a middle-income trap. However, as a "middle-income trap in Asia" has not yet been seen, a wider range of economic and social phenomena tend to be regarded as risk factors. ADB (2011) and Eichengreen *et al* (2011) identify the factors of "economic slowdown". These include inequity within a country, competition for natural resources, carbon emission limitations, migration, global warming, bad governance and corruption, ageing populations combined with declining birthrates, absence of trade openness, and over-depreciation of currencies. Of these, the main causes of a middle-income trap should be the factors

that were not a problem when the countries were at low-income level but become a problem when they reach MIC level. The other factors can be regarded as factors in the economic slowdown, but not as middle-income trap factors. For example, an increase in the wage level is considered as triggering a risk of falling into the trap, and is a problem after the country concerned becomes a MIC. On the other hand, competition for finite natural resources, limitation of carbon emissions, and global warming and climate change are problems irrespective of income level. Table 1 categorises the various factors. A failure to bring about timely economic structural change is a factor leading to a middle-income trap by definition, and all the factors listed in the left-hand column of Table 1 except those related to worsening income inequality are considered to be related to economic structural changes or productivity. A brief observation on the situation of productivity in Asian MICs and necessary policies for avoiding the trap are discussed in the Appendix.

Table 1: Factors behind a middle-income trap and economic slowdown

	Middle-income trap	Economic slowdown, others
Factors triggering a middle-income trap	<p>(1) Inability to increase the inputs</p> <ul style="list-style-type: none"> • Increase in wage level • Excessive public investment <p>(2) Worsening of the problem unique to MICs</p> <ul style="list-style-type: none"> • Over-dependence on exporting manufacturing • Regional income disparity • Income inequality among households • Population ageing, drying-up of demographic dividend [*arguable]³ 	<p>(1) Limitation of input-driven growth, but Low-income countries also suffer</p> <ul style="list-style-type: none"> • Limitation of using natural resources (competition for them), global warming <p>(2) Other factors</p> <ul style="list-style-type: none"> • Increase of the number of migrants • Intentional over-devaluation of currency
Factors hampering the country from getting out of the trap	<p>(1) Inability or limitation to improve productivity</p> <ul style="list-style-type: none"> • Lack of innovation and investment in R&D • Inefficient use of the infrastructures • Insufficient inter-industry labour mobility • Insufficiency of the amount and quality of higher education and vocational training • Mono-/oligopoly of main industries by state-owned enterprises • Lack of government's ability to formulate and implement a comprehensive economic growth strategy • Poor governance, Spread of corruption • Policy for excessively protecting low-productivity industries (including agriculture) <p>(2) Inability to solve the problem unique for MICs</p> <ul style="list-style-type: none"> • Failure of facilitating domestic demand • Failure in implementing income redistributive policy measures Delay in human development (education and health-care for the bottom of the pyramid), shortage of government budget for economic reforms 	<p>(1) Relevant with the limitation of improving productivity, but low-income countries also suffer</p> <ul style="list-style-type: none"> • Lack of economic (hard) infrastructures • Political uncertainty / unrest <p>(1') Measures for improving productivity</p> <ul style="list-style-type: none"> • Opening up of trade and investment abroad (incl. harmonisation of products standards and business practices, etc.) • Completion of AEC (ASEAN Economic Community) <p>(2) Relevant with the inability to solve the problem unique for MICs, but low-income countries also suffer</p> <ul style="list-style-type: none"> • Too small budget (lack of tax-collecting power)

Source: Bruegel.

³ Fertility rate and dependency ratio are related to the discussion on 'draining of demographic dividend' (or 'demographic onus'), and this phenomenon can be seen typically in middle-income countries. Demographic onus is not a factor affecting long-term economic growth potential, but a factor technically reducing the economic growth rate. However, in the field of demography studies, the change in demographic structure is considered to be related to economic development. Therefore, these factors remain to be categorised in the left-hand column of Table 1.

3. Income inequality and the middle-income trap

How then should we consider the relationship between income inequality and the middle-income trap? Most MICs in Asia have failed to improve income distribution, or have left income inequality untreated, while they elaborate and implement policies and medium-term plans for economic structural change. If worsening income inequality is also a factor that might trigger a fall into a middle-income trap, governments should deal with it as aggressively as they deal with economic structural change.

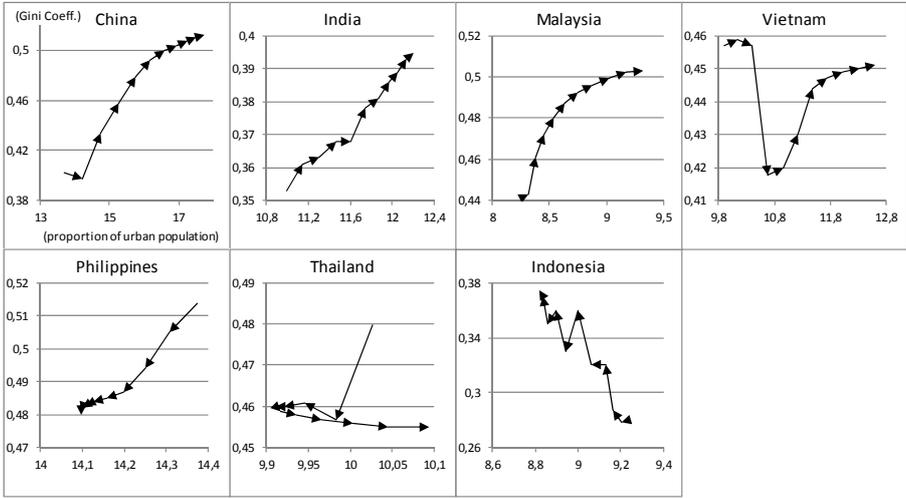
Does income inequality have any relevance to the middle-income trap?

The arguments about whether income inequality is a cause of the middle-income trap are conflicting, but the basic structure of conflict is the same as an old argument in development economics⁴. One argument is based on the theory of growth accounting. It states that worsening income distribution cannot affect the economic growth rate at least in the long term, because change in income distribution cannot affect innovation or growth of total factor productivity. According to this argument, only two possible kinds of causality would exist between them. One is that worsening income inequality would cause social unrest and, as a result, become a drag on economic growth. But this is not a fundamental cause of economic stagnation. The other is that inequality may occur as a by-product of growth. A typical argument is the discussion of income inequality brought about by urbanisation. In MICs in Asia, economic growth has been mainly driven by industrialisation in urban areas. As a result, migration occurred from rural to urban areas, and the urban population grew at a higher rate than the rural population. This causes rapid urbanisation with a widening of rural-urban income disparities and worsening of intra-urban income disparity, both of which in theory cause nationwide income inequality (Lambert, 1994). Figure 1 shows that countries except Indonesia and Thailand exhibit a positive relationship between the rate of urbanisation and the Gini coefficient. Regarding this, Kanbur and Zhuang (2013) conduct a quantitative analysis of which factors out of urbanisation, rural-urban income disparities, intra-urban income inequality and intra-rural income inequality contribute to worsening income inequality at the national level from the early 1990s to the late 2000s. They find that, among four countries analysed (India, China, Indonesia and the Philippines), the increase in the share of the urban population worsened national income inequality in three countries, with the exception being China (the contribution of urbanisation to income inequality

⁴ NIRA (2012) summarises the both opinions. The former opinion is represented by Yasuyuki Todo, who also worries that too many factors are brought into a discussion of a middle-income trap, whereas the only factor determining long-term growth is productivity growth. The latter opinion is stated by Junhua Wu, pointing out that possible paths to the trap include not only a social unrest but also insufficient education in rural areas becoming a fetter against economic growth.

is negligibly negative in China).

