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## Measuring labour market transitions of youths in Thailand: Evidence from rotation groups (2012-21) in the Labour Force Surveys

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# ► Measuring labour market transitions of youths in Thailand: Evidence from rotation groups (2012–21) in the Labour Force Surveys

Authors / Joshua D. Hawley, Nuttanan Wichitakorn





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## Abstract

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Using data from Thailand's Labour Force Survey from 2012 to 2021, the differences over time were investigated for the likelihood of youths moving between employment states, such as unemployment, employment and out of the labour force. Additional transitions were calculated for groups moving between vulnerable and non-vulnerable employment and with respect to education level and part- or full-time work. This analysis is useful to understand trends in the Thai labour force and showcase a unique method using panel data with national-level surveys from the National Statistical Office.

## About the authors

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## Executive summary

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This study analysed data covering a full decade of Thai economic activity. It is critical to recognize just how much has changed in the country over the intervening decade. Demographic change has resulted in overall population decline as well as a reduction in the number of people entering the labour force. The number of labour force participants is essentially stagnant. The labour force was smaller in 2022 (at 39.8 million) than in 2012 (at 40 million). Because of these demographic shifts, the labour force is older on average, and by 2031, the nation is projected to become a “super-aged” society, with more than 20 per cent of its population older than 65. The economy has compensated for these demographic changes to an extent, because the average age of the labour force has increased and a large number of persons older than 25 are working while fewer youths aged 15–24 are employed.<sup>1</sup>

A major feature of the Thai labour force is the many workers employed in the informal sector. In 2021, more than 50 per cent of the labour force was in informal employment. The percentage of the total labour force reported by the National Statistical Office as informal in the 2012 Informal Employment Survey was 62.7 per cent (NSO 2022). It declined in the ensuing decade but remains a striking feature of the Thai labour market.

The cross-sectional results from the Labour Force Survey highlight some facts of the Thai economy. Although the unemployment rate remains low, decent work deficits persist. Unemployment, which encompasses persons older than 15 working or looking for work who did not work for at least one hour during the survey week and were looking for work or available for work, is historically around 1 per cent. The percentage of persons unemployed was 2 per cent in 2020 and 2021. However, persons aged 15–29 had unemployment rates of 3.6 per cent in 2020 and 3.9 per cent in 2021.

### Data

Traditionally, governments have measured labour force status and transitions using cross-sectional data from national surveys. In recent years, however, analysts have documented the use of panel data from the Labour Force Surveys. In addition to Thailand, this type of data were used in studies of Serbia, the United States and Viet Nam, among others (Soares and Berg 2022; Samanego and Viegelahn 2021). The advantage of this approach is that individuals can be observed over time and measures, such as unemployment or employment across time, also can be calculated, as opposed to relying on comparing groups over time. Using panel data, such as rotation group information, can improve the quality of the underlying information used to understand changes in the labour market. For example, in a traditional survey where there is no resampling or rotation group, summary statistics are based on groups newly selected in each round of a study. This approach has a difficult time when workers migrate, especially seasonally. A second important feature is the influence of significant personal events for individuals, such as getting a degree or job training, and any direct impact on employment or earnings.

The Thai Labour Force Survey is the main source of labour market data for the National Statistical Office. It has been conducted for many decades successfully, and in 2002, the agency began surveying households repeatedly. This is called a “rotation group” and allows for observation of what occurs to people over time, for instance, capturing flows like graduation and moving into a job or losing a job and entering unemployment. This study used rotation groups that began in

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<sup>1</sup> This study used two definitions of youth, 15–24 and 15–29. Standard statistics from the National Statistical Office use 15–24, so tables cited from published data use this narrower range. However, ILO data analysis files use ages 15–29, acknowledging the longer labour market transitions of youth, leading to a larger age band for numbers that report information from microdata analysis.

2012 and ended in 2021. This is the second full set of rotation groups that the National Statistical Office has followed, with the first finishing in 2011.<sup>2</sup>

Examination of the data revealed that 70 per cent of the individuals had at least one quarter of measurement, while about 30 per cent had only one period of measurement. The number of observations for everyone was a function of the timing of the reports and the sampling frame. Not all people were followed in each quarter. Technically, two quarter transitions were used, as opposed to looking at four periods. These were subsequently used to match across pairs of quarters because not all cases in each quarter were part of the rotation group. In other words, a linked quarter-to-quarter file was created for each pair of adjacent cohorts, such as 2012Q1 to 2012Q2 or 2021Q1 to 2021Q2. The two-quarter rotation group matching was used for this paper because of the prior work from the International Labour Organization (ILO) using rotation groups in studies of Viet Nam (Samanego and Viegelahn 2021). The authors shared the code they used to generate the transitions based on the two-quarter design.

## Study method

After linking the data, several analyses were performed: First, the transition between employment states, such as unemployment, employment and out of the labour force, were calculated. These transitions were calculated by age and gender and then by education level. This analysis allowed for answers to direct questions about the transitions between employment, unemployment and out of the labour force for different demographic categories.

Second, the movement between sectors was calculated, including measures of job quality and stability, such as education or full- or part-time employment. Additionally, shifts in occupation or industry of employment were examined along with regional differences across the decade. Then a regression model enabled accounting for demographic, educational and employment differences in the likelihood of having vulnerable employment.

## Results

The results are presented in five areas: (a) labour force status (employment and unemployment); (b) job stability; (c) sectoral and occupational transitions; (d) vulnerable employment; and (e) regional variations in employment stability.

### Employment, unemployment and out of the labour force

The transition data from 2012 to 2021 revealed that most Thai workers remained employed in the following quarter, meaning that employment was very stable: About 90 per cent of workers remained employed consistently when comparing two quarters over the decade. This varied by demographic characteristic. For example, younger workers had less employment stability and young women especially had decreased likelihood of sustained employment.

Quarter-to-quarter unemployment was rare, although younger workers experienced higher unemployment. Unemployment-to-unemployment transitions (consistently being unemployed) and employment-to-unemployment transitions (changing from working to not working) differed depending on the age group. In the transitions, it was apparent that young people overall faced a higher likelihood of being unemployed than adults, for both women and men. Although the

<sup>2</sup> Research Institute on Policy Development and Evaluation (2020) provides a summary of the method used to create the rotation group that we have also followed in this report.

rate of unemployment remained low (about 1 per cent overall), it was consistently higher for youths aged 15–24.

The employment transition data illustrate movements out of employment or unemployment (out of the labour force). Overall, less than 10 per cent of employed workers in a given quarter were classified as out of the labour force in the next quarter. However, for young people and workers older than 55, the percentage of workers becoming unemployed in the next quarter was between 12 per cent and 15 per cent. For young workers, this greater likelihood of unemployment could represent going back to school, while for older workers, retirement could be the explanation. The school-to-work transition was not examined for this paper, although the data from the rotation groups can be used to describe this situation.

## Employment stability

Education was strongly associated with higher levels of employment stability, although some evidence emerged of lower employment and more difficult transitions for low-educated workers: About 90 per cent of individuals with a tertiary degree were employed in the following quarter. In contrast, workers with a primary or less than primary level of education had much lower stability in employment. Employment by education level was also associated with the greater likelihood of working full time (41 or more hours per week). In other words, part of the reason education is protective of sustained employment is because workers work more hours.

Workers who were employed between the ages of 15 and 29 were frequently moving from part-time to full-time employment (or out of the labour force). Some 20–35 per cent of young men or women, depending on the quarter and education level, moved to full-time employment after reporting part-time work in the prior quarter. This is a sign of employment churn in the labour market, meaning that firms are generating new full-time roles for workers. In contrast, a significant number of workers by age moved to non-working or part time employment from full-time work. This labour movement might also be a sign of problems with stability of work and the prevalence of short-term contracts for younger workers.<sup>3</sup> The data from the Labour Force Survey do not include variables on the employment conditions of specific jobs.

## Sector and occupation

The quality of jobs varied considerably depending on the sector and occupation of employment. The study looked primarily at the movement between sectors (such as agriculture, construction and market services) with two different measures: “to a new sector” (such as changing from agriculture to construction or another industry) or “to non-employment”, where this is inclusive of not employed, outside the labour force or unemployed. The data from the ten-year period indicated the highest level of employment transitions was out of construction and mining and the lowest level of transitions was out of agriculture or non-market services. However, the examination of moves to non-employment found that more than a quarter of workers moved from agriculture to non-employment. This summative number over a ten-year period describes the long-run changes that have occurred in the Thai economy – away from agriculture and towards services. Given the complexities of trends occurring in the decade, it is difficult to pinpoint explanations for the movement of workers from one group to another.

Occupational changes were calculated for sales, management, machine operator, agriculture and elementary occupations. Over the ten-year period, people moved out of elementary occupations and machine operator jobs. As with the sectoral data, the examination of movements

<sup>3</sup> The Labour Force Survey findings include data on some select employment conditions in jobs in the third quarter of each year. However, the structure of the transition data used for the study did not allow for measurement of annual transitions using the quarterly data.

to non-employment revealed the highest level among workers from the agriculture sector, followed by workers from elementary occupations. These moves were consistent also with global changes in occupational structure, whereby workers are more likely to be employed in occupations that use more technology and require higher levels of education.

## Vulnerable employment

“Vulnerable employment” is defined in this study as having a job classified as an “unpaid family worker” or “self-employed without employees”. Vulnerable employment in this study therefore comprises own-account workers and contributing family workers, as it was used in the past as an indicator in the Millennium Development Goals. While this combination of workers provides a relevant proxy for vulnerable employment in the labour market context of Thailand, its limitation should be acknowledged as not all of these workers can be considered vulnerable. Over the period of study (2012–21), approximately 40–50 per cent of all workers were characterized as vulnerable each year. Movements out of vulnerable employment varied by age, with the average rate at around 4 per cent per quarter moving from vulnerable to non-vulnerable employment. Interestingly, youths (aged 15–24) had the highest rate of movement into non-vulnerable jobs out of non-vulnerable employment, although it was highly variable over time.

Regression results illustrate the ways that rotation group data can be used for empirical estimates of the impact of individual characteristics, such as education or region of residence, on vulnerable employment. What it revealed in this study is that, generally, women and residents from the North-East of Thailand had a greater probability of vulnerable employment over time. The specific models used with the regression data also illustrate that individuals from the North-East were less likely to find non-vulnerable employment and more likely to be in vulnerable work than workers from the Bangkok metropolitan area.

## Regional variations

The regional transitions for employment, unemployment and out of the labour force status were broadly examined. Youths, and those from the rural areas in the North-East in particular, were less likely to have sustained employment and more likely to move to unemployment. Youths from the North-East consistently had lower stability in employment over the entire ten-year period, while youths from the Central region had consistently greater stability. The other transitions, such as moving from out of the labour force to employment, showed less variation by region and appeared to converge during the COVID-19 pandemic. One possible conclusion from this is that employment opportunities for residents in the North-East are systematically different, leaning towards a lower likelihood of people obtaining employment.

The regional data were also available for the regression results using vulnerable employment as the outcome measure. What the more formal analyses techniques revealed is that individuals from the North-East had a much-reduced likelihood of moving to non-vulnerable employment, even after controlling for other factors, such as education level or gender. The reduction in opportunity was also prevalent for workers in the North and the South of the country, although it was most significant for the North-East region. The takeaway from this is that employment options are still most attractive in the Bangkok metropolitan area and that there is a lack of opportunity in regional employment.

## Policy lessons

The study was an initial step to understand how to use panel data from the Thai Labour Force Survey to investigate employment transitions. The analysis generated the following suggestions for policy consideration.

**Addressing the employment transition from out of the labour force to productive employment.** Although employment stability emerged quite high in the analysis, there are possible difficulties when workers are out of the labour force or unemployed and need to obtain a job. This is especially true for persons with less education, such as from the north-eastern provinces, and for youths entering the workforce. Governments have tools for addressing youth transitions, such as vocational and technical schooling and public employment services, but the underlying issues in Thailand might be more complex.

Tackling vulnerable employment. The problems with the demand side of the labour market need to be addressed. Thailand has an exceptionally large number of people in vulnerable employment, closely associated with informal employment, and youths or poorly educated workers are more likely to be stuck in these jobs. Although the number of vulnerable-employed workers dropped in the decade of the study, it was still about the same number of jobs in 2021 as it was in 2012. Integrated strategies are needed to support a transition from the informal to the formal economy. As addressed in the ILO Transition from the Informal to the Formal Economy Recommendation, 2015 (No. 204), there are steps all nations should take to improve the transition between informal and formal employment (ILO 2015). Further efforts can be made to encourage small and medium-sized firms to create productive employment and decent work. Doing so will further increase the hiring of secondary and higher education-level workers who might be experiencing spells of unemployment or underemployment.

**Occupational and sectoral development.** Many workers are moving out of low-skill professions, such as agriculture or elementary occupations. However, it is not clear that workers are moving into higher-skill or higher-paid jobs. Conducting a more formal supply and demand analysis using the data from the Labour Force Survey would be an effective way of getting a handle on where workers are going when they leave the low-skill trades. It also reinforces the need for better social policy to support worker reskilling for trades that will ensure higher pay and for work in the formal sector or upskilling to facilitate better labour market opportunities in the same field.

## ▶ Introduction

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Economic changes in Thailand since the last global recession, in 2009, have presented challenges. Per capita gross domestic product (GDP) numbers since 2009 have varied significantly, with negative growth rates during two recessionary eras, in 2009 and 2020. In each recession, the Thai economy lost jobs, although the unemployment rate only increased modestly.

The nation has continued to see significant increases in foreign direct investment, driven by growth in the service sectors, such as tourism and real estate. But growth in traditional goods-producing sectors, such as industry or manufacturing, have stagnated in recent years. Due to the lower GDP growth and continuing reliance on agriculture and services, the demographic shifts taking place have magnified potential economic problems. Although Thailand is experiencing significant demographic changes, it also continues to rely on low-skilled migrants from the ASEAN region (mostly from Cambodia, Lao People's Democratic Republic and Myanmar) to meet demand.

But what will happen when Thailand becomes a super-aged society? Will the country be able to meet the need for workers with lower annual increases in the labour force? For instance, how can the Government address the fact that a much older nation requires various kinds of skilled workers? An increasing demand for health and social services will lead to changes in the mix of service sector workers, particularly those in elder care or other occupations aimed at the older population.

The labour force in Thailand has shifted over the past decade, with the number of labour force entrants (aged 15–29) declining. In 2012, some 14 million people were in this age group. In 2022, the number had declined to 13.1 million.<sup>4</sup> Declines in the number of new workers brings pressure to the transition of workers from secondary school or university to the workforce. If employers require more skilled workers to respond to changes in the economic conditions, they must either provide training to new workers or retain older workers much longer. Because the economy had a substantial fraction of workers in vulnerable employment over the past decade, it may be difficult to ensure that firms train the workers they require. And because non-standard forms of employment are growing and agricultural or own-account work continues, addressing Thai labour force challenges requires significant rethinking.

