A Portrait of High-income Thailand: Future Labor Market Outlook

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Synopsis

- The World Bank reported that, due to impressive advancements in social and economic growth, Thailand's economy achieved the upper-middle income status in 2011.

- Since then, various difficulties, including the devastating flood, domestic political upheaval, and the coronavirus outbreak, have slowed the momentum of economic growth and increased vulnerability to structural problems, such as an aging population, disruptions in technology, and extreme weather.

- The country urgently needs to increase the capacity of its main production input, labor, in order to maintain its current economic trajectory and achieve a high-income position.

- This study examines the labor market in Thailand before and after the pandemic. Estimated contributions of the wages of different worker groups to national income, were used to create an example of the workforce structure of a "high-income Thailand," based on the "Green S-Curve Plus" model, assuming that the country had effectively embraced digital and green technologies.

- The study concludes with a policy suggestion to develop coordination, using an integrated labor infrastructure, to enable large-scale skill upgrading of labor, which would be instrumental in achieving high-Income status for Thailand.

According to the World Bank, Thailand reached upper-middle income status in 2011 as a result of the nation's impressive success in both, social and economic development. Since then, the economy has experienced a number of difficulties, including the great flood, domestic political upheaval, and the coronavirus outbreak. These shocks not only halted the pace of economic expansion but also damaged prospective long-term growth by increasing sensitivity to enduring structural problems, including an aging population, disruptive technologies, and catastrophic weather. The nation urgently needs to increase the capacity of its main production input, i.e., labor, if it hopes to maintain its current economic trajectory and achieve a high-income status.

Amarase et al. (2013) drew a few conclusions from the history of economic growth around the world: technological innovation was the main force behind long-term economic growth, institutions needed to foster innovation, and growth achieved might not be sustainable. As shown in figure 1, long-term economic growth tendencies are not always uni-directional. The economic trajectories of some Latin American countries have reversed, in

contrast to the success of the four East-Asian economies and Singapore. Their economies failed to grow further and fell into a middle-income trap.

Thailand's recent flattened growth trajectory indicates a lower probability of rising to achieve high-income status, without a growth engine upgrade, even as China and South-East Asian nations undergo consistent economic development.

Figure 1: The long-term economic growth trends are not necessarily uni-directional
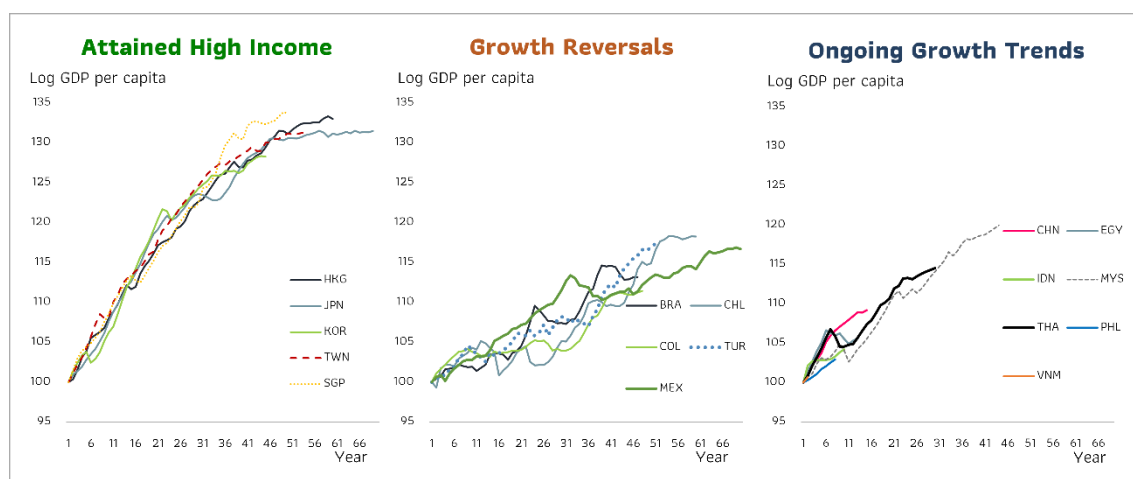
Source: Data from Feenstra, R. C., Inklaar, R. and Timmer, M.P. (2015).

Note: Country graduates into middle-income status if their real GDP per capita reached $3,000 constant 2005 PPP (year 1).

Klyuev (2015) stated that the slowdown in Thailand's economy was caused by the protracted structural transformation process, which was supposed to reallocate labor from low- to high-productivity sectors. The primary reasons for this include the government's agricultural price support programs, skill differences between rural and urban workers, and uniform minimum wage.

Thus, this study examined the labor market in Thailand before the pandemic. First, we used the National Statistical Office's Labor Force Survey to determine the sources of the national income in 2019. Thereafter, we calculated the share of labor in the national income. Based on two dimensions—working status (employer, employee, or self-employed) and skill (STEM[1] education, Technician with 1-digit ISCO[2] < 4, or Non-Technician, with no STEM education and not Technician)–the study divided labor into nine groups.

