GROWTH CONVERGENCE AND THE MIDDLE-INCOME TRAP

EE 462 Development Macroeconomics

Reference: Ito, T. (2017). Growth convergence and the middle-income trap. *Asian Development Review*, *34*(1), 1-27.

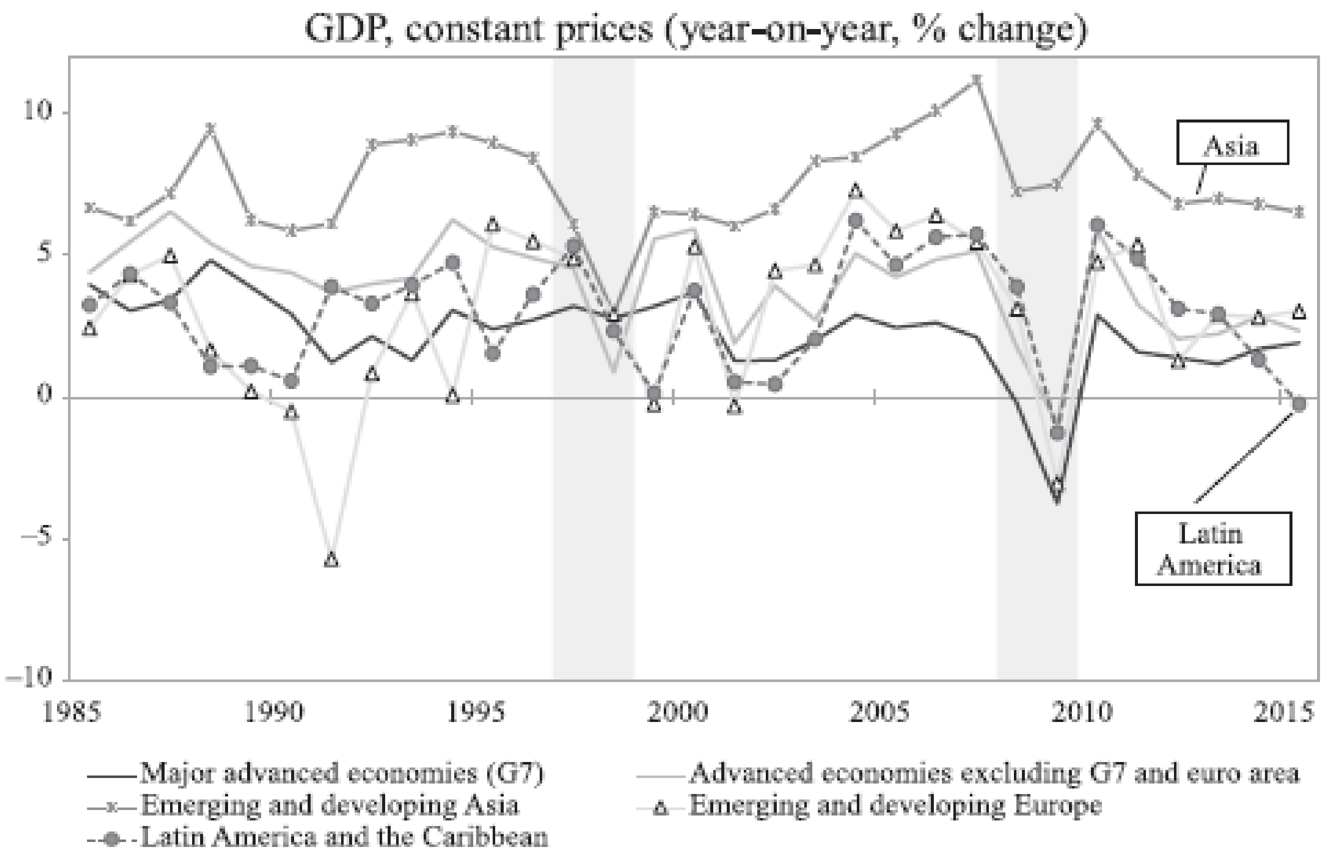
Motivation

- What is the motivation of this paper?
- What are we concerned with the growth in the emerging Asian Economies?
- What is the objective of this paper?
- What is the main conclusion?

Impacts of AFC and GFC

- When did the Asian Financial crisis and the global financial crisis happen?
- What are the main problems occurred in each crisis?