Figure 1: Urbanisation and Gini coefficient (annual movement, from 2000 to 2010)



Source: World Bank Data and Euromonitor (2012)

Of course, the other argument is that worsening of income inequality would be a cause of the middle-income trap. To conform if income inequality has any relationship with the middle-income trap, the following two propositions should be satisfied: first, to confirm that income inequality is a problem that should be dealt with when a country reaches MIC level; second, to analyse how income inequality would hamper economic growth in the medium or long term. The Kuznets hypothesis could contribute to the former, and the basic-needs approach may explain the latter.

(1) Kuznets hypothesis: income inequality and the level of economic development

According to the Kuznets (1955) hypothesis, income distribution worsens in the early stage of development and then improves in the course of development. In the early stage of economic development, a country has to concentrate limited domestic resources on prioritised sectors in order to accelerate economic development. In the course of development, the country begins to consider an equitable distribution of the benefits of growth among the population, and policy measures result in an improvement in income distribution. If this hypothesis is applied to the real world, the relationship between the income levels of countries and their degree of income inequality displays an inverted U-shape (frequently termed the Kuznets curve).

In fact, the applicability of the hypothesis always faces criticism in terms of both methodology

and implication⁵. I estimated (Egawa, 2012a) the Kuznets curve with per-capita GDP on the horizontal axis and the average S5/S1 ratio⁶ on the vertical axis. Even though the R-squared is very small (0.0712), an inverse-U Kuznets curve can be drawn with the income level which gives the peak of the curve at \$3,836 in purchasing power parity (PPP), which is considered to be at lower-middle-income countries level. With these observations, it is worth considering that income inequality is related to the middle-income trap because (i) it becomes a problem when a country exits least-developed level, and (ii) MICs with higher s5/s1 ratio than the asymptotic line would have a problem for economic growth.

(2) Human development and economic growth potential

The basic-needs approach emerged in the 1970s, and UNDP (2011) follows this approach. They point out that income inequality is related to the limits of “human development”. As low-income households can less afford education and healthcare, they are less likely to engage in productivity-driven industries. Abundance of educated and healthy workers is key for the development of a high-value added and knowledge-based economy. Moreover, low-income households tend to pay little attention to eco-friendliness and environmental protection, which would harm the sustainability of economic development. Birdsall *et al* (1995) argue with an empirical analysis that greater equality in income distribution would raise average nutrition standards and entail more widespread education. Based on these thoughts, UNDP (2011) calculated Inequality-adjusted Human Development Indicators (IHDI). I attempted to calculate future rankings of IHDI for the Asian countries in 2020 with and without improvement in income distribution (Egawa, 2012; Table 2). The results show that, for China, the IHDI rank would increase but would decline somewhat if income distribution is not improved. For Thailand, the IHDI rank in 2020 would increase if there is improvement in income distribution, but would even drop from 2011 if there is not.

⁵ Anand and Kanbur (1993) argue that the result of a data analysis is strongly dependent on the method of calculating income disparity and the choice of the base year; showing those differences can produce a U relationship, an inverse-U relationship, or no relationship at all. Bigsten (1987: 146-9) points out the political changes in Taiwan and South Korea just after the second world war realised relatively equal distribution of wealth and their development happened alongside an increase in the incomes of the poor.

⁶ The S5/S1 ratio is the ratio of the average income of the highest-earning 20 percent (S5) against the average income of the lowest-earning 20 percent (S1). The IMF Database offers S5 and S1 data for every year from 2000 to 2010 for a few countries. Here, the average of the available data for 2000-10 is employed. This means that if data is only available for one year, the data is adopted as is, without averaging.

Table 2: Change in the ranking where there is no improvement of income distribution until 2020

	China		India		Indonesia	
	2011	2020	2011	2020	2011	2020
Position on HDI	101		134		124	
Position on IHDI (improvement of income distribution)	102	91 (+11)	133	130 (+3)	116	109 (+7)
Position on IHDI (no change in income inequality)		92		130-131		111
	Philippines		Thailand		Vietnam	
	2011	2020	2011	2020	2011	2020
Position on HDI	112		103		128	
Position on IHDI (improvement of income distribution)	108	111 (-3)	101	100 (+1)	114	107 (+7)
Position on IHDI (no change in income inequality)		113		101-102		107

Source and note: Figures for 2011 are taken from UNDP (2011). However, the UNDP (2011) does not show relative positioning for the IHDI in 2011, but only the degree of change from the HDI. Egawa (2012) calculated relative positioning on the IHDI based on this data. Figures for 2020 are from Egawa (2012). UNDP (2011) does not provide data of IHDI for Malaysia.

On the other hand, if the need to deal with income inequality is recognised by the government, measures to tackle it would limit the amount of the budget that can be used for economic development. The measures for income inequality include direct income redistribution measures such as negative income taxes, social security measures such as unemployment pay or pensions, redemption of VAT for necessary goods and so on. These measures require huge amounts of budget, especially at the initial stage of their operation, and reduce the amount of budget available for economic development. Besides, government revenues in Asian UMICs are relatively small (the revenue/GDP ratio is lower than 25 percent in the UMICs in Asia, compared to more than 30 percent in Japan for example) and are not expected to increase in the near future (Figure 2). Another option would be to introduce each scheme one by one. The success of introducing the schemes one by one would depend on whether the government can order its priorities in a democratic way. Otherwise, social satisfaction with the government's policies might be undermined because the benefits that the public need most may come later. In addition, business sectors' needs may not be met if government decides the order. For Asian UMICs, the period of government-led development has already passed and they are now at the stage at which more democratic decision-making is expected. However, democratic decision-making in China, Malaysia and Thailand is still weak (Figure 3).

Figure 2: Measures cannot be introduced simultaneously (smaller budget size)

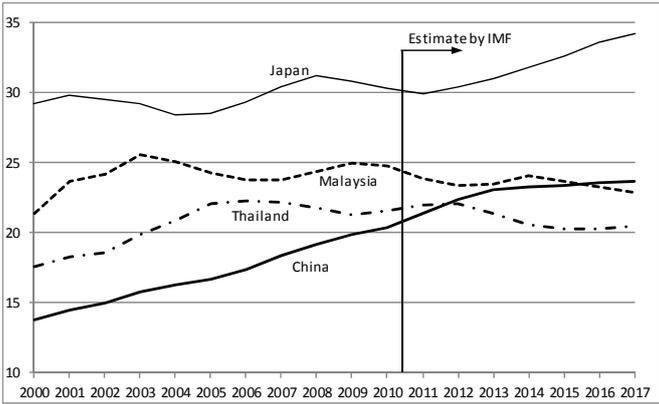
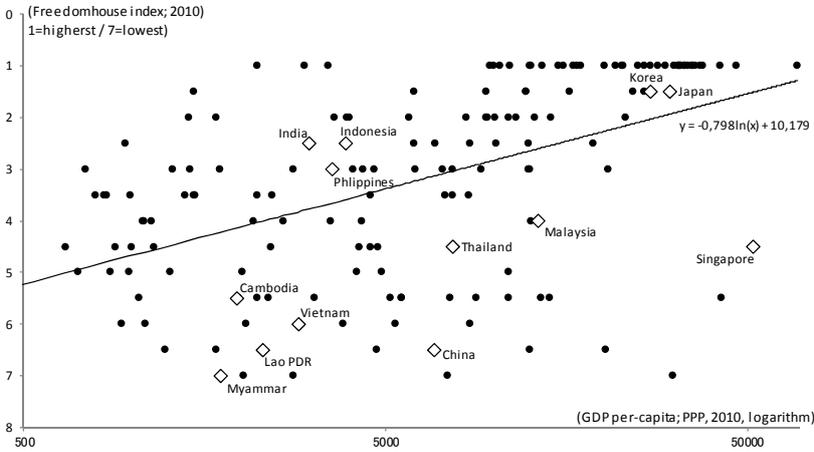


Figure 3: Democratic decision-making is not very likely in Asian UMICs (Freedom House Index)



Source and note for Figures 2 and 3: IMF “World Economic Outlook Database” and Freedom House International. Budget size is total general government revenue as a percentage of GDP.

