THE ROLE OF HUMAN CAPITAL IN MALAYSIA'S ECONOMIC DEVELOPMENT

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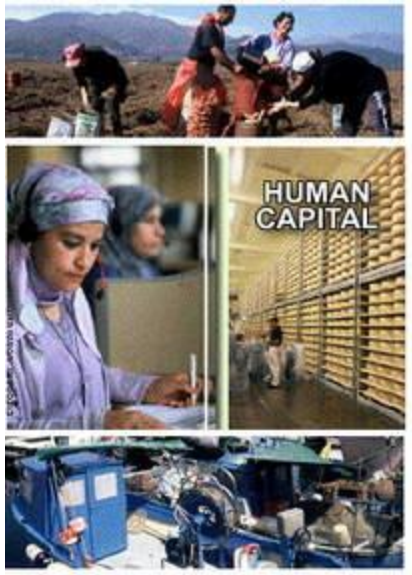

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INTRODUCTION

- For a number of decades Malaysia was heralded as a model of economic development for other countries to emulate (World Bank, 1993)
- Since the late 1990s, however, the onset of premature deindustrialization has cast a different light on the Malaysian experience
  - rapidly cooling manufacturing sector
  - the lack of human capital

INTRODUCTION

- The aggressive promotion of export processing zones since 1972 assisted industrialization to stimulate structural change in Malaysia with manufacturing overtaking agriculture in terms of sectoral contribution to become Malaysia's leading sectoral contributor to GDP since 1984 and since 1988 (Malaysia, 2000)
- Foreign direct investment (FDI) helped make Malaysia a major exporter of the light manufactured goods of electronics and clothing since the 1980s
- Domestic firms became the prime driver of processed vegetable oils and fats exports from the 1980s

INTRODUCTION

- Massive inflows of FDI into the manufacturing sector also caused serious tightening of the labor market by the mid-1990s (Mohamad Ariff, 1991; Rasiah, 1995)
- The focus of industrial policy shifted towards industrial deepening as the government attempted to take advantage of low unemployment levels (which reached 2.7 percent in 1995) to stimulate structural change into high value added activities
- Following the introduction of the Way Forward initiative by the government in 1991 targeted at making Malaysia a developed economy by 2020, a series of instruments were introduced to promote industrial deepening, alongside the Action Plan for Industrial Technology Development (APITD) of 1990 (Malaysia, 1991)

INTRODUCTION

- Unfortunately, institutional weaknesses restricted Malaysia's capacity to stimulate structural change from low to high value added activities
- The most fundamental shortcoming was the inability of the government to produce quality human capital from the expansion in tertiary education, as well as, to make its brain programme successful in attracting its diaspora embodied with tacit knowledge from abroad
- The growing shortage of human capital since 1990 forced firms to import foreign labour
- Unfortunately, the prime target of firms to sustain their operations was low skilled labour, which aggravated the situation by reducing the pressure to upgrade (Rasiah, 1995; Henderson and Phillips, 2007)
- Hence, while South Korea, Taiwan and Singapore have successfully evolved a critical mass of human capital to spearhead sustain structural change from low to high value added activities, Malaysia has remained entrenched among the upper middle income countries

OBJECTIVE

- To examine the contribution of human capital to Malaysia's economic development.
- To examine why Malaysia has not managed to generate the requisite human capital to propel the country's growth to developed status.

THEORETICAL CONSIDERATIONS

Solow (1956) Growth Model	**Capital and Labour as factors of production**
Solow-Romer Growth model (1986)	Endogenization of technology embodied in labour and capital
Contribution of HC to growth	Barro etc
Vogel, E (1991)	Successful government policies to expand supply of quality HC
Saxenian, A.L. (2006)	The role of HC from abroad in the growth of dynamic firms in Korea, Taiwan, India and China
Synthesis	Combination of domestic and foreign sources knowledge embodied in HC.

