UNITED NATIONS UNIVERSITY
UNU-WIDER

WIDER Working Paper 2020/46

Benign growth

Structural transformation and inclusive growth in Thailand

Peter Warr[1] and Waleerat Suphannachart[2]

April 2020

United Nations University World Institute for Development Economics Research
wider.unu.edu

Abstract: Between 1981 and 2017, real gross domestic product in Thailand grew at an average annual rate of 5.7 per cent. Agricultural output grew more slowly than industry or services, and its gross domestic product share consequently declined. Industry's gross domestic product share increased, and the share of services remained relatively constant. Agriculture's employment share declined, but most new jobs were in services. Concurrently, poverty incidence declined dramatically. Income inequality increased until the late 1980s, then gradually declined, reaching a level in 2017 that was well below the 1981 level. Economic growth combined with structural change contributed to poverty reduction, but the magnitude of this impact depends heavily on the poverty line used in calculating poverty. The Thai data support the Kuznets hypothesis of an inverted U-shaped relationship between average income and inequality but suggest no long-term 'Kuznetsian tension' between the rate of structural change and the level of inequality.

Key words: inclusive growth, inequality, poverty reduction, structural transformation, Thailand

JEL classification: O14, O53, P51

Figures and tables: at the end of the paper.

Acknowledgements: Helpful suggestions from Andy Sumner, data and graphical assistance from Kyunghoon Kim, and computational assistance from Huong Lien Do are gratefully acknowledged.

[1]Australian National University, Canberra, Australia. [2]Kasetsart University, Bangkok, Thailand. Corresponding author: peter.warr@anu.edu.au.

This study has been prepared within the UNU-WIDER project Developer's dilemma – structural transformation, inequality dynamics, and inclusive growth.

Information and requests: publications@wider.unu.edu

ISSN 1798-7237 ISBN 978-92-9256-803-0

https://doi.org/10.35188/UNU-WIDER/2020/803-0

Typescript prepared by Mary Lukkonen.

The United Nations University World Institute for Development Economics Research provides economic analysis and policy advice with the aim of promoting sustainable and equitable development. The Institute began operations in 1985 in Helsinki, Finland, as the first research and training centre of the United Nations University. Today it is a unique blend of think tank, research institute, and UN agency—providing a range of services from policy advice to governments as well as freely available original research.

The Institute is funded through income from an endowment fund with additional contributions to its work programme from Finland, Sweden, and the United Kingdom as well as earmarked contributions for specific projects from a variety of donors.

Katajanokanlaituri 6 B, 00160 Helsinki, Finland

1 Introduction

Structural change is a ubiquitous feature of growing economies (Timmer 2014). Thailand certainly qualifies as a growing economy. In 2017 real gross domestic product (GDP) per person was 13 times the level in 1951, having grown for two-thirds of a century at an average annual rate of 4 per cent. The growth has been far from uniform over time, between economic sectors, and between regions. The structure of the Thai economy has transformed radically, with agriculture contracting as a share of both GDP and employment, while the combined shares of industry and services expanded. The rate of this structural change has been strongly correlated with the overall rate of growth—the faster the growth, the more rapid the structural change. Not surprisingly, structural change in sectoral terms has also been correlated with the rate of urbanization.

Economic growth has coincided with a massive reduction in the incidence of poverty. The rate of poverty reduction has been strongly correlated with changes in the overall rate of growth (Warr 2020), and structural change has undoubtedly affected this relationship. Earlier empirical research has indicated that the degree to which aggregate poverty incidence is reduced by a 1 per cent contribution from a given sector to aggregate GDP growth is highest for agriculture, followed by services, with industry far behind (Ravallion and Datt 1996; Warr 2019). The decline in the GDP share of agriculture has meant that agriculture's contribution to overall GDP growth has similarly contracted. Do these structural changes mean that the poverty-reducing power of economic growth has also fallen?

The story on economic inequality is more nuanced. Thailand's recorded level of economic inequality is high by international standards, both across regions and across households.[1] Average incomes per person among people living in or close to the capital city, Bangkok, have remained well above those of residents elsewhere in the country, especially the north and north-east regions. At the national level, measured economic inequality among households has declined over the long term. Over the medium term, it increased from the early 1960s until about 1986, then levelled off until about 1992, and subsequently declined steadily until 2017, reaching a level lower than any previously recorded. In his celebrated 1955 article, Simon Kuznets advanced the hypothesis of an inverted U-shaped medium-term relationship between economic inequality and levels of national income (Kuznets 1955). The Thai data are consistent with this account.

