SECTION 3

SHARED AND SUSTAINABLE GROWTH

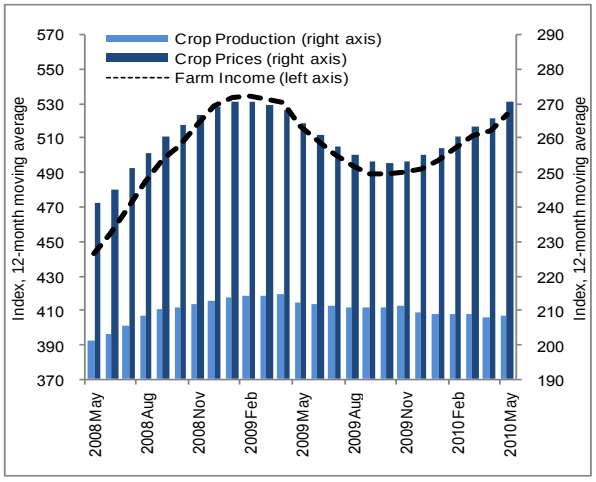
3.1 Poverty and Inequality

The global financial crisis likely halted poverty reduction in 2009. The net effect of the economic volatility of 2008 and 2009 on Thailand's poor is difficult to measure, but poverty likely increased in 2009 compared to 2008. As a result of the crisis, real per-capita consumption levels, which are highly correlated with the poverty rate, contracted in 2009 for the first time since the 1997 crisis. Given the elasticity between per-capita household consumption and the poverty rate, the observed 1.7 percent decline in real per-capita household consumption in 2009 is associated with an increase in the poverty rate between 0.5 and 1 percentage points from 2008. The poverty rate would still be below the latest published figure from 2007 (8.5 percent), however, due to gains from growth in 2008 (projected at about one percentage point).

The crisis affected vulnerable households through two main channels: a decline in agricultural prices and softer labor markets. The contraction in household consumption and associated increase in poverty was due to a decline in agricultural incomes from lower agricultural prices compared to 2008 (on average, rice prices in 2009 declined by 15 percent from 2008, Figure 86). Labor market effects included a relative shift of labor towards lower-productivity (and lower-wage) sectors, which contributed to a decline in average real wages and a decrease in overtime. Although labor markets appear very tight (the unemployment rate is currently around one percent), real wages remain below their pre-crisis levels (Figure 87). This is due to the flexibility of Thai labor markets and limited formal safety nets, which implies that employment is usually high and labor market adjustments take place through sectoral shifts (e.g. from manufacturing to agriculture and informal services, such as retail), lower wages, and reduced work-hours (35 percent of the workforce works over 50 hours per week on average). Interviews with affected individuals confirm the safety net role played by agricultural land (see Box 8 below). Figure 88 provides some evidence to such sectoral shifts: employment in agriculture surges during the crisis at the same time manufacturing employment declines. Manufacturing employment picks up in the second half of 2010, whereas agricultural employment declines. Figure 89 provides evidence that firms initially cut overtime as a response to the crisis, reducing household incomes even as employment was maintained.

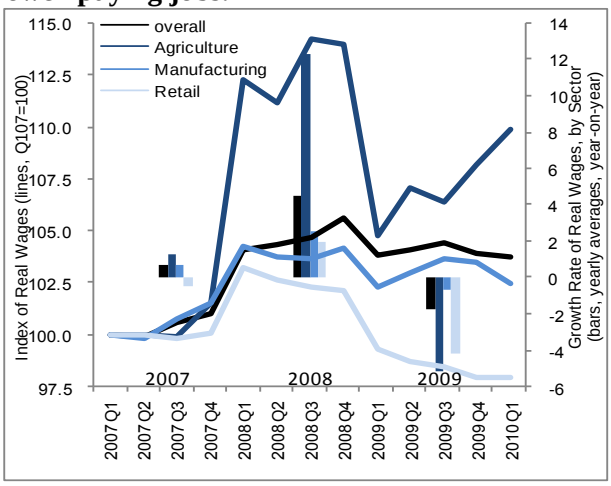
The government's first stimulus package, while unlikely to have had a large impact on the overall GDP, may have helped limit the impact of the crisis on the poor. Disbursements under the first stimulus package are estimated at 0.8 percent of GDP between March and September 2009. While the stimulus package was not particularly well-targeted towards the poor, it did contain a number of measures that likely reached vulnerable households. The old-age pension may have been especially effective, since the elderly are over-represented among the poor, and the measure specifically targeted those individuals not receiving formal pensions.

Figure 86. Farm incomes have rebounded since the fourth quarter of 2009 although production has declined.



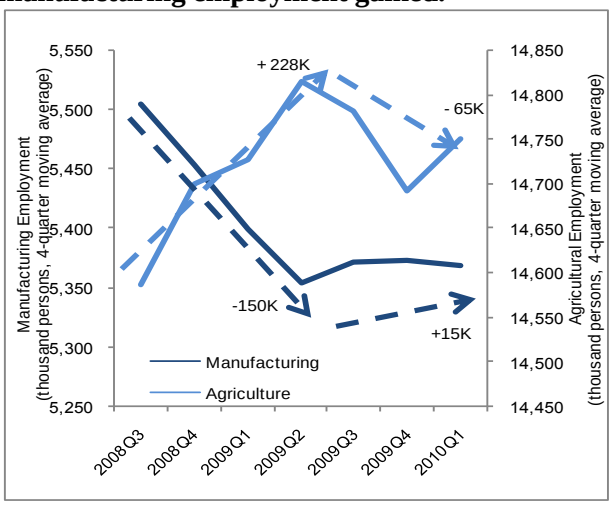
Source: BoT and World Bank staff calculations.

Figure 87. Wages declined in 2009 despite low rates of unemployment as workers shifted to lower-paying jobs.