A decline in the growth of younger workers has direct effect on the school and university systems and is leading to challenges for employers due to the decline in the number of persons transitioning from school to work. Thailand's education system is shrinking, with the number of students in 2020 at about 12.6 million, down from nearly 14 million ten years earlier.<sup>5</sup> The number of secondary school pupils in 2022 was 5 million, a slight increase from 2021, but still lower than the numbers for 2014–19. Vocational and technical school enrolments peaked in 2008 at 738,000.<sup>6</sup> The enrolment number dropped to 540,000 in 2002, before recovering to 656,000 in 2018. A decline in the number of students is also leading to an increase in the pupil-to-teacher ratio. This increase has been highly variable over time, but in 2020 it was 19 students for every teacher in schools, and 7.5 students per teacher in vocational-technical schools.<sup>7</sup> The long-term problems of the demographic change will also filter through to the university sector, with fewer students in secondary school leading to reduced numbers of candidates for all degrees in university.

Thailand has some options when it comes to arresting the fall in the student populations. The out-of-school population for upper secondary school is still quite large. There is a significant decline in the rate of completing upper secondary school, in comparison to the percentage of students

<sup>4</sup> National Statistical Office, "Labour force participation rate by age group, sex and quarter".

<sup>5</sup> See the National Statistical Office, "Education Statistics".

<sup>6</sup> Data from World Bank, "Secondary education vocational pupils - Thailand", based on UNESCO Institute of Statistics Series.

<sup>7</sup> See National Statistical Office reports at (author's calculations based on teacher and pupil numbers).

that finish compulsory lower secondary schooling. Less than 50 per cent of the upper-secondary school-age group completed school in 2019, while the lower-secondary school rate was 86 per cent.<sup>8</sup> If the nation were to rapidly increase the completion rate for secondary school, there would be more university and post-secondary students available, and universities could become more selective about acceptance.

Another headwind and potential strength for the economy is the fact that Thailand has a robust network of migrant workers. Migrant workers from Cambodia, Lao People's Democratic Republic and Myanmar have consistently provided labour for construction and agriculture. Addressing the training and immigration challenges of absorbing new workers from other countries requires consideration.

Trends in youth transitions from high school to work or university to work have been changing over time (ILO 2022a; ILO 2021a; ILO 2021b). Global and regional research indicate that finding a job or transitioning to a new one was more difficult for youths in the period of recovery from the COVID-19 crisis (ILO 2022b; ILO 2022c). These students face crises in finishing school, and it is possible that drop-outs from post-secondary schooling are increasing. Students face greater difficulty completing university due to reductions in support from families who lost jobs or savings due to the pandemic. If students do not graduate from university, they traditionally have more difficulty with employment, exacerbating the impact of the pandemic on transitions.

Youths are experiencing unemployment and disconnect from the labour market. Specifically, youths not in employment, education or training (NEET) accounted for 15.5 per cent of Thai youths aged 15–24 in 2020, as opposed to 12 per cent in 2012. In Thailand, students with advanced levels of education have higher rates of NEET classification. The rate of youths with advanced education but classified as NEET in 2020 was 29.4 per cent, as opposed to 14.8 per cent of those with intermediate schooling (ILO 2022c). This lag in the transition to employment creates a feedback loop in the system. Students in this model are accumulating over time in the stock of unemployed workers, thereby generating increased unemployment overall as well as greater problems with finding jobs and lowering overall salaries (Ghaffarzadegan, Larson and Hawley 2017).

Disadvantage in the labour market creates barriers to successful job transitions for youths. In many countries, the history of disadvantage is strongest for workers who have experienced discrimination or with accumulated barriers to employment, including migrant workers, women, ethnic minorities and workers from LGBTQ+ backgrounds who have complex labour force transitions driven by different factors.

This study is an initial step to frame employment transitions in Thailand. The core goal is to document the variety of transitions that are experienced by individuals aged 15–24 and 15–29, which is often the age range for when big transitions in adult life are expected to occur. Using data from the Thai Labour Force Survey, which allows linking cohorts across two-quarter periods, the transition between states of employment were documented, including between work and unemployment. Using this information on labour market transitions, the Government can be better informed and positioned to design and adjust public policies to support movements from unemployment, employment and inactivity to more productive employment and decent work.

<sup>8</sup> UNICEF Education Fact Sheet 2019.



## ▶ 1 Background

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### 1.1 Growth and population change

GDP growth in Thailand has fluctuated widely since 2012, ranging from periods of positive change in annual GDP (3–4 per cent) between 2015 and 2019 to periods of contraction (negative 6 per cent in 2020) during the COVID-19 era. In the most recent crisis, from 2020 to 2022, GDP was 2.2 per cent in 2019, negative 6.2 per cent in 2020 and then rebounded to 1.6 per cent in 2021. Given this significant fluctuation in GDP growth, the GDP in constant 2015 US dollars declined from \$460.8 billion in 2019 to \$431.86 billion in 2021.

Thailand's demographic shifts reflect a rapidly ageing society. In 2022, the total population as projected by the National Statistical Office was 66.1 million.<sup>9</sup> The number of persons aged 60 and older in 2012 was 8.1 million, compared to 12.7 million in 2022. Over that same ten-year period, the average age of the population dramatically increased, and the fertility rate was at 1.5 in 2020, below replacement.<sup>10</sup> As a result of the rapidly ageing society and the lower birth rate, the number of new labour force entrants is declining. In 2022, there were only 13.1 million people aged 15–29 according to the National Statistical Office, while in 2012 there was 14 million. In 2031, Thailand will become a “super-aged society”, where more than 20 per cent of the population is older than 65.

### 1.2 Labour force

Thailand's labour force peaked in 2012, at slightly more than 41 million. By 2022, the labour force was 40.2 million.<sup>11</sup> The percentage of the population aged 0–14 peaked in the 1960s and stands at around 16 per cent of the total population. In 1972, it was 44 per cent. At the same time, older retirees now make up 14 per cent of the total population, as opposed to 4 per cent in 1972.<sup>12</sup> Therefore, if the country is to maintain its current labour force participation rates, it will need to increase the proportion of working-age persons who are employed and support older adults and retirees in part-time employment to ensure the labour supply.

Currently, overall labour force participation is 68.5 per cent (first quarter 2023). In 2022, it stood at 67.8 per cent, down from 72.3 per cent in 2012. Both male and female participation is also down, although the participation rate by age cohort has changed. Young adults aged 15–19 are less likely to be employed in 2023 in comparison to 2015 (at 13.6 per cent versus 19.7 per cent). Youths aged 20–24 have much greater labour force participation than all other age groups, which has not dramatically changed (64.4 per cent in 2015 versus 63.9 per cent in 2023). In contrast, all other adult age groups (25 and older) have higher labour force participation rates in 2023 in comparison to 2015. After age 60, the labour force participation rate is much lower (below 40 per cent for both men and women).<sup>13</sup>

The labour force participation shifts matter because employers continue to report shortages of skilled workers. Moreover, if there are shortages of labour, why are higher-education workers not in the labour force? As the International Labour Organization (ILO 2020c) reported, rates of unemployment were higher for workers with higher education as opposed to compulsory schooling

<sup>9</sup> The National Statistical Office estimated the Thai population to be 66 million. See “Demography, population statistics”.

<sup>10</sup> National Statistical Office, “Total fertility rate”.

<sup>11</sup> World Bank Indicators based on ILO and UN Population Division.

<sup>12</sup> Ibid.

<sup>13</sup> National Statistical Office tables.

in 44 of 156 countries in 2020 including Thailand. In 70 per cent of lower-middle-income nations, the rate of unemployment was higher for those with a university education.

Reported job vacancies increased between 2012 and 2021 despite the decrease in labour force participation, according to data from the National Statistical Office. In 2021, there were 562,615 jobs reported across the country, while in 2012, there were only 447,027 jobs posted. The number of job vacancies in Thailand dramatically declined prior to the COVID-19 pandemic (annually 340,000 in 2018 and 2019) and spiked in 2020, to 793,069.<sup>14</sup>

Overall, unemployment is usually below 1 per cent in Thailand, although due to the pandemic it increased to approximately 2 per cent in 2020. By the second quarter of 2022, overall unemployment was 1.4 per cent. However, unemployment by age group is often much higher. For youths aged 15–24, it was 5.3 per cent in 2020, and in 2022, unemployment for this young group was 4.2 per cent. More worryingly when disaggregating unemployment since 2019, the 20–24 age group still had unemployment that was extremely high among persons tertiary education (the group with higher levels of education (advanced) had unemployment of 16.5 per cent in 2020, 18.4 per cent in 2021 and 16.3 per cent in 2022).

An additional problem with the labour force in Thailand is the high percentage of workers still in vulnerable employment. In 2021, around 50 per cent of the labour force was engaged in either own-account work or worked for family in unpaid roles (NSO 2022). Although the number has decreased since 2012, the continuing persistence in the number and percentage of workers in vulnerable employment is exceedingly difficult to address, given that the Social Security Fund does not automatically cover own-account or informal sector workers.

This delay in moving to non-vulnerable employment is due in part to the ageing workforce. With many older workers and fewer new labour force entrants, the jobs are not turning over. And because non-standard forms of employment are more common now, there is increasing need to address their challenges and implications for vulnerable employment due to more people becoming drivers or doing delivery or other gig work. As noted in the *ASEAN Employment Outlook* (ASEAN Secretariat 2023), “Formalization gives government a greater scope of work to generate revenue and enforce the rule of law. Furthermore, the social protection of workers is greatly assured under formal enterprises or arrangements.”

### 1.3 Public policy and the labour force

Thailand’s ability to ensure that youths and prime-age workers (generally assumed to be 25–54 years old) make the transition into the workforce successfully has depended on the Government building economic frameworks that are supportive of work; establishing an educational policy that ensures that workers have the skills that employers need; and building systems of social insurance that can set the framework for careers and in response to an ageing society.

Thailand’s economic framework for the workforce has shifted in recent years due to the struggles with the demographic reality of many older workers while continuing to expand economic development away from traditional manufacturing and services. Thailand’s recent economic history is complicated by the fact that political control over policymaking has also shifted under different governments. While the nation has continued to put out five-year economic frameworks since 1961, policy changes to expand the quality of the workforce have been difficult to achieve. It was not until 1997 that Thailand required lower-secondary schooling (nine years); in 2002, lower- and upper-secondary school became free.

<sup>14</sup> [Data on job postings in Thailand](#) come from the National Statistical Office, see the table labelled “Number of job vacancies by sex, region and province: 2012–2021”.

Currently, Thailand operates an education system that continues to face significant challenges, especially in preparing workers for the labour market. Overall, the number of Thai students in schooling peaked in 2011, and because the number of school-age youths continues to decline, this will have continued negative impacts on the demand for teachers and supply of entry-level workers.<sup>15</sup> Despite the declines in the number of students overall in compulsory education, the percentage of age groups completing upper-secondary schooling has not increased substantially, nor has the average number of years of schooling increased.

Skilled workers from vocational and technical education or universities face difficulties in Thailand. Although the nation has a robust network of technical and vocational education and training (TVET) institutions offering both traditional in-school programmes as well as a small number of dual (apprenticeship) programmes, the systems are often criticized for not preparing enough workers nor working with industry in ways that will help schools keep up with changes in the demand for higher-level skills. One challenge is that the number of vocational education students peaked in 2008, at 738,000;<sup>16</sup> it had fallen to 656,000 in 2018. Thailand's ability to respond to the changing demand for skilled workers requires addressing this shortfall in student enrolment.<sup>17</sup>

## 1.4 COVID-19 era policy

The COVID-19 economic policy in Thailand mirrored efforts in other nations. To counter the dramatic declines in business and specifically unemployment, the Government launched several important economic interventions. For business, they adopted policies designed to help firms survive despite the dramatic decline in revenues due to shifts in demand. For example, large national firms, such as Thai Airways, received subsidies to ensure they survived by reducing excise taxes on fuel in addition to other activities. In terms of monetary policy, beginning in March 2020, the Bank of Thailand reduced borrowing rates and allowed commercial banks to borrow more than \$30 billion quickly to ensure liquidity remained in the market. Small businesses received significant support in terms of short-term cash payments, special loans and grace periods for loan repayments (Bank of Thailand 2021; NSO 2021c).

Labour force policy during the pandemic was highly varied and led to several short-term activities designed to reduce the impact on unemployment and weaken the impact on people.

- Foreign worker management (from August 2020) covered 241,537 workers from Cambodia, Lao People's Democratic Republic and Myanmar who were allowed to stay in Thailand until 31 March 2022. Considerable accommodations were provided for workers in fishery employment, and a service centre was created for foreign workers during the pandemic.
- Job expositions (during 2020) promoted 895,739 jobs and led to the hiring of 151,119 people for government, state enterprise and private sector jobs.
- Unemployment benefits were expanded and provided to 1.9 million people, at a cost of 39 million baht in 2020.
- The Social Security Fund was extended to 10 million workers not covered, with them receiving 5,000 baht per month for six months in 2020.

On the higher education side, Thailand experienced tremendous institution closures and therefore changes in the access to workforce training during the pandemic. Universities quickly went

<sup>15</sup> Various sources can be used for this statistic: UNESCO-UIS is the most comprehensive, although the numbers differ from the sources provided by the Ministry of Education for later years, which are cited by the National Statistical Office. For the UNESCO-UIS data system on Thailand, use <http://data.uis.unesco.org/> and refer to the indicators on enrolment. For the Ministry data, some are available from individual pages at [www.moe.go.th/education-statistics/](http://www.moe.go.th/education-statistics/) and some are available from the National Statistical Office, at <http://statbbi.nso.go.th/staticreport/page/sector/en/03.aspx>.

<sup>16</sup> Data from World Bank, "Secondary education vocational pupils - Thailand", based on UNESCO Institute of Statistics Series.

<sup>17</sup> UNESCO-UIS Institute of Statistics, "Secondary education-vocational pupils".

to online learning in 2020. Even in 2022, there was great variation in the reopening of schools, programmes and classes, many of which were still conducted online.

Given the move towards online instruction during the pandemic, there is a possibility of decline in the quality of skilled trade instruction in the vocational education sector. The global ILO–UNESCO Joint Survey on Technical and Vocational Education and Training and Skills Development conducted in 2020 demonstrated substantial immediate impacts of the pandemic on vocational schooling, as some 98 per cent of participating countries closed schools in April 2020 (ILO and UNESCO, 2020). However, the issues of the pandemic exacerbated the long-run problems in TVET that the vocational sector has faced in supplying skilled workers to changing economies in Malaysia, Thailand and Viet Nam. The percentage of level 3 (upper secondary) enrolment in vocational or technical education varies considerably, from about 20 per cent in 2017 for Thailand to 43 per cent in Indonesia in 2019. Viet Nam’s TVET enrolment was 10 per cent in 2015–16 according to published reports (ADB 2020; Bai and Paryono, 2019).<sup>18</sup>

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<sup>18</sup> The most recent enrolment numbers for selected nations are archived in the UNESCO–UIS data system (the indicator is secondary education vocational pupils).

