DETERMINANTS OF GROWTH
IN LOW-INCOME ASIA

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Determinants of Growth in Low-Income Asia

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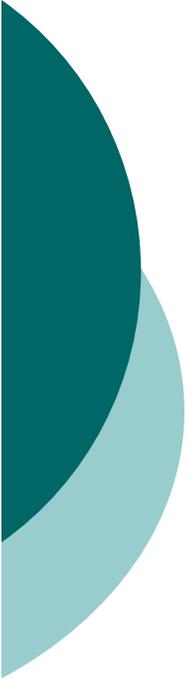
Questions

- What are the determinants of growth in low-income Asia?
- What can be learned from the growth experience of emerging-Asia?
- What are the policy implications of the analysis?

Outline

I. Stylized facts of GDP growth

II. Econometric model

III. Comparative exercise low-income and emerging Asia

IV. Policy recommendations

Growth in Asia has been higher than the world average...

Average of Real Growth in 1970 to 2000
(In percent)
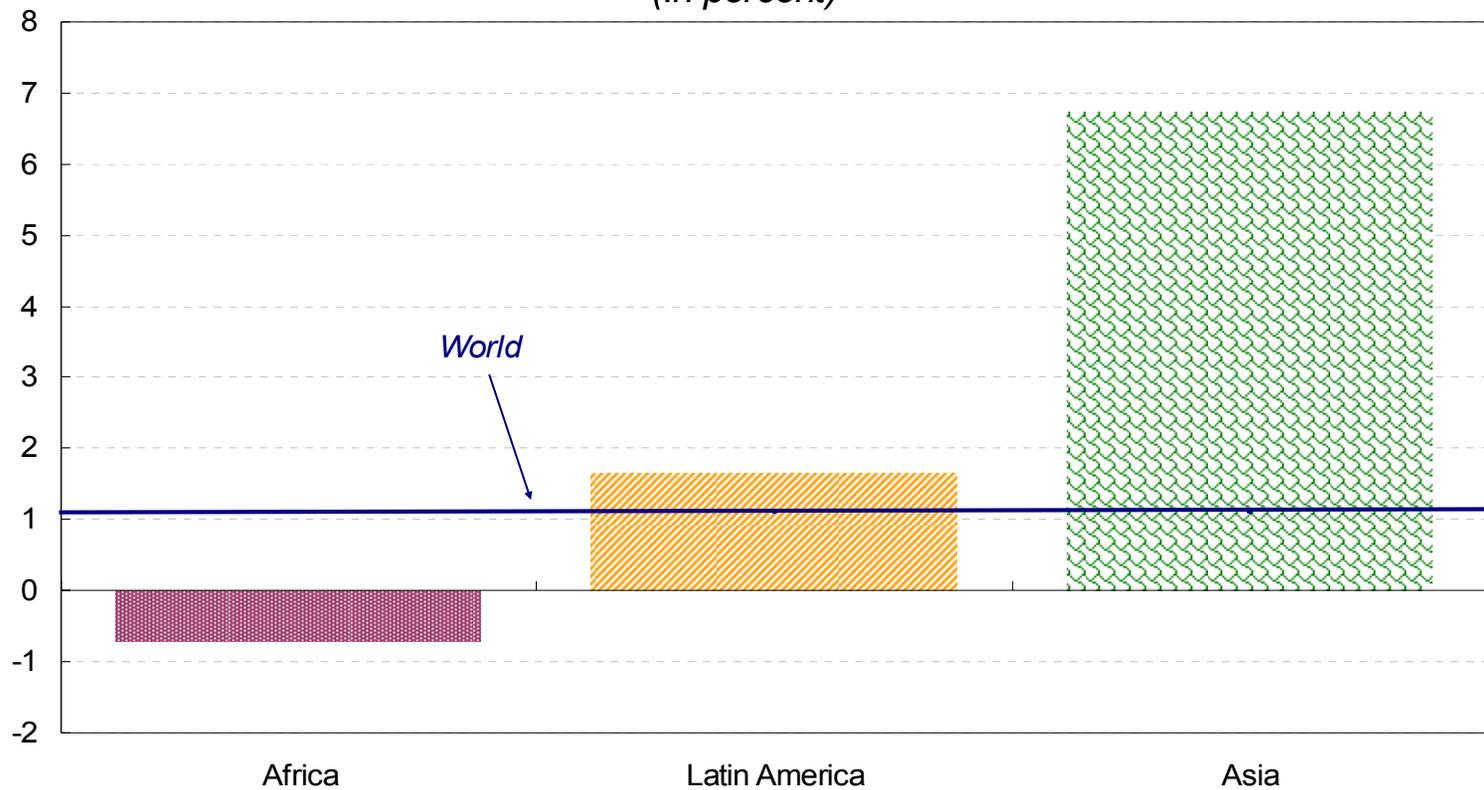
...but differences in performance have been significant within Asia.