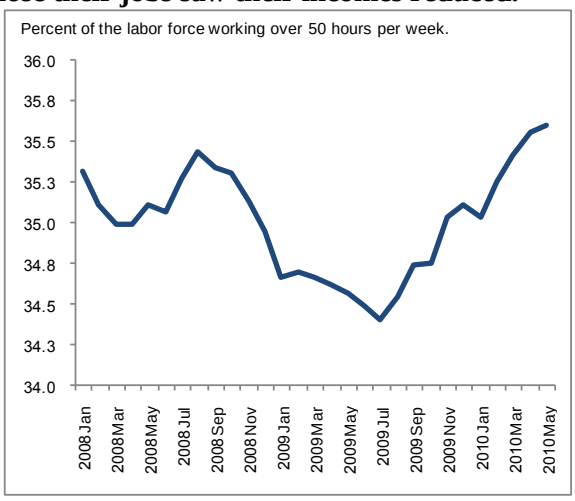
Source: NSO (Labor Force Survey), Ministry of Commerce (prices), and World Bank staff calculations.

Figure 88. Labor initially shifted to agriculture during the crisis, but as the recovery took hold manufacturing employment gained.



Source: NSO, MoC, and World Bank staff calculations.

Figure 89. Employers cut overtime as a means to rein in labor costs, so even those who did not lose their jobs saw their incomes reduced.



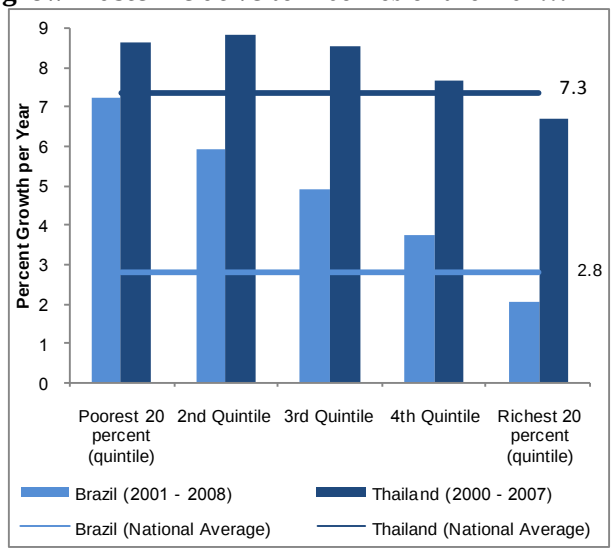
Source: NSO and World Bank staff calculations.

The outlook for poverty in 2010 is highly uncertain given the escalation of the political crisis and the major drought in the first half of the year, but there are positive signs. Agricultural prices have been increasing (Figure 86), some labor shifted back from agriculture to higher-paying manufacturing jobs (Figure 88) and overtime has picked up (Figure 89). A recent interview-based assessment of the social and economic impact of the crisis reinforces these trends (see Box 8 below). On the other hand, a severe drought affected 53 out of 76 provinces and destroyed over 230 km^2 of agricultural land. While irrigation, higher prices of agricultural goods and government support should partly mitigate the impact of the drought, the net impact is likely to be negative for a number of vulnerable households. Moreover, the political crisis had a greater impact on sectors that employ a large number of workers such as retail trade, hotels and restaurants (which together account for 23 percent of the workforce). Risks are mitigated by the continued recovery in manufacturing, as well as the continuation of pro-poor government policies,

especially the pension to the elderly and free education. Overall, since private consumption per capita is expected to expand by 1.5 to 2 percent in 2010, poverty rates are likely to resume their downward trend in 2010, albeit at a slower pace than in the past.

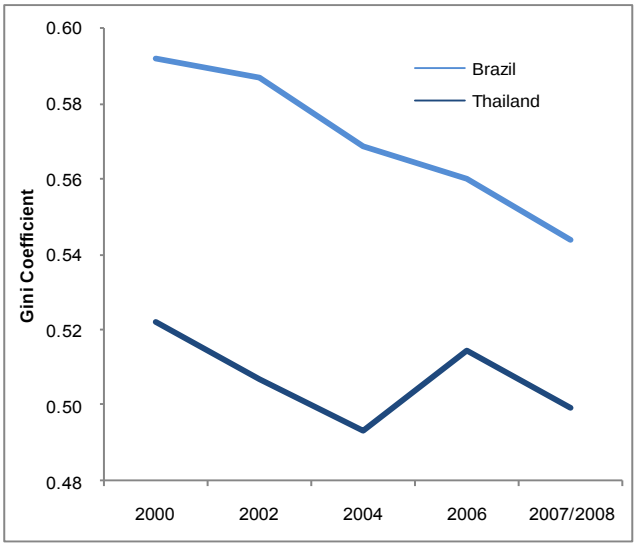
The escalation of the political crisis has intensified the debate about economic inequality in Thailand. Although the causes of Thailand's current political crisis are complex, many analysts have suggested that high levels of income and geographic inequality have been a contributing factor. Indeed some academics have offered evidence that high inequality is associated with a greater probability of conflicts, although the debate is not settled.[24] While individuals at all income levels benefited from Thailand's high GDP growth rates (the poorest 20 percent experienced about nine percent annual income growth rate over the past twenty years), inequality has remained persistently high because growth has, in one sense, been too balanced. Incomes of all income groups have grown at about the same pace, so that the income gap has changed little: in 1988, the richest 20 percent of Thais earned 54 percent of the nation's income; by 2008, that figured had increased slightly to 55 percent.

Figure 90. Thailand's average growth has been higher, but in Brazil incomes of the poor have grown faster relative to incomes of the rich…



Source: NSO, IPEA, World Bank staff calculations.

Figure 91. … as a result inequality declined more in Brazil during the period.



Source: NSO, IPEA, World Bank staff calculations.