Figure 1. **Growth Rates: Asia versus Other Regions**

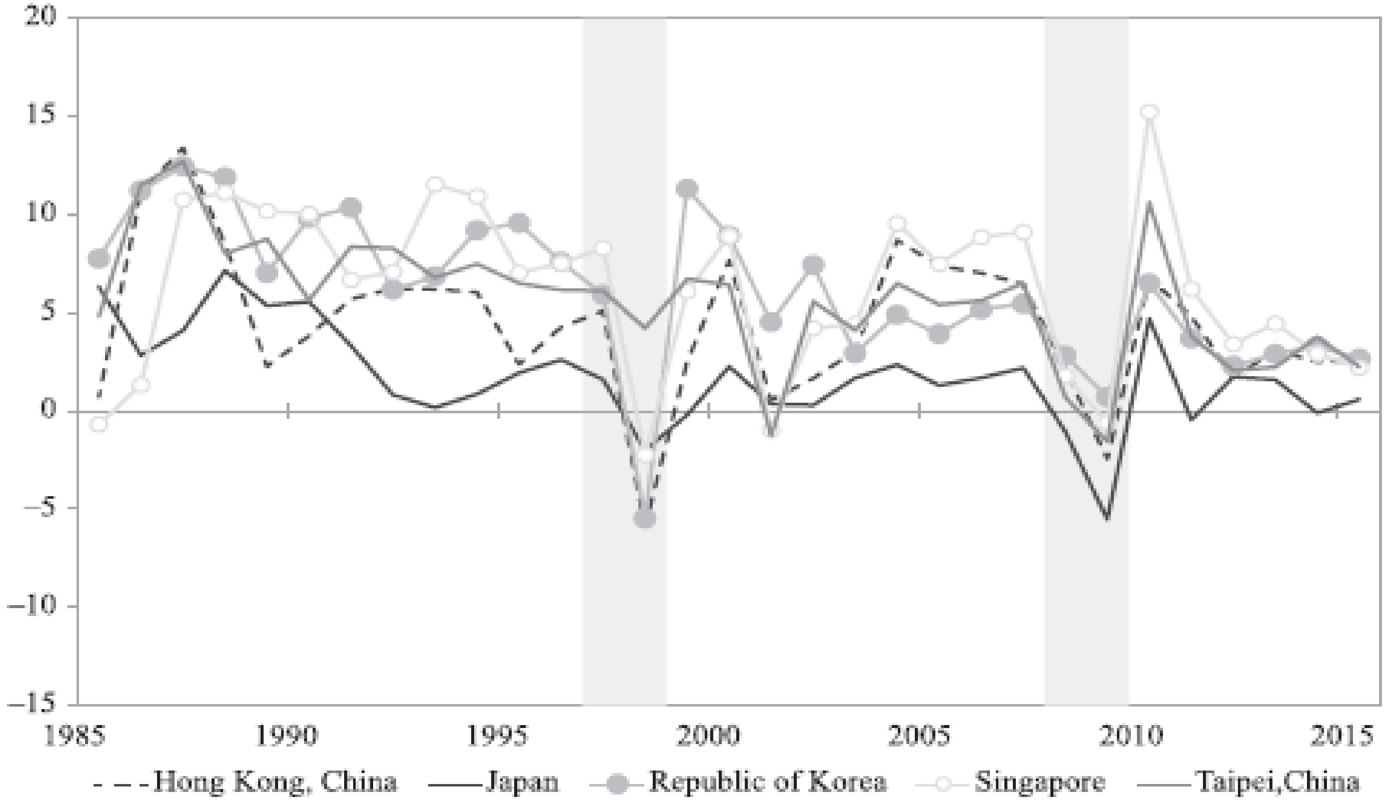


GDP = gross domestic product.
Source: International Monetary Fund. *World Economic Database, October 2015.*
https://www.imf.org/external/pubs/ft/weo/2015/02/weodata/download.aspx

Q: How has the growth rate in Asia changed over time when compared to other regions?

Figure 2. Growth Rates of Japan and the "Four Tigers"

GDP, constant prices (year-on-year, % change)

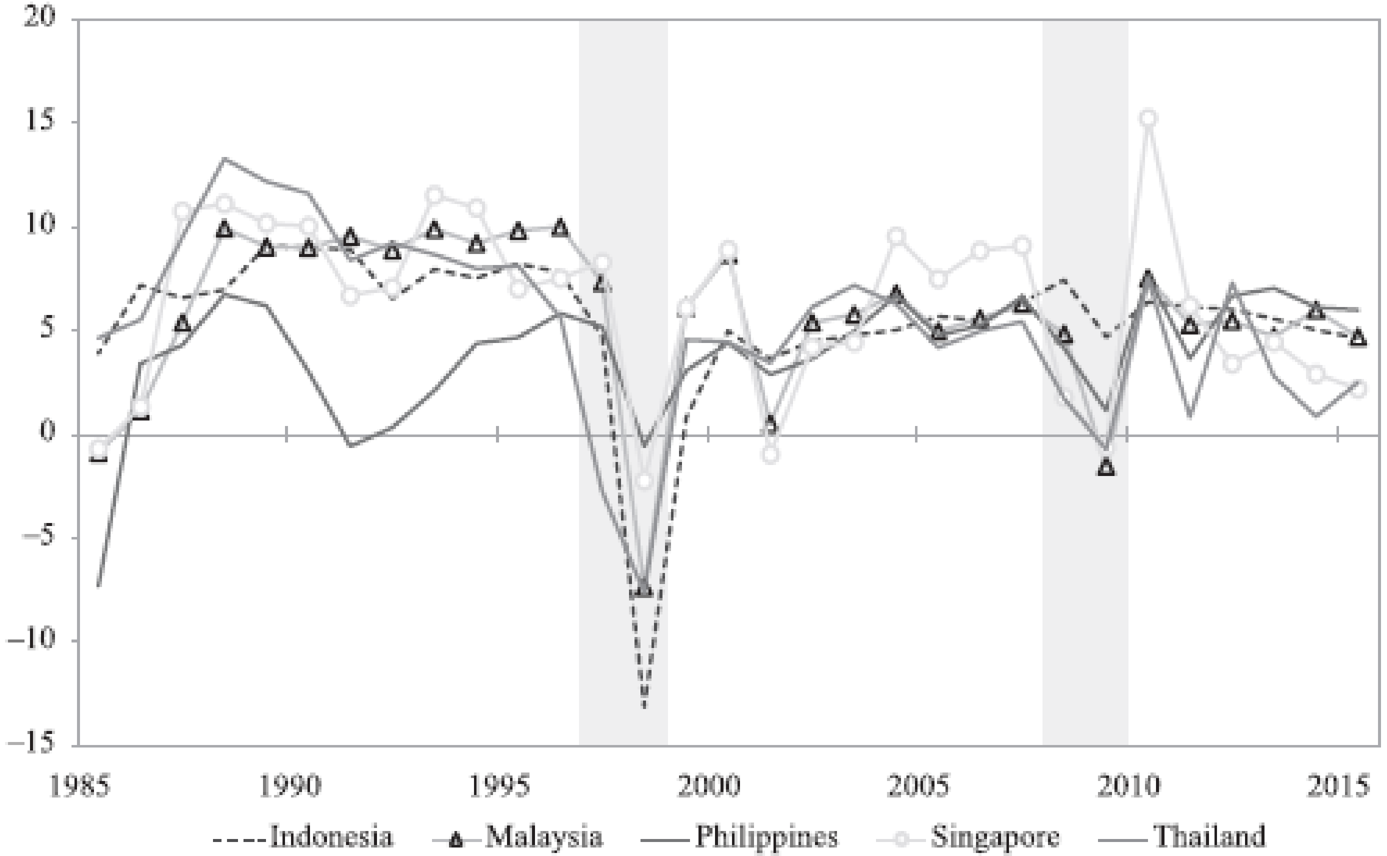


GDP = gross domestic product.
Source: International Monetary Fund. *World Economic Database, October 2015.*
https://www.imf.org/external/pubs/ft/weo/2015/02/weodata/download.aspx

Q: How have the growth rates of the "Four Tigers" changed over time?