METHODOLOGY & DATA

- The paper used descriptive statistics and scatter plots to study the role of human capital in explaining the economic development
- Data is compiled from the “World Development Indicators” provided by the World Bank for the period of 1996 to 2011.
- Income classification is based on the World Bank Atlas Method

HUMAN CAPITAL AND INNOVATION

Table 1: Descriptive Statistics (1996-2010)

	Innovation Input			Innovation Output			Economic Progress
	RDP	TERTIARY	RDEX	SCJ	TM	PAT	GNI
Upper Middle Income							
Mean	793.2	34.4	0.6	6092.3	81921.5	12761.2	4699.2
Median	737.3	31.1	0.5	1544.9	19790.0	682.0	3993.4
Maximum	2131.1	67.6	1.8	89894.4	1388399.0	415829.0	10806.4
Minimum	71.7	5.1	0.1	33.9	2873.0	2.0	834.1
Std. Dev.	521.3	15.5	0.3	14738.6	198238.4	51650.1	2417.1
High-Income OECD							
Mean	3516.2	62.9	1.9	18377.8	40774.7	29844.6	27729.6
Median	3154.3	61.7	1.8	5133.1	17754.0	1972.0	25310.0
Maximum	8003.5	101.8	4.1	209898.0	304129.0	384201.0	86850.0
Minimum	1144.6	20.1	0.5	142.6	2095.0	18.0	3760.0
Std. Dev.	1609.5	15.3	0.9	35695.5	52732.3	79829.2	15492.1
Malaysia							
Mean	706.0	30.7	0.7	961.5	22247.1	681.4	5367.4
Median	499.5	30.0	0.7	724.1	24049.0	531.0	5587.7
Maximum	1642.7	37.1	1.1	2092.2	28833.0	1234.0	6364.1
Minimum	152.8	21.8	0.4	387.1	14876.0	193.0	4175.8
Std. Dev.	548.3	5.3	0.3	596.4	4787.9	421.8	791.6

Note: RDP - Researchers in R&D (per million people); Tertiary – Tertiary school enrolment (% gross); RDEX - Research and development expenditure (% of GDP); SCI - Scientific and technical journal articles; TM – Total trademarks; PAT – patent applications by residents; GNI – GNI per capita (current US$) **(change this to constant)**

HUMAN CAPITAL AND INNOVATION

- R&D personal and tertiary enrolment is higher in high-income economies than in the upper-middle income countries
- While Malaysia is classified as upper–middle income economy, the R&D personal and tertiary enrolment is lower than its peers
- Interestingly, Malaysia spent more resources on R&D activities, but the effectiveness of the spending remains uncertain

HUMAN CAPITAL AND INNOVATION

- Lack of focus in human capital development could explain for the ineffectiveness of R&D spending
- World Bank (2010) reported that poor quality of human capital is the major obstacle for investment climate in Malaysia
- Rasiah (2011) found a lack of connection between firms and organisations that entrusted for knowledge creation affecting the local firm's performance

HUMAN CAPITAL AND ECONOMIC DEVELOPMENT

- The role of human capital in the economic development is well established by both neo-classical and evolutionary scholars.
- Economy with stronger human capital development tends to enjoy higher income growth.
- Figure 1 and 2 shows this relationship where the regression line is positive for both, Upper-Middle income and High-income OECD countries