The left panel of Figure 2 shows the number of workers in each group in 2019. Non-technicians numbered 33 million. Of them, 19.7 million were self-employed. The "Green S-Curve Plus" model was used to simulate the workforce structure of Thailand with high-income status, in the right panel. According to TDRI (Forthcoming), the model's assumption is that

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[1] STEM is an acronym for Science, Technology, Engineering, or Mathematics.
[2] ISCO is an acronym for International Standard Classification of Occupations.

the nation can successfully implement digital and green technology. Thailand has to upgrade about 55% of its non-technical workers in order to become a high-income nation.

Figure 2: Riding the Green & Digital Wave to achieve high-income status
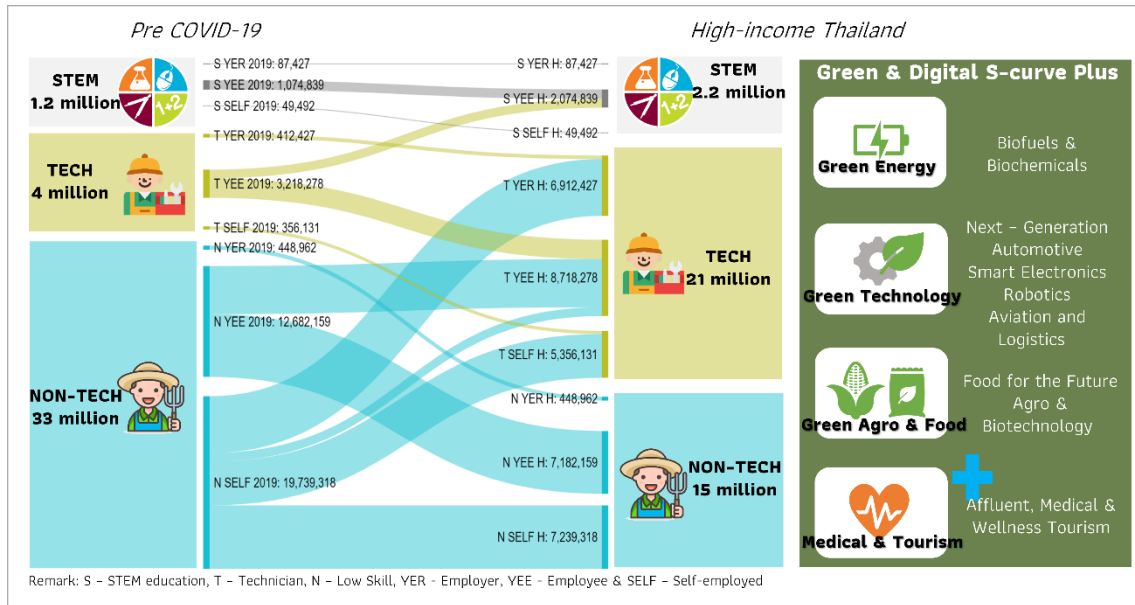
Source: TDRI (2023). *Policies and Measures to Support and Prevent the Impact of COVID-19 on Labour and Employment*. National Research Council of Thailand.

Imbens and Wooldridge (2009) addressed the econometric and statistical analysis that had been conducted to assess whether the key motivation for people to enroll in a training program was wages or employment status. This can be used in our study to calculate the resultant increase in income from upgrading a non-technician's skill, while controlling for age, education level, and degree subject. As a result, the propensity score and Average Treatment Effect for the Treated (ATT)[3] are estimated as follows:

$$revenue_i = \beta_0 + \beta_1 Technician_i + \beta_2 e(X_i) + \beta_3 Technician_i \times e(X_i) + \varepsilon_i$$

$revenue_i$ is the monthly salary of each employee, $Technician_i$ is a dummy variable with the values 1 for a technician, and 0 for a non-technician, X_i is the vector of covariates, $e(X_i)$ is a propensity score estimated from the logistic regression of the condition, technician, on the covariates, and subscript i stands for each observation.

The estimated Average Treatment Effect (ATE), which is the difference between the expected value of the revenues of a technician and that of a non-technician in the manufacturing, agricultural, service sectors, and overall, is shown by the variable _*treated*

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[3] See intuition and technical discussion in Pan and Bai (2015) and Ratkovic (2014).

$\left(\widehat{\beta_1}\right)$ in Table 1, which shows the estimated Average Treatment Effect (ATE). Additionally, Constant $\left(\widehat{\beta_0}\right)$ denotes the expected revenues of non-technicians.

Table 1: Propensity Score Matching: Results

VARIABLES	Model Manufacture	Model Agriculture	Model Service	Model All
_treated	13,361***	17,247***	12,584***	12,921***
	(250.0)	(794.2)	(123.8)	(109.6)
Constant	14,736***	7,469***	15,304***	15,001***
	(152.2)	(288.7)	(95.50)	(81.70)
Observations	10,358	628	58,220	69,421
R-squared	0.216	0.430	0.151	0.167

Standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Source: Data from Labor Force Survey 2019 of Thailand's National Statistical Office and calculated by the authors

The analysis of matched data on propensity scores was performed by estimating the ATT. A similar probability of being a technician exists for the matching units in the non-technician group, as for the equivalent units in the technician group. Figure 3 shows the results after survey weights were adjusted to account for Thailand's 18.4 million employees in 2019.