Average of Real Growth in 1970–2000
(In percent)
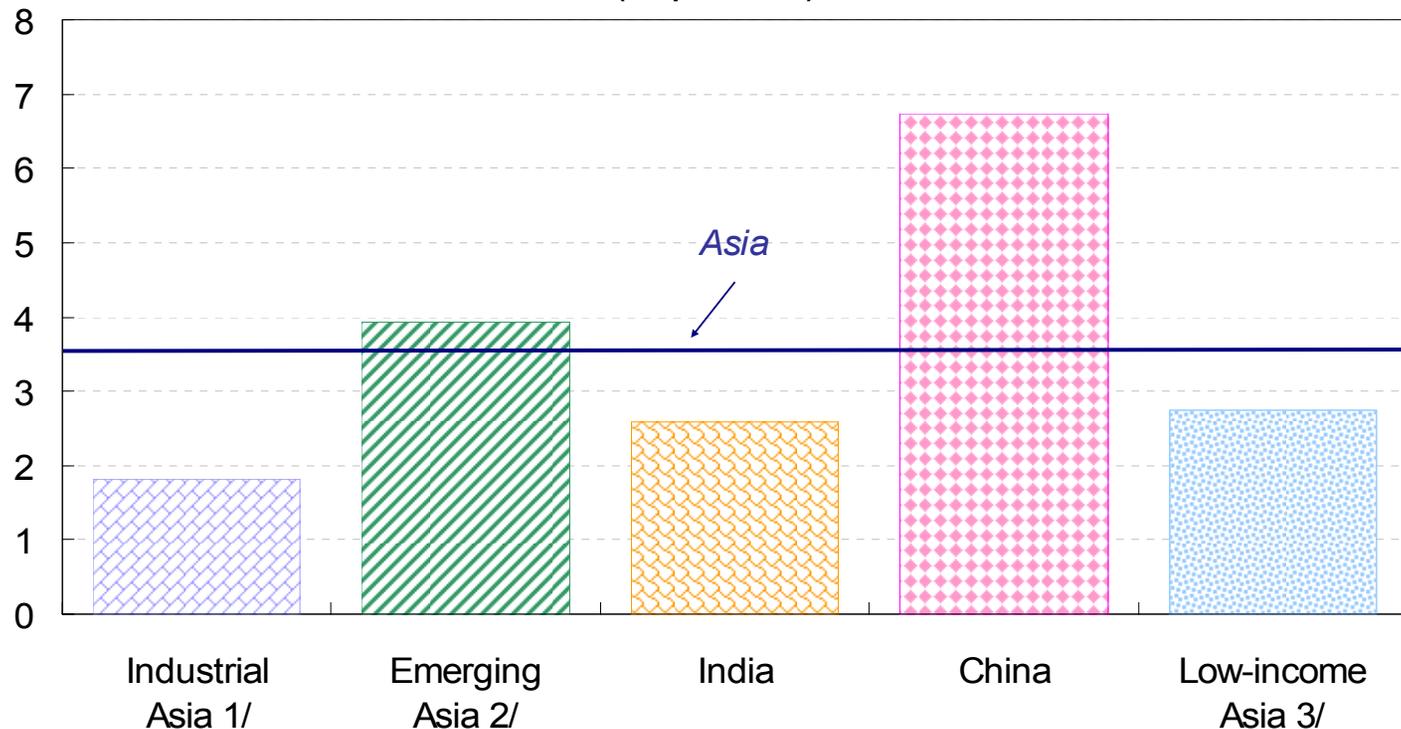
1/ Industrial Asia consists of Australia, Japan, and New Zealand.

2/ Emerging Asia consists of Indonesia, Korea, Malaysia, Philippines, Singapore, and Thailand.

3/ Low-income Asia consists of Bangladesh, Bhutan, Cambodia, Lao P.D.R., Mongolia, Myanmar, Nepal, Sri Lanka, and Vietnam.

II. Econometric Model

○ Dataset covers 146 developing countries in the period 1970-2000.

○ Standard growth model (Barro and Sala-i-Martin, 2004)

$$GDPgrowth_{it} = \alpha \log(GDP_{i,t-1}) + \mathbf{X}'_{i,t}\boldsymbol{\beta}_1 + v_i + \varepsilon_{it}$$

$$i = 1,...,N \quad t = 1,...,T_i$$
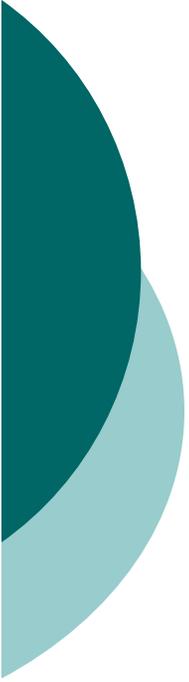
Explanatory Variables

- **Investment/GDP**
- **Government consumption/GDP**
- **Openness**
- **Enrolment in primary school**
- **Rule of law**
- Inflation
- Growth of terms of trade
- Political instability (cabinet changes)
- Democracy
- Fertility
- Decade dummies
- Country dummies