HUMAN CAPITAL AND ECONOMIC DEVELOPMENT

Figure 1: Upper-Middle Income

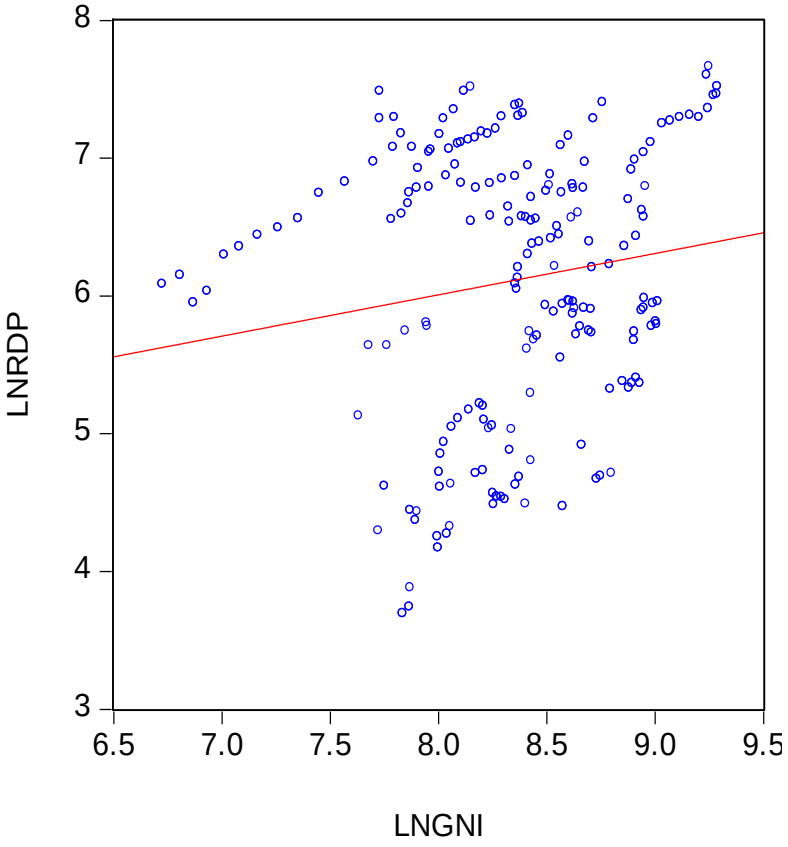
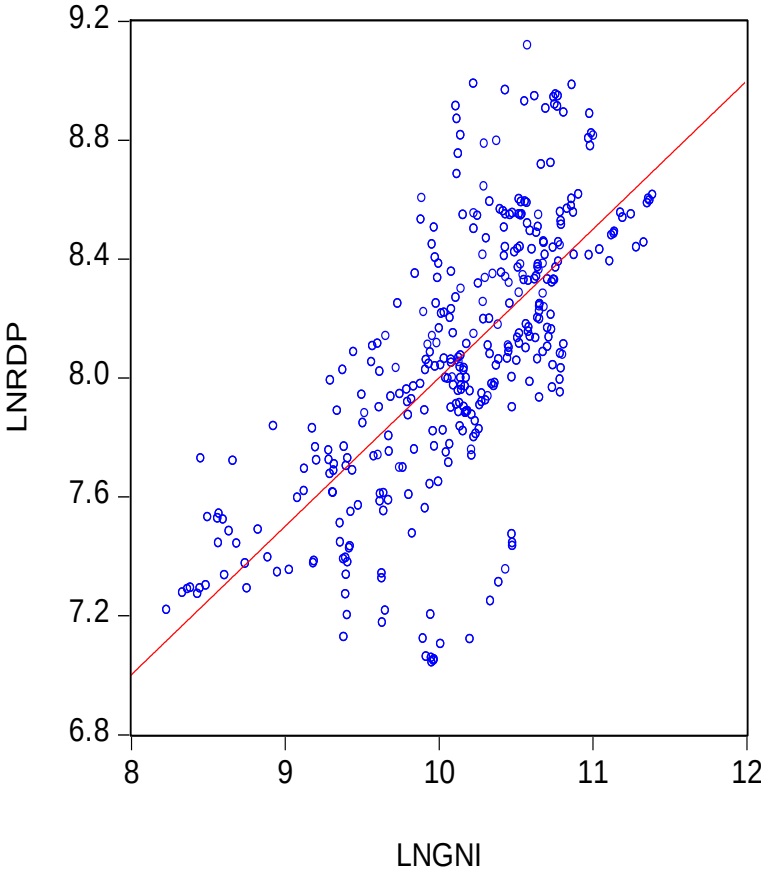