Figure 3. Growth Rates of Members of the Association of Southeast Asian Nations

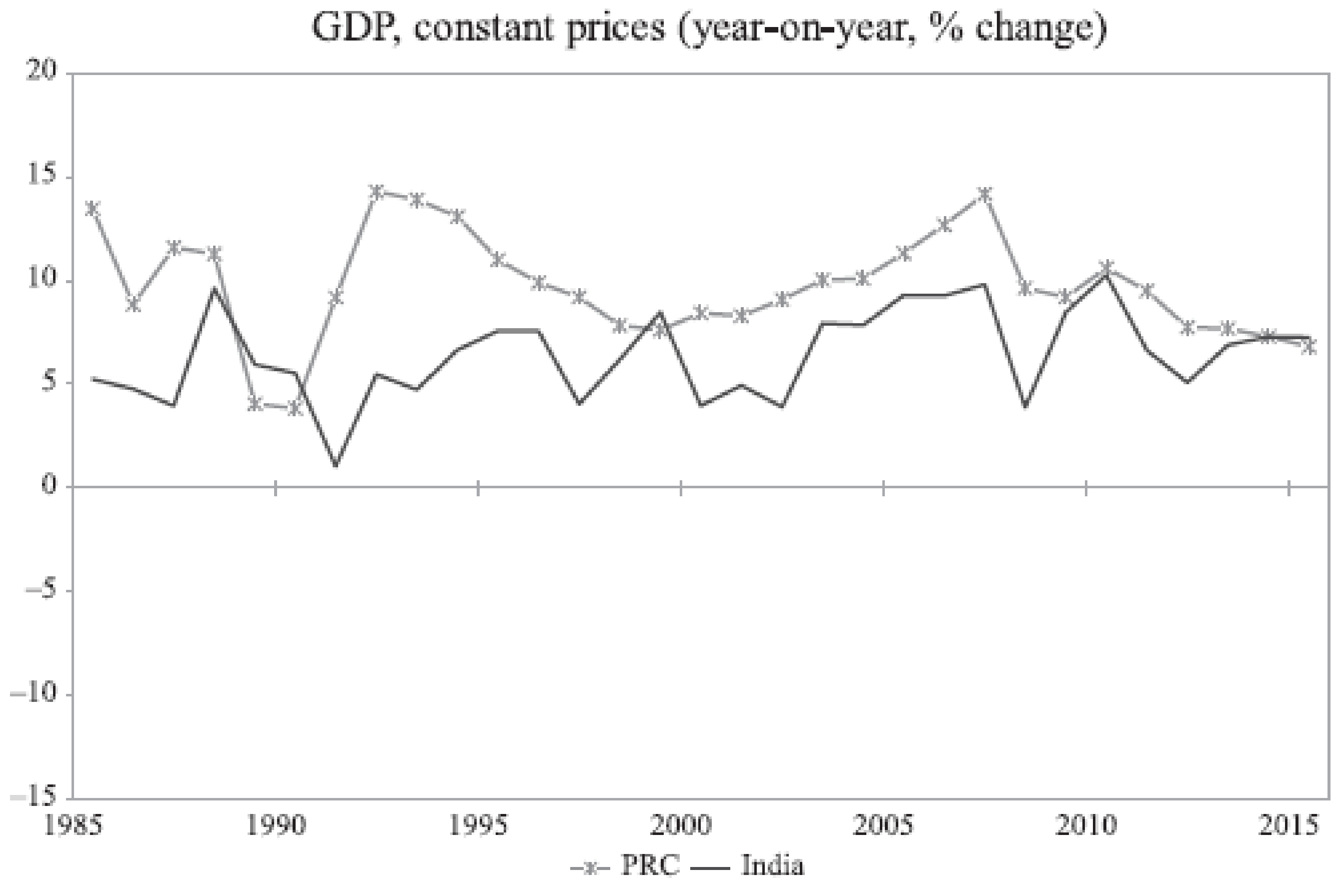
GDP, constant prices (year-on-year, % change)



GDP = gross domestic product.
Source: International Monetary Fund. *World Economic Database, October 2015.*
https://www.imf.org/external/pubs/ft/weo/2015/02/weodata/download.aspx

Q: How have the growth rates of the ASEAN countries changed over time?

Figure 4. **Growth Rates of the People's Republic of China and India**



GDP = gross domestic product.
Source: International Monetary Fund. *World Economic Database, October 2015.*
https://www.imf.org/external/pubs/ft/weo/2015/02/weodata/download.aspx

Q: Discuss the growth rates of PRC and India.

Slowdowns in Growth

Table 1. Period Average Growth Rates (%)

	Pre-AFC 1985–1996	Intercrises 1999–2007	Post-GFC 2010–2015
Hong Kong, China	4.8	4.7	2.2
Japan	2.8	1.4	0.9
Republic of Korea	8.2	4.8	2.5
Singapore	5.7	4.4	2.1
Taipei,China	7.1	4.3	2.5
Malaysia	5.5	3.3	3.5
Indonesia	5.9	3.6	4.0
Thailand	7.6	4.4	2.4
Philippines	1.3	3.0	4.0
Cambodia	NA	7.7	5.5
Lao PDR	2.2	5.1	5.8
Myanmar	NA	12.1	6.8
Viet Nam	4.8	5.9	4.8
PRC	8.6	9.8	7.3
India	3.6	5.4	5.0

AFC = Asian financial crisis, GFC = global financial crisis, Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China.
Source: Author's compilation.