Cross-Country Growth Regressions

Dependent Variable: Real Per Capita GDP Growth	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Lagged log (real per capita GDP)	-1.07 (0.324) ***	-7.55 (1.110) ***	-7.77 (1.115) ***	-8.35 (1.142) ***	-7.60 (1.114) ***	-7.61 (1.114) ***	-7.55 (1.115) ***	-7.63 (1.128) ***	-7.84 (1.129) ***	-8.67 (1.199) ***	-0.88 (0.321) ***	-0.89 (0.324) ***
Enrollment in primary school	0.03 (0.010) ***	0.04 (0.017) ***	0.04 (0.017) ***	0.05 (0.017) ***	0.04 (0.017) **	0.04 (0.017) **	0.04 (0.017) **	0.04 (0.017) **	0.04 (0.017) ***	0.05 (0.017) ***	0.03 (0.011) ***	0.03 (0.011) **
Investment/GDP	0.16 (0.029) ***	0.21 (0.037) ***	0.19 (0.039) ***	0.18 (0.039) ***	0.21 (0.037) ***	0.21 (0.037) ***	0.21 (0.037) ***	0.21 (0.037) ***	0.21 (0.037) ***	0.20 (0.037) ***	0.16 (0.029) ***	0.16 (0.029) ***
Government expenditures/GDP	-0.09 (0.021) ***	-0.19 (0.032) ***	-0.19 (0.032) ***	-0.18 (0.033) ***	-0.20 (0.032) ***	-0.20 (0.032) ***	-0.19 (0.033) ***	-0.19 (0.033) ***	-0.18 (0.033) ***	-0.17 (0.034) ***	-0.08 (0.020) ***	-0.09 (0.020) ***
Openness	-0.01 (0.007) *	0.04 (0.012) ***	0.04 (0.012) ***	0.04 (0.012) ***	0.04 (0.012) ***	0.04 (0.012) ***	0.04 (0.013) ***	0.04 (0.013) ***	0.04 (0.012) ***	0.04 (0.012) ***	-0.01 (0.007) *	-0.01 (0.007)
Inflation	-0.02 (0.004) ***	-0.02 (0.004) ***	-0.02 (0.004) ***	-0.02 (0.004) ***	-0.02 (0.004) ***	-0.02 (0.004) ***	-0.02 (0.004) ***	-0.02 (0.004) ***	-0.02 (0.004) ***	-0.02 (0.004) ***	-0.02 (0.003) ***	-0.02 (0.003) ***
Cabinet changes	-1.38 (0.254) ***	-1.23 (0.258) ***	-1.20 (0.258) ***	-1.18 (0.257) ***	-1.23 (0.258) ***	-1.23 (0.258) ***	-1.24 (0.259) ***	-1.23 (0.258) ***	-1.24 (0.258) ***	-1.23 (0.257) ***	-1.37 (0.254) ***	-1.37 (0.254) ***
Democracy	0.02 (0.036)	-0.01 (0.046)	0.00 (0.046)	0.00 (0.046)	-0.01 (0.047)	-0.01 (0.047)	-0.01 (0.047)	-0.01 (0.046)	0.00 (0.047)	0.01 (0.047)	0.01 (0.035)	0.02 (0.035)
Terms of trade growth	0.19 (1.082)	0.65 (1.142)	0.71 (1.141)	0.75 (1.138)	0.64 (1.143)	0.64 (1.143)	0.65 (1.146)	0.62 (1.145)	0.60 (1.142)	0.59 (1.139)	0.19 (1.085)	0.19 (1.084)
Fertility	0.17 (0.367)	-0.65 (0.647)	-0.44 (0.654)	-0.35 (0.652)	-0.68 (0.650)	-0.68 (0.650)	-0.65 (0.649)	-0.64 (0.649)	-0.88 (0.672)	-1.03 (0.665)	0.23 (0.359)	0.24 (0.362)
Rule of law	2.73 (0.523) ***										2.60 (0.513) ***	2.66 (0.517) ***
Investment/GDP * low-income Asia			-0.07 (0.193)	-0.04 (0.193)								
Investment/GDP * emerging Asia, excluding China and India			0.24 (0.122) **									
Investment/GDP * emerging Asia				0.33 (0.116) ***								
Rule of law * low-income Asia											-2.96 (2.463)	-3.00 (2.493)
Rule of law * emerging Asia, excluding China and India												-0.69 (1.204)
Rule of law * emerging Asia											-0.27 (1.211)	
Government expenditures/GDP * low-income Asia									-0.16 (0.253)	-0.18 (0.252)		
Government expenditures/GDP * emerging Asia, excluding China and India										-0.33 (0.140) **		
Government expenditures/GDP * emerging Asia									-0.20 (0.163)			
Openness * low-income Asia							0.00 (0.074)	0.00 (0.074)				
Openness * emerging Asia, excluding China and India								0.02 (0.033)				
Openness * emerging Asia							0.00 (0.033)					
Enrolment in primary school * low-income Asia					0.04 (0.063)	0.04 (0.063)						
Enrolment in primary school * emerging Asia					-0.01 (0.106)							
Enrolment in primary school * emerging Asia, excluding China and India						0.00 (0.113)						
Observations	801	801	801	801	801	801	801	801	801	801	801	801
R-squared		0.17	0.18	0.18	0.17	0.17	0.17	0.17	0.17	0.18		
Number of countries	84	84	84	84	84	84	84	84	84	84	84	84

1/ Regressions include a constant and dummies for decades. Estimates are obtained from a panel dataset of 84 developing countries in the period 1970–2000 with fixed effects with exception of regressions in columns (1), (11) and (12) estimated using random effects; robust standard errors in parentheses; and * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.
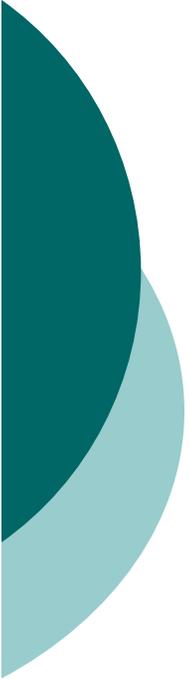
Investment

Average of Investment Ratio in 1970–2000
(In percent of GDP)