The ATT's Technician Premium is significantly less than that for the unmatched: 3,146–16,735 THB/month in agriculture, 5,969–15,458 THB/month in manufacturing, 5,569–14,674 THB/month in services, and 6,024–15,454 THB/month overall. On the one hand, the advantages of improving labor competence are constrained. On the other hand, policymakers can prioritize by proactively assisting the matching non-technicians. In addition, implementation use cases would provide lessons learned for program improvement on a larger scale.

Figure 3: Propensity Score Matching: Technician premium[4]
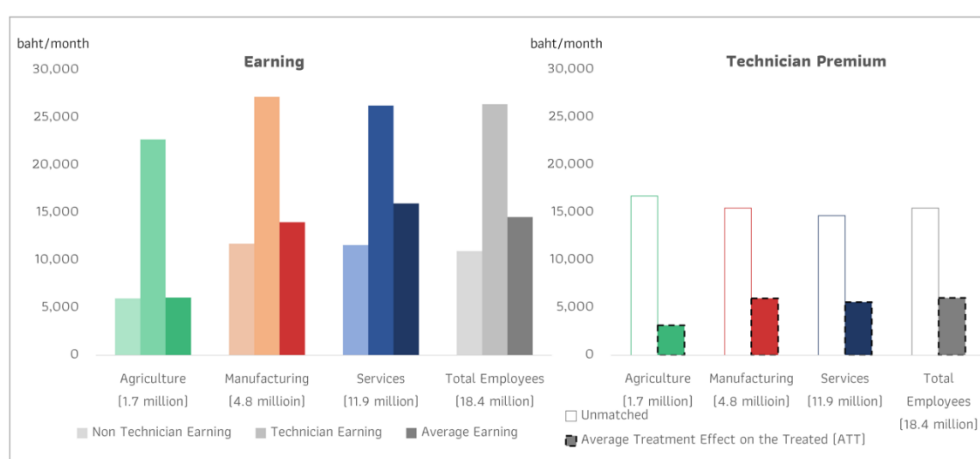
Source: Data from Labor Force Survey 2019 of Thailand's National Statistical Office; calculations by the authors

Policy planning, using integrated labor infrastructure to assist large-scale upgrading of labor skills, through a major shift from non-technicians to technicians, is a game-changer for Thailand's success in increasing national income. The COVID-19 problem has prompted corporate, public, and academic partnerships to seriously create the means, such as the E-Workforce Ecosystem discussed in TPQI et al. (2021), to increase the potential of Thai labor. How Thailand can maintain the momentum of cooperation and utilize it appropriately, is the next, and most difficult step, for future research and policy implications. In this regard, the suggestion would be 'not to waste such a good crisis.'

References

Amarase, N., Apaitan, T., and Ariyapruchya, K. (2013). Thailand's Quest for Economic Growth: From Factor Accumulation to Creative Destruction. *Bank of Thailand Discussion Paper*, *2*, 2013. Accessed 21 December, 2022. Available at https://www.bot.or.th/Thai/MonetaryPolicy/ArticleAndResearch/SymposiumDocument/Paper1_2556.pdf

Amarase, N., and Thapkham, P. (forthcoming). *Determinants of Wage Premium in Thailand.*

Feenstra, R. C., Inklaar, R. and Timmer, M.P. (2015). The Next Generation of the Penn World Table. *American Economic Review, 105*(10), 3150-3182. Accessed 21 December, 2022. Available at www.ggdc.net/pwt

Imbens, G. W., and Wooldridge, J. M. (2009). Recent Developments in The Econometrics of Program Evaluation. *Journal of economic literature*, *47*(1), 5-86.

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[4] Amarase, N., and Thapkham, P. (forthcoming) discusses technical detail.

Klyuev, M. V. (2015). *Structural Transformation—How Does Thailand Compare?* International Monetary Fund. Accessed 21 December, 2022. Available at https://www.elibrary.imf.org/downloadpdf/journals/001/2015/051/article-A001-en.xml

National Statistical Office. (2020). *The Labor Force Survey 2019*.

Pan, W., and Bai, H. (2015). Propensity Score Analysis: Concepts and Issues. *Propensity Score Analysis*, 3-19. Guilford Publications.

Ratkovic, M. (2014). *Propensity Score Matching and Beyond*. Princeton University. Accessed 21 December, 2022. Available at https://www.princeton.edu/~ratkovic/public/EpenDay1.pdf

TDRI. (2023). *Policies and Measures to Support and Prevent the Impact of COVID-19 on Labour and Employment*. National Research Council of Thailand.

TPQI, Amarase, N., Thapkham, P., Pathomsart, W. and Koseeyaporn, P. (2021). *E-Workforce Ecosystem: Optimizing National Workforce Management*. Thailand Professional Qualification Institute (Public Organization). Accessed 21 December, 2022. Available at https://www.tpqi.go.th/downloadFile.php?WP=qUqcMUuCpWOghKstGREgFJqeqPMcAUtkpQWgZ3qCGWOghJstqREcFKuw