Reducing income inequality requires accelerating the growth of the incomes of individuals in lower income levels through policies to increase both labor and non-labor income. Brazil's experience in this regard may be relevant to Thailand. Incomes of the poorest 20 percent of Brazilians have been growing almost five percentage points more than incomes of the richest 20 percent (Figure 90). This has led Brazil's notoriously high income inequality to steadily decline for the past seven years (Figure 91). A recent study measures the relative importance of policies that raised both labor and non-labor income, and suggests that both channels played an important role in reducing inequality in Brazil. [25] Transfers paid to low-income families to boost their income and allow them to keep children in school clearly helped, but

[24] See for example Boix, Carles, "Economic Roots of Civil Wars and Revolutions in the Contemporary World", *World Politics* 60 (3), April 2008. Boix finds that "Systematic and organized violent conflicts are most likely in economies where inequality is high and wealth is mostly immobile."

[25] See IPEA (Institute of Applied Economic Research), "Initial Analyses of Brazil's 2008 Household Survey", http://www.ipea.gov.br/sites/000/2/comunicado_presidencia/09_09_24_ComunicaPresi_30_PNAD2008.pdf (only available in Portuguese) and http://www.ipea.gov.br/sites/000/2/pdf/090924_ComPres30Ricardo.pdf.

more important was an uneven increase in labor incomes (i.e., the labor incomes of the poor have grown more quickly than those of the rich). This likely reflects the fact that the productivity of low-income individuals has increased more quickly than that of higher-income workers. While the causes of this unbalanced growth in labor incomes are not fully understood, a possible explanation is that educational reforms implemented in the 1990s (which greatly expanded access to basic education and incentives to conclude primary education) are currently bearing fruit.

Inequality in Thailand has important spatial dimensions, as most of the poor are concentrated in the North and Northeast of the country. The faster development of Bangkok compared to the rest of the country Thailand's development success, as agglomeration economies were realized and catalyzed economic growth. Despite substantial migration from rural to urban areas, especially Bangkok, a large fraction of the Thai workforce remains in agriculture and therefore in rural areas. Welfare disparities between those in urban and rural areas have increased with the process of development, and today most inequality in Thailand is inequality between regions rather than within each region. Getting the benefits of both economic concentration and social convergence (i.e. reduced welfare disparities) requires policy actions aimed at economic integration between lagging and leading regions and equitable delivery of social services.

Box 8. Findings on the Second Round of the Rapid Poverty and Social Impact Assessment of the Economic Downturn in Thailand[26]

The second rapid assessment of the impact of the economic crisis was conducted in Thailand during the month of January 2010. A series of in-depth interviews and focus group discussions with workers in the formal and the informal sectors, with private sector, non-governmental organizations and government agencies were conducted in four provinces, namely Bangkok, Ayutthaya, Samutsakorn and Nakornrachasrima. The assessment was able to provide a flow of updated information on crisis impacts that are diverse in both scope and intensity across different groups and sectors. The storyline is one of recovery in some formal sectors, but of persistent and severe hardship in the urban informal sector.

The assessment found signs of improvement in the business sector. General views from the in-depth interviews with enterprises indicate that business has been picking up since the second quarter of 2009. This is especially true for large sized companies and companies in the IT and automobile sectors. However, business owners described adjustments that they had made in order to survive the crisis. IT related companies had downsizing its staff and reorganized management into cluster to improve efficiency and cope with both the crisis and the new rapid demand of products. In the automobile sector, enterprises mentioned that demand for high-end cars had held firm during the crisis but there had been a shift in demand among mid- and lower income groups towards cars with smaller engines (1,300cc or 1,500cc). Several small and medium enterprises were struggling to survive and were particularly troubled by their inability to access credit.

Scarcity of workers: In stark contrast to the first round of research, there was high demand for workers in every target province. The employment offices reported that local enterprises were short of 13,000 workers in Ayutthaya and 6,000 workers in Nakornrachasrima. Though business owners and the Employment Department have been working closely together to try to find workers over the past months, the supply of Thai workers has been limited. Enterprises seeing a recovery in orders from overseas noted that the scarcity of workers is now a major constraint. Respondents suggested that the following factors were important in limiting the supply of workers:

[26] Prepared by Pamornrat Tansanguanwong.

- Workers in the formal sector and laid off workers are (possibly temporarily) enjoying the benefits from the government stimulus interventions such as the Income Generating scheme (Tonklar Archeep) which provides training, seed funds for the laid-off workers and youth groups to start small businesses, and the 2,000 baht cash support scheme for workers who earn up to 15,000 baht.
- Some workers may have decided to move permanently out of paid employment. Laid-off workers in their late twenties/early thirties anticipate that they will not be employed in certain industries after the age of 35. Rather than return to paid employment for a few years, the Employment Department estimated that around 20 percent of laid off workers have changed their career and invested instead in small businesses or small-scale income generating activities.
- A recent surge in the prices of agricultural products such as rice, corn, tapioca and rubber, may mean that workers that originally migrated from agricultural areas are staying back in rural areas during the harvest season.
- Some workers who do not have much education may not access employment information.
- Representatives from the Provincial Employment Department felt that the education system is producing a workforce with a skill set that is poorly matched with the increasing demand in the industrial sector.

Stress and Hardship in the formal sectors remained high. Workers employed in enterprises that are experiencing labor shortages in the face of recovering demand reported working long hours. Women workers who are working in the lowest level of the production line were simultaneously pleased with the opportunity to earn overtime wages, but commented on the physical stress of long working hours. Men in the mid and upper management also reported stress that they all would have to manage to meet their reached targets.

The role of migrant workers appears to have extended. With the shortage of Thai workers, some enterprises were filling gaps with migrant workers. In Samutsakorn, migrant workers have expanded from working in the unskilled to more skilled labor positions, and have extended beyond the traditional seafood processing businesses. Unlike Samutsakorn, the labor office of Ayutthaya is still firm in allowing migrant workers to only work in the unskilled positions. Many enterprises reported a preference for immigrant workers because they accept lower wages and are "easier to manage", a factor that might influence the nature of the Thai labor force in the future. Immigrant workers reported anxieties over government's policy requiring proof of citizenship, with exploitation by brokers reportedly common.