1/ Industrial Asia consists of Australia, Japan, and New Zealand.
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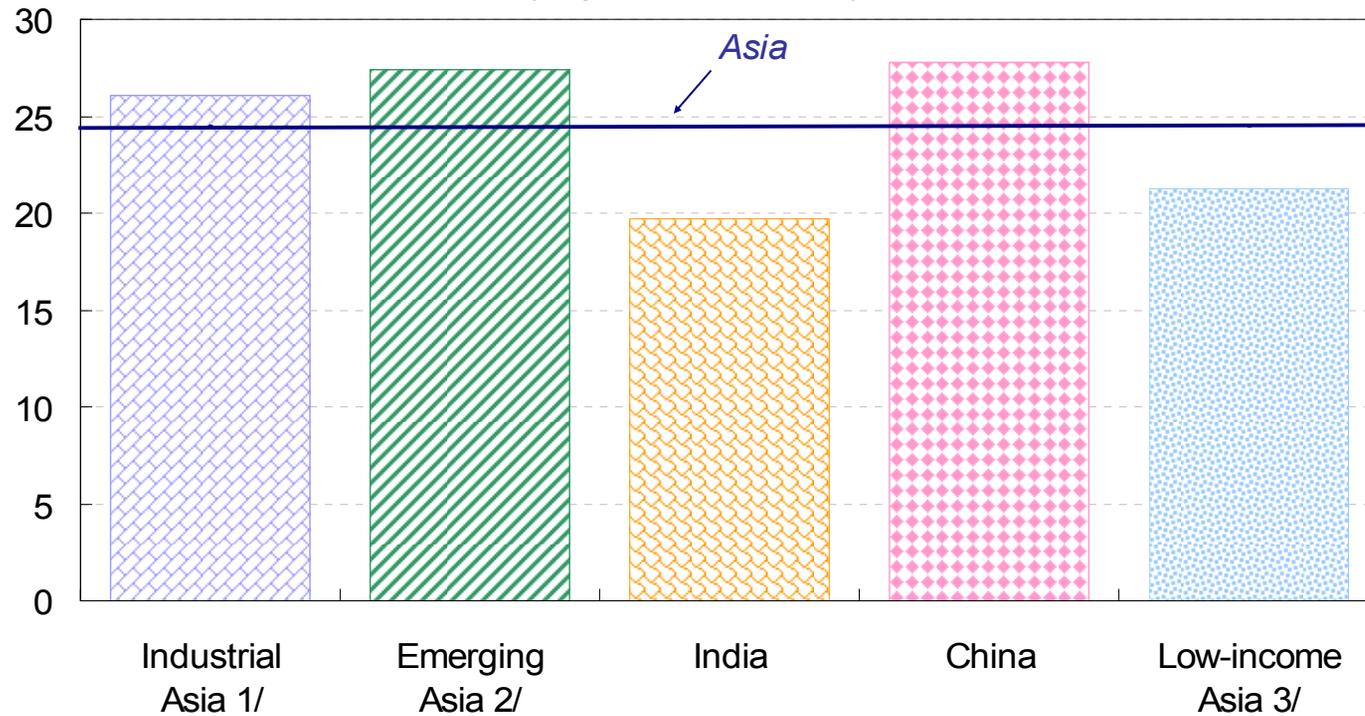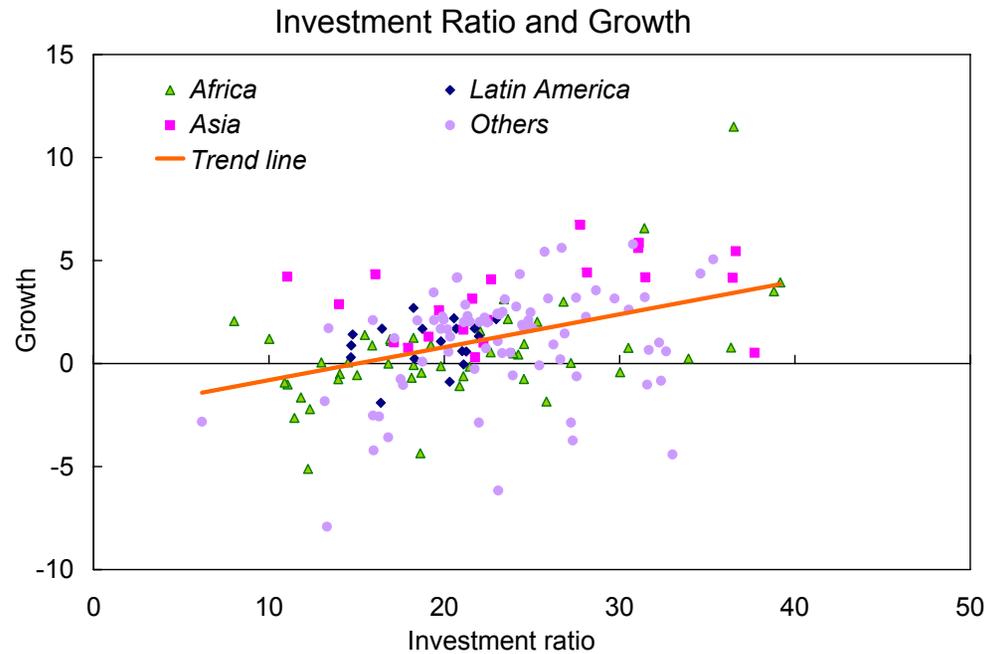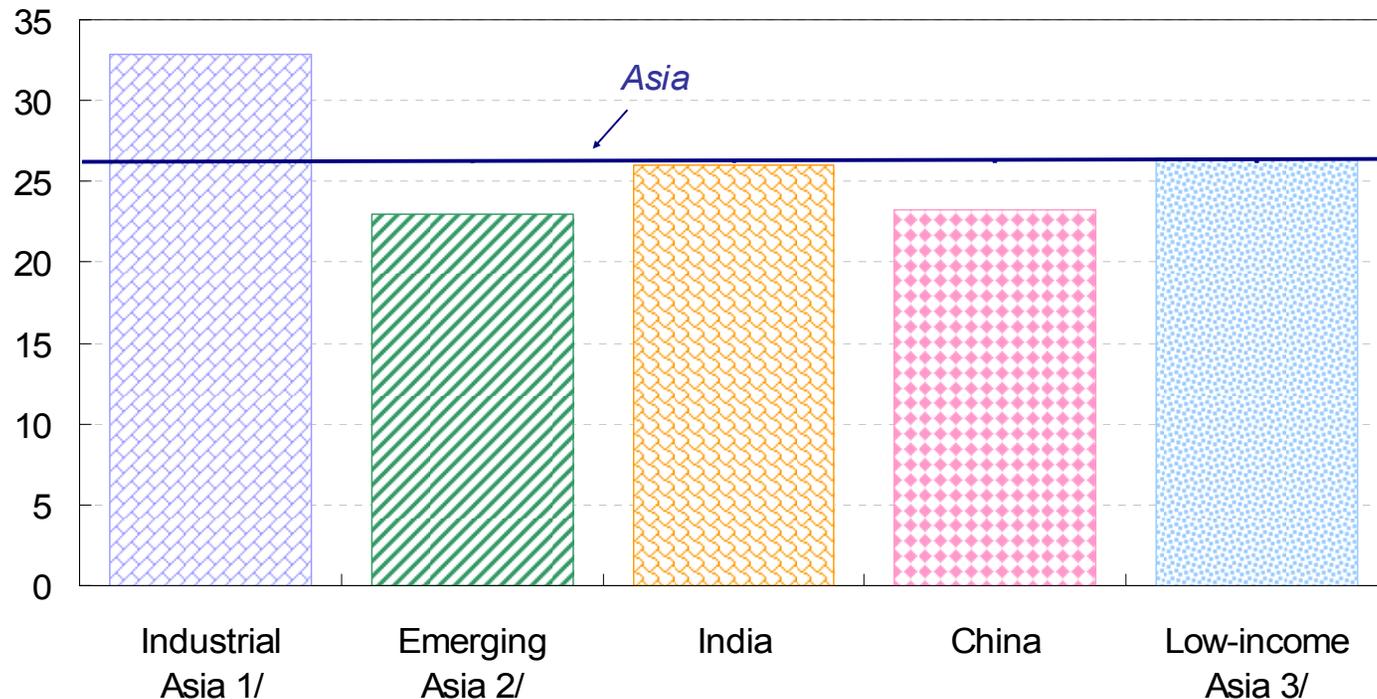
Marginal Effects on Growth

Investment Ratio and Growth

Low-income Asia	0.19
Emerging Asia	0.51
Emerging Asia, excluding India and China	0.43
Rest of developing countries	0.19