Our interest in this study is in the medium- to long-term relationships between growth and structural transformation as well as the outcomes of poverty incidence and inequality. We are less interested in the short-term, year-to-year, fluctuations in these variables, which are sensitive to other short-term shocks, unrelated to the underlying relationships of interest. Accordingly, the Thai historical data are divided into four distinct periods, according to the country's aggregate economic performance. We study whether a correlation exists between average annual rates of growth and structural change within each of these four periods and the corresponding poverty and inequality outcomes.

[1] International comparisons of measured inequality must be viewed with caution. Countries vary according to which items are included in income. Furthermore, in most, if not all, countries it seems that the very rich, and often the very poor, are systematically excluded in the sample surveys used to estimate the distribution of incomes. Consequently, income inequality is typically underestimated. However, the extent of underestimation presumably varies among countries and possibly across time for individual countries.

Sections 2 and 3 of the paper review the record of Thailand's aggregate economic growth and structural change, respectively. Section 4 analyses the relationship between these events and changes in labour productivity, at both the aggregate and sectoral levels. It is shown that the movement of labour from the low levels of average productivity seen in agriculture to the higher levels seen in industry and services has been a major contributor to overall productivity growth, in addition to productivity growth within these sectors themselves. Section 5 studies the evidence on poverty incidence and economic inequality in Thailand and their possible relationship to growth and structural change. Section 6 explores the political economy implications of economic growth and structural change, as experienced in Thailand. The discussion stresses the regional dimensions of both economic growth and structural change as a driver of political events in Thailand. Section 7 concludes.

2 Aggregate economic growth

Figure 1 depicts Thai economic growth since 1951, when national accounts were first produced. The diagram shows both the level and growth rate of real GDP per person over this period, identifying four distinct periods, labelled I to IV. Table 1 summarizes these four periods in terms of the average growth rates of real GDP (not per capita) and their sectoral components.[2]

2.1 Period I: post-war recovery and sustained, moderate growth (1951–86)

During the recovery from World War II and until the late 1950s, the annual growth of economic output per person fluctuated widely, averaging 2.5 per cent per annum over this period. The policy priority of this time was not fostering growth but containing price inflation, which had reached almost 100 per cent per annum at the end of World War II (Nidhiprabha 2019). The policies used to contain this inflation included an inefficient multiple exchange rate system (Corden and Richter 1967), which remained in place until unification of the exchange rate in 1955 (Ingram 1971).

From 1959 to 1986 the average annual growth rate of real GDP per person was 4.3 per cent, compared with an average of just over 2 per cent for all low- and middle-income countries over the same period, according to World Bank (2020b) data. This was an extended period of moderate growth combined with macroeconomic stability.

2.2 Period II: economic boom (1987–96)

Over this critical decade, the Thai economy was the fastest growing in the world, with real GDP per person growing at an average annual rate of 7.3 per cent. The boom was fuelled by very high rates of private investment, at around 40 per cent of GDP. During this boom, earlier negative assessments of Thailand's prospects were replaced by euphoric predictions that it would soon become a 'Fifth Tiger', following in the footsteps of Korea, Taiwan, Hong Kong, and Singapore. In 1993 the country was identified by the World Bank as one of east Asia's 'miracle' economies (World Bank 1993). By 1996 Thailand had experienced almost four decades without a single year of negative real GDP growth.

[2] For comparison with later discussion, Period I is truncated in Table 1 to 1981–88.

2.3 Period III: the Asian financial crisis (1997–99)

The Asian Financial Crisis was a turning point for Thailand, in both economic and political terms. Over the two years 1997 and 1998, real GDP per person fell by a cumulative 14 per cent. In the simplest terms, the crisis was the collapse of the investment-driven economic boom of the preceding decade (Vines and Warr 2003). Over-confident macroeconomic policy—including mismanagement of the fixed exchange rate policy in combination with an open capital account—was central to this collapse (Warr 1999).

2.4 Period IV: recovery from the Asian financial crisis, the global financial crisis, and moderate growth (2000–17)

Following the Asian financial crisis, the rate of economic recovery was moderate and has remained so ever since. Thailand has never fully recovered from the loss of business confidence caused by the Asian financial crisis, as reflected in declining rates of private investment combined with a loss of public confidence in the capacity of the traditional Thai elite to manage economic change and the expectation of political instability. From 2000 onwards, growth of real GDP was positive but below its long-term trend. It was not until 2003 that the level of real GDP per capita regained its pre-crisis level of 1996. Both private domestic investment and, to a lesser extent, foreign direct investment (FDI) remained sluggish. Nevertheless, despite the slower than expected recovery, moderate growth did occur. By 2007 real economic output per person was 20 per cent above its 1996 pre-crisis level and almost 10 times its level of 1951.