## ► 2 Theory

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### 2.1 Labour force transitions

Transitions from school to work and between labour force statuses are a staple of the economics of education and form a key rationale for conducting Labour Force Surveys overall. The ILO is invested in data collection to represent transitions using labour force data collected at the national level. ILOSTAT has a primary set of indicators on employment status and educational attainment. These measures represent basic elements, such as unemployment, and disaggregate by age, gender and educational status. According to the economic literature, while the measurement of unemployment is a methodological issue, considerably more information about unemployment is required for effective government policymaking, particularly the transitions between unemployment, education and work.

Transitions are important for a number of reasons because changes in the economic success of workers require successfully navigating a series of hurdles. There are initial transitions that are critical, such as finding a job out of high school or university. Additionally, individuals traditionally change jobs frequently. Moreover, workers moving from vulnerable employment or a job in the agriculture sector to productive employment and decent work in a modern private sector or government job may be seen as evidence of successful transitions.

However, as the pandemic experience made clear, the dramatic rise in unemployment in 2020 resulted in many workers experiencing barriers to their return to work after a period of unemployment (Soares and Berg 2022). Additionally, in nations such as Thailand, where a large percentage of the labour force is employed in the informal sector or in agriculture, measuring transitions continues to be difficult due to the level of informality. Informal employment continues to be the dominant way to differentiate “decent” jobs (ILO 2022c).

Academic literature on transitions could be framed as literature focusing on the larger developmental transitions from school to work and proceeding to retirement (Tanner, Arnett and Leis 2009; Lloyd 2005). These lifespan studies draw on sociological and psychological theory. Using this literature, it is possible to differentiate childhood from adolescence and young adults from older adults. These stages of development are, in many scholarly studies, a reflection of modern economic development. In this respect, a full accounting of transitions needs to include family and marriage as well as education and work (Lloyd 2005).

Research by the ILO and others during the pandemic showed changes in the transition rates in recent years and laid the groundwork for studies like what Soares and Berg (2022) initiated. Using data from seven countries, they compared the transitions from employment and unemployment for 2019 and 2020. Their study used rotation groups and compared the numbers of employed and out-of-work persons in the first and second quarters of 2019 and 2020. Their examination revealed that in most of the seven countries, workers experienced a considerable drop in employment in 2020 and there were some increases in the population out of work. Data for Mexico, for example, showed a drop of 5 per cent in employment and an increase of 10 per cent of people out of work between the first and second quarter of 2020.

### 2.2 Concepts

Transitions between employment status (employment, unemployment and out of the labour force) are at the core of this study. The results reinforce the general understanding of employment

transitions in so far as most people who were employed remained in employment in the following quarter. This was true in the analysis by age group and by gender and age group combined.

The literature on unemployment in Thailand is heavily weighted towards the concept of educated unemployment. Beginning in the 1970s, there was increasing sensitivity to growing unemployment among university-level graduates in developing countries like Thailand (Dore 1994; Dore 1976). Governments developed mass education often without thinking through the labour force needs of business. Therefore, the employment opportunities of many university graduates remained tied to government service or education. The fact that credentials were increasingly important for employment was not considered.

A second body of literature from Thailand talks about the low aggregate level of unemployment. Thailand's unemployment has not gone above 3 per cent during the past four years, even after the pandemic recession.<sup>19</sup> Part of the reason for this is that at least half of all workers are in the informal sector.

Technology is impacting the transitions more generally. It is safe to assume that aggregate levels of education need to keep increasing to ensure that skills improve overall. However, it is not possible to predict how jobs are going to change soon with the introduction of artificial intelligence. The safest course of action is to assume that routine jobs will at some point continue to decline, leading to a decrease in demand for less-educated workers. How this will influence the demand for higher-level skilled workers will depend on the cost of those workers and the speed at which computers can be programmed to carry out those jobs (Frey and Osborne 2017). For example, some medical specializations, such as radiology, are projected to fundamentally change, affecting the number of medical doctors needed to carry out the work. Yet, the impact may vary for surgeons or emergency room doctors. Other examples depict similar change for finance and banking (Autor, Levy and Murnane 2003).

More generally, the scholarship on the future of employment is changing due to the combination of technological and other factors. McKinsey Global Institute (Lund et al, 2021) outlined several ways that the increasing push towards remote work as well as a refocus on physical work will change overall demand for workers and the percentage of workers globally who might experience occupational transitions. First, remote work will impact up to one third of all workers, leading to decreased demand for office space and increased flexibility where people work. Second, countries will have many workers changing occupations because they are not needed in the new scenarios. Occupations that will see large increases in demand, such as health care and science, technology, engineering, and math-oriented work, are distinct from the types of occupations that Thailand has in large numbers.

### **Employment stability**

The following sections review overall employment stability in Thailand. Employment is defined using the definitions in the quarterly Labour Force Survey: if an individual is employed for at least one hour for wages, salary or profit during the survey week; alternatively, individuals can be counted as employed if they received wages or salary or profits and were not working during the survey week but would return to work. And, individuals working on farms owned by household heads or by members of the household but are not paid are counted as employed.

Individual employment (as opposed to unemployment or not being in the labour force) is currently stable in Thailand, according to the National Statistical Office quarterly reports (NSO 2020–22). The labour force participation rate, as described earlier, is high. Consistently, 67–69 per cent of the labour force is working, as defined by the labour force participation rate. And the unemployment

<sup>19</sup> National Statistical Office, “Labour force statistics: Unemployment rate by quarter”.

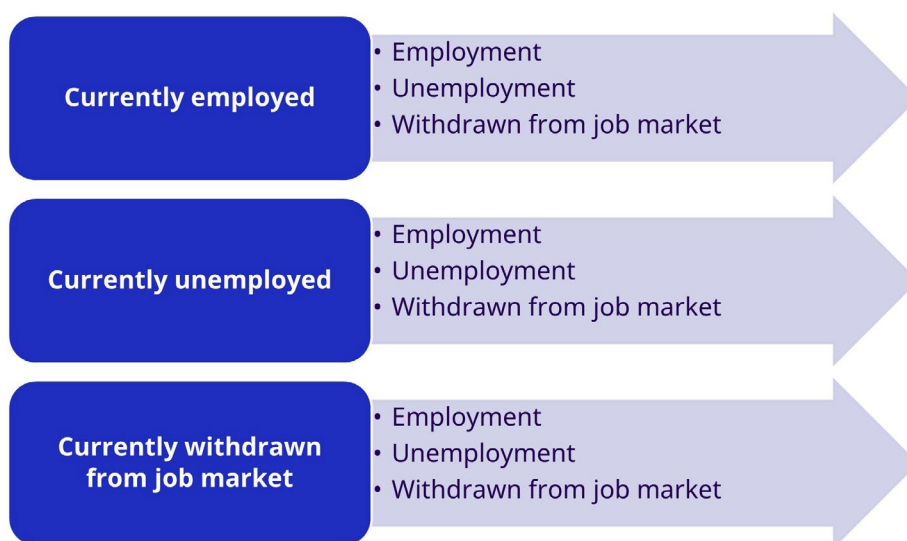
rate is usually at around 1 per cent, even for the period from 2020 and 2021 when the nation was focused on the pandemic.

In a typical quarter during the decade analysed, from 2012 to 2021, the majority of respondents older than 15 were working, according to the Labour Force Survey findings. But a large percentage of respondents were employed as either own-account or unpaid family workers. This is treated as work status in the Thai reports. For example, in the report for the second quarter of 2022, some 47.7 per cent of employed people were working as employees, 34.4 per cent were own-account workers, and 15.4 per cent were unpaid family workers. This was little changed from prior years. In 2015, for example, some 47.3 per cent of employed people were working as employees, while 31.9 per cent were own-account workers and 17.9 per cent were unpaid family workers. And going back to the first year of this analysis, 2012, 42.7 per cent were employees, 31.3 per cent were own-account workers and 23.3 per cent were unpaid family workers (NSO 2022b).

The government statistics typically capture employment for each quarter (or an average for each year), and thus do not address the transitions overall or for groups of workers. In this case, overall employment is used. Inactive implies a temporary stoppage due to seasonal disruptions. Being out of the labour force includes household work, study or individuals younger than 15.

Traditionally, stability in employment would be examined using cross-sectional measures, such as the labour force participation rate. The participation rate in Thailand in 2012–21 was between 72 per cent and 67 per cent.<sup>20</sup> It is measured through the quarterly Labour Force Survey data, but each observation is independent. Therefore, it does not account for individuals' behaviour in the labour market. As well, cross-sectional samples from each year do not give a good sense of the changes in the composition of the labour force. As the population ages, there are fewer working adults who can be employed, leading to a natural decline in the percentage of people working.

In contrast, this study measured transition using the rotation groups, thus offering an alternative to the strictly cross-sectional measures of employment. For example, a rotation group design provides opportunity to observe an individual's employment status in one survey and then to look at the same individual in the following quarter. This allows the chance to look at stability of employment and, conversely, at the move to unemployment or out of the labour force. The following illustrates the transitional states that were measured in this study.



<sup>20</sup> National Statistical Office, "Labour force statistics".

In effect, this leads to nine transitions:

1. employment to employment;
2. employment to unemployment;
3. employment to out of the labour force;
4. unemployment to employment;
5. unemployment to unemployment;
6. unemployment to out of the labour force;
7. out of the labour force to employment;
8. out of the labour force to unemployment; and
9. out of the labour force to out of the labour force.

These transitions can be calculated for a variety of subgroups. This study looked at transitions overall for adults (older than 15), by certain regional groups (North, South, Central, North-East and Bangkok metropolitan), youth (defined as 15 or older but younger than 25), gender, industry and occupational status.

The sectoral and occupational data were assessed, with focus on transitions between employment states within sectoral and occupational status. For example, on the industry side, employment in sectors was documented in a specific quarter:

- agriculture;
- construction;
- manufacturing;
- market services;
- mining, quarrying or electricity, gas and water; and
- non-market services.

Occupational transitions were also captured:

- employed as clerical, service or sales worker;
- employed as manager, professional or technician;
- employed as plant and machine operator or assembler;
- employed as skilled agricultural or trades worker; and
- employed in an elementary occupation.

The occupation and sectoral data are relevant from a transition standpoint and could be further developed over time. For this initial analysis, the focus kept to the following two transitions for each industry or occupation: (a) the transition to a new industry or occupation (for example, a move from agriculture to construction); and (b) a move to outside the labour force.

The work in this paper also requires clarifying the following terms that the ILO has documented in the statistical code but are not standardized in the data from the Thai Labour Force Survey.

**Demographics.** There are some demographic characteristics that were added to the analysis: the five- and ten-year age bands from the ILO. This data divide individuals working into five-year bands (15–19, 20–24, 25–29, etc.) and ten-year bands (15–24, 25–34, etc.). The data were more complicated in situations in which family members reported other household members' ages. For instance, there were cases in the data in which individuals who were 24 years old in one year



had become younger in the following measurement period (say, 22). Also, there was evidence of data entry errors, whereby someone who was a 2 in a survey instance was 22 in the following year. This was clearly a keying error. There were similar errors in other variables, such as gender or education level, where the data required cleaning. Generally, the errors were accepted during the analysis; in the situations where there was conflict, the first instance of the variable was used (if someone was male in the first year or quarter observation but inexplicably coded as female in the second observation, they remained coded as “male” for all periods of observation).

The age-level analysis for transitions relied on the difference between “youths” and “adults.” Youth are defined as of working age, which is 15–24 in Thailand. Adults, in contrast, are defined as 25 years and older.

**Level of education.** The level of education data in the Labour Force Survey can be coded depending on the goals of the research. The study used the ILO coding scheme for ISCED97 classification, but it required recoding the existing education variables into the following codes: no schooling, pre-primary, primary or first stage of basic education, lower-secondary schooling or second stage of basic education, upper-secondary education, post-secondary or non-tertiary education, first stage of tertiary education and second stage of tertiary education.

In the tables illustrating transitions, the data were compressed down to four levels: less than primary, primary, secondary and tertiary schooling. The following codes were compressed down from the existing ISCED97 items.

1. Less than primary (ISCED 1 “no schooling” or 2 “pre-primary”).
2. Primary (ISCED 3 “primary” or 4 “lower secondary or second stage of basic”).
3. Secondary (ISCED 5 “upper secondary” or 6 “post-secondary and non-tertiary”).
4. Tertiary (ISCED 7 “first stage tertiary” or 8 “second stage of tertiary”).

**Vulnerable employment.** For this study, vulnerable employment was used as a measure of quality of employment. Vulnerable employment is defined from the work status variable (which is labelled as “status in employment”). If an individual was labelled as either an “unpaid family worker” or “self-employed without employees”, they were assigned to the category “vulnerable worker”. If they were instead reporting either that they were an “employer” or “government”, “government enterprise” or “private employee”, they were assigned the label “non-vulnerable worker”. Vulnerable employment in this study therefore comprises own-account workers and contributing family workers, as it was used in the past as an indicator in the Millennium Development Goals. While this combination of workers provides a relevant proxy for vulnerable employment in the labour market context of Thailand, its limitation should be acknowledged as not all of these workers can be considered vulnerable.

## ▶ 3 Study method

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### 3.1 Data origins

Data for this project derive from the Thai Labour Force Survey from 2012 to 2021. The data represent approximately 200,000 individuals on a quarterly basis, or some 8 million records over the ten years. The Labour Force Survey is a household sample survey that is representative of all households in the country. It is conducted by the National Statistical Office.

The sampling begins with the use of the provinces (77, for example) as strata. The strata are then divided into municipal and non-municipal areas. Enumeration areas in each stratum are identified. In 2022, there were 5,430 areas among a population of 139,325 enumeration areas. The number of households surveyed within each enumeration area was 16 for both municipal and non-municipal areas. Sample sizes vary over time, but the 2022 sample was 86,800 households. The number of rounds on an annual basis has remained the same since 1998 (four). Prior to that, there were three rounds (1984–97), and from 1963 to 1984, there were two rounds. As far as known, the National Statistical Office does not report response rates by rotation group, only for the entire household sample surveyed in each quarter of observation. Response rates are high for the Labour Force Survey. In 2022, the rate was 95 per cent overall, with only Bangkok metropolitan area having a rate lower than 90 per cent.<sup>21</sup>

The sampling design since 2012 has included a rotation group that is followed for up to four quarters in a two-year period. For example, households surveyed in 2012 contained eight groups (1A, 1B, 1C, 1D, 2A, 2B, 2C and 2D). The latter four (2X) were surveyed again in 2013. The former group was not resurveyed. This is a similar practice to the Current Population Survey and indeed for many Labour Force Surveys influenced by the ILO, which provides model methodology for designing rotation groups.