The well-being of informal workers deteriorated. Workers in the informal sector reported severe economic stress. Work remains scarce, wages remain low and many reported an accumulation of alarming levels of debt. In the Klong Toey area, most porters and informal workers reported drawing down on their long term safety net, the savings and cooperative groups for housing. Managers of these savings and cooperative groups felt that if they did not use the funds to help their members now, many members will lose their houses used for collateral to loan sharks. The long term savings were at risk of evaporating within the next few months as there are limited funds revolving in the system. The informal workers reported highly constrained access to formal safety nets. They are unable to make use of programs aiming to refinance loans because such schemes do not work in situations where they cannot report the names of their loan sharks. Other schemes (such as training or cash support) are catered to people in the formal sector. Other major concern is the widespread of drugs in all provinces interviewed. Disturbing note that the major targets of drug dealers are children as lower as ten years of age. As much as they are struggling to survive, majority do not want to return to rural areas.

Land remains an important safety net in rural areas. Agricultural land has provided an important safety net for households in rural areas and has cushioned the impact of falling remittances from overseas

and domestic sources. Rising agricultural prices have kept rural livelihoods buoyant and many households even called their children and relatives to move back from their hardship in urban areas or industrial zones to live in rural areas with them.

High levels of social capital were noted to be important for rural people who are landless. These people are suffering the most from receiving less remittance from their children working in other provinces in Thailand. Without land, they do not reap the benefit from rising agricultural prices and are dependent on day laboring jobs. Many of these landless households reported that they are struggling but their neighbors and relatives in the villages have helped provide food for their families. Living in the rural areas, they can still find crabs, fish and vegetables from the rivers and public land to feed their families.

3.2 Education for Sustainable Growth[27]

To start a second engine of growth, a greater number of Thai workers must be integrated into dynamic sectors of economy and perform tasks with higher value-added. Thailand's long-term challenge is to move a large share of the labor force currently in agriculture or otherwise performing simple, low value-added tasks into the dynamic parts of the economy. To achieve such a shift, Thailand requires better and more accessible education, deeper regional integration, improvements to agricultural productivity, and regulatory reforms to foster competition in the services sectors, including through greater participation of foreign firms.

Export-driven manufacturing will continue to be a dynamic sector, but services sectors potentially offer opportunities for more Thais to engage in higher value-added tasks. The competition for the location of manufacturing facilities of global supply chains is only likely to increase going forward, as infrastructure improves and political stability takes hold in countries such as Vietnam and Indonesia. Therefore, in order to maintain high growth rates of manufacturing value added, Thailand will need to attract higher value added tasks. Substantial growth in manufacturing value-added over the past decade was achieved primarily through capital deepening and has not contributed to growth in employment, suggesting limited potential for employment growth. Nevertheless, there are ample opportunities to move from simpler to more complex tasks within manufacturing, namely from assembly, testing and packaging to research, design, development, marketing, servicing and branding. Services sectors hold greater potential for generating more higher-paying jobs, but the key remains to shift workers to high complexity, high value-added tasks. Financial services, medical tourism and creative areas such as architecture and advertising are example of services sectors that involve the performance of complex tasks.

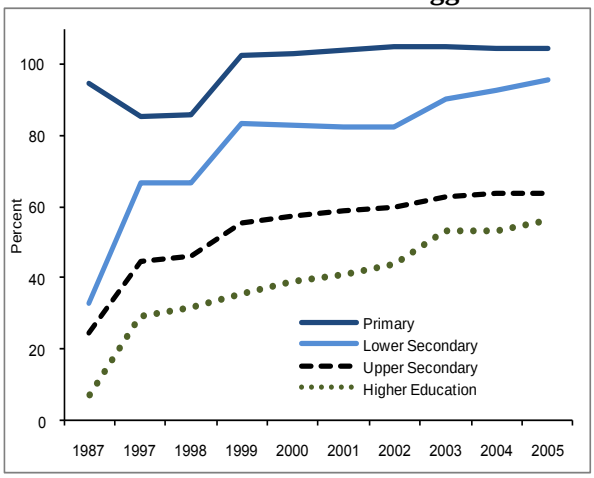
Investments in education represent one critical requirement for the activation of a second engine of growth. While improving education is only one element of a strategy for shared and sustainable growth (and often not even the most important element), enhancing the quality and access to secondary and tertiary education could potentially contribute to (1) reducing income inequality and create a larger middle class; (2) increasing the supply of skills in the market, which is required for moving up the value chain in manufacturing and fostering the creation of high-value-added and internationally competitive services sectors. This section draws from the World Bank's Thailand Social Monitor to highlight some ways in which improvements in education may contribute to Thailand's long-term development.

[27] This section draws from the Thailand Social Monitor, February 2010 issue. The report can be downloaded from http://www.worldbank.or.th.