Quantitative analysis

If the relationship between the degree of income inequality and economic growth rates can be identified, we can have an idea of the likelihood of each Asian MIC falling into the trap. Therefore, a cross-economy regression should be attempted, with growth rate as the regressant. In fact, there have been lots of quantitative studies on the relationship between income inequality and growth rate. Here, what should be identified are (1) income inequality is a problem for MICs in terms of economic growth, not for low-income countries, and (2) insufficient access to education and healthcare would reduce the growth rate. The former is related to the Kuznets hypothesis, ie worsening income distribution would raise the economic growth rate at the early stage of economic development, but reduce it afterwards. Therefore, the coefficients for the variable measuring income inequality γ can be formed as $\gamma = \alpha / (GDP \text{ per capita}) - \beta$ ($\alpha > \beta > 0$). As the per-capita GDP increases, γ becomes lower, and zero when per-capita GDP equals α / β , and then becomes negative if the per-capita GDP becomes

greater. It is necessary to examine whether these coefficients have correct signs with statistical significance, and at what level of per-capita GDP the sign of γ would change. A few more factors linked with the observations above (interpreting factors in the left-hand column of Table 1), such as urbanisation, working-age population, R&D and the transparency of political decision-making, are also included. The details of each variable are shown in Annex Table 2.

Table 3 shows the result. In all cases, urbanisation is not statistically significant, maybe because it occurs with economic growth but is correlated with income inequality. The transparency of political decision-making (Freedom House Index) would positively affect economic growth with statistical significance when the Gini coefficient is employed alongside it, although the coefficient for the Index is expected to be negative.

Looking at the measurement of income inequality, s5/s1 ratio measures the income “gap” between the top and bottom income groups. The result (2) indicates that the Kuznets hypothesis is applied with statistical significance, and an increase in the Gini coefficient would reduce the growth rate when the country’s income level is above \$5650 in PPP [=exp(4.4856/0.5192)]. Malaysia, Thailand and China exceeded this level in 1992, 2003 and 2007, respectively. Indonesia is approaching this level (\$4358 in PPP in 2010). In fact, these countries’ s5/s1 ratio is below the average, but their s5/s1 level could turn negative if they leave it untreated. The same analysis can be applied to the results with the Gini coefficient. The Gini coefficient measures the nationwide inequality of income distribution, including the individuals in the middle income strata. From the result (4), it can be calculated that the increase in Gini has a negative effect on the growth rate when the per-capita GDP exceeds \$13073 in PPP. Malaysia exceeded this level in 2007 and, according to the IMF’s April 2013 Outlook, China and Thailand will exceed this level in 2016 and 2017, respectively. Therefore, it can be said that income inequality will become a problem for (upper) MICs and will reduce the growth rate if left untreated.

In terms of human development aspects, for education, the results of the regression with s5/s1 ratio have positive coefficients but none are statistically significant. For the Gini coefficient, the coefficients for primary education enrolment rate are negative, although they are not statistically significant. The coefficients for the secondary education enrolment rate are positive and statistically significant. Moreover, the coefficients for secondary education are greatest when only the data for the countries whose per-capita GDP is above \$5000 is used. Currently, the secondary education enrolment rate for Asian MICs is about 70 percent. The result shows that a 1 percentage-point increase in the rate would raise the per-capita economic growth rate by 0.0823 percentage points. If the countries realise full secondary education enrolment in the near future, the growth rate would increase by more than 2 percentage points. Policies for raising enrolment rates for secondary education would work well as

inequality-alleviating measures and would reduce the risk of falling into the middle-income trap. Life expectancy would affect the growth rate. The estimates tell us that the increase in the life expectancy would increase the growth rate until life expectancy reaches 61.2 years (with $s5/s1$) and 67.4 years old (with Gini coefficient); thereafter the growth rate decreases as life expectancy continues to rise. These results support the assertion that income inequality would also affect the growth rate if assessed according to the basic-needs approach. All three Asian UMICs reached this level in the early 1980s, so the period when the basic-needs approach was applied was already over in terms of healthcare.

The ratio of working age population positively affects the economic growth rate. Although it is arguable that this factor is related to the middle-income trap, the end of the demographic dividend, which is expected to happen in the near future in Asian UMICs, would at least reduce the economic growth rate of these countries. The high-tech export share is statistically insignificant. However, using data only for countries with an income level above \$5000, the coefficient for high-tech export shares is positive with statistical significance. Therefore, upgrading the economic structure would also increase the economic growth rate for MICs.

Table 3: Determinants of GDP growth rates [results]