### 3.2 Sample

The procedure for this study used rotation groups beginning in each year (from 2012 to 2021) to examine labour market engagement in paired quarters. Thus, the individuals in each rotation group (2A, for example) were used to assemble linked individual panel data. Individuals were linked by use of the household identifier. Following a method developed by the University of the Thai Chamber of Commerce's Research Institute for Policy Evaluation and Design, an individual identifier "caseid" was constructed by adding in region, province, urban area, rotation group, block/village, household type, household number and member number. This was largely a deterministic matching process, as opposed to one using formal statistical procedures (Tolke and Bender 2020). The main issue with this process is that the household ID remains largely stable over the rotation groups, but the member number can vary. For example, a child can be member number 1 in period one but become member number 2 in period two. Therefore, some manual and data cleaning needed to be performed.

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<sup>21</sup> The details for the survey method are included in each report for the Labour Force Survey. Specific response rates, sample sizes and the number of households vary and are detailed in each report.

The procedure for linkage across rotation groups was as follows:

$$\text{caseid} = \text{region} + \text{province} + \text{urban} + \text{rotation group} + \text{block/village} + \text{household type} + (1) \\ \text{household number} + \text{line number}$$

This procedure thus generated a unique identifier for everyone who could be used to link across quarters. The process generated 3.6 million unique case identifiers across the 2012–21 period. These were subsequently used to match across pairs of quarters because not all cases in each quarter were part of the rotation group. In other words, a linked quarter-to-quarter file was created for each pair of adjacent cohorts, such as from 2012Q1 to 2012Q2 or from 2021Q1 to 2021Q2.

The final group of individuals that can be linked is approximately 100,000 for each quarter, or 2.7 million in the ten-year period. Three quarter-to-quarter transitions were not possible due to missing variables in three files (from 2014Q3 to 2014Q4 and from 2015Q2 to 2015Q3 and from 2015Q3 to 2015Q4).

The sample of 2.7 million records by size of paired quarter-to-quarter panels is approximately half of each of the rotation groups in each period. Because each rotation group is followed for four time periods, only about half of each quarter cases are available for the subsequent quarter. Appendix 1 lists the sample sizes for each rotation group's paired sample.

### 3.3 Biases from time aggregation

Linking across rotation groups helps address a key problem with creating longitudinal studies from Labour Force Surveys. The Current Population Survey in the United States went to a rotation design in 1953, and members of households are now interviewed eight times in a 16-month period (Rivera Drew, Flood and Warren 2014). In other cases, Viet Nam's Labour Force Survey is followed for consecutive two-quarter pairs, enabling linkages (Samaniego and Viegelahn 2021). Other examples have been described in the literature, although there are major problems, given the difficulties assumed from sample attrition across rotation groups (Zillak and Kniesner 1998).

Prior to 2002, Thailand's Labour Force Survey was entirely cross-sectional, with the sampling conducted independently from quarter to quarter. This resulted in a challenge for labour market studies due to the fact that individual labour market flows cannot be followed over time. Any event, such as a spell of unemployment or a job change to a new occupation, is therefore unlinked to the records in the subsequent period. In fact, earlier work conducted was entirely subject to this problem (Hawley 2004; Hawley 2003). In that work, simple Mincer models were developed to measure the relative impact of, say, educational attainment on labour market success in subsequent years or quarters in Thailand, although any time-varying characteristics at the individual level were unmeasurable.

## ▶ 4 Results

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### 4.1 Labour force status

**The vast majority of Thai workers maintained employment in subsequent quarters, which implied a high degree of employment stability.**

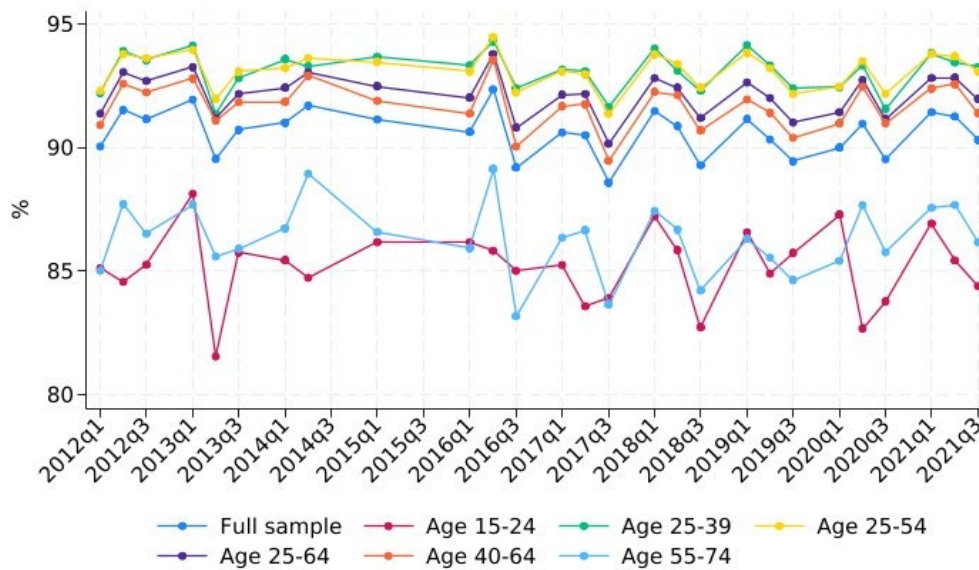
Overall, the transition from employment to employment across all pairs of quarters from 2012Q1 to 2021Q4 was 90–91 per cent for all adults older than 15. This means the individuals working in the previous quarter continued to work in the subsequent quarter. This is an alternative way of looking at labour force participation or employment stability.

Figures 1 and 2 illustrate the employment-to-employment transitions. This analysis revealed high levels of employment over time in subsequent quarters. In all sub-groups (gender and age), there was never a quarter-to-quarter transition in which the rate of transition from employment to employment dropped below 80 per cent. Even in the COVID-19 era, the overall transition rate between quarters of employment was more than 90 per cent if age of the group was not considered (defined as employed in two adjacent quarters).

**Younger workers (aged 15–24) had lower employment stability in comparison with prime-age (aged 25–54) workers.**

Examination of the age effects in more fine-grained categories (figure 1) revealed that the transitions for 15- to 24-year-olds and workers aged 55 and older were lower than for other age groups. Typically, 15- to 24-year-olds experience significant lags in employment because they enter high school and university and delay going to work. As people progress to retirement, a significant drop-off in the employment-to-employment transition is expected. It was interesting to see that the COVID-19 era quarter-to-quarter transition was NOT the low point for any of the age groups. In 2013 and again in 2017, however, there were drops in all working-age quarter-to-quarter transitions. There is no clear explanation as to why these drops in earlier years occurred for some age groups. Unemployment in those years was low overall.

► Figure 1. Quarter-to-quarter transitions from employment to employment, by age group, 2012–21



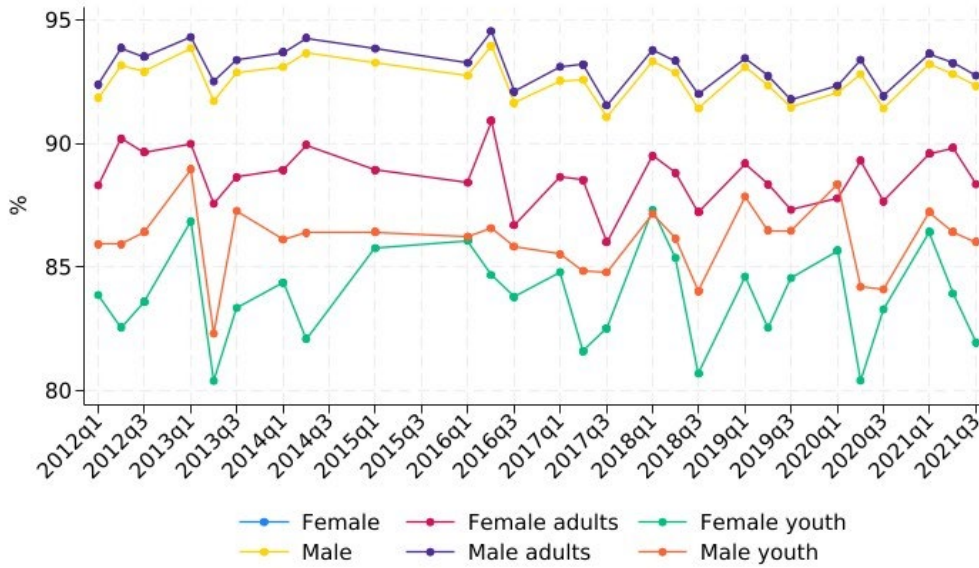
Note: The data for three transitions (2014Q3 to 2014Q4 and 2015Q2 to 2015Q3 and 2015Q3 to 2015Q4) cannot be linked due to missing identifiers for three of the quarters.

Source: Thailand Labour Force Surveys 2012–21.

### Young women (aged 15–24) experienced lower employment stability in comparison with young men.

Figure 2 illustrates the gap between men and women by age. Young women had the lowest quarter-to-quarter stability in employment, and a great deal of variation. The young men also experienced similar instability in employment-to-employment transitions, but women's participation dropped more in quarters where the employment for both young men and young women fell. For example, in quarters from 2013, 2017, 2018, 2019 and 2020, there were instances in which women aged 15–24 experienced a drop in employment from one quarter to the next. For young men of a similar age, the transitions did not fall as regularly or as far. With regard to the sectoral composition of employment, women were concentrated in own-account and unpaid family labour and men were employed in manufacturing and trade – areas that had more growth in the decade (2012–21).

► **Figure 2. Quarter-to-quarter transitions from employment to employment, by gender and age group, 2012–21**



Note: The data for three transitions (2014Q3 to 2014Q4 and 2015Q2 to 2015Q3 and 2015Q3 to 2015Q4) cannot be linked due to missing identifiers for three of the quarters.

Source: Thailand Labour Force Surveys 2012–21.

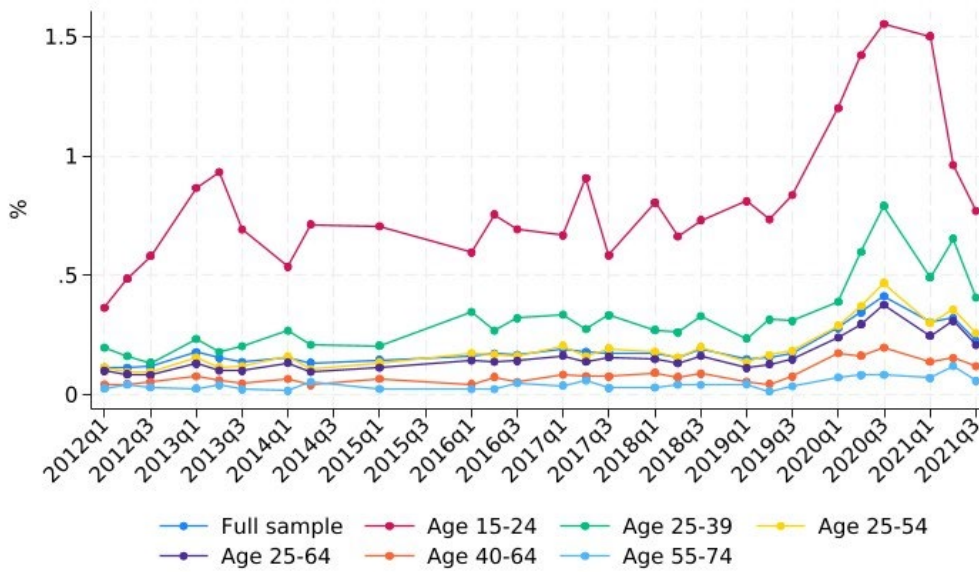
**Unemployment was rare in Thailand, especially for prime-age workers. However, younger workers experienced more unemployment.**

The probabilities for transitions from employed to unemployed were always below 1 per cent for adults from 2012 to 2021, regardless of the quarter-to-quarter period. There are different reasons why Thailand has very low open unemployment. The primary explanation usually has to do with the way unemployment is worded in the Labour Force Survey. The questions the Labour Force Survey uses to record unemployment refer to persons available for work as well as persons actively looking. However, the question asks if the individual has “worked for pay or profit or as an unpaid family member in the last seven days”. This measure, therefore, includes any vulnerable workers, from agriculture or own-account workers, as well as persons unemployed but previously working in industrial or government work.

**Young people experienced higher unemployment than adult workers.**

Despite Thailand’s low (less than 1 per cent) unemployment rate, there is evidence from recent years that larger numbers of workers aged 15–24 and 25–39 (youth and adults) are experiencing higher levels of unemployment. In this analysis, young workers frequently were unemployed at higher rates according to the national statistics. Thailand youths (aged 15–24) had increasing unemployment rates between 2014, at 3.2 per cent, and 2020, at 5.3 per cent. Figures 3 and 4 illustrate an increasing quarter-to-quarter transition between employment and unemployment by age. Beginning in 2016, there appeared to be a move to a higher rate of transition for youths aged 15–24. However, the measure in figure 3 is the employment-to-unemployment transition, so it is reflective of the cases in which an individual reported being employed in a quarter and unemployed in the subsequent quarter. The transition data support the conclusion that youths aged 15–24 are experiencing distinct transitions.

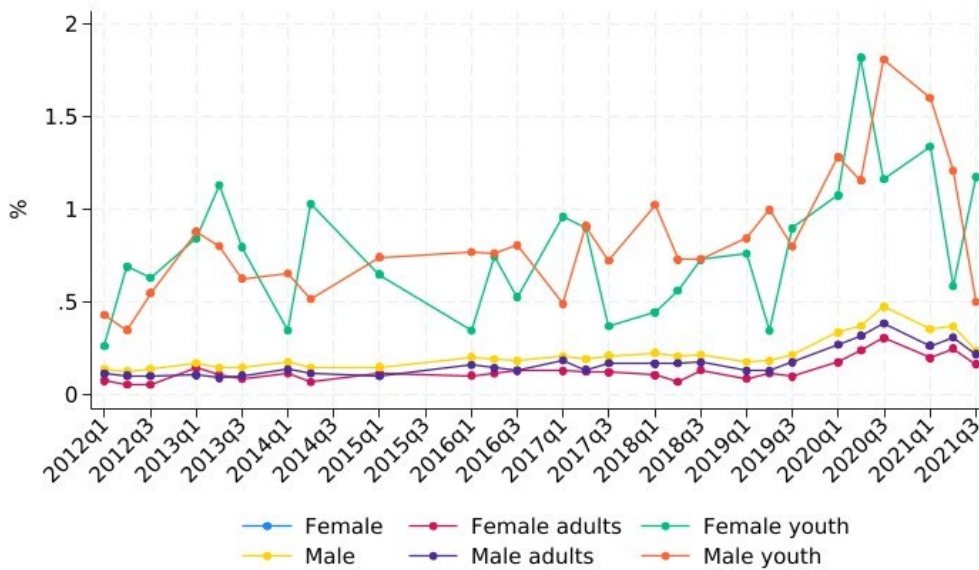
► **Figure 3. Quarter-to-quarter transitions from employment to unemployment, by age group, 2012-21**



Note: The data for three transitions (2014Q3 to 2014Q4 and 2015Q2 to 2015Q3 and 2015Q3 to 2015Q4) cannot be linked due to missing identifiers for three of the quarters.