Q: What could be the explanations (or hypothesis to explain) declining growth rates in East Asian economies?

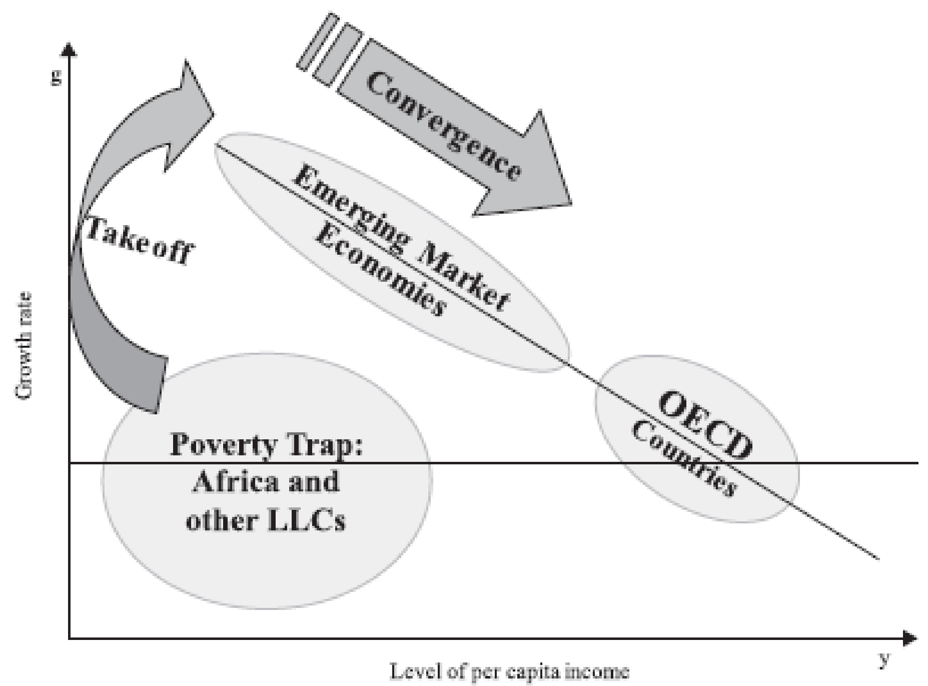
Growth Convergence

- Typical convergence equation:

$$g_j(t) = a + b\{logy_j(t) - logy_j^*(t)\}$$

- Explain the above convergence equation.
- What does the growth convergence imply about the value of *b*?

Figure 5. Growth Convergence

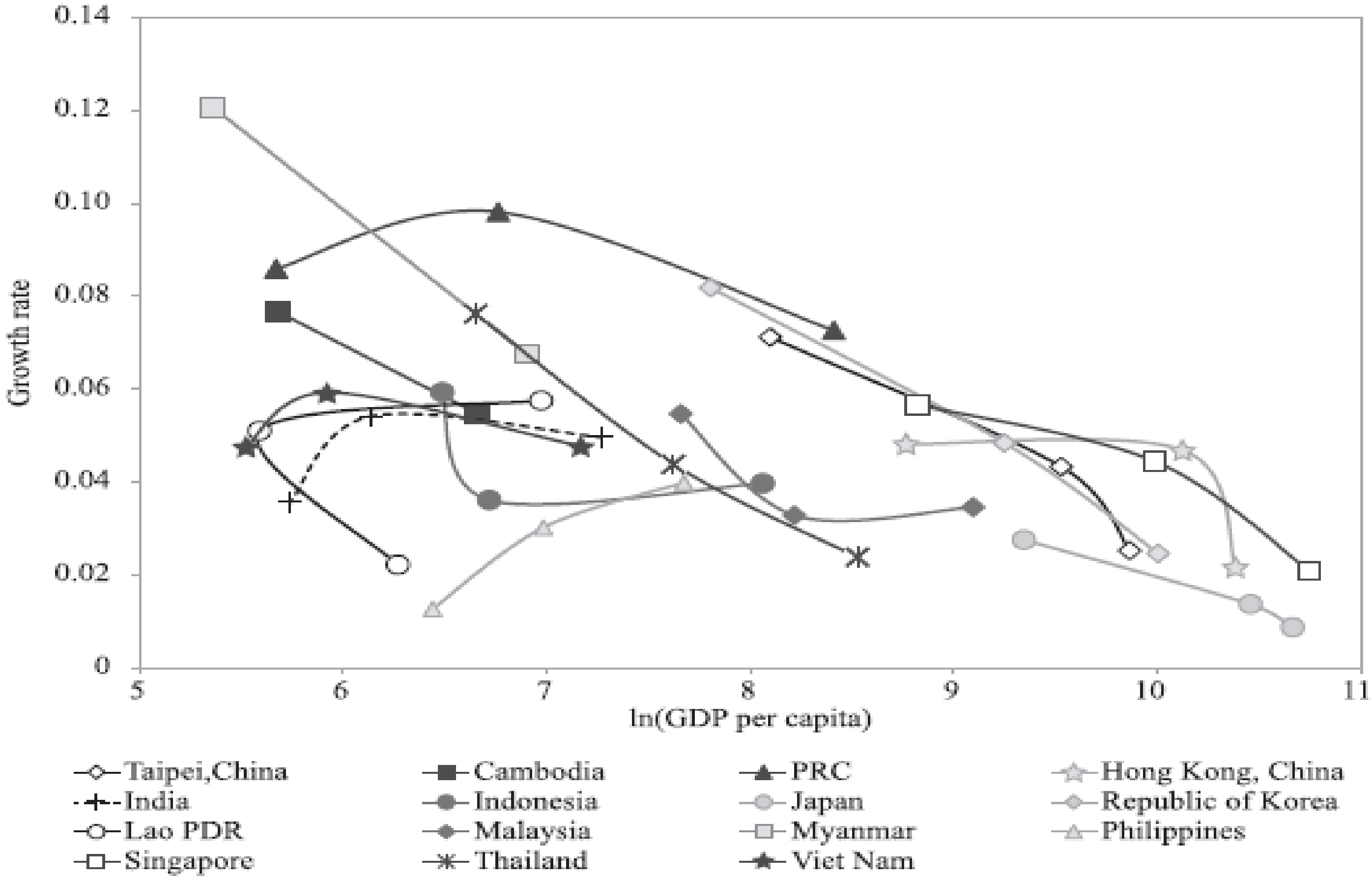


Source: Author's illustration.