Government Consumption

Average Government Consumption in 1970–2000
(In percent of GDP)

Asia

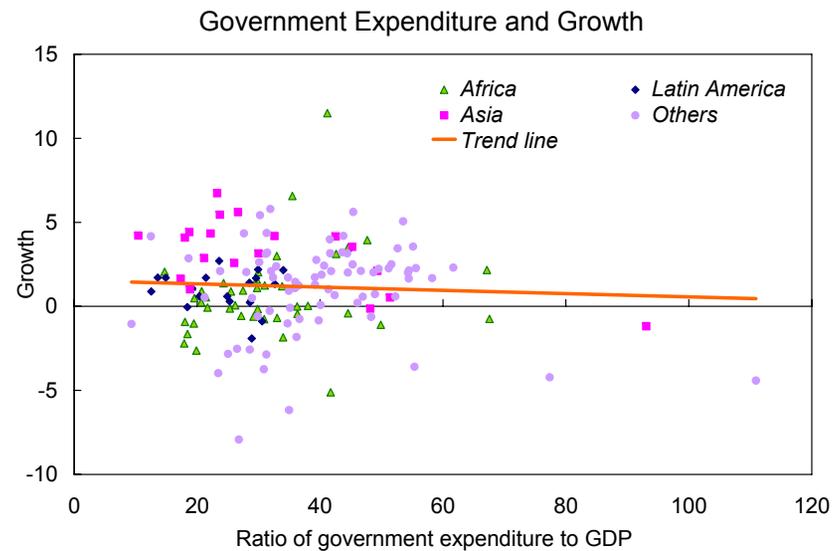|				
Industrial Asia 1/	Emerging Asia 2/	India	China	Low-income Asia 3/

1/ Industrial Asia consists of Australia, Japan, and New Zealand.
2/ Emerging Asia consists of Indonesia, Korea, Malaysia, Philippines, Singapore, and Thailand.
3/ Low Income Asia consists of Bangladesh, Bhutan, Cambodia, Lao PDR, Mongolia, Myanmar, Nepal, Sri Lanka, and Vietnam.

Marginal Effects on Growth

Government Expenditure and Growth

Low-income Asia	-0.18
Emerging Asia	-0.51
Emerging Asia, excluding India and China	-0.18
Rest of developing countries	-0.17

Openness

Average of Openness in 1970–2000
(In percent of GDP)

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3/ Low Income Asia consists of Bangladesh, Bhutan, Cambodia, Lao PDR, Mongolia, Myanmar, Nepal, Sri Lanka, and Vietnam.
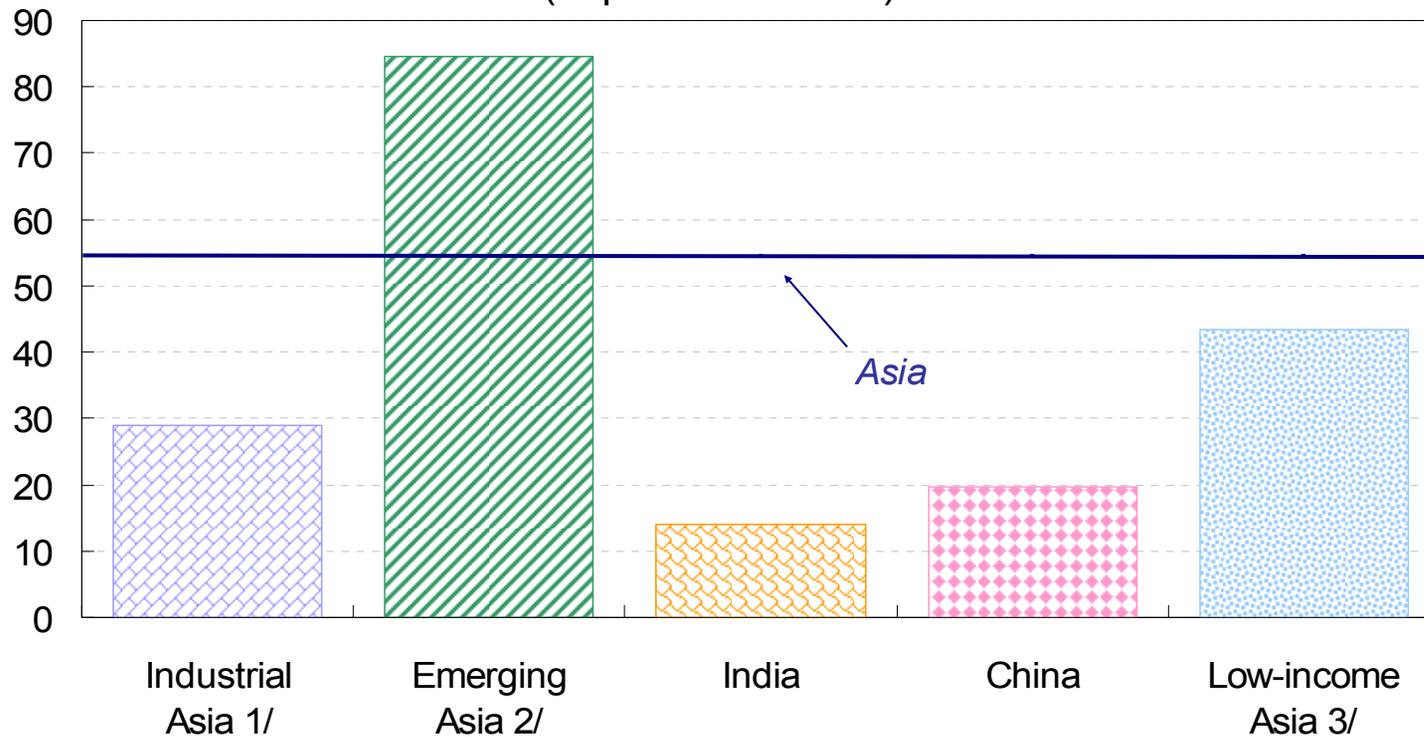
Marginal Effects on Growth

Openness and Growth

Low-income Asia	0.04
Emerging Asia	0.04
Emerging Asia, excluding India and China	0.04
Rest of developing countries	0.04