The combination of unequal access to tertiary education and the high premium labor markets pay for skills is one source of the persistence of income disparities in Thailand. Inequality in access to quality primary and secondary education, leads, in part, to the large observed disparities in access to higher education across different levels of household income. Labor markets transform these disparities in access to education into income disparities through the high premium attached to additional years of education, a premium that increases with experience, thus contributing to overall income inequality. Because this analysis only considers one factor affecting labor incomes, it does not provide an overall explanation for Thailand's levels of income inequality. Nevertheless, the analysis suggests access to tertiary education may be one source of inequality that merits further examination.[28]

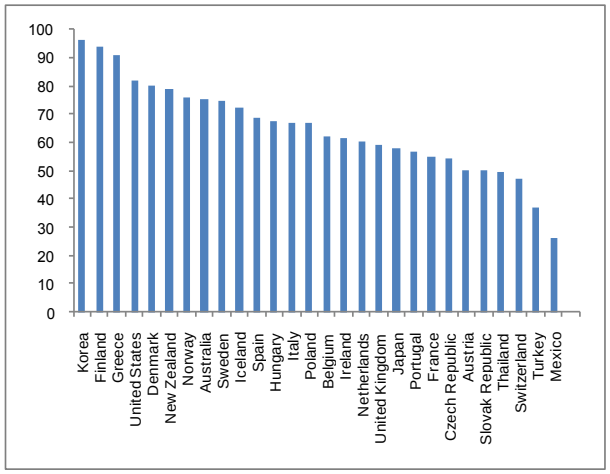
Despite high enrollment rates in primary and secondary education, access to tertiary education in Thailand is highly unequal. Access to primary and lower-secondary education is nearly universal as between 2001 and 2005 Thailand steadily and impressively increased gross enrollment rates (Figure 92).[29] Enrollment rates in tertiary education are 50 percent, in line with other countries in the region but behind OECD countries (Figure 93). However, when looking at enrollment by age group, it is noteworthy that higher education participation by the appropriate age cohort (18 to 21 years old) is only 25 percent.[30] Most importantly, Thailand experiences substantial inequalities in terms of access to higher education by household income. Whereas almost 50 percent of students from the highest income quintile participate in higher education, less than five percent of students in the lowest quintile are enrolled, a pattern that has not changed significantly since 2000 (Figure 94). The three lowest income quintiles combined represent about 20 percent of higher education enrollment. While the top two income quintiles represent the vast majority of enrollments, there is nonetheless a vast chasm in participation rates even between the fourth and the fifth quintiles.

Figure 92. Primary enrollment rates are close to 100 percent, but upper-secondary and higher education enrollment rates have lagged.



Source: Ministry of Education, 2007.

Figure 93. Tertiary Gross Enrollment rates in Thailand are well below those of most OECD countries.



Source: Edstats and World Development Indicators.

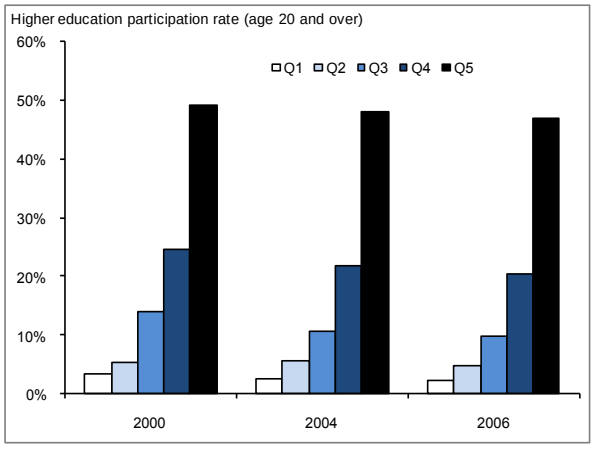
[28] The role of education as a source of inequality in Thailand was studied by Fofack, Hippolyte and Albert Zeufack (1999), "Dynamics of income inequality in Thailand: evidence from household psudo-panel data", World Bank working paper. The authors find that education, along with access to formal credit markets, intra-family transfers and spatial concentration of wealth are key determinants of income inequality in Thailand.

[29] The GER is the number of pupils enrolled in a given level of education regardless of the age expressed as a percentage of the population in the theoretical age group for that level of education.

[30] See Makishima, Minoru and Somchai Sukisiriserekul, eds. (2003), *Human Resource Development Toward a Knowledge-Based Economy: The Case of Thailand*. Bangkok, Thailand: Institute of Developing Economies, Japan External Trade Organization.

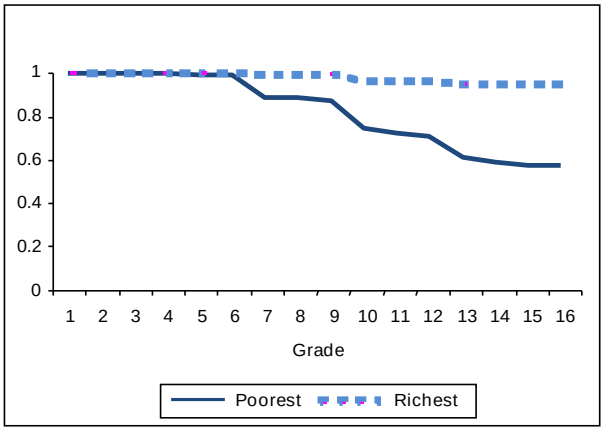
Inequality in access to tertiary education may be in part due to disparities in the quality of primary and secondary education. Inequalities in higher education manifest early in the educational lives of Thai children. Figure 95 illustrates the survival curve for students (ages 6 to 22) from primary through tertiary education. Whereas survival rates are constant for students from the highest income quintile, they are constantly decreasing for students from low-income families. Survival rates of wealthier students are almost 100 percent compared to barely 60 percent for students from the poorest backgrounds. At each level of education, low income students are more likely to drop out upon completion. The dropout rate increases from primary to secondary and from secondary to higher education. Given the high premium attached to additional years of education and the relatively open access (especially to additional years of secondary education), this may imply that students do not feel that the level of education they completed adequately prepares them to succeed in the next level.

Figure 94. Students in higher education still predominantly come from top quintile of the income distribution.



Source: Socio-Economic Survey, 2006.

Figure 95. While most students from the top quintile go on to finish university, students from the lowest quintile drop out earlier.