[A] Regressant: Per-capita GDP growth rate

	All					Over 5000		Over 7500		Over 10000		Over 12500	
	(1)	(2)	(3)	(4)	(5)	(2)	(5)	(2)	(5)	(2)	(5)	(2)	(5)
Intercept	-37.4397 ***	-37.5926 ***	-60.4487 **	-56.7180 ***	-53.4537 **	-49.8024 **	-54.2172 *	-91.9230	-202.1921 **	-99.9106	-24.4809	-489.9076 **	-45.1262
[t-value]	[-4.9159]	[-4.9703]	[-2.6189]	[-2.6568]	[-2.4918]	[-2.1739]	[-2.5604]	[-0.8006]	[-2.2813]	[-0.6021]	[-0.1950]	[-2.4907]	[-0.3464]
s5s1	-0.5041 **	-0.5192 ***				-2.2497 ***		-2.8655 ***		-2.4552 **		-2.6370 *	
[t-value]	[-2.4984]	[-2.7064]				[-2.7091]		[-3.4425]		[-2.6121]		[-1.9639]	
s5s1/GDP	4.3652 ***	4.4856 ***				20.1967 ***		27.0522 ***		23.3633 **		24.8213 *	
[t-value]	[2.6206]	[2.8235]				[2.7902]		[3.5588]		[2.7052]		[1.8692]	
Gini			-36.8828 ***	-38.8260 ***	-41.1695 ***		-48.0196 ***		-57.9962 ***		-61.9723 ***		-67.0080 ***
[t-value]			[-2.8863]	[-3.4317]	[-3.6351]		[-3.5446]		[-4.9459]		[-5.0550]		[-4.6224]
Gini/GDP			352.2623 ***	368.0084 ***	399.4846 ***		478.8136 ***		574.8416 ***		603.4946 ***		656.8894 ***
[t-value]			[3.0551]	[3.4997]	[3.8305]		[3.9071]		[5.1567]		[5.1458]		[4.5756]
Primary education	0.0267	0.0270	-0.0301	-0.0267	-0.0369	0.0977	-0.0292	0.0372	-0.0487	-0.0803	-0.0718	-0.2316 **	-0.0778
[t-value]	[1.5086]	[1.5402]	[-0.6741]	[-0.6132]	[-0.8512]	[1.5397]	[-0.4862]	[0.6196]	[-1.0716]	[-1.0982]	[-1.5406]	[-2.2213]	[-1.5196]
Secondary education	0.0035	0.0033	0.0837 ***	0.0823 ***	0.0871 ***	0.0242	0.1009 ***	0.0501 **	0.0986 ***	0.0540	0.0682 **	0.0226	0.0202
[t-value]	[0.2178]	[0.2083]	[3.5883]	[3.7786]	[3.9949]	[0.8929]	[3.7421]	[2.0909]	[4.4594]	[1.6902]	[2.5847]	[0.5509]	[0.6436]
Life expectancy	0.8412 ***	0.8450 ***	1.4832 **	1.3350 **	1.1807 *	1.0055	1.3151 **	2.0466	5.2592 **	2.5120	0.8328	12.8844 **	1.5384
[t-value]	[3.4456]	[3.4807]	[2.1243]	[2.1581]	[1.9141]	[1.5445]	[2.3071]	[0.6662]	[2.2389]	[0.5790]	[0.2534]	[2.4743]	[0.4502]
Square of Life expectancy	-0.0068 ***	-0.0069 ***	-0.0110 **	-0.0099 **	-0.0086 *	-0.0081	-0.0095 **	-0.0141	-0.0351 **	-0.0167	-0.0063	-0.0821 **	-0.0106
[t-value]	[-3.5745]	[-3.6338]	[-2.1328]	[-2.1825]	[-1.9178]	[-1.6402]	[-2.2765]	[-0.7038]	[-2.2936]	[-0.5927]	[-0.2973]	[-2.4582]	[-0.4795]
Working age population	0.1735 ***	0.1723 ***	0.1344 *	0.1411 **	0.1693 **	0.1477	0.0656	0.1800 **	0.0426	0.1656 *	0.0037	0.0827	-0.0541
[t-value]	[2.9328]	[2.9330]	[1.8341]	[2.0685]	[2.5446]	[1.6207]	[0.9372]	[2.0913]	[0.8326]	[1.7946]	[0.0671]	[0.8879]	[-0.9772]
high-tech export	-0.0080	-0.0081	0.0080	0.0104	0.0095	0.0262	0.0368 **	0.0070	0.0261 **	-0.0059	0.0360 **	0.0109	0.0453 ***
[t-value]	[-0.5101]	[-0.5183]	[0.5086]	[0.6999]	[0.6320]	[1.3556]	[2.3000]	[0.4489]	[2.1091]	[-0.2913]	[2.4203]	[0.5139]	[3.1607]
freedomhouse index	0.1874	0.1925	-0.0651			-0.1025		-0.2652		-0.3712		0.8984	
[t-value]	[1.3761]	[1.4346]	[-0.3679]			[-0.5017]		[-1.0959]		[-1.0015]		[1.6443]	
Urban population	-0.0030		-0.0054										
[t-value]	[-0.2499]		[-0.2861]										
dummy (2000s)	1.4066 ***	1.4153 ***	0.6496	0.6358		1.6428 ***		0.7146		0.1266		0.1387	
[t-value]	[3.6850]	[3.7369]	[1.6028]	[1.6087]		[2.8611]		[1.5624]		[0.2277]		[0.2856]	
Adjusted R Square	0.3035	0.3087	0.3106	0.3251	0.3124	0.3484	0.3670	0.5019	0.5234	0.4386	0.4960	0.3248	0.5252
Observations	138		93			65	77	39	60	30	52	25	46

Table 3: Determinants of GDP growth rates (results) (continued)

[B] Regressant: GDP growth rate

	All					Over 5000		Over 7500		Over 10000		Over 12500	
	(1)	(2)	(3)	(4)	(5)	(2)	(5)	(2)	(5)	(2)	(5)	(2)	(5)
Intercept	-30.2423 ***	-30.1060 ***	-42.3029 *	-43.3393 *	-39.7158	-18.6866	-55.3786 **	-82.8832	-328.2455 ***	-54.4024	-205.1511	-534.8099 **	-373.5809 *
<i>[t-value]</i>	<i>[-3.6887]</i>	<i>[-3.6980]</i>	<i>[-1.7096]</i>	<i>[-1.7617]</i>	<i>[-1.6291]</i>	<i>[-0.7373]</i>	<i>[-2.0963]</i>	<i>[-0.6621]</i>	<i>[-3.1244]</i>	<i>[-0.2853]</i>	<i>[-1.2299]</i>	<i>[-2.1451]</i>	<i>[-1.8694]</i>
s5s1	-0.4002 *	-0.3867 *				-1.9082 **		-1.8369 *		-1.2822		-1.2908	
<i>[t-value]</i>	<i>[-1.8423]</i>	<i>[-1.8728]</i>				<i>[-2.0772]</i>		<i>[-2.0242]</i>		<i>[-1.1873]</i>		<i>[-0.7584]</i>	
s5s1/GDP	3.5385 *	3.4312 **				17.5696 **		18.3211 **		13.3895		13.1484	
<i>[t-value]</i>	<i>[1.9734]</i>	<i>[2.0065]</i>				<i>[2.1941]</i>		<i>[2.2108]</i>		<i>[1.3494]</i>		<i>[0.7812]</i>	
Gini			-25.3317 *	-21.4794 *	-23.2588 *		-8.4810		-29.5766 **		-26.8109		-42.3933 **
<i>[t-value]</i>			<i>[-1.8491]</i>	<i>[-1.7542]</i>	<i>[-1.9163]</i>		<i>[-0.5300]</i>		<i>[-2.0455]</i>		<i>[-1.6303]</i>		<i>[-2.2071]</i>
Gini/GDP			280.9762 **	250.9328 **	274.3291 **		155.0442		333.1670 **		304.0759 *		449.3228 **
<i>[t-value]</i>			<i>[2.2731]</i>	<i>[2.2046]</i>	<i>[2.4551]</i>		<i>[1.0742]</i>		<i>[2.4529]</i>		<i>[1.9459]</i>		<i>[2.3825]</i>
Primary education	0.0213	0.0210	-0.0500	-0.0509	-0.0569	0.0783	-0.0086	0.0034	-0.0456	-0.1047	-0.0623	-0.3581 **	-0.0790
<i>[t-value]</i>	<i>[1.1224]</i>	<i>[1.1133]</i>	<i>[-1.0471]</i>	<i>[-1.0688]</i>	<i>[-1.2027]</i>	<i>[1.1144]</i>	<i>[-0.1215]</i>	<i>[0.0517]</i>	<i>[-0.8670]</i>	<i>[-1.2454]</i>	<i>[-1.0560]</i>	<i>[-2.7095]</i>	<i>[-1.2036]</i>
Secondary education	-0.0072	-0.0071	0.0642 **	0.0692 ***	0.0729 ***	0.0050	0.0636 **	0.0311	0.0730 ***	0.0546	0.0656 *	0.0621	0.0229
<i>[t-value]</i>	<i>[-0.4236]</i>	<i>[-0.4168]</i>	<i>[2.5659]</i>	<i>[2.9317]</i>	<i>[3.1167]</i>	<i>[0.1655]</i>	<i>[2.0187]</i>	<i>[1.1901]</i>	<i>[2.8336]</i>	<i>[1.4878]</i>	<i>[0.2004]</i>	<i>[1.1971]</i>	<i>[0.5671]</i>
Life expectancy	0.9164 ***	0.9130 ***	0.9786	1.0432	0.8859	0.3743	1.3372 *	1.8639	8.5006 ***	1.3170	5.4062	14.0926 *	9.8744 *
<i>[t-value]</i>	<i>[3.4869]</i>	<i>[3.4940]</i>	<i>[1.3074]</i>	<i>[1.4118]</i>	<i>[1.2231]</i>	<i>[0.5197]</i>	<i>[1.8043]</i>	<i>[0.5565]</i>	<i>[3.0652]</i>	<i>[0.2642]</i>	<i>[1.2497]</i>	<i>[2.1352]</i>	<i>[1.9047]</i>
Square of Life expectancy	-0.0072 ***	-0.0071 ***	-0.0069	-0.0074	-0.0061	-0.0031	-0.0098 *	-0.0120	-0.0559 ***	-0.0083	-0.0358	-0.0890 *	-0.0638 *
<i>[t-value]</i>	<i>[-3.4751]</i>	<i>[-3.4857]</i>	<i>[-1.2602]</i>	<i>[-1.3485]</i>	<i>[-1.1454]</i>	<i>[-0.5746]</i>	<i>[-1.7744]</i>	<i>[-0.5503]</i>	<i>[-3.0995]</i>	<i>[-0.2577]</i>	<i>[-1.2848]</i>	<i>[-2.1027]</i>	<i>[-1.9218]</i>
Working age population	0.0223	0.0234	0.0978	0.0808	0.1005	0.0166	0.0695	0.1326	0.0464	0.1439	0.0275	0.0996	-0.0445
<i>[t-value]</i>	<i>[0.3503]</i>	<i>[0.3699]</i>	<i>[1.2449]</i>	<i>[1.0978]</i>	<i>[1.4089]</i>	<i>[0.1651]</i>	<i>[0.8468]</i>	<i>[1.4135]</i>	<i>[0.7766]</i>	<i>[1.3570]</i>	<i>[0.3972]</i>	<i>[0.8437]</i>	<i>[-0.6174]</i>
high-tech export	0.0053	0.0054	0.0213	0.0189	0.0188	0.0429 **	0.0379 **	0.0115	0.0210	-0.0051	0.0263	-0.0047	0.0466 **
<i>[t-value]</i>	<i>[0.3153]</i>	<i>[0.3218]</i>	<i>[1.2552]</i>	<i>[1.1462]</i>	<i>[1.1392]</i>	<i>[2.0103]</i>	<i>[2.0107]</i>	<i>[0.6720]</i>	<i>[1.4430]</i>	<i>[-0.2207]</i>	<i>[1.2876]</i>	<i>[-0.1727]</i>	<i>[2.1884]</i>
freedomhouse index	0.3096 **	0.3051 **	0.4090 **	0.4249 **	0.4539 **	0.1060	0.2999	0.1563	0.5640 ***	-0.1368	0.5418 ***	1.1572	0.8329 ***
<i>[t-value]</i>	<i>[2.1117]</i>	<i>[2.1123]</i>	<i>[2.1563]</i>	<i>[2.2682]</i>	<i>[2.4470]</i>	<i>[0.4688]</i>	<i>[1.6011]</i>	<i>[0.5925]</i>	<i>[3.6588]</i>	<i>[-0.3213]</i>	<i>[2.7281]</i>	<i>[1.6709]</i>	<i>[3.6310]</i>
Urban population	0.0027		0.0128										
<i>[t-value]</i>	<i>[0.2069]</i>		<i>[0.6363]</i>										
dummy (2000s)	1.5939 ***	1.5862 ***	0.4810	0.4567		1.6569 **		0.4977		-0.0104		-0.0318	
<i>[t-value]</i>	<i>[3.8790]</i>	<i>[3.8909]</i>	<i>[1.1070]</i>	<i>[1.0589]</i>		<i>[2.6084]</i>		<i>[0.9980]</i>		<i>[-0.0162]</i>		<i>[-0.0517]</i>	
Adjusted R Square	0.2247	0.2305	0.2598	0.2651	0.2640	0.2920	0.2028	0.3039	0.4216	0.1090	0.3503	0.0920	0.4512
Observations	138		93			65	77	39	60	30	52	25	46