Primary Scholl Enrolment

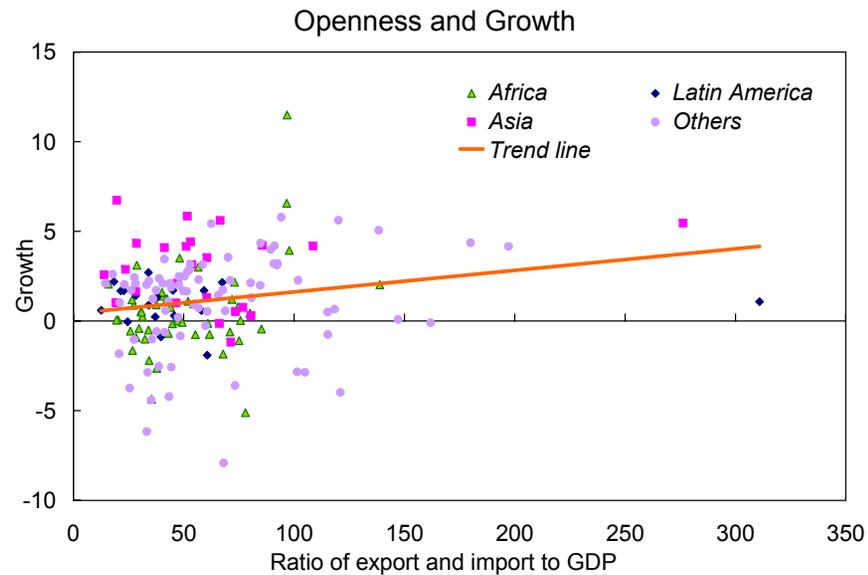## Average of Primary Enrollment in 1970–2000

1/ Industrial Asia consists of Australia, Japan, and New Zealand.
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3/ Low Income Asia consists of Bangladesh, Bhutan, Cambodia, Lao PDR, Mongolia, Myanmar, Nepal, Sri Lanka, and Vietnam.
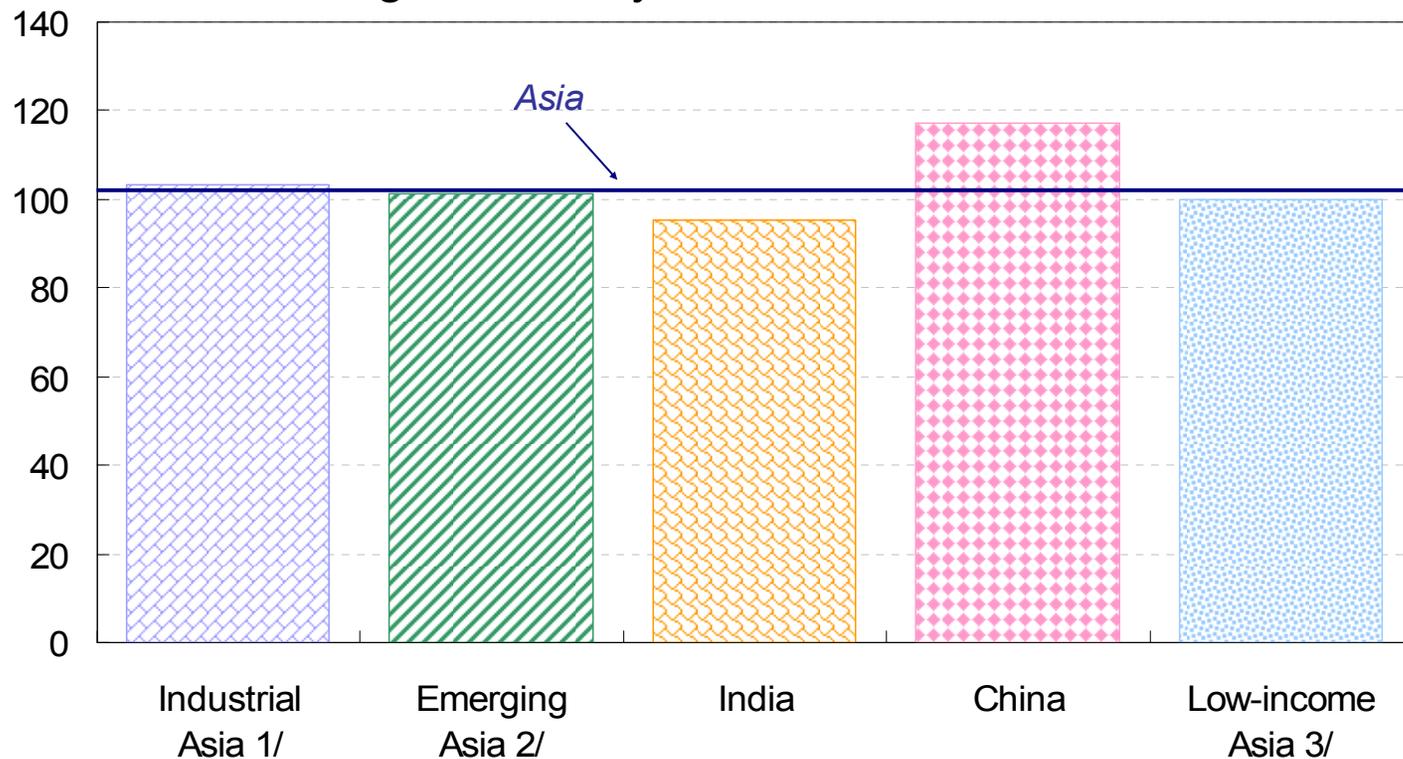
Marginal Effects on Growth

Primary Enrollment and Growth

Low-income Asia	0.04
Emerging Asia	0.04
Emerging Asia, excluding India and China	0.04
Rest of developing countries	0.04