Stylized facts of Growth convergence

Figure 6. **Growth Convergence in East Asia**

ln(GDP per capita, current prices [$])



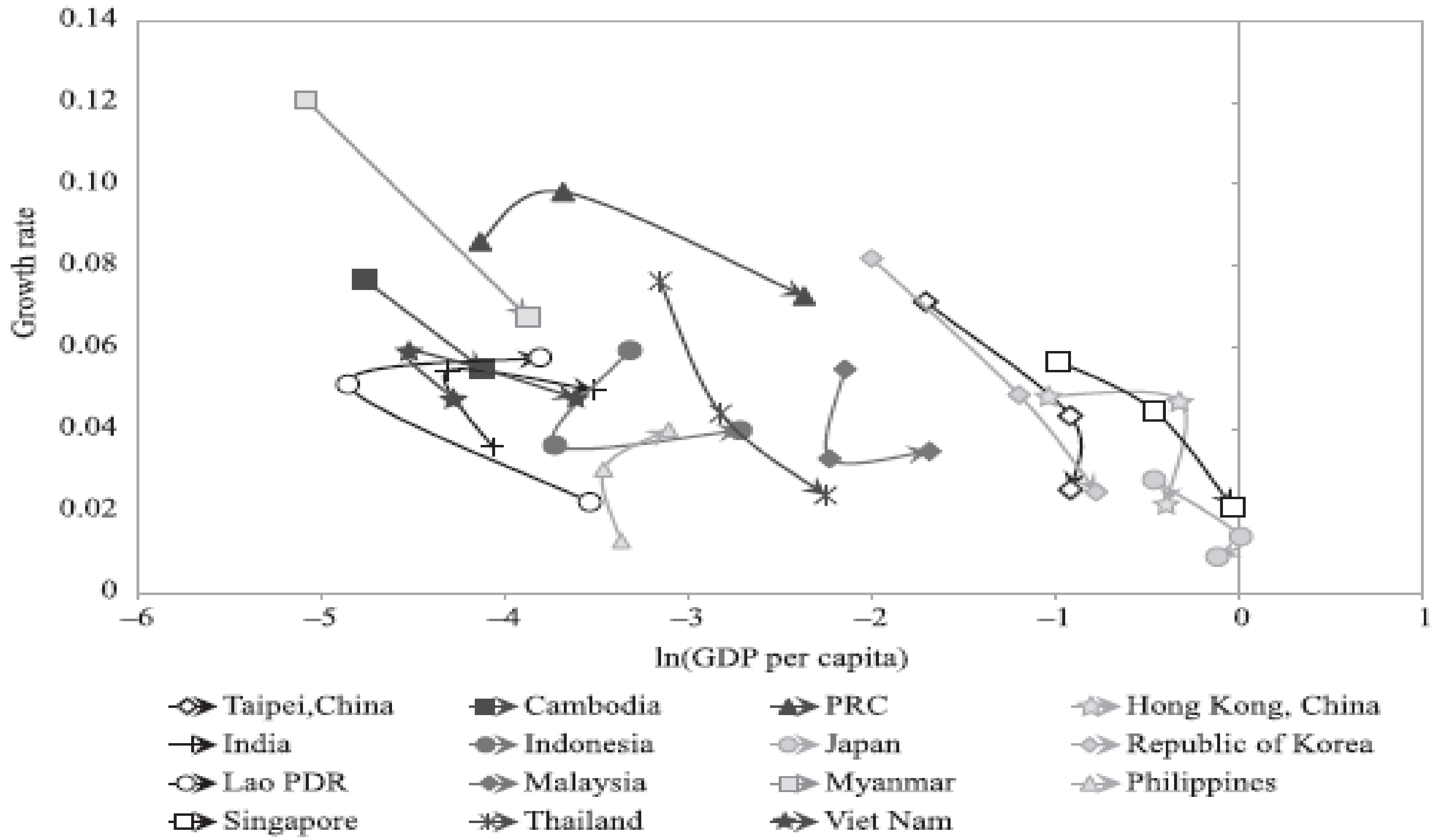
GDP = gross domestic product, Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China.
Source: Author's calculations.

Q: Is there any growth convergence in time-series data of each economy?

Stylized facts of Growth convergence

Figure 7. Growth Convergence in East Asia: Relative to the US

ln(GDP per capita, current prices / US GDP per capita, current prices)



GDP = gross domestic product, Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China, US = United States.
Source: Author's calculations.

Q: What are the three groups of growth convergence? Who are in each group?

3 possible cases

Case 1. Indonesia is in the middle-income group and the Philippines is in the low-income group.

Case 2. Both Indonesia and the Philippines are in the low-income group.

Case 3. Indonesia in the intercrises period is in the low-income group and in the other two periods is in the middle-income group. The Philippines in the pre-AFC and the intercrises periods is in the low-income group and in the post-AFC period is in the middle-income group.