Using results (2) and (4) in Table 3, the average growth rates are employed here (Table 4, their values are in the cells named as “Critical”). If the estimated growth rate falls below the average growth rate, there is room to suspect that the country might fall into the middle-income trap. So we conduct a sensitivity analysis; Table 4 gives the critical value of each variable at which the estimated growth rate falls below the average growth rate (the value in the cells named “Critical” in Table 4). The following finding can be identified. First, the estimated growth rates of the three Asian UMICs are by far lower than their actual growth rates, but above the average growth rate when the $s5/s1$ ratio is used. However, the difference between estimated and critical growth rate is not large for Malaysia and Thailand (the difference between them is 1.2 percentage points for Malaysia and 1.8 for Thailand, whereas it is 2.9 for China). Second, the three countries need to narrow the income gap between the top and bottom income groups taking into account their per-capita GDP levels, but the $s5/s1$ value is still lower than the critical value and other variables have not reached the critical values even in the recent years. This means that the countries take steps to narrow the income gap without worrying about other income-inequality related problems.

Third, the estimate using the Gini coefficient shows that the estimated growth rates for China and Malaysia are lower than their average growth rates, although the difference is very small. The result of the sensitivity analysis using the Gini coefficient tells us that China and Malaysia should upgrade their economies, and Malaysia should improve its secondary education enrolment rate, and should directly improve income distribution.

Table 4: Sensitivity analysis (results)

s5/s1	China			Malaysia			Thailand		
	Estimate	Critical	Recent	Estimate	Critical	Recent	Estimate	Critical	Recent
GDPpc growth	4.693	1.768	7.800 (2012)	2.695	1.429	5.613 (2012)	3.559	1.710	6.435 (2012)
s5/s1	7.363	113.631	9.605 (2005)	10.451	32.086	11.333 (2009)	7.937	64.210	7.078 (2009)
Primary education	(90.872)	(below 0)	(no data)	95.851	49.002	95.891 (2005)	91.543	23.117	89.680 (2009)
Secondary education	(59.134)	(below 0)	(no data)	69.201	(below 0)	68.610 (2010)	70.520	(below 0)	71.470 (2012)
Life expectancy	72.305	84.622	73.486 (2011)	73.119	79.260	74.261 (2011)	73.268	81.559	74.091 (2011)
Working age population	71.612	54.636	73.336 (2012)	65.531	58.184	68.185 (2012)	70.364	59.633	72.118 (2012)
high-tech export	27.070	-----	25.808 (2011)	52.271	-----	43.390 (2011)	27.466	-----	20.472 (2011)
freedomhouse index	6.600	-----	6.500 (2011)	4.650	-----	4.000 (2011)	2.650	-----	4.000 (2011)
Gini	Estimate	Critical	Recent	Estimate	Critical	Recent	Estimate	Critical	Recent
GDPpc growth	2.366	2.418	7.800 (2012)	1.324	1.450	5.613 (2012)	2.926	2.252	6.435 (2012)
Gini	0.402	0.437	0.513 (2010)	0.442	0.319	0.503 (2010)	0.480	(below 0)	0.455 (2010)
Primary education	90.872	-----	(no data)	95.851	-----	95.891 (2005)	91.543	-----	89.680 (2009)
Secondary education	59.134	59.772	(no data)	69.201	70.733	68.610 (2010)	70.520	62.332	71.470 (2012)
Life expectancy	72.305	71.679	73.486 (2011)	73.119	71.757	74.261 (2011)	73.268	77.689	74.091 (2011)
Working age population	71.612	71.985	73.336 (2012)	65.531	66.425	68.185 (2012)	70.364	65.585	72.118 (2012)
high-tech export	27.070	32.113	25.808 (2011)	52.271	64.390	43.390 (2011)	27.466	(below 0)	20.472 (2011)

Notes: 1. The estimated and critical growth rates are calculated with the countries' per-capita GDP in 2012. 2. The result should be interpreted as follows; [1] for the results with s5/s1 and for the result for Thailand with Gini coefficient, the actual values should not reach the critical levels. [2] For the results for China and Malaysia with Gini coefficient, the actual values should achieve the critical levels in order to realise the estimated growth rate above average. 3. The bold italic figures indicate that they do not meet critical levels.