Source: Thailand Labour Force Surveys 2012-21.

► **Figure 4. Quarter-to-quarter transitions from employment to unemployment, by gender and age group, 2012-21**



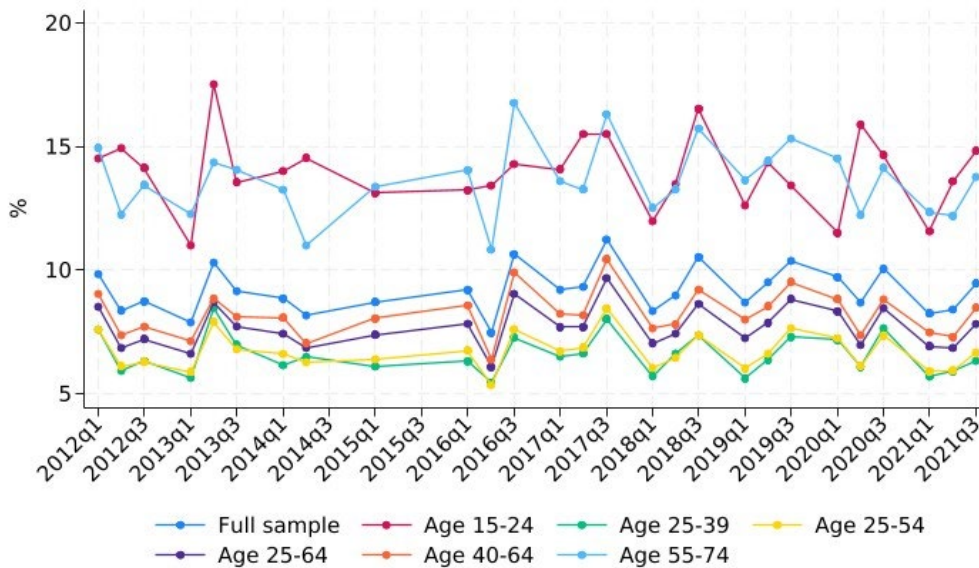
Note: The data for three transitions (2014Q3 to 2014Q4 and 2015Q2 to 2015Q3 and 2015Q3 to 2015Q4) cannot be linked due to missing identifiers for three of the quarters.

Source: Thailand Labour Force Surveys 2012-21.

**Overall, about 10 per cent of every pair of quarter-to-quarter transition resulted in a change from employed to out of the labour force.**

Transitions from employment to out of the labour force were very stable between 2012 and 2021, at about 6–10 per cent of the quarterly cases (figures 5–6), although for older adults (aged 55–74) and youths (aged 15–24) this appeared to be much more significant. Since 2017, there were regular quarter-to-quarter transitions in which more than 15 per cent of older or younger workers moved from employment to out of the labour force. And this move from employment to out of the labour force was always greater than the move between employment and unemployment. One possibility suggested by a reviewer is that individuals with secondary school were returning to university, therefore transitioning to out of the labour force under that scenario can also be a positive reflection of investments in human capital. Future research should examine the educational level of individuals transitioning between employment and out of the labour force.

► **Figure 5. Quarter-to-quarter transitions from employment to out of the labour force, by age group, 2012–21**

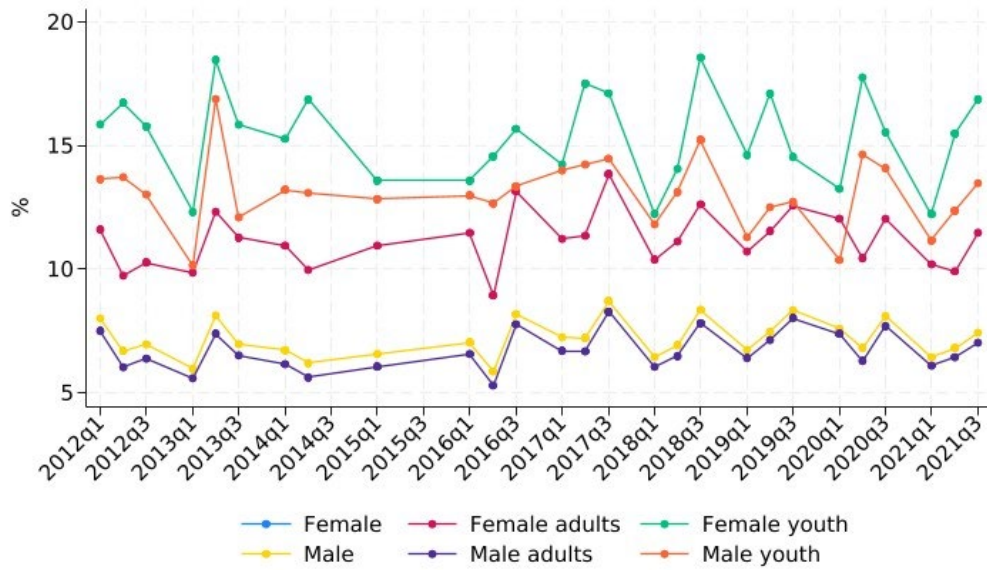


Note: The data for three transitions (2014Q3 to 2014Q4 and 2015Q2 to 2015Q3 and 2015Q3 to 2015Q4) cannot be linked due to missing identifiers for three of the quarters.

Source: Thailand Labour Force Surveys 2012–21.



► **Figure 6. Quarter-to-quarter transitions from employment to out of the labour force, by gender and age group, 2012-21**



Note: The data for three transitions (2014Q3 to 2014Q4 and 2015Q2 to 2015Q3 and 2015Q3 to 2015Q4) cannot be linked due to missing identifiers for three of the quarters.

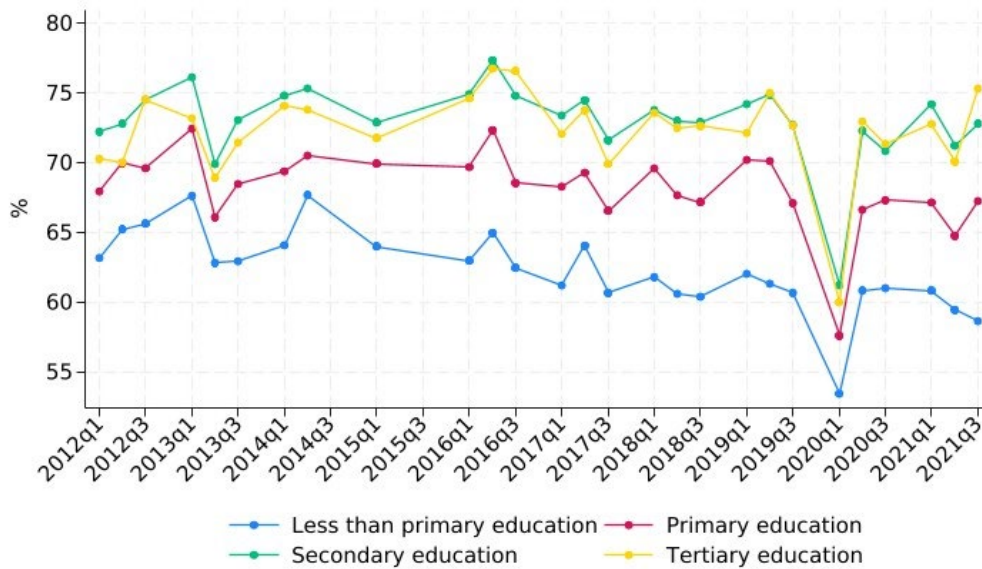
Source: Thailand Labour Force Surveys 2012-21.

## 4.2 Measures of job quality and transitions

**Job stability for workers by education level was high regardless of the highest level of schooling received. However, being employed full-time yielded the most benefits for workers with tertiary education.**

The Labour Force Survey collects information on the highest level of schooling completed at the time of the interview. Using the ISCED97 categories of schooling, the Thai education credential types were collapsed into four levels (less than primary, primary, secondary and tertiary) for this analysis. This allowed for the description of labour force transitions and other measures of job quality by education level. Overall, employment stability (measured as employed in two consecutive quarters) was high regardless of schooling completed. Around 90 per cent of the individuals with a tertiary degree were employed in the following quarter. The percentage of employed persons dropped a few levels for individuals with secondary or primary schooling only, but not substantially. The takeaway point from this is that churn is low. There is evidence, however, that the stability of employment is higher for individuals with secondary and tertiary schooling than with a lower level of education.

► **Figure 7. Quarter-to-quarter transitions from employment to employment, by education level, 2012-21**

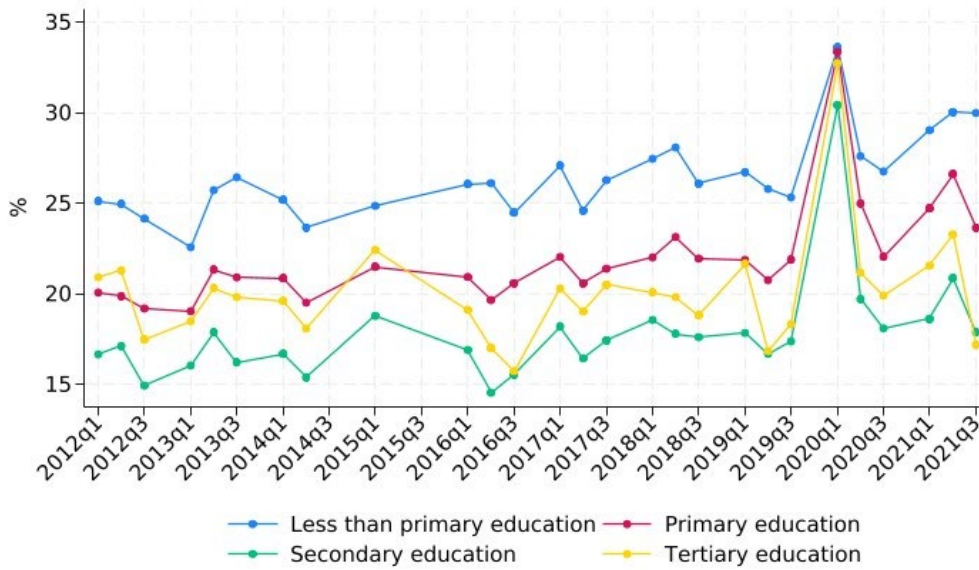


Note: The data for three transitions (2014Q3 to 2014Q4 and 2015Q2 to 2015Q3 and 2015Q3 to 2015Q4) cannot be linked due to missing identifiers for three of the quarters.

Source: Thailand Labour Force Surveys 2012-21.

To explore education level and the difference that education makes to employment transitions, the quality of the jobs was described by looking at the transitions between part-time and full-time work by education level. Part time is defined from a variable in the Labour Force Survey that measures the number of hours worked. Using this variable on hours worked we created a full and part time employment measure using ILO standards. Full-time workers are employed more than 41 hours a week. In this analysis, the data showed that higher levels of education were associated with being employed full time (figure 8). Conversely, part-time employment was more associated with less-educated workers, although movement from part-time to full-time work also reflected significant similarities among education groups.

► **Figure 8. Quarter-to-quarter transitions from full-time to part-time employment, by education level, 2012-21**

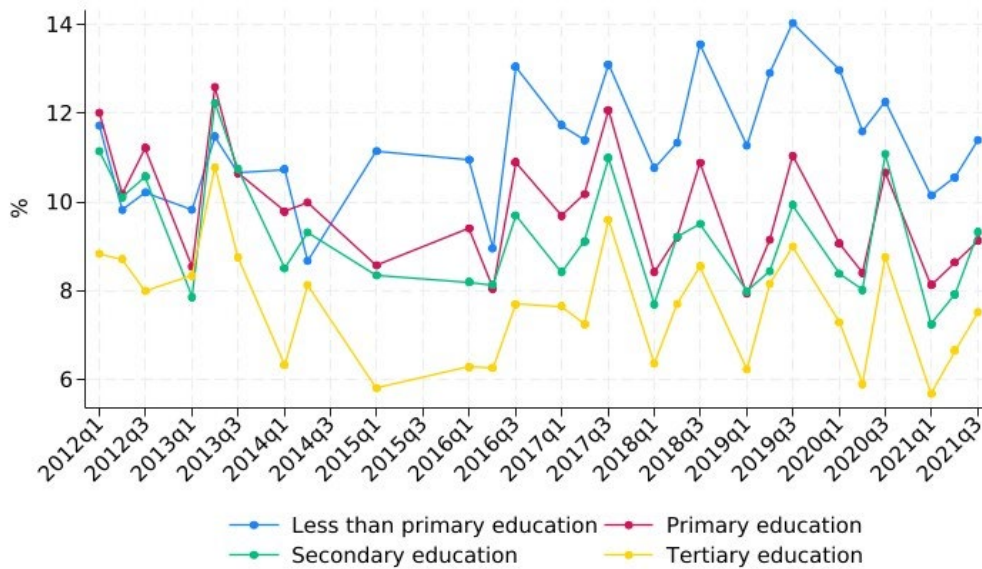


Note: The data for three transitions (2014Q3 to 2014Q4 and 2015Q2 to 2015Q3 and 2015Q3 to 2015Q4) cannot be linked due to missing identifiers for three of the quarters.

Source: Thailand Labour Force Surveys 2012-21.

Figure 9 displays the transitions between full-time work to out of the labour force by education level. The results support the conclusion that education improves job quality: The higher the level of education, the lower is the percentage of individuals classified as not employed in subsequent quarters.

► **Figure 9. Quarter-to-quarter transitions from full-time employment to out of the labour force, by education level, 2012–21**



Note: The data for three transitions (2014Q3 to 2014Q4 and 2015Q2 to 2015Q3 and 2015Q3 to 2015Q4) cannot be linked due to missing identifiers for three of the quarters.

Source: Thailand Labour Force Surveys 2012–21.

More generally, the examination of the transitions in working hours (full and part time), regardless of education level, revealed that adults and youths of both genders had a consistently high percentage of employment transition. For example, 65 per cent or more of young men (aged 15–24) were employed full time in the subsequent quarter. This did not change over the decade observed. And the percentage of young women (aged 15–24) who were employed full time from one quarter to the following was about the same. Adults had about the same level of stability between full-time jobs in one quarter and full-time jobs in the following quarter. This elevated level of stability for full-time work is reflective of the value in Thailand placed on holding a high-quality job. Once an individual obtains a full-time job, it is highly likely they will try to keep it.

A second story emerged from the transitions around part-time to full-time work: There was an expectation to see workers moving from one state of employment to the next as they entered the labour force and obtained experience. With experience, they then moved from part-time to full-time work. In this indicator, the numbers of men and women between the ages of 15 and 24 moving from part-time to full-time work remained constant but fluctuated between 20 per cent and 35 per cent, depending on age and gender.