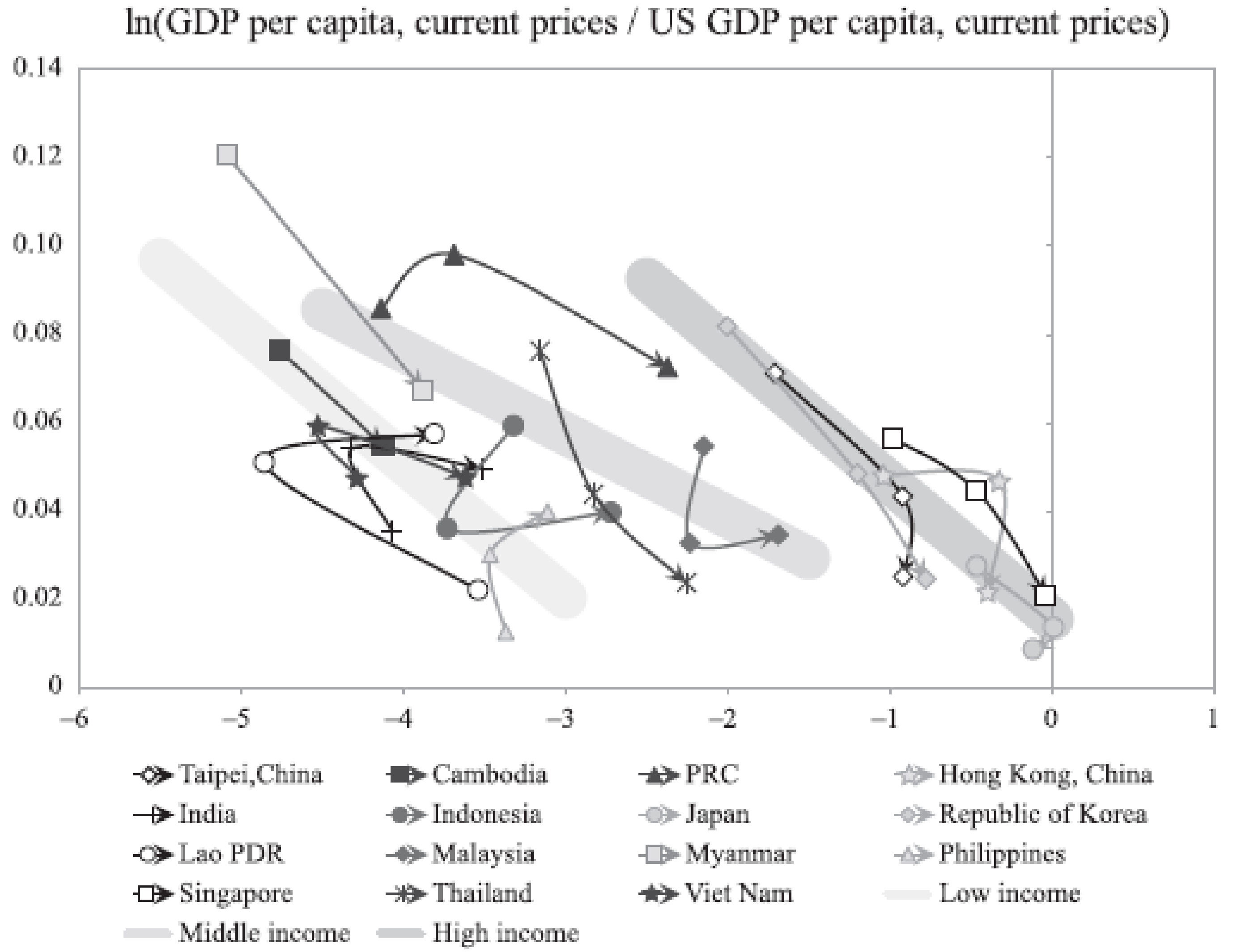
Table 2. **Conditional Convergence**

	Case 1			Case 2			Case 3			
		α	β		α	β		α	β	
Group 1	Coefficient	0.016	−0.031	Coefficient	0.016	−0.031	Coefficient	0.016	−0.031	**Case 1:** Hong Kong, China; Japan; Republic of Korea; Singapore; and Taipei,China
	STD Er	0.005	0.005	STD Er	0.005	0.005	STD Er	0.005	0.005	
	t-stat	3.298	−6.172	t-stat	3.298	−6.172	t-stat	3.298	−6.172	**Case 2:** Hong Kong, China; Japan; Republic of Korea; Singapore; and Taipei,China
	p stat	0.006	0.000	p stat	0.006	0.000	p stat	0.006	0.000	
	R-bar sq	0.726		R-bar sq	0.726		R-bar sq	0.726		**Case 3:** Hong Kong, China; Japan; Republic of Korea; Singapore; and Taipei,China
	# obs	15		# obs	15		# obs	15		
		α	β		α	β		α	β	
Group 2	Coefficient	0.001	−0.019	Coefficient	−0.013	−0.026	Coefficient	−0.011	−0.024	**Case 1:** PRC, Indonesia, Malaysia, and Thailand
	STD Er	0.023	0.008	STD Er	0.021	0.007	STD Er	0.021	0.007	**Case 2:** PRC, Indonesia, Malaysia, and Thailand
	t-stat	0.050	−2.359	t-stat	−0.629	−3.517	t-stat	−0.518	−3.212	**Case 3:** PRC; Malaysia; and Thailand; Indonesia ($t = 1, 3$); Philippines ($t = 3$)
	p stat	0.961	0.040	p stat	0.549	0.010	p stat	0.616	0.009	
	R-bar sq	0.293		R-bar sq	0.587		R-bar sq	0.459		
	# obs	12		# obs	9		# obs	12		
		α	β		α	β		α	β	
Group 3	Coefficient	−0.071	−0.031	Coefficient	−0.042	−0.024	Coefficient	−0.089	−0.035	**Case 1:** Cambodia, India, Lao PDR, Myanmar, Philippines, Viet Nam
	STD Er	0.031	0.008	STD Er	0.027	0.007	STD Er	0.033	0.008	
	t-stat	−2.282	−3.973	t-stat	−1.584	−3.537	t-stat	−2.711	−4.309	**Case 2:** Cambodia, India, Indonesia, Lao PDR, Myanmar, Philippines, Viet Nam
	p stat	0.039	0.001	p stat	0.132	0.003	p stat	0.017	0.001	
	R-bar sq	0.496		R-bar sq	0.39		R-bar sq	0.539		**Case 3:** Cambodia; India; Indonesia ($t = 2$); Lao PDR; Myanmar; Philippines ($t = 1, 2$); Viet Nam
	# obs	16		# obs	19		# obs	16		

Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China.
Source: Author's calculations.