4. Discussion: can the middle-income trap be avoided through income redistribution?

Our analysis has shown that, as the Kuznets hypothesis indicates, income inequality is a problem for MICs in terms of the relationship with economic growth, and that the basic-needs approach, especially access to secondary education, explains the growth rate. As the demographic dividend will soon dry up, all Asian UMICs are trying to upgrade their economic structures (see Appendix 1). On the other hand, measures for alleviating income inequality and improving school enrolment have seen little progress. The question now is what can be done to prevent the middle-income trap through the alleviation of income inequality?

(1) Narrowing rural-urban income disparities

Since income inequality is considered to be caused in part by rural-urban income disparities, policy measures targeting rural development may work. Developing economic infrastructure in cities (eg roads to connect them with megacities, well-developed industrial estates) are typical policy measures and would incentivise entrepreneurs in the megacities to shift their labour-intensive, low value-added production processes or industries to the rural cities. This shift could also be accelerated by investment promotion by the government, such as corporate tax reductions for new investment in rural areas. In fact, China has concentrated public investment into local infrastructure development since the global financial crisis, and Thailand has given greater tax privileges to foreign investors with the aim of establishing firms in areas remote from Bangkok and its vicinities. However, this may only

postpone the middle-income trap because such measures do not upgrade the economic structure of the country or increase the productivity of labour.

(2) Benefits for low-income individuals

Other options would be in-cash and in-kind benefits to low-income individuals and a minimum wage hike. All Asian UMICs have raised their minimum wages sharply in recent years. However, some of these policies are not linked to the effort to raise labour productivity, or will have a counter effect on economic growth and structural change. For example, Thailand changed its minimum wage scheme to a uniform minimum wage nationwide in early 2012, resulting in a huge hike of the minimum wage in peripheral areas (up to 90 percent in two years). This may widen (not narrow) rural-urban income disparities by preventing factories from operating in rural areas where the wage level was formerly well below that in the megacities. There are similar concerns about Malaysia's "bumiputera policy", an affirmative action favouring indigenous Malays, who are considered to be poorer and have fewer opportunities than those of other ethnic groups. With this policy, Malays have been offered greater opportunities in education and work for example, and the policy has succeeded in producing an urban Malay middle class. Now, however, companies in Malaysia have lost opportunities to increase their productivity by hiring talented people more from other ethnic groups. Moreover, for the country itself, the policy deprives a large portion of people of opportunities to improve their educational achievements and contribute to the economy, which results in a reducing of the country's labour productivity. The policy has also contributed to a brain drain from the country.

(3) A rich-to-poor transfer

A simple rich-to-poor transfer would be the most efficient way of income redistribution, as we know from microeconomics textbooks. Measures could include a mixture of progressive income taxation, wealth taxation and taxation of real estate transactions, insurance schemes for (or free provision of) public health and education, and so on. The countries that we consider have already established progressive income tax programmes, but their governments cannot always identify the correct taxation levels because it has not established the system enough to capture individual income levels (especially in the border areas of Thailand and China, or in informal sectors). Because of this, only the workers in larger firms and the public sector are subject to the income tax programme, and the tax programme does not work as a rich-to-poor income redistribution mechanism nationwide.

(4) Primary and secondary education

If income inequality is left untreated, human development would be delayed, and negatively

affect economic growth because of lower productivity. In turn, slower economic growth delays human development, which may lead to rigidity of social class in the country and produce a vicious circle, increasing the risk of social unrest and the risk of falling into a middle-income trap. Therefore, tackling this problem is a further urgent political issue for the countries concerned. For education, necessary policies include direct in-kind provision (free compulsory education) and measures for ensuring the schooling of children from poor households. In fact, the primary education enrolment rates in Asian UMICs are high, but full enrolment has not been achieved yet, even though free compulsory education schemes have been implemented. For secondary education, the enrolment rate is 72.2 percent in Malaysia and 68.6 percent in Thailand (no data for China).

All Asian UMICs are now implementing educational reforms focusing mainly on the quality aspects of compulsory education. These include provision of quality education to rural areas, improving teachers' abilities, revising curricula in response to economic and social changes and needs (to develop ICT skills for example), and so on. However, to promote human development, these countries need to tackle the obstacles preventing children from poor households from being schooled, and to raise the enrolment rate at the same time (secondary school enrolment in particular). Possible measures include vouchers for education, prohibition of children labour and the reduction of schooling costs. These efforts would enable escape from the vicious circle connecting income inequality (rigidity of social class) and insufficient human development at the bottom of the pyramid.

(5) Vocational training

Increasing the number of skilled workers is an urgent priority for MICs, because it will take time until a majority of the working-age population has a good education and can start working as an educated worker, though rapid structural change is required in the face of international competition. Asian UMICs have expanded the capacity of universities and polytechnics and try to provide more talented workers to the labour market, from their higher education systems.

A current problem is that supply of and demand for university graduates are not balanced in the labour markets. In China, since there is an oversupply of educated labour, the acceleration of economic structural change causes few problems in terms of labour demand and supply in the high-value-added industries. However, in Malaysia and Thailand, a short supply of educated labour is a problem even currently. In Thailand, there are too few natural science graduates entering the labour market, whereas there are too many arts and social science graduates. Malaysia has a brain drain problem, as we have noted. The problem for vocational training would be how to deliver the training to low-skilled workers living in rural areas, slum areas or in mountain areas. Most of these inhabitants work and maintain themselves at subsistence level. If there is only small demand for talented labour in the workplace and

if an increase in demand is unlikely to occur in the near future, they would be unwilling to start vocational training. Nevertheless, income inequality would be widened unless these workers have some kind of skills that can be used in a productivity-driven economy. On the other hand, even if all citizens are willing to participate in vocational training, the government might not be able to afford to deliver it in a short period of time, because the population of the current Asian UMICs is large.

(6) Fiscal burden for alleviating income inequality

Asian UMICs are learning, or trying to learn, from advanced countries' experiences of introducing various social safety net programmes (public health insurance, pensions, etc.). Some programmes have already been implemented in Asian UMICs. However, every possible measure (described above and others, such as developing a social safety net or social security schemes) requires a huge amount of budget, especially at the initial stage of implementation. This means that it is very difficult for Asian UMICs to introduce all the schemes at one time. Although they can introduce each scheme one by one, the government has to order the priorities in a democratic way but, as seen in Figure 3, three Asian UMICs have shortcomings when it comes to democratic decision-making. Moreover, Asian countries sometimes insist that, unlike western countries, they need strong government initiatives in order to realise fast economic development. This means that it may not be expected for Asian countries to change their political standpoints. In this sense, fiscal reforms (especially tax reform) would be a short-cut for implementing more measures to improve income distribution.

5. Conclusion

Asia's growth is promising, but there exist risk factors that put Asian countries at risk of falling into a middle-income trap. In order to avoid this, improving income distribution is a good option and is socially desirable in Asian UMICs. As income inequality, insufficient provision of education to the bottom of the pyramid and economic growth might lead to the development of a vicious circle, a measure to prevent the circle is inevitable, which can be done by free provision of education as an in-kind benefit, for example, or direct income redistributive programmes. For the Asian UMICs, the effort to improve income distribution and secondary education enrolment would be good for the economy, and would lead to the economic growth rate picking up.