Rule of Law

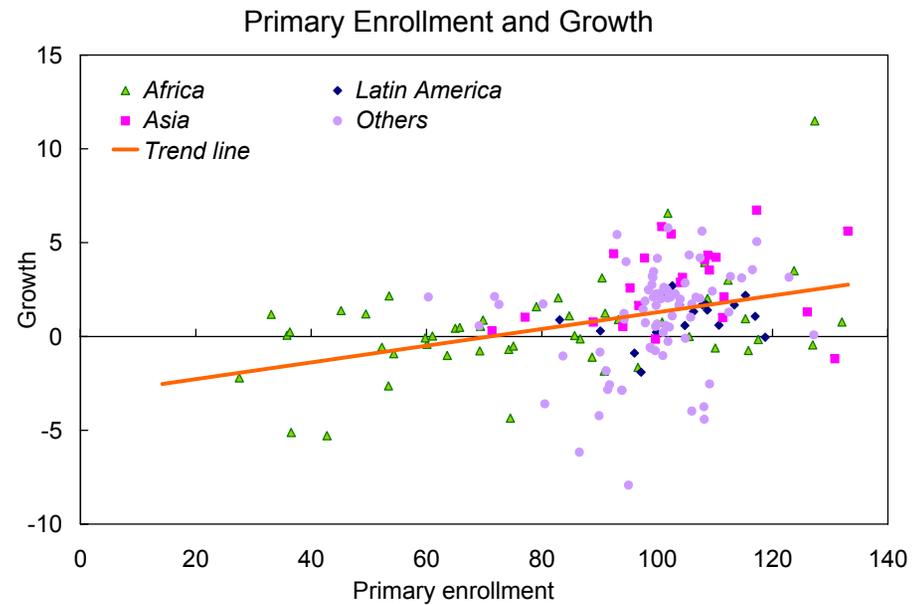## Average of Rule of Law in 1970–2000

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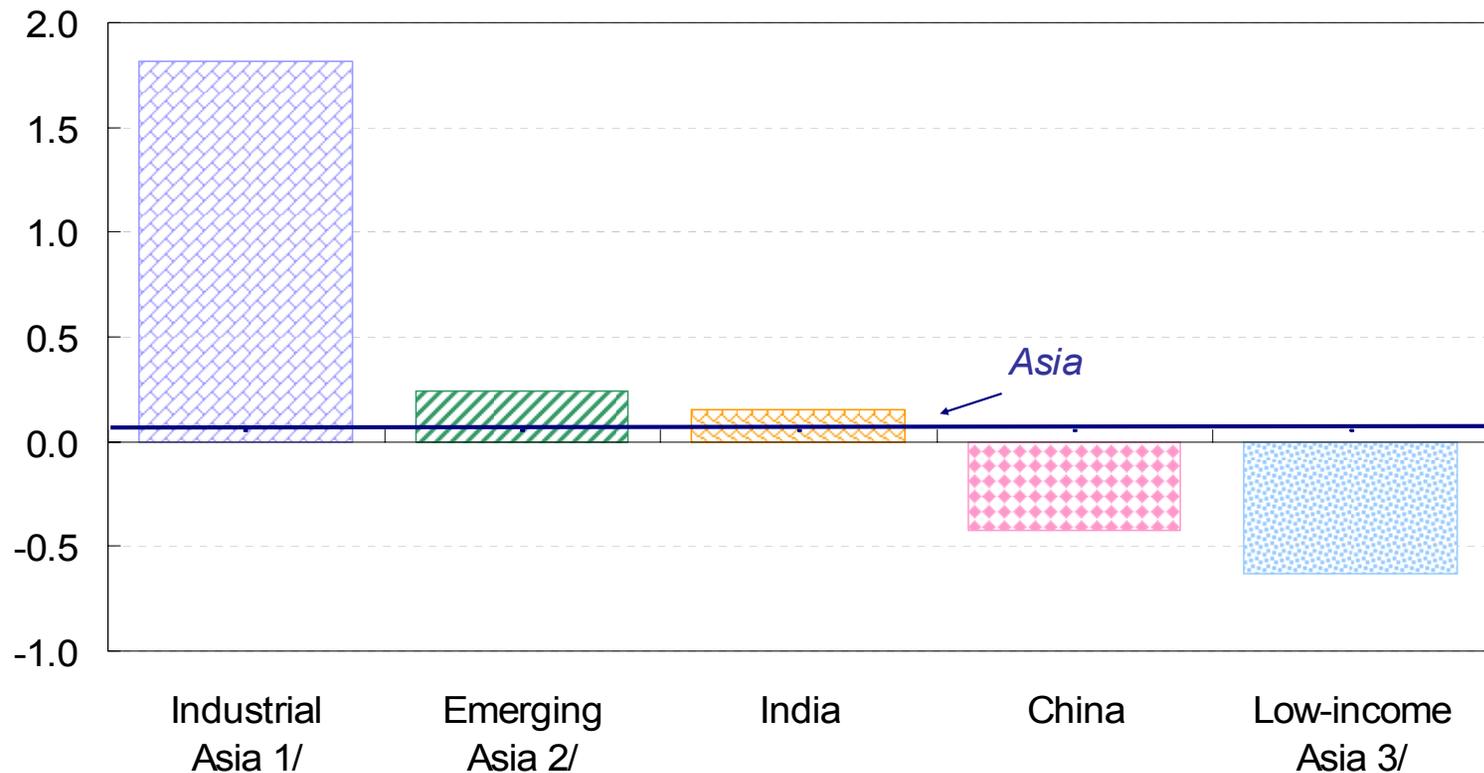
Marginal Effects on Growth

Rule of Law and Growth
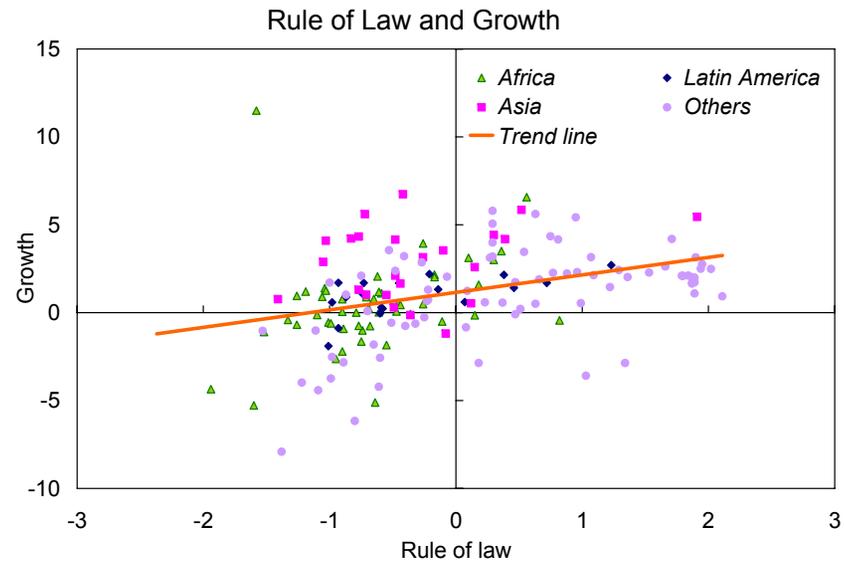
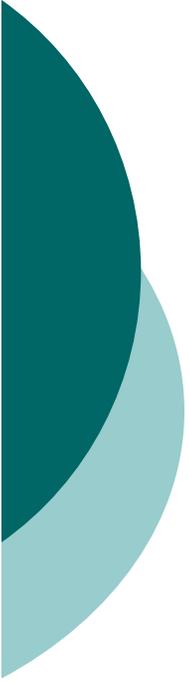| Low-income Asia | 2.60 |
Emerging Asia	2.60
Emerging Asia, excluding India and China	2.66
Rest of developing countries	2.60