Q: What is the general result about convergence?

Figure 8. **Three Groupings of Economies—Case 1**



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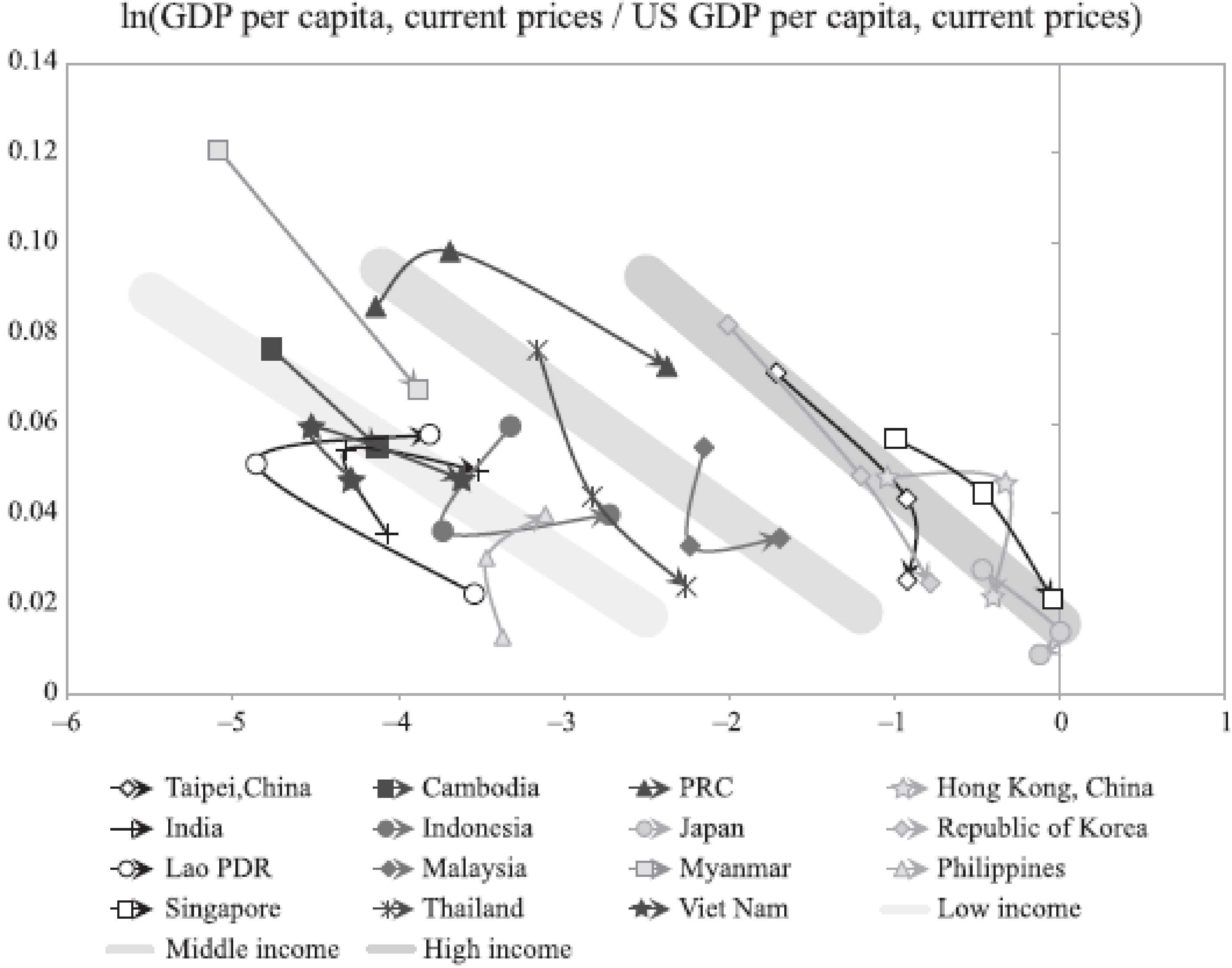
Source: Author's calculations.