Figure 2: High Income OECD



Note: ln= natural log

HUMAN CAPITAL AND ECONOMIC DEVELOPMENT

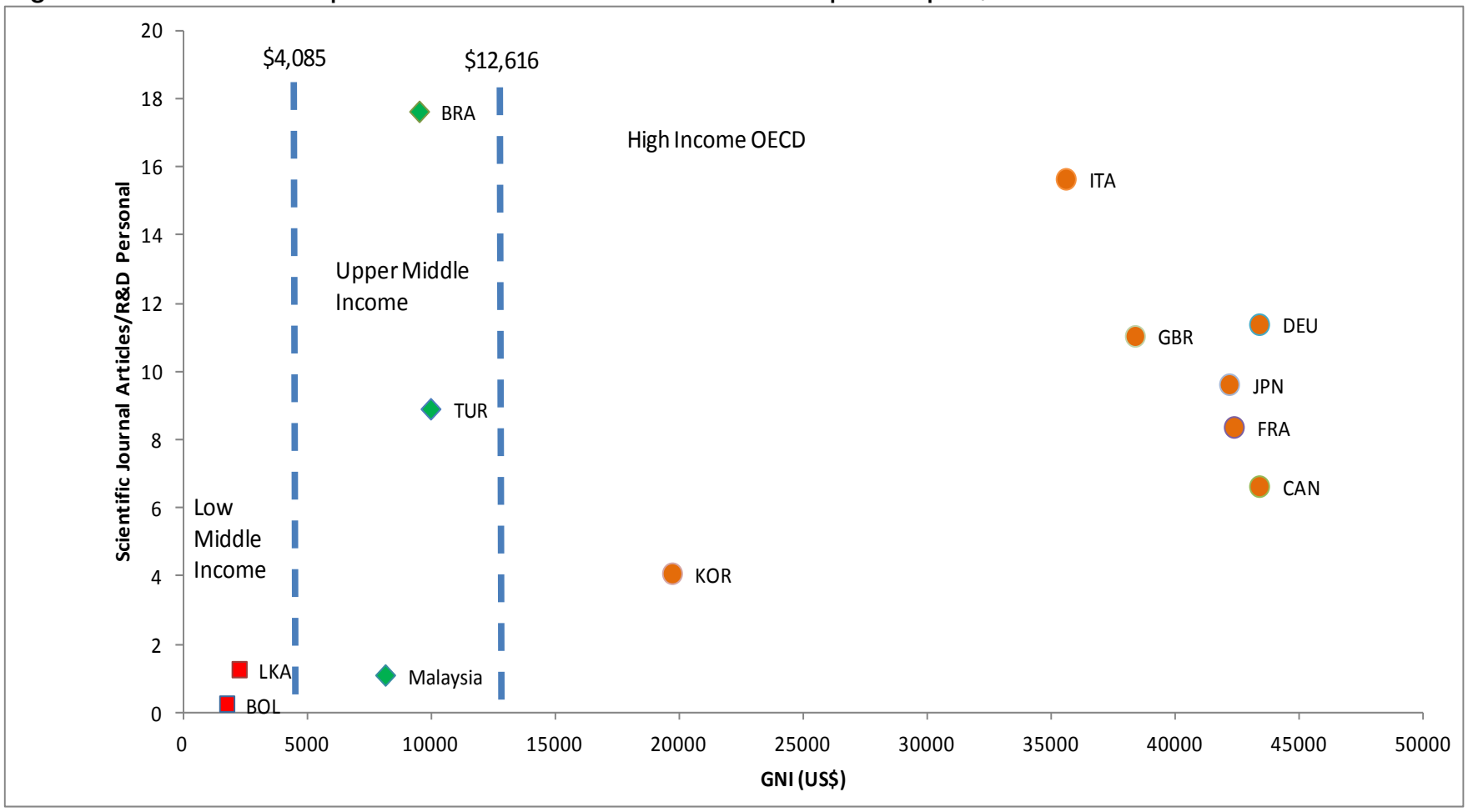
- The role of R&D personal in explaining GNI growth is weaker in the Upper-Middle Income countries compared to the High-income countries
- This is reflected from an almost flat regression line in Upper-Middle income countries compared to positive relationship in the High-income countrie

HUMAN CAPITAL AND ECONOMIC DEVELOPMENT

- This could explain why Malaysia still has enjoyed higher GNI per Capita compared to Upper-Middle income average despite having a weaker human capital and innovation performance (see Table 1)
- We therefore suggest the income growth could be driven by non-innovative economic activities and higher commodity prices
- Nonetheless, further in-depth study is recommended to confirm this relationship

SCIENTIFIC OUTPUT AND ECONOMIC DEVELOPMENT

Figure 3: Scientific Outputs/R&D Personal Ratio and GNI per Capita, 2010



SCIENTIFIC OUTPUT AND ECONOMIC DEVELOPMENT

- Scientific output expressed the effectiveness of human capital development and other formed of innovation inputs.
- A larger number of innovation inputs does not guarantee for higher innovation output, especially when the quality of inputs is lower and the resource allocation to develop innovation capabilities were wrongly targeted.

SCIENTIFIC OUTPUT AND ECONOMIC DEVELOPMENT

- In the case of Malaysia, the ratio of scientific output over R&D personal is very low. In fact the ratio resembles the countries in lower middle income category
- The present condition of its human capital and scientific output is not encouraging. Hence, the policy makers have to revisit human capital and innovation policy to ensure the country's progression become a high-income nation by 2020 is a reality

CHANGES IN TERTIARY EDUCATION AND ECONOMIC GROWTH

- Education is often perceived as one of the most important determinants of growth; education is expected to increase economic growth
- However, recent evidence reveals that the relationship between education and growth is negative
  - seminal paper on growth empirics by Mankiw et al. (1992)
  - Pritchet (2001) and Benhabib and Spiegel (1994)