### 4.3 Sectoral and occupational transitions

#### **Most employment transitions across industry occurred between construction or mining and a new industry sector.**

Following prior work from Samaniego and Viegelahn (2021), transitions were categorized at the highest level of aggregation between sector of employment at two levels: into a new sector and non-employment.

For example, as table 1 illustrates, 8.1 per cent of the employed persons in agriculture one quarter (between 2012 and 2021) transitioned into a second industry sector. In construction, it was 27.3 per cent of workers on average.

The transition rates here did not consider education level or other characteristics but seem to fit with a broader understanding of churn rates in and out of industries globally: Construction and mining are difficult and dangerous jobs and both have considerably higher levels of turnover in most nations.

► **Table 1. Quarterly job-to-job transitions to a different sector and quarterly transitions to non-employment, 2012–21**

Sector	To new sector	To non-employment
Employed in agriculture	8.1	25.3
Employed in construction	27.3	21.2
Employed in manufacturing	17.1	18.2
Employed in market services	11.6	18.2
Employed in mining and quarrying or electricity, gas and water supply	23.6	13.1
Employed in non-market services	11.5	13.9

Note: The data points used unadjusted sampling weights. The data for 2014Q3, 2015Q1 and 2015Q2 are not available due to ID misspecification. The “non-employment” includes not employed, outside the labour force and unemployed.

Source: Thailand Labour Force Surveys 2012–21.

#### **Occupational transitions, again, demonstrated elevated levels of transitions between elementary occupations and others, as well as between machine operations or assemblers and other occupations.**

Transitions by sector and occupation to non-employment were high overall (table 2), representing much higher rates than the transition to unemployment using traditional measures. This gap makes sense because unemployment is one of the categories included in non-employment. However, the difference between unemployment as a state (around 1 per cent) and non-employment (around 18–23 per cent) in the analysis is important to emphasize. Over the ten-year period almost a quarter of persons employed in construction transitioned to unemployment, as opposed to only 13 per cent of persons in non-market services.

► **Table 2. Quarterly job-to-job transitions to a different occupation and quarterly transitions to non-employment, 2012–21**

<b>Occupation</b>	<b>To new sector</b>	<b>To non-employment</b>
Employed as clerical, service or sales worker	16.2	18.0
Employed as manager, professional or technician	17.8	12.3
Employed as plant and machine operator or assembler	23.8	14.4
Employed as skilled agricultural or trades worker	10.1	23.5
Employed in an elementary occupation	31.1	25.3

Note: The data points used unadjusted sampling weights. The data for 2014Q3, 2015Q1 and 2015Q2 are not available due to ID misspecification. The “non-employment” includes not employed, outside the labour force and unemployed.

Source: Thailand Labour Force Surveys 2012–21.

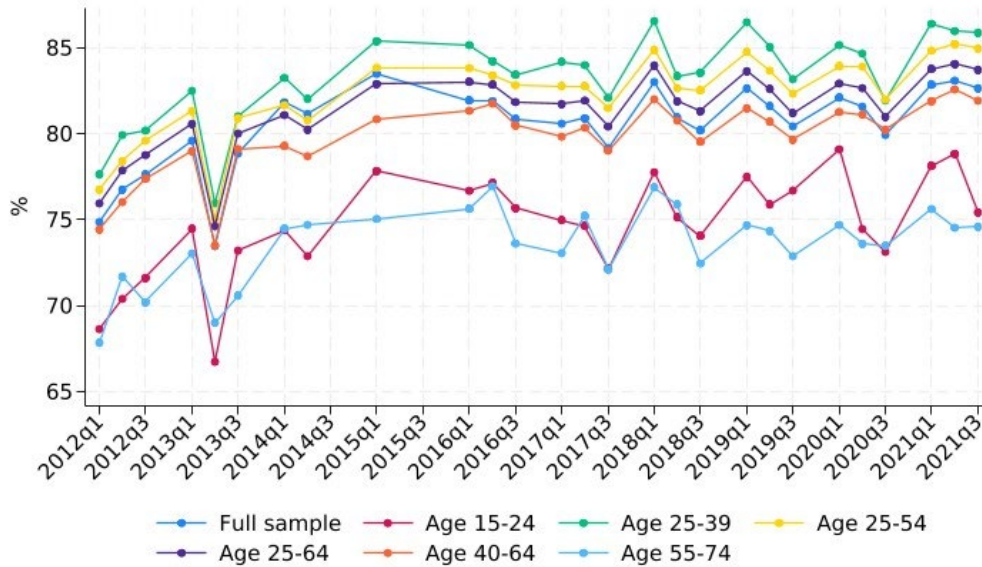
## 4.4 Vulnerable employment

For all workers between 2012 and 2021, the transition probabilities between quarter pairs allowed analysis based on employment status. Overall, there was relatively low movement by adults out of vulnerable employment<sup>22</sup>, with the rate varying from 5 per cent to 8 per cent over the ten years observed. If anything, the rate of transition between vulnerable to non-vulnerable employment declined. In contrast, the rate of movement from non-vulnerable to vulnerable employment stayed between 8 per cent and 14 per cent in the ten years.

The overall trends by age group reflect some heterogeneity. For example, among persons who experienced a transition from non-vulnerable to non-vulnerable employment (figure 10), older workers (aged 55–74) and youngest workers (aged 15–24) had lower rates. But for prime-age workers (aged 25–54), the rates were consistently higher and, as of 2019, had not fallen below 80 per cent. When broken out by gender and age, it became evident that male youths and female youths both had significantly lower rates of transition between non-vulnerable and non-vulnerable employment over time than the other workers (figure 11).

<sup>22</sup> Vulnerable employment in this study comprises own-account workers and contributing family workers, as it was used in the past as an indicator in the Millennium Development Goals. While this combination of workers provides a relevant proxy for vulnerable employment in the labour market context of Thailand, its limitation should be acknowledged as not all of these workers can be considered vulnerable.

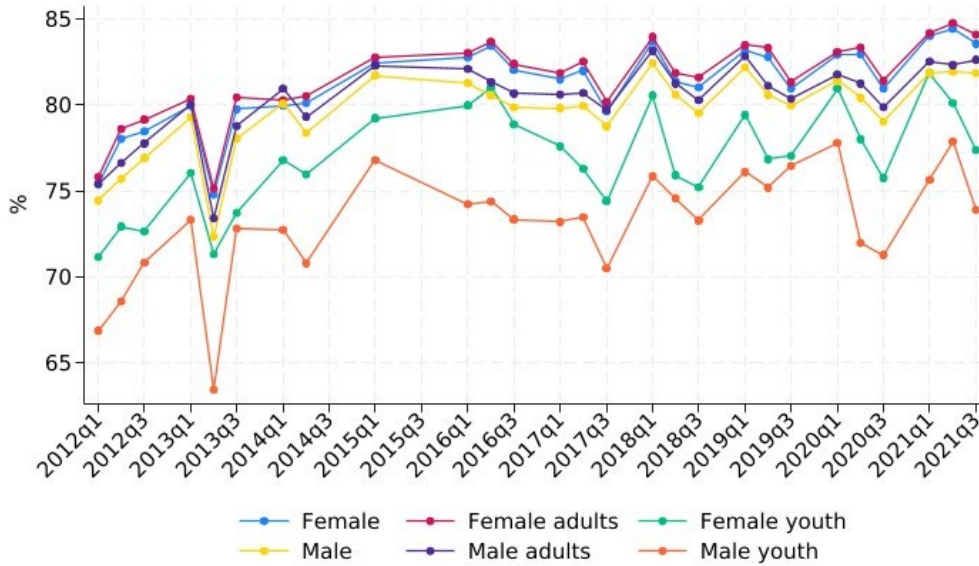
► **Figure 10. Quarter-to-quarter transitions from non-vulnerable to non-vulnerable employment, by age group, 2012-21**



Note: The data for three transitions (2014Q3 to 2014Q4 and 2015Q2 to 2015Q3 and 2015Q3 to 2015Q4) cannot be linked due to missing identifiers for three of the quarters.

Source: Thailand Labour Force Surveys 2012-21.

► **Figure 11. Quarter-to-quarter transitions from non-vulnerable to non-vulnerable employment, by gender and age group, 2012-21**

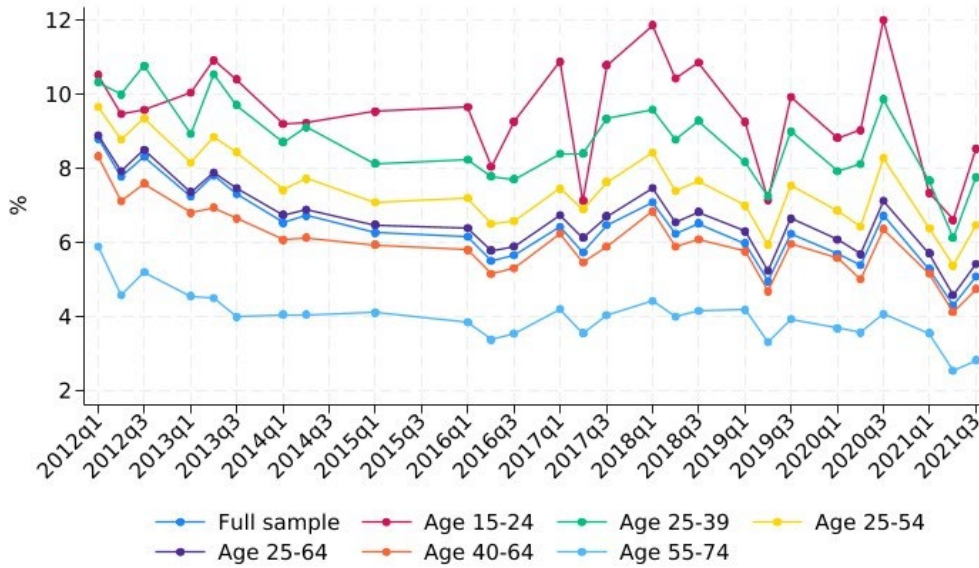


Note: The data for three transitions (2014Q3 to 2014Q4 and 2015Q2 to 2015Q3 and 2015Q3 to 2015Q4) cannot be linked due to missing identifiers for three of the quarters.

Source: Thailand Labour Force Surveys 2012-21.

Figures 12 and 13 illustrate a previous point about individuals in vulnerable sector employment having a low and variable rate of staying in vulnerable (moving from vulnerable to vulnerable employment). Male and female youths transitioned from vulnerable to non-vulnerable employment at rates above the labour force average as a whole. The gap was frequently not that large. Conversely, workers aged 55 and older were the least likely to transition to non-vulnerable employment from vulnerable work.

► **Figure 12. Quarter-to-quarter transitions from vulnerable to non-vulnerable employment, by age group, 2012-21**

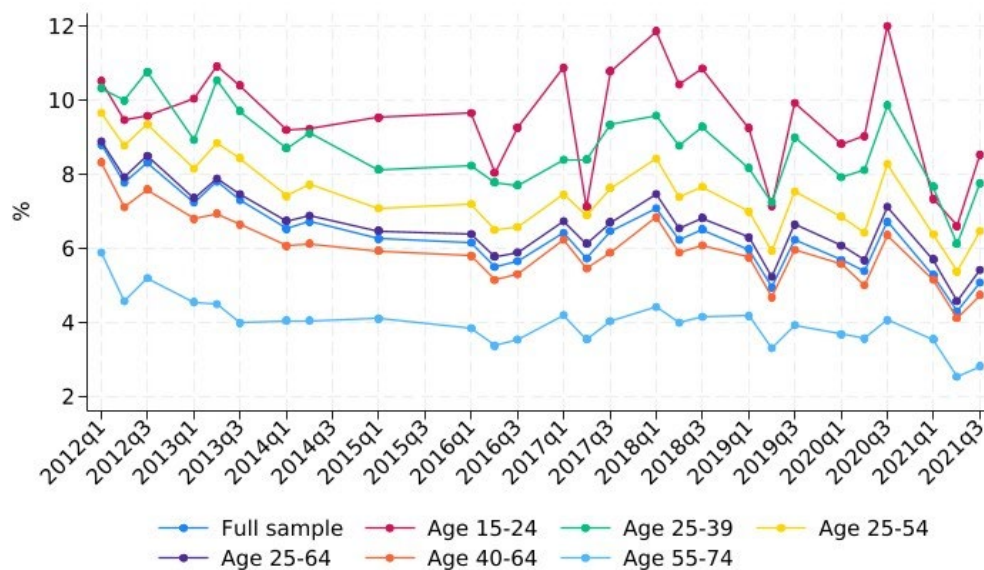


Note: The data for three transitions (2014Q3 to 2014Q4 and 2015Q2 to 2015Q3 and 2015Q3 to 2015Q4) cannot be linked due to missing identifiers for three of the quarters.

Source: Thailand Labour Force Surveys 2012-21.



► **Figure 13. Quarter-to-quarter transitions from vulnerable to non-vulnerable employment, by gender and age group, 2012–21**



Note: The data for three transitions (2014Q3 to 2014Q4 and 2015Q2 to 2015Q3 and 2015Q3 to 2015Q4) cannot be linked due to missing identifiers for three of the quarters.

Source: Thailand Labour Force Surveys 2012–21.

Vulnerable employment is significant numerically as well. In 2021Q3–2021Q4, there were an unweighted 27,275 adults who were in vulnerable employment in both quarters, while only 15,708 adults were in non-vulnerable employment in both quarters. Even in 2021, Thailand's labour force was dominated by individuals in vulnerable employment.

## 4.5 Regional transitions

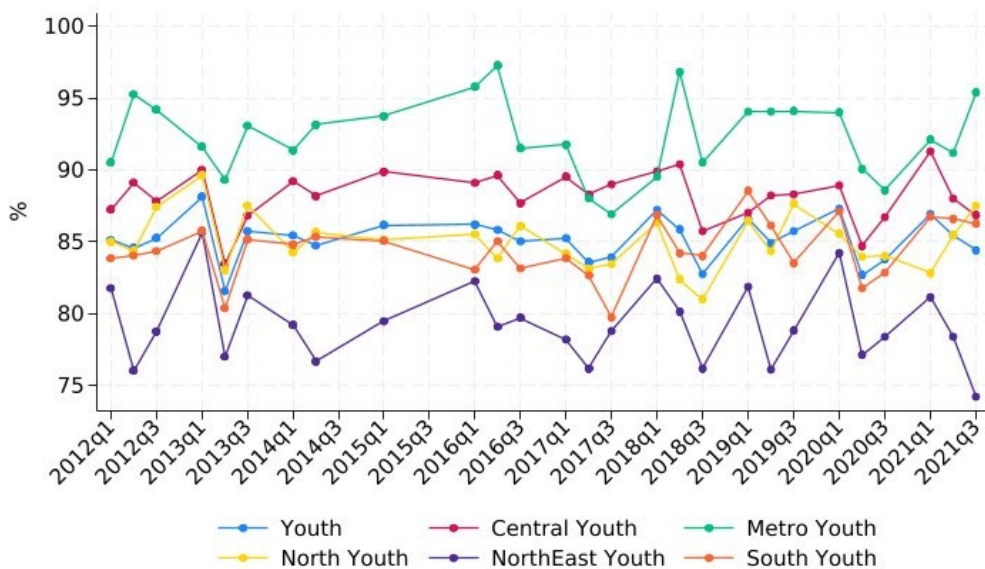
**Regional transitions from employment to other states, such as unemployment or out of the labour force, were a critical part of the story. Youths, and youths from rural areas in the North-East in particular, were less likely to have sustained employment and more likely to move to unemployment.**

Differences between the regions over the decade were also investigated using data for seven transitions:

- employment to employment;
- employment to unemployment;
- employment to out of the labour force;
- out of the labour force to employment;
- out of the labour force to unemployment;
- unemployment to employment; and
- unemployment to out of the labour force.