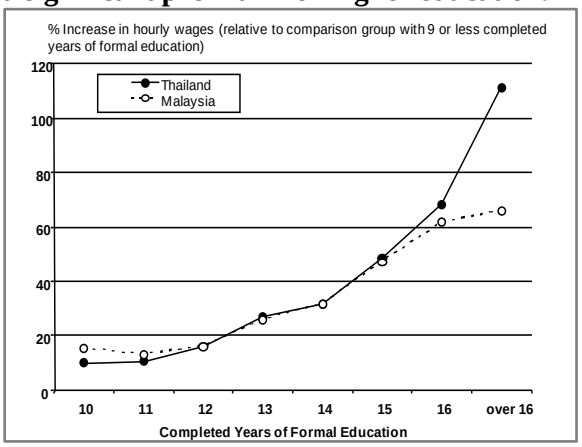


Source: Socio-Economic Survey, 2006.

Mean wages in Thailand increase substantially with additional years of education completed. As Table 15 indicates, workers with higher education make, on average, three times more than workers with only a secondary education. Evidence from firm surveys suggests that the skills premium in Thailand is higher compared to other countries in the region.[31] Whereas mean hourly wages for a Thai worker who completed more than 16 years of education were 110 percent more than wages for those who completed only basic education, the comparable figure for Malaysia is only 60 percent (Figure 96; see also Table 15). In addition, there is evidence that this gap tends to grow wider as workers increase their labor force experience. At the age of 25, workers with tertiary education earn about 5,000 baht more per month more than workers with either primary or secondary education. The difference increases over time and by the age of retirement, workers with tertiary education receive about 40,000 baht per month compared to 25,000 baht for those with a secondary education and 5,000 baht for those with primary education. Figure 97 shows that there is almost no growth in earnings over time for workers with only primary education.

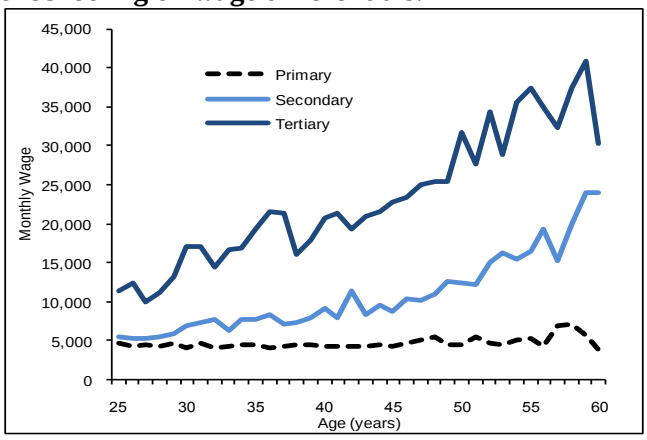
[31] See World Bank (2006), *Thailand Investment Climate, Firm Competiveness and Growth*, Chapter 3.

Figure 96. Thai employers are willing to pay a significant premium for higher education.



Source: World Bank (2006 - see footnote 31).

Figure 97. Work experience exacerbates the impact of schooling on wage differentials.



Source: World Bank, Thailand Social Monitor, 2010.

Table 15. Workers with higher education make four times more than those with only a primary education.

Education level	Average wage
Primary or less	4,390
Secondary	6,772
Higher education	17,680
Unknown	17,250
Population average	8,259

Source: Labor Force Survey, fourth quarter of 2004.

Reducing income inequality may help boost the middle class and support domestic consumption. Reducing Thailand's dependence on external demand requires removing constraints to higher growth of household consumption. Household savings rates are relatively high in Thailand, but also importantly average incomes of Thailand's "middle class" (defined as the median income) are relatively low at less than 4,000 baht per person per month (about 1,350 US dollar per year).[32] One author finds that, by one definition, Thailand's "middle class" comprises only 8.7 percent of the population and accounts for 17.4 percent of consumption; for comparison, in Colombia, the middle class comprises 13.5 percent of the population and accounts for 26 percent of consumption.[33] One of the consequences of reducing income inequality will be increased purchasing power of the middle and bottom quintiles, which have a higher marginal propensity to consume compared to the top quintile in the income distribution, thus generating higher growth rates from domestic sources.

Expanding the supply of skilled labor and enhancing the skill set of labor force are critical for increasing the complexity of tasks performed in Thailand. Higher value-added manufacturing and service tasks will require increased investments in education as a part of a broader strategy to develop these sectors. Innovative and other high-complexity tasks require not only skilled labor that can adopt new technologies, but also close cooperation of high-quality universities with the private sector. High value-added services invariably require extensive training. Exports of medical services, for example, have shown great potential, but because Thailand currently produces too few doctors (it has ratios of doctors

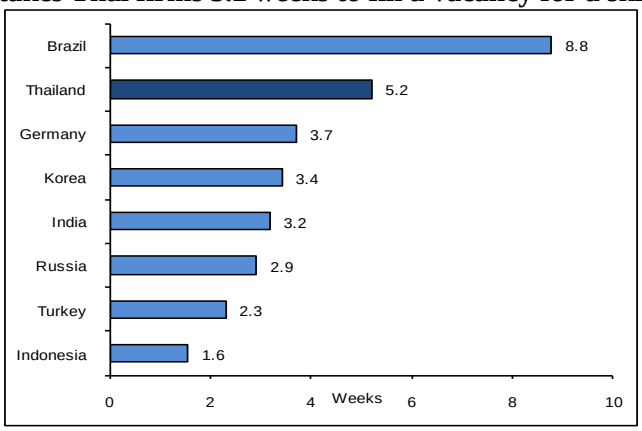
[32] Wages are generally higher than average incomes because wage-earners must support individuals who are out of the labor force.

[33] See Nancy Birdsall (2010). "The (Indispensable) Middle Class in Developing Countries; or, The Rich and the Rest, Not the Poor and the Rest." CGD Working Paper 207. Washington, D.C.: Center for Global Development.. Birdsall defines "middle class" as an individual earning more than US$10 per day.

per capita well below most middle-income countries) the private health sector has been absorbing doctors from the public sector, creating long-term problems for the equitable delivery of social services.