CHANGES IN TERTIARY EDUCATION AND ECONOMIC GROWTH

- The negative result might be due to data issues and schooling variables as Fuente and Domenech (2000) argue:
  - *"weak data was likely to be one of the main reasons for the discouraging results obtained in the recent empirical literature on human capital and growth"*

CHANGES IN TERTIARY EDUCATION AND ECONOMIC GROWTH

- The choice of data might influence conclusions, especially when the study involves a time dimension
- Different types of data lead to contradictory conclusions (Atkinson and Brandolini, 2001) and policy recommendations
- See Table 2

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Table 2: Education and Growth Relationship (Tertiary School)

Dependent variable: Economic Growth

	Malaysian Educational Statistics	**WDI**	**Barro and Lee (2010)**
	(1)	(2)	(3)
Population	-2.690 (-0.85)	-5.320 (-1.23)	-2.221 (-1.29)
Capital	0.182*** (2.39)	0.232*** (3.13)	0.193*** (4.59)
Tertiary	-0.384 (-0.48)	-0.157 (-1.18)	-1.142** (-1.99)
Constant	5.829 (0.73)	12.172*** (1.10)	6.703* (1.70)
Observations	35	31	49
Adj. R2-squared	0.106	0.273	0.194

Notes: Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1
Data for Population and Capital was obtained from WDI Online, 2010

Source: Abdullah, Abdul Jabbar (2013).

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CHANGES IN TERTIARY EDUCATION AND ECONOMIC GROWTH

- The results show in all specifications or models that capital makes a significant contribution to economic growth in Malaysia, consistent with the predictions of the Solow model for all datasets
- The coefficients of capital are positive and significant while the coefficients for population are negative
- The above results mean that capital formation is an important factor for growth in Malaysia

CHANGES IN TERTIARY EDUCATION AND ECONOMIC GROWTH

- To implement its education policy, Malaysia has been impressive in its public spending on education (Cheong et al., 2011)
- In Table 3, Malaysia's expenditure significantly focuses on tertiary education
  - Between two development plans (Seventh and Eight Malaysia Plan), expenditure for tertiary education grew over one and a half times
- Between 8MP and 9MP, Malaysia's spending on tertiary education was 81% of per capita GDP compared to other Asian countries, including Singapore and South Korea (Cheong et al., 2011)

Table 3: Development Expenditure for education: Seventh and Eight Malaysia Plans, 1996 – 2005

(RM million)

Level	Seventh Plan	Eight Plan	Ninth Plan	Percentage Change	
	1996 - 2000	2001 - -2005	2006 – 2010[c]	7P – 8P	8P – 9P
Primary[a]	2,739	5,585	5,645	+103.9	+1.1
Secondary	5,318	8,748	6,793	+64.5	-22.4
Tertiary	5,005	13,404	16,069	+167.8	+19.9
Other[b]	4,480	10,185	11,849	+127.3	+16.3
Total	**17,542**	**37,922**	**40,356**	**+116.2**	**+6.4**

Source: Adapted from Cheong, K.C., Viswanathan, S., and Goh, K. L. (2011)

[a] includes preschool
[b] consists of teacher education and other education support programmes
[c] allocation only

QUALITY ISSUES IN EDUCATION

Over the past decade, Malaysia has invested heavily in post-secondary and higher education

In 2009, higher education institutions across the nation produced more than 181,000 graduates, including more than 81,000 graduates from private higher education institutions

Similarly, in 2009, skills training institutes produced more than 120,000 graduates, including more than 30,000 graduating from private skills training institutes

QUALITY ISSUES IN EDUCATION

- There was also increased concerned on quality of graduates of professional courses by professional bodies as a consequence many new programmes and impact of international developments in various professions

QUALITY ISSUES IN EDUCATION

- provision of poor quality programmes
- insufficient commitment and monitoring of the delivery by partner institutions
- different quality standards, indifference or general ignorance to national criteria
- local needs and policies, issues comparability of quality of education
- faculty staff
- lack of clear information
- cultural differences and had issues relating to recognition of qualification

QUALITY ISSUES IN EDUCATION

- Cheong et al. (2011) has clearly stated in their paper about the poor quality of the output of tertiary institutions and mismatch between skills needed and those acquired from the tertiary education system
- Rasiah (2002, 2005) pointed that this mismatch is particularly problematic at a time when Malaysia sets out to upgrade its technological capability

QUALITY ISSUES IN EDUCATION

- Table 4
- Malaysia has a low proportion of students enrolled in technical subjects and research scientists to population ratio compared to countries moving towards high technology
- At the same time, the proportion on graduates in arts and humanities has been rising