The data in figure 14 focus specifically on transitions for youths aged 15–24. The overall transitions over the decade from employment to employment were around 85 per cent, although it dipped in 2013 and 2020. However, youths from the North-East and the South generally had lower levels of employment stability.

► **Figure 14. Quarter-to-quarter transitions from employment to employment among youths aged 15-24, by region, 2012-21**

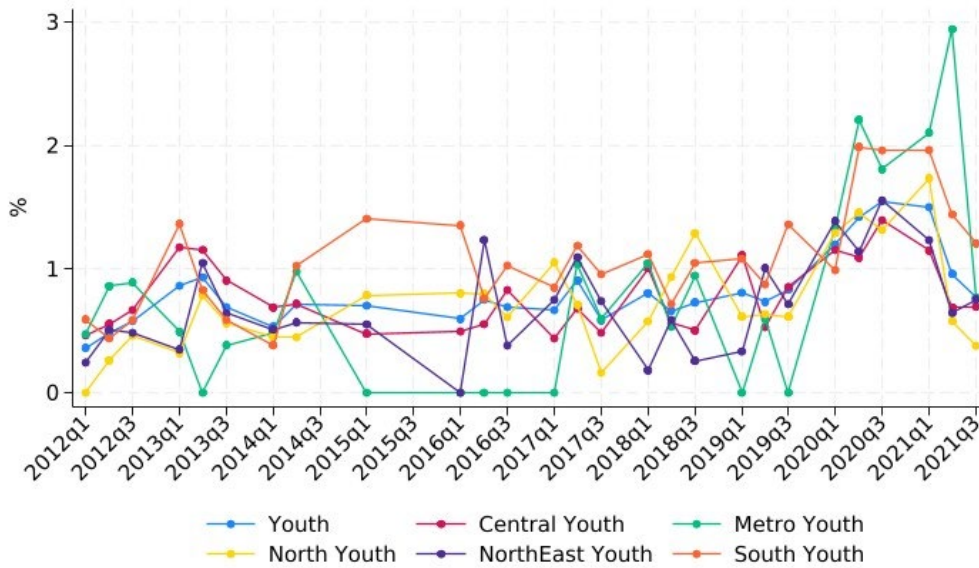


Note: The data for three transitions (2014Q3 to 2014Q4 and 2015Q2 to 2015Q3 and 2015Q3 to 2015Q4) cannot be linked due to missing identifiers for three of the quarters.

Source: Thailand Labour Force Surveys 2012-21.

Figure 15 illustrates the overall low rate of unemployment among youths (it is around 1 per cent on average for all workers). There was high variability in the rate at which individual youths became unemployed across regions. Over time, the unemployment trended upwards, and youths from the South of Thailand appeared to be experiencing unemployment transitions more frequently. However, there were small numbers represented in these cells, given the unemployment rate overall.

► **Figure 15. Quarter-to-quarter transitions from employment to unemployment among youths aged 15–24, by region, 2012–21**

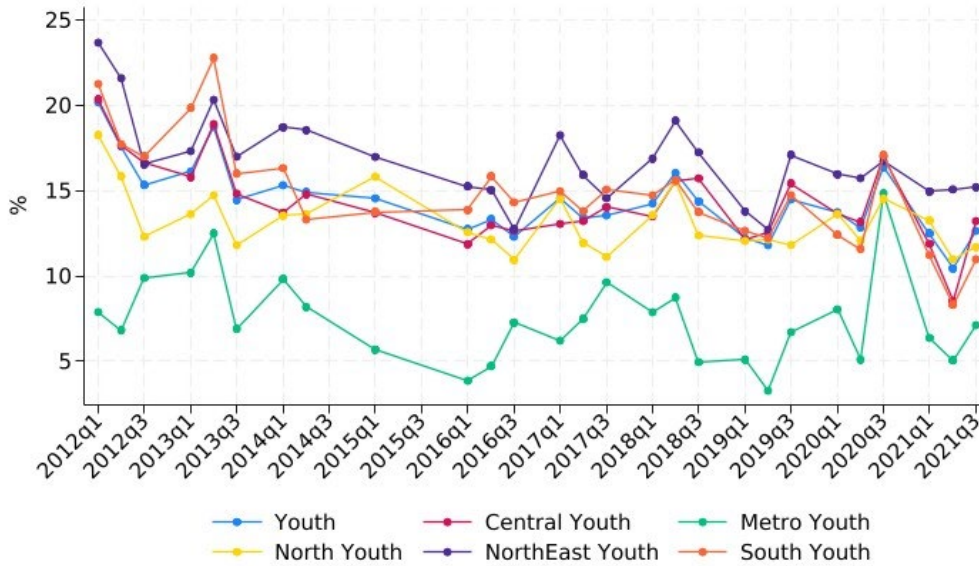


Note: The data for three transitions (2014Q3 to 2014Q4 and 2015Q2 to 2015Q3 and 2015Q3 to 2015Q4) cannot be linked due to missing identifiers for three of the quarters.

Source: Thailand Labour Force Surveys 2012–21.

The other transition by region that is useful to point out is the move from out of the labour force to employment (figure 16). Overall, the rate of transition between these two states declined between 2012 and 2021. However, the transition rates by region did not vary as much as rates that indicated employment stability.

► **Figure 16. Quarter-to-quarter transitions from out of the labour force to employment among youths aged 15-24, by region, 2012-21**

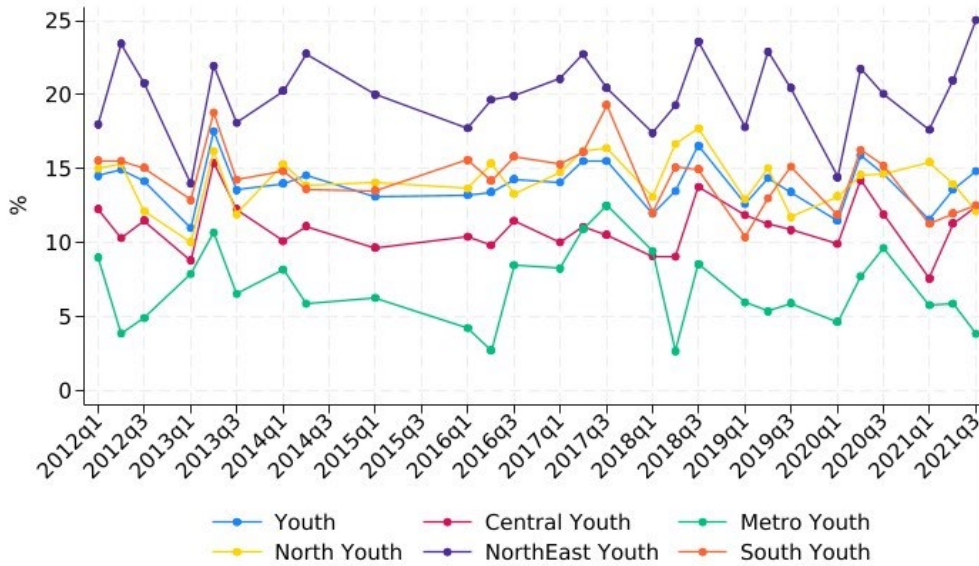


Note: The data for three transitions (2014Q3 to 2014Q4 and 2015Q2 to 2015Q3 and 2015Q3 to 2015Q4) cannot be linked due to missing identifiers for three of the quarters.

Source: Thailand Labour Force Surveys 2012-21.

Figure 17 shows movement from employment to out of the labour force by region for all youths. This was a much more common transition, and youths from the North-East of Thailand moved frequently from employment to out of the labour force status. Conversely, individual youths from the Central region were the least likely to move between these two states.

► **Figure 17. Quarter-to-quarter transitions from employment to out of the labour force among youths aged 15-24, by region, 2012-21**

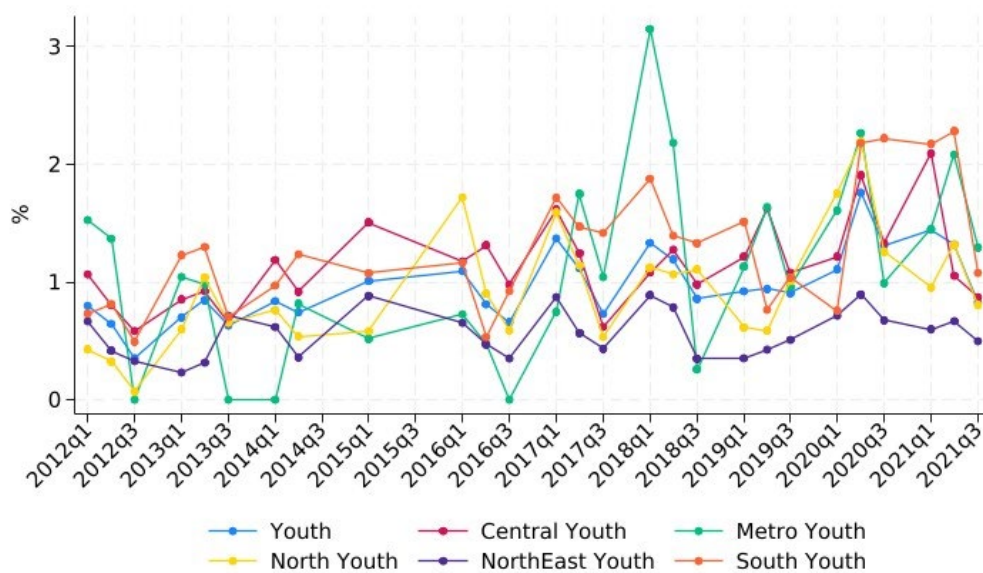


Note: The data for three transitions (2014Q3 to 2014Q4 and 2015Q2 to 2015Q3 and 2015Q3 to 2015Q4) cannot be linked due to missing identifiers for three of the quarters.

Source: Thailand Labour Force Surveys 2012-21.

Figure 18 illustrates that a small but significant number of youths transferred from out of the labour force to unemployment. It seemed to grow over time in parallel with the transition from employment to unemployment. Youths from the southern areas in recent years were more likely to become unemployed through this route.

► **Figure 18. Quarter-to-quarter transitions from out of the labour force to unemployment among youths aged 15–24, by region, 2012–21**

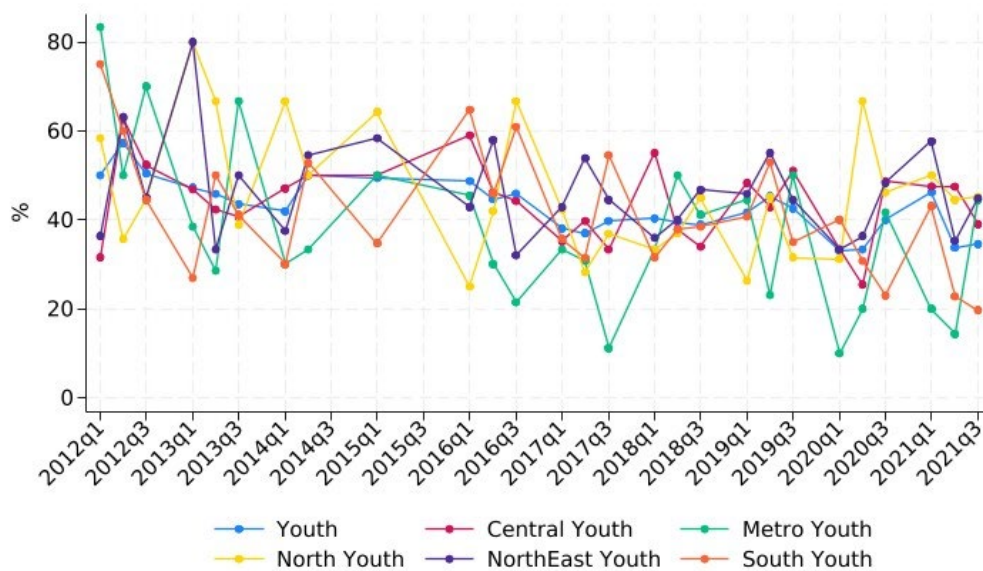


Note: The data for three transitions (2014Q3 to 2014Q4 and 2015Q2 to 2015Q3 and 2015Q3 to 2015Q4) cannot be linked due to missing identifiers for three of the quarters.

Source: Thailand Labour Force Surveys 2012–21.

Figure 19 reflects the important question of to what extent regional youth populations move from unemployment to employment. The graph indicates declining transition rates between unemployment and employment overall, but the rates were quite varied. It is difficult to draw a firm conclusion about the differences in the regional data.

► **Figure 19. Quarter-to-quarter transitions from unemployment to employment among youths aged 15-24, by region, 2012-21**

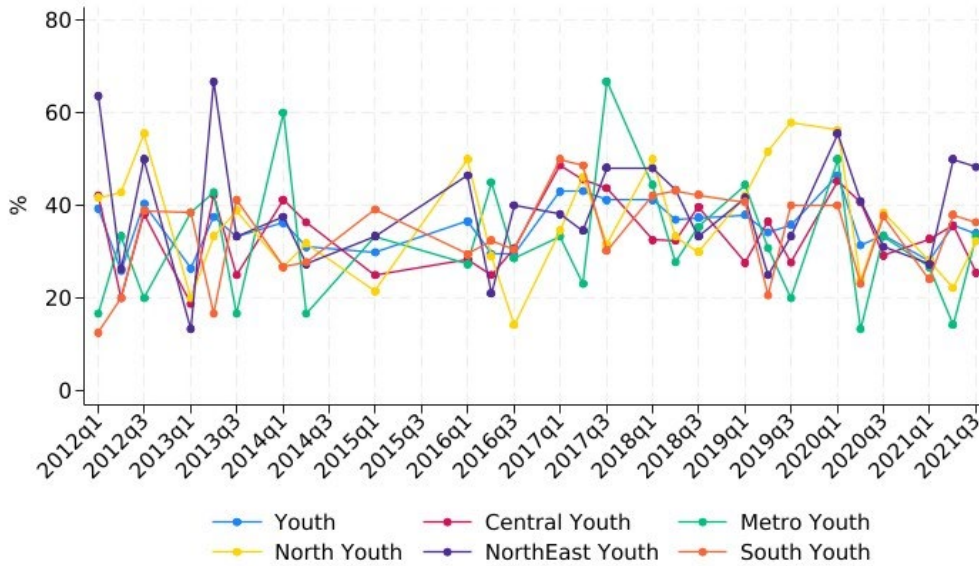


Note: The data for three transitions (2014Q3 to 2014Q4 and 2015Q2 to 2015Q3 and 2015Q3 to 2015Q4) cannot be linked due to missing identifiers for three of the quarters.