Main Findings from Comparative Analysis

- The effect of investment on growth in emerging Asia is around three times bigger than the effect in low-income Asia pointing to differences in MPK.

- Government consumption/GDP is higher in low-income Asia than in emerging Asia.

- Emerging Asia is more open to trade than low-income Asia by a margin of over 30 percentage points of GDP.

- Enrolment in primary schooling is similar between both groups and is not the main driver of difference in growth performance.

- The difference in the index for rule of law between emerging and low-income Asia is high and its marginal effect on growth strong.

III. Policy Recommendations

- Raise the marginal productivity of capital by:
  1. improving the business climate
  2. deepening the financial sector
  3. investing in human capital through training and education
  4. removing barriers to the free flow of technology
- Remove barriers to trade
- Improve the judicial system

Doing Business Rankings

Country	Ease of Doing Business	Starting a Business	Dealing with Licenses	Employing Workers	Registering Property	Getting Credit	Protecting Investors	Paying Taxes	Trading Across Borders	Enforcing Contracts	Closing a Business
Average low-income Asia	108.3	78.0	94.8	99.9	82.1	113.0	84.0	76.6	128.9	103.0	116.4
Bangladesh	88	68	67	75	167	48	15	72	134	174	93
Bhutan	138	79	145	116	41	159	118	68	150	56	151
Cambodia	143	159	159	124	100	174	60	16	114	118	151
Lao P.D.R.	159	73	130	71	148	173	170	36	161	146	151
Mongolia	45	55	34	61	17	65	19	56	162	41	115
Myanmar	...	...	...	...	...	...	...	...	...	...	...
Nepal	100	49	127	150	25	101	60	88	136	105	95
Sri Lanka	89	44	71	98	125	101	60	157	99	90	59
Vietnam	104	97	25	104	34	83	170	120	75	94	116
Average emerging Asia	69.4	88.9	91.0	80.6	64.0	51.8	53.3	90.9	60.1	75.6	74.1
Indonesia	135	161	131	140	120	83	60	133	60	145	136
Korea	23	116	28	110	67	21	60	48	28	17	11
Malaysia	25	71	137	38	66	3	4	49	46	81	51
Philippines	126	108	113	118	98	101	151	106	63	59	147
Singapore	1	11	8	3	12	7	2	8	4	23	2
Thailand	18	28	3	46	18	33	33	57	103	44	38
India	134	88	155	112	110	65	33	158	139	173	133
China, People's Republic of	93	128	153	78	21	101	83	168	38	63	75
Average emerging Asia, excluding China and India	54.7	82.5	70.0	75.8	63.5	41.3	51.7	66.8	50.7	61.5	64.2

Source: World Bank, *Doing Business Rankings* .

1/ Lower values of the index indicates lower costs of doing business.
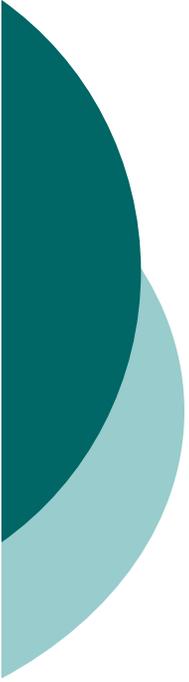
Private Credit/GDP

Average low-income Asia	22.4
Bangladesh	27.4
Bhutan	17.1
Cambodia	8.1
Lao P.D.R.	5.9
Mongolia	29.5
Myanmar	6.5
Nepal	27.7
Sri Lanka	28.5
Vietnam	51.1
Average emerging Asia	78.9
Indonesia	21.0
Korea	125.4
Malaysia	121.6
Philippines	33.5
Singapore	122.7
Thailand	95.2
India	32.8
China, People's Republic of	…
Average emerging Asia, excluding China and India	86.6

Source: IMF, *International Financial Statistics* .

1/ As of 2004, with the exception of Nepal (2000) and Myanmar (2003).
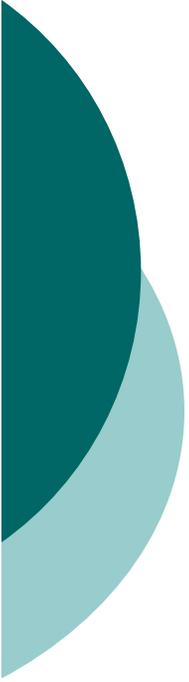
Average Tariff Rates

Country	Year	Tariff Rate
Average low-income Asia	...	12.9
Vietnam	2005	16.7
Sri Lanka	2006	10.8
Nepal	2005	13.9
Myanmar	2005	5.3
Mongolia	2005	4.3
Lao PDR	2005	9.5
Cambodia	2003	16.9
Bhutan	2005	23.0
Bangladesh	2006	16.0
Average emerging Asia	...	9.0
Indonesia	2005	7.0
Korea	2004	11.7
Malaysia	2005	7.4
Philippines	2005	6.3
Singapore	2005	0.0
Thailand	2005	12.0
China, People's Republic of	2005	9.8
India	2005	17.8
Average emerging Asia, excluding China and India	...	7.4

Source: World Bank, *World Integrated Trade Solutions* (WITS).