Table 4: Enrolment in technical subjects and public expenditure on education: Selected countries

COUNTRY	Total enrolment in technical subjects ('000) (1)	Percentage of total enrolment in technical subjects (2)	Public expenditure/ Tertiary student 2005[a] (3)	Percentage of education in total public expenditure 2005 (4)
Malaysia	74.9	14	93.7	28.0
South Korea	1000.4	33	9.3	15.0
Singapore	15.9	19	-	-
Taiwan, China	368.9	37	-	-
China	2580.4	21	90.1 (1998)	-
India	1913.0	19	68.6	10.7
Indonesia	585.6	19	13.3	9.7
Thailand	186.0	9	23.0	27.5

[a] expressed as percent of per capita GDP

Source: Adapted from Cheong, K.C., Viswanathan, S., and Goh, K. L. (2011)

QUALITY ISSUES IN EDUCATION

- Inputs to tertiary education are output of the secondary education system
- An international comparison of mathematics and science performance among grade 4 and 8 students is provided by the Trends in Mathematics and science Study (TIMSS)
- Table 5 show Malaysia's average scores for grade 8 (form 4) students and percentage of these students who achieved high score for 1999, 2003 and 2007

Table 5: TIMSS grade 8 scores for selected Asian countries, 1999-2007

Subject/ Country	Average Score			Percentage of students reaching high benchmark (score 550)		
	1999	2003	2007	1999	2003	2007
Mathematics						
Malaysia	519	508	474	36	30	18
Hong Kong SAR	582	586	572	70	73	64
Singapore	604	605	593	77	77	70
South Korea	587	589	597	70	70	71
Taiwan, China	585	585	598	67	66	71
Science						
Malaysia	492	510	471	24	28	18
Hong Kong SAR	530	556	530	40	58	45
Singapore	568	578	567	60	66	61
South Korea	549	558	553	50	57	54
Taiwan, China	569	571	561	61	63	60

QUALITY ISSUES IN EDUCATION

- Malaysia's school performance in these subjects to have fallen in absolute terms
- For Mathematics, Malaysia's average score has fallen monotonically from 519 (1999) to 474 (2007)
- 2007 score slightly below the intermediate benchmark (475) for all countries
- Only 18% of grade 8 students achieved a score of 550

QUALITY ISSUES IN EDUCATION

- Malaysia's school standard have fallen over much of the last decade
- Must be remedied
- A serious impediment in the supply of a pool of quality students for tertiary-level training in science, engineering and technology

QUALITY ISSUES IN EDUCATION

- Rankings of world universities show that Malaysian universities are not internationally competitive and one of the main contributing factor in research weakness

CONCLUSION

- Malaysia has developed strongly enough to become an upper middle income country with manufacturing becoming the prime exporter since the 1980s
- However, natural resources, such as, oil and gas and oil palm not only initiated the country's growth till the early 1970s, they have become important again in the country's rapid growth since the late 1990s

CONCLUSION

- Growth, however, has slowed down in trend terms since the Asian financial crisis struck in 1997-98
- Malaysia's progress has since fallen below the growth trajectory required for the country to achieve developed status by 2020
- Human capital has indeed been the key deficiency that has restricted Malaysia's capacity to sustain rapid growth and structural change to high value added activities (Malaysia, 2011).

CONCLUSION

- Although Malaysia invested relatively strongly in education compared to other countries, the share of enrolment in technical education fell below Korea, Taiwan, Singapore, China, India and Indonesia
- Similarly, Malaysia had a significantly lower ratio of R&D scientists and engineers per million population than Korea, Singapore, Taiwan and China
- Little wonder that Malaysia ranked low in scientific output and patents taken in the United States when compared to Korea, Taiwan, China and Singapore

CONCLUSION

- Malaysia enjoyed higher GNI per capita mean compared to the upper-middle income country average despite having a weaker human capital, innovation and scientific publications performance suggesting that the country's income growth has been driven strongly by non-innovative economic activities, such as, mining and quarrying and oil palm

CONCLUSION

- These results suggest that serious efforts must be taken to review Malaysia's human resource policies
- While investment is necessary the prime deficiency appears to come from the quality of human capital produced in the country
- Also, while the infusion of quality is pertinent in the country's educational establishments, more vigorous efforts must be taken to attract Malaysians abroad with tacit knowledge to return and lead the organizations producing human capital

THANK YOU