Source: Thailand Labour Force Surveys 2012-21.

The last transition in this section (figure 20) reflects the move from unemployment to out of the labour force. As with the other transitions, there were large swings over time. But there appeared to be less variation over time in the rate with which individual groups of youths in the regions moved.

► **Figure 20. Quarter-to-quarter transitions from unemployment to out of the labour force among youths aged 15–24, by region, 2012–21**



Note: The data for three transitions (2014Q3 to 2014Q4 and 2015Q2 to 2015Q3 and 2015Q3 to 2015Q4) cannot be linked due to missing identifiers for three of the quarters.

Source: Thailand Labour Force Surveys 2012–21.



## ► 5 Conclusions

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### 5.1 Summary

Using data from Thailand's Labour Force Survey from 2012 to 2021, differences over time were investigated for the likelihood of individuals moving between employment states, such as employed, unemployed and out of the labour force. The study used coding to link quarterly samples of individuals from the Labour Force Survey that were resampled in the subsequent quarter. This is called the rotation group. This covered approximately 2.7 million unique people over a period of ten years. Due to the difficulty of linking individuals together (missing variables in some quarterly data sets), there were three quarter-to-quarter transitions without rotation group samples (2014Q3 to 2014Q4 and 2015Q2 to 2015Q3 and 2015Q3 to 2015Q4).

What this exercise revealed is that the transitions were remarkably stable over time. In each period overall, if someone was employed, they were most likely to remain in that status in the following quarter. Bigger challenges exist for adults when they moved from vulnerable to non-vulnerable employment or from unemployment to employment. The youth group was especially at risk when it came to initial employment at an early age (younger than 19), when unemployment is high and labour force attachment takes longer.

A second lesson comes from examining employment by region over time. A second set of transitions looked at unemployment, employment and out of the labour force by region of residence. Two transitions stood out over time: (a) the high percentage of people who continued to remain employed in successive periods of measurement (perhaps due to residence in the North-East, which was associated with lower rates of staying employed in consecutive quarters) and (b) the large number of people who moved from out of the labour force to employment. This percentage was similar across regions, but it also declined over time.

Additionally, logistic regression methods were used to examine the probability of vulnerable employment over time, controlling for time-varying and invariant characteristics. While age and lack of education were associated with higher probability of vulnerable employment, living in either the north-eastern or northern provinces also produced high odds of vulnerable employment.

The larger challenge is understanding the labour force transitions of two groups: (a) the highly educated and why they continued to have difficulty with transitions to employment and (b) vulnerable workers. There were minor differences in transitions between quarters for persons within education levels, from employment to employment, meaning stability across quarters was high regardless of education level. But when going from unemployment or out of the labour force to employment, persons with higher education had more issues in 2021 than in earlier years.

The initial rotation group data provide some important opportunities for research in the future. For example, although these rotation groups are based on paired quarter transitions, the transitions can be calculated across four quarters, thus providing four observation periods per individual over a two-year period. This additional data would provide a novel way to measure medium-term (annual) success in the labour market. It is likely that completion of different educational credentials can be observed in the data and on subsequent labour force participation. And using the four periods of measurement also would allow for identification of sequences and transitions that reveal patterns. These patterns, such as the difficulties young people aged 15–19 had with initial employment, could vary in significant ways.

Finally, other measures of job quality, such as occupation or sector, were likely to vary across region by age group. Using the rotation group data allowed a more detailed understanding based on individual-level panel data of the experiences of Thai youths and adults.

## 5.2 Policy lessons

The study is an initial step to understand how panel data from the Thailand Labour Force Survey can be used to investigate employment transitions. The analysis generated the following suggestions for policy consideration.

**Addressing the employment transition from out of the labour force to productive employment.** Although employment stability was quite high, there were difficulties when workers were out of the labour force or unemployed and needed to obtain a job. This was especially true for workers with lower education and/or from the north-eastern provinces and for youths entering the workforce. Governments have tools for addressing youth transitions, such as vocational and technical schooling and public employment services, but the underlying issues in Thailand might be more complex.

There is also a demonstrated problem with the quality of the Thai workers with higher levels of schooling. In the statistical data, this is harder to demonstrate with average employment or unemployment by education level. However, the transition from out of the labour force to employment based on education level indicated that when someone with a secondary or tertiary degree was out of the labour force, 70 per cent or more of them were still out of the labour force in the subsequent quarter. If higher education (or high school) provides a boost in employment opportunities, a significantly increased likelihood of moving to employment for higher levels of schooling should be apparent. But in this examination, it was not and, instead, only roughly a quarter of all workers (regardless of education level) made the transition on a quarterly basis from out of the labour force to employment.

**Tackling vulnerable employment.** The problems with the demand side need to be addressed. Thailand has an exceptionally large number of workers in vulnerable employment. Youths and low-educated workers are more likely to be stuck in these jobs. Although the number of vulnerable-employed workers dropped in the decade of the study, there were still around the same number of jobs in 2021 as in 2012. Integrated strategies are needed to support a transition from the informal to the formal economy and from vulnerable to non-vulnerable employment. Further efforts can be made to encourage small and medium-sized firms to create productive employment and decent work. Doing so would further increase the hiring of secondary- and higher education-level workers who might be experiencing spells of unemployment or underemployment.

Vulnerability in employment has many facets. These are additional problems for the Government to address. Most critically, the vast majority of Thai rural residents are without advanced schooling. The Government is addressing disadvantages in the labour market but additional steps could be taken. For instance, rural residents are routinely disadvantaged in the transition to non-vulnerable employment and have for generations relied on migration to cities or other countries for better employment options. Ensuring that economic opportunity is shared across regions more equitably is an important way of addressing vulnerability in employment.

**Occupational and sectoral development.** Large numbers of workers typically move out of low-skill professions, such as agriculture or elementary occupations. However, it is not clear that workers in Thailand are moving into higher-skill or higher-paid jobs. Conducting a more formal supply and demand analysis using the data from the Labour Force Survey would be an effective way of getting a handle on where workers are going when they leave low-skill trades. It also reinforces the need for better social policy to support worker reskilling for trades that will ensure higher pay and work in non-vulnerable employment or upskilling to facilitate better labour market opportunities in the same field.

A formal supply and demand analysis in Thailand would help develop the intellectual infrastructure to monitor the Thai labour force. A supply and demand model that would formally link the demand side (current and future employment) with the current education and training programmes is needed. Doing so on the supply side would also require better knowledge of both

the traditional university and public sector vocational programmes and expanded awareness of certificate or other programmes conducted by firms outside of government control.

**Rotation group advances.** The rotation group design for the Labour Force Survey is a useful resource for understanding the experiences of workers over time. Thailand has had a rotation group for more than 20 years as part of its Labour Force Survey, but there are unexploited opportunities for research and evaluation using the data. From a methods perspective, there could be benefit for standard data linkage and survey weights that are shared among the economics and public policy community. Many of the measures, such as unemployment or labour force participation, could be presented using the cohorts, thus enabling a richer understanding of the labour force statistics. Finally, Thailand's rotation group design is comparable with other nations regionally (Viet Nam) and globally (United States) and could benefit from knowledge-sharing across countries.

## Annex

### Annex 1. Number of persons for two-quarter panels, from 2012Q1 to 2021Q4

Quarter	No. of persons (master) only	No. of matched	% matched
2012Q12	121 581	96 491	0.4425
2012Q23	126 019	100 802	0.4444
2012Q34	129 986	109 269	0.4567
2013Q12	118 348	97 687	0.4522
2013Q23	123 163	99 224	0.4462
2013Q34	125 421	109 181	0.4654
2014Q12	114 183	98 993	0.4644
2014Q23	120 332	102 224	0.4593
2014Q34	232 710		
2015Q12	111 829	97 753	0.4664
2015Q23	218 289		
2015Q34	58 488		
2016Q12	111 361	98 855	0.4703
2016Q23	116 709	103 346	0.4696
2016Q34	123 650	107 148	0.4643
2017Q12	110 624	96 858	0.4668
2017Q23	117 649	101 607	0.4634
2017Q34	122 773	104 456	0.4597
2018Q12	107 419	95 031	0.4694
2018Q23	115 863	99 086	0.4610
2018Q34	119 892	102 645	0.4612
2019Q12	107 101	94 875	0.4697
2019Q23	113 858	96 477	0.4587
2019Q34	116 554	99 154	0.4597
2020Q12	104 806	94 835	0.4750
2020Q23	111 630	98 544	0.4689
2020Q34	118 019	102 653	0.4652
2021Q12	105 517	95 439	0.4749
2021Q23	110 838	99 057	0.4719
2021Q34	116 138	101 333	0.4660

Quarters in grey did not have variables used to create linkage.

## Annex 2. Example variable list, 2012

Name	Description or label
encaseid	case identification No. NSO
yrqtr	2012 qtr1 to 2021 qtr 4
reg	Bangkok and metropolis; Central; North; North-East; South
cwd	changwad in region. 1 ~ 96
blkv	village NO. 0010 ~ 1650
ea_set	rotation group sample set 1. 1 ~ 11
samset	rotation group sample set 2. A, B, C, D
hh_no	household number. 1 ~ 81
hh_type	household type. private household; special household
line_no	hh member No. 1 ~ 31
ilo_wgt	sample weight
ilo_geo	urban; rural
ilo_sex	male; female
ilo_age	0 ~ 98
ilo_age_5yrbands	0-4; 5-9; 10-14; 15-19; 20-24; 25-29; 30-34; 35-39; 40-44; 45-49; 50-54; 55-59; 60-64; 65+
ilo_age_10yrbands	<15; 15-24; 25-34; 35-44; 45-54; 55-64; 65+
ilo_age_aggregate	<15; 15-24; 24-54; 65+
ilo_edu_isc97	no schooling; pre-primary education; primary education or first stage of education; lower secondary education or second stage of education; upper secondary education; post-secondary non-tertiary education; post-secondary non-tertiary education, first stage of tertiary education, second stage of tertiary education; level not stated
ilo_edu_aggregate	less than basic; basic; intermediate; advanced; level not stated
ilo_edu_attendance	attending; not attending; not elsewhere classified
ilo_relationship_details	reference person, head; partner, spouse; child, son, daughter; parent, father, mother; grandchild, grandson, granddaughter; child, son, daughter-in-law; other family relative; other unrelated person
ilo_relationship_aggregate	reference person, head; partner, spouse; child, son, daughter; parent, father, mother; other family relative; other unrelated person
ilo_mrts_details	single; married; widowed; divorced, separated; not elsewhere classified
ilo_mrts_aggregate	single, widowed, divorced, separated; married, union, cohabiting; not elsewhere classified
ilo_ifs_emp	in employment; temporary absent; not in employment
ilo_ifs_notemp_activ	actively looking to work; not actively looking to work
ilo_ifs_notemp_avail	available to work; not available to work; not stated
ilo_ifs	employed; unemployed; outside labour force
ilo_mjh	one job only; more than one job
ilo_job1_ste_icse93	employees; employers; own-account workers; members of producers' cooperatives; contributing family workers
ilo_job1_ste_aggregate	employees; self-employed

Name	Description or label
ilo_job1_eco_isic4_2d	two digits of isic code
ilo_job1_eco_isic4	four digits of isic code
ilo_job1_eco_aggregate	agriculture; manufacturing; construction; mining and quarrying, electricity; market services; non-market services; not classified by economic activities
ilo_job1_ocu_isco08_2d	two digits of isco 2008 code
ilo_job1_ocu_isco08	four digits of isco 2008 code
ilo_job1_ocu_aggregate	managers, professionals, and technicians; clerical, service, and sales workers; skills agricultural and trade workers; plant and machine operators; elementary occupations
ilo_job1_ocu_skill	skill level 1 (low); skill level 2 (medium); skill levels 3 and 4 (high)
ilo_job1_ins_sector	public; private
ilo_job1_how_actual	0-98
ilo_joball_how_actual	0-140
ilo_job1_how_actual_bands	not hours actually worked; 0-14;15-29; 30-34; 35-39; 40-48; 49+
ilo_job1_job_time	part-time; full-time
ilo_job1_size_details	2-4; 5-9; 10-19; 20-49; 50+; not stated
ilo_job1_size_aggregate	less than 5; 5-49; 50+; not stated
ilo_joball_lookoj	yes; no; not stated
ilo_joball_will	yes; no
ilo_dur_aggregate	less than months; 6 months to less than 12 months; 12 months or more; not elsewhere classified
ilo_cat_une	unemployed previously employed; unemployed seeking their first job

### Annex 3. Weights

The Thai Labour Force Survey comes with cross-sectional weights representing the sampling. Weights can be used as frequency weights, as in the prior work from Samaniego and Viegelahn (2021). In the Thai data, however, cross-sectional weights do not adjust for attrition across measurement periods. Therefore, we calculated weights using the process from Falick and Fleischman (2001) and demonstrated in Samaniego and Viegelahn (2021).

The attrition weights use inverse probability weights. This is done by using probit models of attrition for each quarter. Equation 2 provides an illustration. In equation 2, the attrition is an indicator equal to 1 if the individual  $i$  in the survey sample on quarter  $t$  is not matched to an observation in the next time period ( $t$ ). It is zero if not 1. There are also fixed effects  $Y_g^t$  for three-way interactions between individual gender, status and age group. The effects also vary by quarter.

$$attrit_{i,t} = \sum_g Y_g^t + \epsilon_{i,t} \quad (2)$$

Following this, the predicted probability for each group  $g$  was estimated, with attrition probability and sampling weights rescaled using relative attrition probability.

$$\omega_i^{att} = \omega_i \times \frac{attrit_{i,t}}{attrit_t} \quad (3)$$

In this model (3), the individual sampling weight and attrition was equal to 1 minus the share of matched observations in quarter  $t$ . In rescaling the sampling weights using this procedure, the

groups that had higher attrition were reweighted. These weights will be more useful if measuring individuals over more than two periods of time.

After carrying out the weighting, we compared the results of the transitions using all three versions of weights (unweighted, attrition and cross-sectional survey weights). These results did not appear to fundamentally change the overall results, although there was no established procedure for deciding if attrition-adjusted estimates were superior to those from the survey or unweighted procedures. For example, the following estimates were for adults (whole sample) for a single transition (employed to employed) for a single period (from 2013Q1 to 2013Q2). In this case, the unweighted result was 92.2 per cent (meaning, this percentage of adults aged 15–74 were employed in both 2013Q1 and 2013Q2). In contrast, for the survey weights, it was 92.3 per cent, and for the attrition-corrected weights it was 92.3 per cent.

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