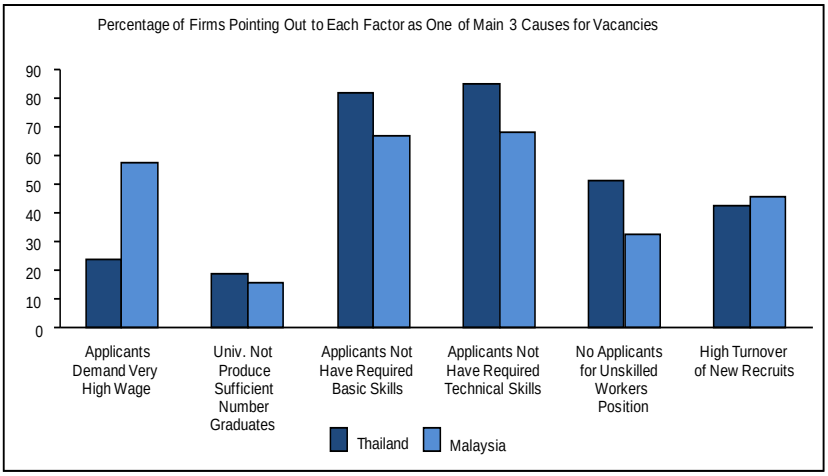
Firms identify skills shortages as a key obstacle to growth, reflecting shortcomings with the quality of tertiary education. According to firm-level surveys, 36 percent of Thai firms identify the lack of skilled labor as a top constraint to their business.[34] Thai firms take on average 5.2 weeks to fill a vacancy for a skilled position compared to 3.2 weeks in India, for example (Figure 98). The main reason for job vacancies is related to the inability to identify applicants with appropriate basic and technical skills. More than 80 percent of companies in Thailand and 70 percent in Malaysia identified insufficient basic and technical skills as the major causes for open jobs (Figure 99). On the other hand, less than 20 percent of firms in both countries points to a lack of applicants as a major factor for vacancies. This finding indicates an imbalance between the quantity and the quality of higher education graduates. As noted earlier, this situation is particularly acute in Thailand where employers are willing to pay a significant premium for high-skilled workers.

Figure 98. It takes Thai firms 5.2 weeks to fill a vacancy for a skilled position.



Source: PICS 2007 (see footnote 34 below)

Figure 99. Skill shortages are a salient factor explaining Thai firms' difficulty in filling vacancies.

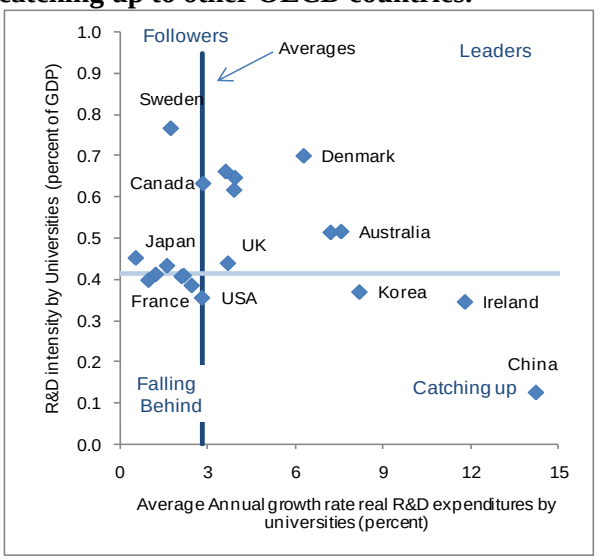


Source: PICS 2007 (see footnote 34 below)

[34] See World Bank (2006), *op. cit.* and World Bank (2008) *Thailand Investment Climate Assessment Update*.

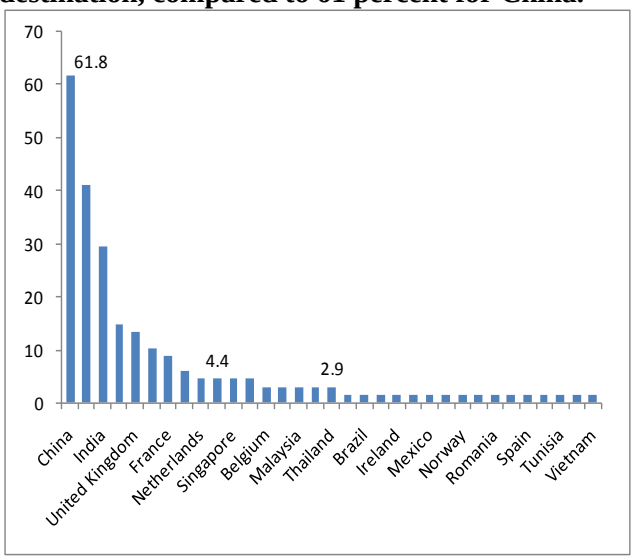
Innovation-led growth is linked to a strong tertiary education sector. Higher education institutions play an important role in preparing individuals to adopt existing technologies (including foreign-developed technologies), but also as engines of research and technological development. New product development, innovation and technology have been conceived and generated from higher education institutions, and countries such as Korea and China have been investing heavily in R&D capacity of their universities (Figure 100).[35] In Thailand, a recent survey of firms revealed that they rarely seek local universities as a source of information and Technology (Table 16).[36]

Figure 100. Chinese and Korean universities have been spending more on R&D and catching up to other OECD countries.



Source: Netherlands Observatory of Science and Technology. R&D intensity is measured as R&D expenditures by universities as a percent of GDP.

Figure 101. About three percent of responders indicated Thailand was an attractive R&D destination, compared to 61 percent for China.



Source: UNCTAD (2005). See footnote below.

Table 16: Universities are not an important source of information and technology to Thai firms.