Figure 9. **Three Groupings of Economies—Case 2**

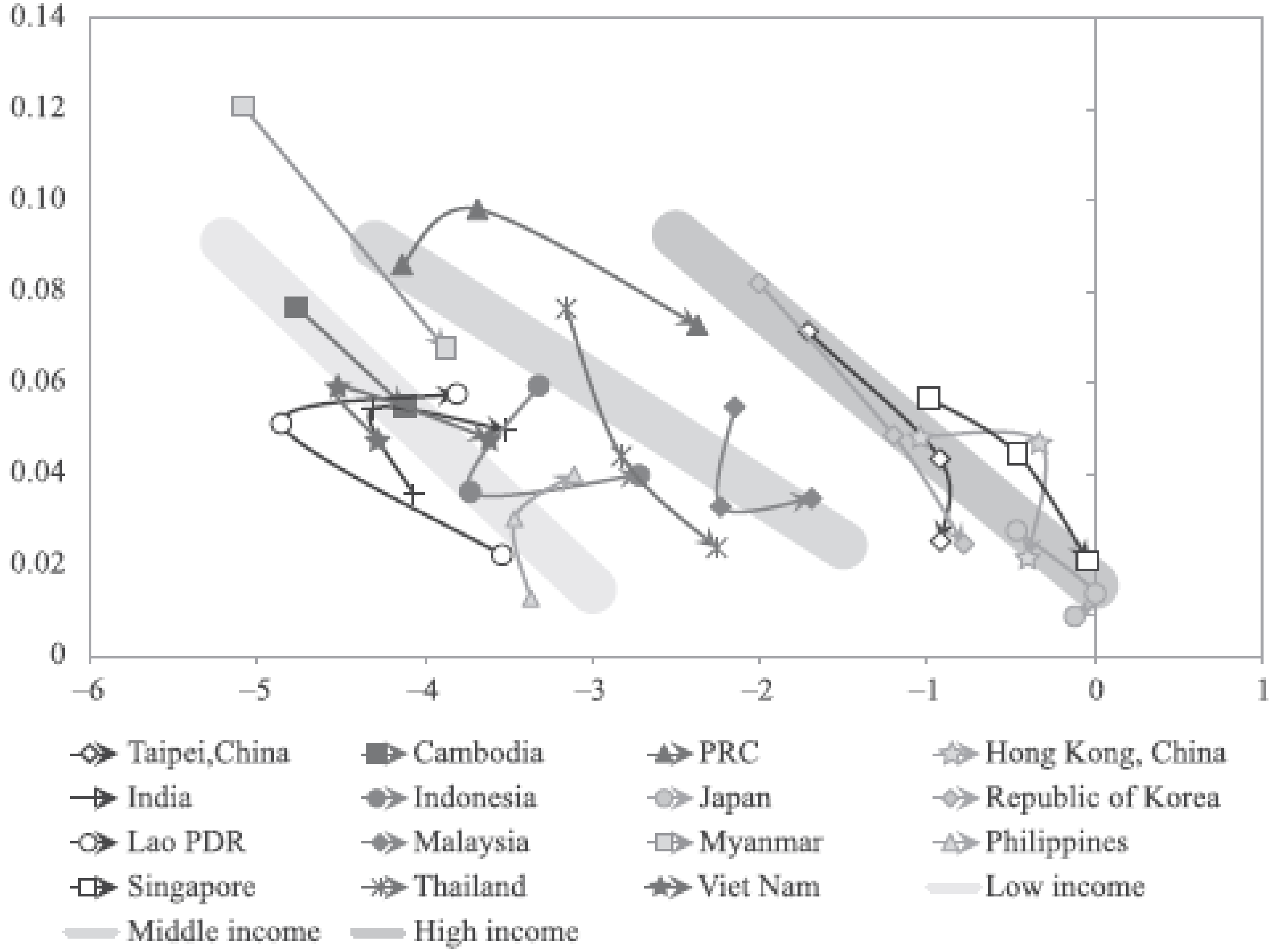


GDP = gross domestic product, Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China, US = United States.

Source: Author's calculations.

Figure 10. Three Groupings of Economies—Case 3

ln(GDP per capita, current prices / US GDP per capita, current prices)



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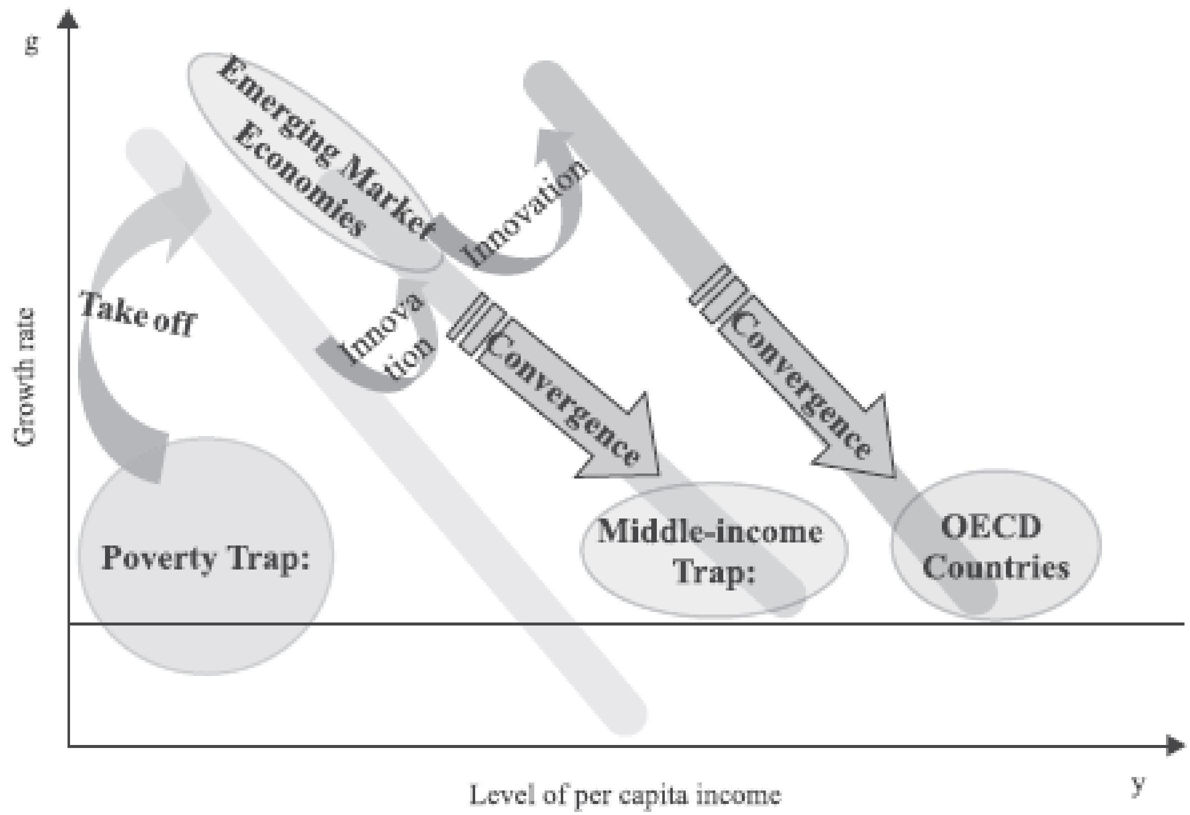
Source: Author's calculations.

Figure 11. **Punctuated Conditional**



OECD = Organisation for Economic Co-operation and Development.
Source: Author's illustration.

Q: What is necessary to have a jump between different growth paths?