Effort must be made to avoid the trap or to tackle these limitations, but as we have discussed, it will not be easy. Therefore, the Asian UMICs are struggling and there is sometimes scepticism about their further economic advancement. Advanced countries (those that have successfully avoided or escaped the trap already) can assist Asian UMICs through an exchange of experience.

Appendix: Failure to accomplish a timely shift of the economic structure

South-east Asian countries accelerated their economic growth by becoming places of strategic importance for manufacturing supply chains set up mainly by Japanese manufacturers. Japanese companies sought countries that offered cheap labour and good investment opportunities, and in turn, some south-east Asian countries such as Malaysia and Thailand advanced their strategies to attract foreign inward investment⁷. In the same way, China has offered an opportunity of cost reduction for manufacturing and has grown faster since the early 1990s. These three countries have now become UMICs.

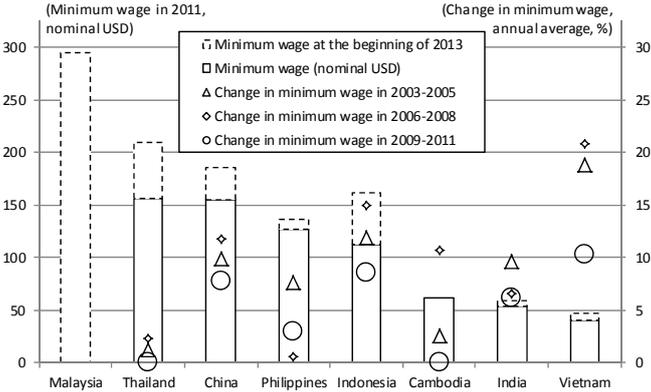
However, if these countries stay as low-cost assembly bases with little improvement in their own innovation, they will lose out in terms of costs to new-frontier countries such as India, Indonesia, Vietnam, Cambodia and Myanmar. Krugman (1994) argued that input-driven economic growth would face diminishing returns, taking Asian New Industrialised Economies (NIEs) as an example. Now, Asian UMICs seem to face the same situation. The problems for Asian UMICs in this context are that wage increases without high productivity growth would give investors an incentive to exclude the countries concerned from the supply chain, and that they still face obstacles to realising productivity-driven growth.

An opportunity for structural change

As Table 1 shows, an increase in the wage of unskilled workers triggers the risk that a country will fall into a middle-income trap. On the other hand, it is natural that wages increase as a nation's per-capita income increases. Moreover, those countries have raised their minimum wage sharply (Figure A1). Although minimum wages have been raised in lower-middle-income countries, the difference in minimum wage levels is unlikely to narrow so rapidly.

⁷In addition, Kimura and Todo (2007) find that Japanese ODA had a side-effect of giving information on business circumstances to Japanese companies, which they call a vanguard effect, and this effect was unique to Japan's ODA.

Figure A1: Minimum wage levels and rates of increase



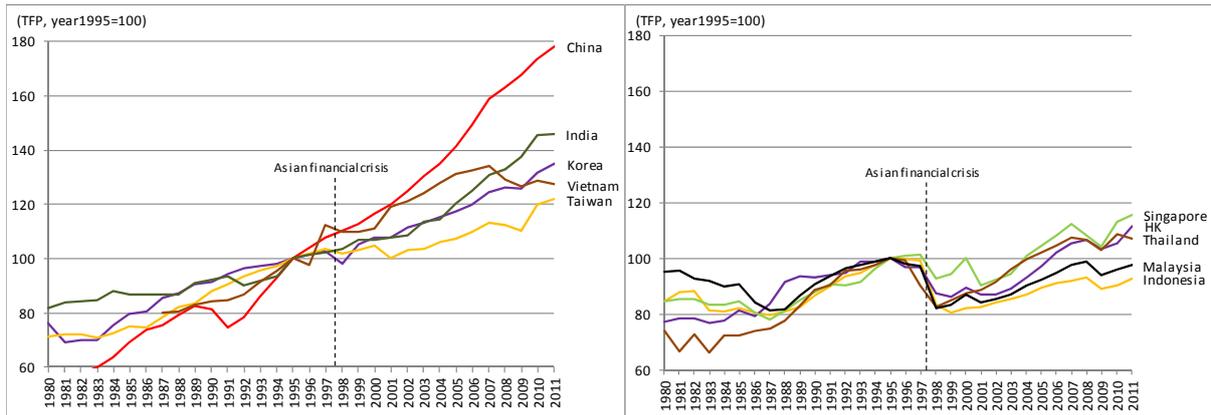
Source: Egawa (2013).

However, stopping the increase in the (minimum) wage level is not a policy option for avoiding a middle-income trap, because it would tautologically hamper the increase in national income level. Instead, it is inevitable that UMICs will establish an economic structure within which economic growth and high wages are compatible. UMICs will no longer be selected as the place of labour-intensive production processes by both foreign and domestic business. For domestic factories in UMICs, it would also be better to establish their own production networks (supply chains) with neighbouring countries, outsourcing input-intensive production processes to the countries offering lower labour costs. In order to facilitate this, UMICs can sharp increase minimum wages.

Has productivity growth in Asian UMICs stopped, or are governments trying to boost it?

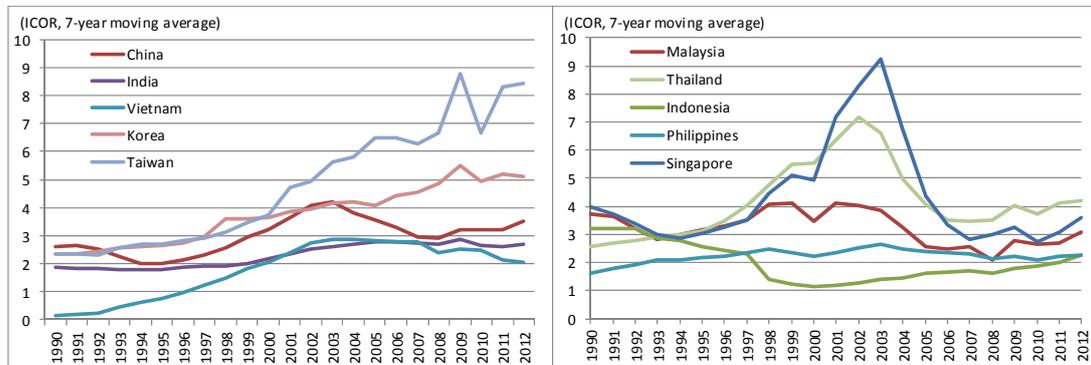
If we only look at wage levels, the risk of a middle-income trap seems to have been triggered. However, whether China, Malaysia or Thailand fall into a trap or not depends on their efforts to improve productivity growth. Therefore, it must be checked if productivity growth in UMICs has stopped, and if they are trying to improve their productivity growth. The total factor productivity (TFP) of Asian countries is shown in Figure A2 (1995=100). China’s TFP has grown most rapidly. However, Malaysia has not regained the productivity level it had in 1995, and productivity is almost at the same level as in the early 1980s. Thailand’s TFP is slightly above its 1995 level, but has not been improved since the latter half of the first decade of the 2000s. The efficiency of investment with incremental capital-output ratio (ICOR, Figure A3), however, has not deteriorated very much in the three UMICs, except during the period of the Asian crisis in the late 1990s. Malaysia’s ICOR stands even lower than in 1990 (showing that Malaysia has a greater investment efficiency than in 1990).

Figure A2: Total factor productivity growth in Asia



Source: Asian Productivity Organization (2012).