Sources of information	Automobile		Electronics	
	No.	%	No.	%
Customers' firms	12	21.8	14	26.9
Parent company (foreign)	15	27.3	12	23.1
Own company (Thai)	4	7.3	6	11.5
Suppliers	4	7.3	5	9.6
Others	9	16.4	5	9.6
Consult/visit/ training inside or outside the country	3	5.5	3	5.8
University	1	1.8	3	5.8
Website	2	3.6	2	3.8
Product fair/ exhibition	2	3.6	1	1.9
Machinery	2	3.6	1	1.9
Conference with other firms	1	1.8	0	0.0
Total	55	100.0	52	100.0

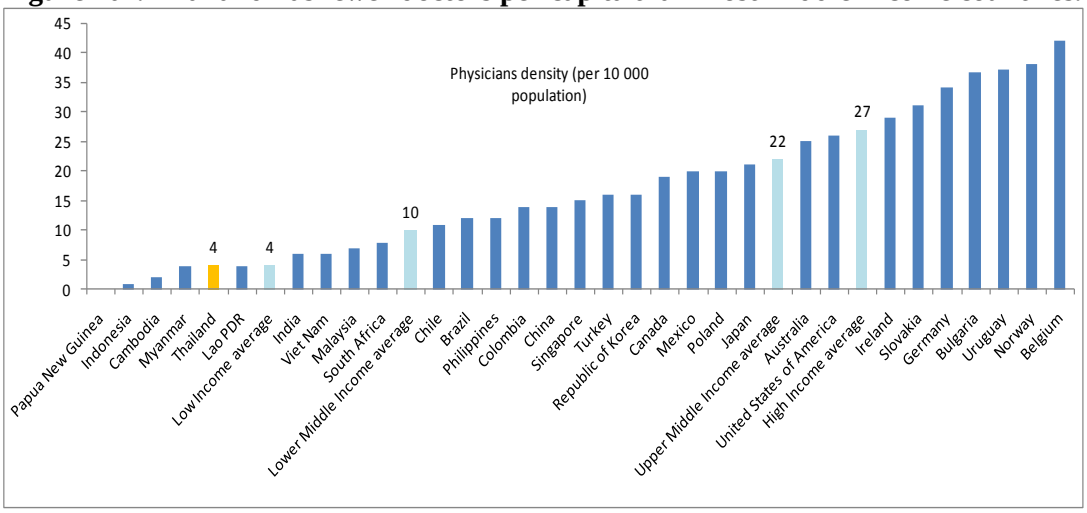
Source: TDRI 2009, in Yussuf and Nabeshima (2010)

[35] See Netherlands Observatory of Science and Technology (2010). *Science and Technology Indicators 2010*.
[36] Yussuf, S. and K. Nabeshima (2010). "Industrial Change in the Bangkok Urban Region" World Bank mimeo.

Thailand could position itself to expand its R&D capabilities more aggressively, for instance, by tapping on current trends of technology outsourcing. Even if Thailand is to attract foreign technologies, the availability of skilled workers to implement those technologies is critical. According to an OECD study, multinational firms have markedly expanded their investments on R&D overseas in search of new global technology solutions that tap into local knowledge networks.[37] While OECD countries maintain primacy as focal points of research and development efforts, developing countries that can mobilize trained researchers at more affordable costs have commanded increasing attention and resourcing. China and India have been notable examples. It is estimated that 750 foreign R&D centers were established in China between 2001 and 2004. In a recent survey from UNCTAD of the largest R&D spenders, about three percent of respondents indicated that Thailand was an attractive destination (Figure 101).[38] This is well behind China, India and the United States, but at par with other Asian economies, such as Malaysia and Korea.

Promoting the growth of high value-added services will also require higher supply of skills, especially in health and education but also finance, software engineering and other professional services. Thailand has a thriving medical tourism industry, but the number of doctors is lower than in most middle-income (and many low-income) countries and the growth in the private sector has been largely at the expense of service delivery in the public sector (Figure 102). Therefore some form of supply response to the increase in demand from medical tourism is warranted (Figure 103). In that regard, medical education is very restrictive in Thailand (only one private university trains doctors, and only on a small scale). Moreover, highly trained and experienced specialists are now hard to join the public sector. Because the supply response for these categories of professionals is very slow, another possibility to increase the supply of skills is to increase openness to imported skilled labor. However, from the point of view of service delivery it is important to ensure that increased supply translates into increased numbers of health professionals in the provinces and rural areas. For that, complementary policies are needed and may be more effective than simply increasing numbers.

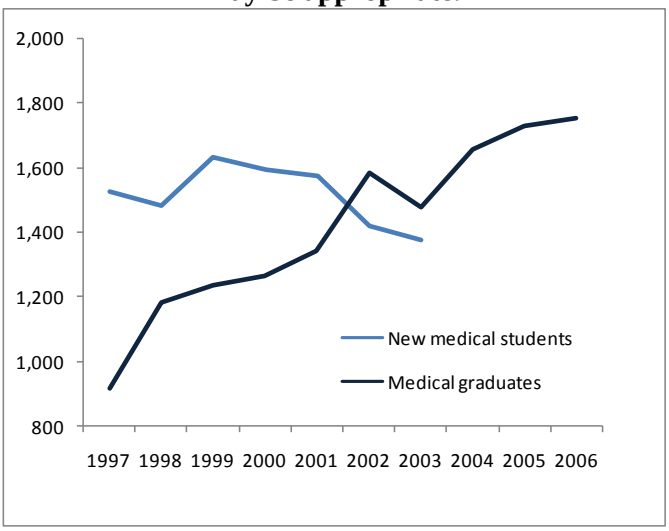
Figure 102. Thailand has fewer doctors per capita than most middle-income countries.



Source: World Health Organization

[37] OECD (2007). *Moving Up the Value Chain: Staying Competitive in the Global Economy*, Paris.
[38] UNCTAD (2005), *World Investment Report, Transantional Corporations and the Internationalisation of R&D*, New York and Geneva.

Figure 103. The number of medical students had been declining, suggesting that a supply response may be appropriate.



Source: Thailand Ministry of Health