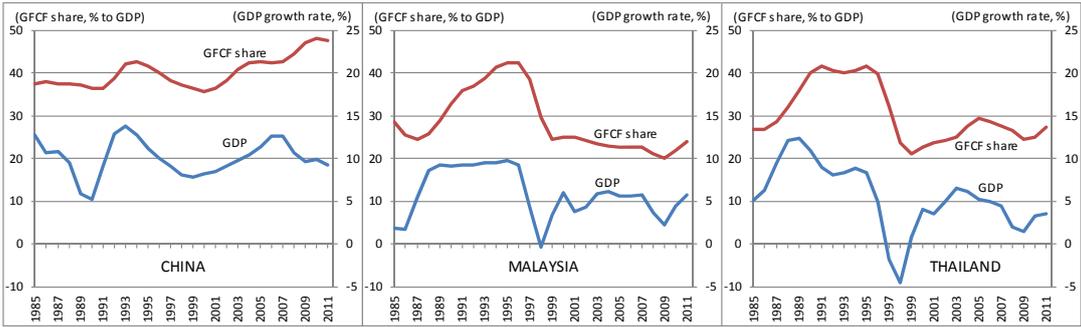
Figure A3: ICOR



Source: World Bank. Note: 7-year moving average backward.

Together with Figure A4, these observations show that China has showed good productivity growth, but has a problem with inefficiency of investment, resulting from overinvestment (see Eichengreen *et al*, 2011, who estimate that the risk of significant economic slowdown would be minimised when the investment share to GDP reaches 29 percent). Malaysia's problem is low productivity growth, but it has maintained the efficiency of investment. For Thailand, inefficiency of investment is a problem but overinvestment has not been seen. Thailand's productivity growth has not been high since the Asian crisis, but has developed in a similar way to Singapore and Hong Kong.

Figure A4: GDP growth rate and investment share to GDP



Source: World Bank.

Looking at governments’ efforts, all three UMICs have their own medium-term economic development plans aimed at improving economic efficiency and productivity. Policy measures include increasing the R&D budget, development of intellectual property rights protection laws, improvement of governance in the public sector and so on. According to World Bank Data, the share of expenditure on R&D to GDP in these countries is still far lower than in advanced countries (for example, 3.36 percent for Japan in 2009), China has increased it significantly from 0.57 percent in 1996 to 1.70 percent in 2009. In Malaysia it grew from 0.22 percent in 1996 to 0.63 percent in 2006, and in Thailand from 0.12 percent in 1996 to 0.21 percent in 2007. In addition, the government in every country encourages through privileges and incentives, including corporate tax reduction for a certain period, foreign direct investment in R&D-intensive and high-value-added industries. As long as their medium-term plans are implemented properly and on time, and structural changes are realised as planned, there should be little need to worry about these countries’ future productivity growth.

On the other hand, developing the skills of the labour force and increasing the size of the skilled labour force could be difficult. As it will take longer for these effects to become apparent, and all the UMICs (especially China) have large populations, policies for realising them should be implemented immediately. For vocational training, China has a concrete plan to speed up the establishment of vocational training schools in order to accept 5 million students by 2015. In Malaysia and Thailand, vocational training schemes have been implemented since the 1990s, but schools and universities (including polytechnics) are now considered to be the main organisations for producing skilled workers.

How can UMICs advance their economies to high-income country level?

In the early 1980s, Singapore and Taiwan succeeded in advancing their industrialisation through clear policies that took into account Japan’s experience of industrialisation. Korea, having in itself a

similar economic policy and structure to Japan including a convoy system⁸, imported Japan's experience of enabling high-tech industries and accelerated its economic growth while receiving a huge amount of investment from Japan. However, a convoy system contains protectionist policies and does not work well in an open economy. Japan was able to take this approach because the non-openness of Japan's market was not yet controversial in the 1960s. By contrast, the current Asian UMICs have realised their rapid economic development by opening their markets and linking closely with other economies with huge volumes of trade and inflows of FDI. Therefore, the UMICs cannot pursue protectionist policies but have to seek another path, compatible with a more open economy, to advance their economic structures. All three countries understand the necessity of this and each country aims its growth strategy at a high-value-added economy, as discussed before. However, implementation may be difficult politically, because sunset industries sometimes have lobbying powers, for example. Moreover, state-owned enterprises tend to be resistant to change. In any case, an effort to maintain these industries by providing subsidies will result in weaker economic growth and may lead countries to fall into the middle-income trap.

⁸A convoy system consists of protection of domestic basic industries from the pressure of entry of foreign companies and promotion of the industries with risk-taking and subsidies by the government, etc. in order to speed up their development to an advanced level.

Annex Table 1: Asia's rapid growth

	Per-capita GNI					
	1990 (per-capita GNP)		2000		2011	
High-income	27.580 Japan	--- Taiwan	35.040 Japan	9.910 <i>South Korea</i>	44.900 Japan	20.870 South Korea
	12.660 Hong Kong		26.930 Hong Kong	--- Taiwan	42.930 Singapore	--- Taiwan
	11.450 Singapore		24.500 Singapore		36.010 Hong Kong	
	(\$7620)		(\$9265)		(\$12475)	
Middle-income	6.000 South Korea		3.420 <i>Malaysia</i>		8.770 Malaysia	4.940 <i>China</i>
					4.440 <i>Thailand</i>	
Upper	(\$2465)		(\$2995)		(\$4035)	
Lower	2.370 Malaysia	1.480 Thailand	1.930 Thailand	930 <i>China</i>	2.940 <i>Indonesia</i>	1.420 <i>India</i>
		730 Philippines	1.050 Philippines		2.210 Philippines	1.270 <i>Vietnam</i>
	(\$615)		(\$755)		(\$1025)	
Low-income	600 Indonesia	200 Laos	560 Indonesia	290 Cambodia	820 Cambodia	
	390 India	130 Vietnam	450 India	280 Laos	780 Bangladesh	
	330 China	--- Cambodia	390 Vietnam	--- Myanmar	--- Myanmar	
	290 Bangladesh	--- Myanmar	380 Bangladesh			

Source: World Bank "World Development Report", "World Bank Data". Note: "---" = not available from the World Bank Data.

Annex Table 2: Variables used for the regression

Factor / Variable	definition	Sign
Per-capita GDP growth rate (regressant)	10-year average, 1991-2000 and 2001-2010, IMF-WEO Database.	
Income level	Per-capita GDP in international dollar (PPP), 10-year average, 1986-95 and 1996-2005, IMF-WEO Database.	(-)
Inequality; S5/S1 ratio, OR Gini coefficient	S5/S1 ratio: 10-year average (available years only), 1986-1995 and 1996-2005, IMF-WEO Database. Gini Coefficient: Data for 1990 and 2000, Euromonitor International "World Income Distribution Databook".	(-)
Urbanisation	Share of urban population. 10-year average, 1991-2000 and 2001-2010, World Bank Database.	?
Education Primary education enrolment rate, AND Secondary education enrolment rate	10-year average, 1991-2000 and 2001-2010. "Net" rates are used. UNESCO Institute for Statistics.	(+)
Health	Life expectancy (age) at birth, 10-year average, 1991-2000 and 2001-2010, World Bank Database.	(+) (-)
Working-age population	Share of population of ages 15-64 to the total, 10-year average, 1991-2000 and 2001-2010, World Bank Database.	(+)
R&D; Export share of high-tech manufacturing goods to total export (XH)	10-year average, 1991-2000 and 2001-2010, United Nations Comtrade Database	(+)
Political decision in line with development	Freedom house index, 10-year average, 1986-1995 and 1996-2005, Data from Freedomhouse International.	(-)

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