While it originated in the United States housing market, the global financial crisis of 2008–09 was transmitted to Thailand primarily through trade in goods—a contraction in global demand for its manufactured exports—rather than through Asian financial markets, as in the case of the Asian financial crisis a decade earlier. The effect on Thailand was smaller than the Asian financial crisis but still significant, and it had political consequences. Unemployment among unskilled and semi-skilled industrial workers, many from the northern and north-eastern regions of the country, contributed in part to political instability between 2008 and 2011. This is discussed in Section 6.

Between 2010 and 2017, the average annual growth rate of real GDP per person recovered to 3.4 per cent. The first half of this interval was a period of political turbulence, culminating in a military coup in May 2014.[3] The average rate of GDP growth per person was 3.6 per cent—slightly below the long-term average since 1951 of 4 per cent. Over the four years of military government up to the end of 2017, the average rate of GDP growth per person was just under 3.1 per cent.

Despite the turbulence, Thailand's long-term growth has been impressive. What were its sources? Figure 2 presents a long-term Solow decomposition of aggregate growth into two components: the growth of factor inputs and the growth in the productivity of these inputs. Factor inputs are divided into physical capital, labour (raw unskilled labour, where each worker counts for one unit, regardless of skill), and human capital (the skills added to raw labour and measured as the difference between the wage or salary received and the wage of unskilled labour). Growth of the productivity of factor inputs (total factor productivity [TFP]) is measured as the difference between the growth of total output (GDP) and the cost-share weighted sum of the growth of the factor inputs described above. The point that stands out from Figure 2 is that the principal source of growth has been expansion of the physical capital stock, accounting for well over half of the

[3] The military government remained in place until new elections were held in March 2019, when it was replaced by a coalition civilian government led primarily by members of the former military regime.

growth of output.[4] Expansion of human capital, raw labour, and TFP have each contributed, but each has been a much less important contributor to overall growth than the growth of the physical capital stock.

The period of the most rapid growth, the boom decade from 1987 to 1996, was especially dominated by the growth of physical capital stock. This was a period of euphoric private investment. As the boom continued through the mid-1990s, the proportional contribution of physical capital rose and those of raw labour, human capital, and TFP declined. Moreover, this private investment was financed increasingly by short-term borrowing from abroad, denominated in foreign currency. The collapse of the boom demonstrated that this very high rate of investment had been excessive. The investment boom resulted from overconfidence stimulated by more than three decades of continuous growth, followed by a decade of boom, during which it seemed to many that failing to invest in physical assets meant missing out on high returns, even if that investment was financed by risky short-term borrowing in foreign currency. The overconfidence induced excessive risk-taking at the business level and complacency at the policy level. This, in combination with the government's fixed exchange rate policy, created the pre-conditions for a financial crisis (Warr 1999). When the exchange rate collapsed, many borrowers were bankrupted.

3 Structural transformation

We define structural transformation as a relocation of sectoral activity that raises overall productivity. The productivity component of this definition will be discussed in Section 4. The definition means that structural transformation is not synonymous with industrialization, although the latter can be expected to be an especially important component of structural transformation. Reallocation of sectoral activity can be interpreted in terms of output or employment. Consider a three-sector classification of the total economy: agriculture, industry, and services. Structural change almost always corresponds to a reduction in agriculture's share of both output and employment (Timmer 2009). This reduction necessarily coincides with an increase in the combined output share of industry and services as well as an increase in their combined employment share. However, the mix of industry and services in this structural change varies greatly, and the mix may be very different for output and employment. The distinction between these two dimensions of structural change (output and employment) will prove to be important for the Thailand case study.

3.1 Output shares

Figure 3 describes sectoral output (value-added) shares from 1960 to 2017. Agriculture's share of GDP (agricultural value added/GDP) declined from 34 to 8 per cent. At the same time, the share of manufacturing rose from 13 to 34 per cent, and the share of the non-manufacturing industry rose marginally from 7 to 9 per cent, while the share of services remained almost unchanged at 46 per cent. The decline in agriculture's share of output was taken up almost entirely by an increase in the share of manufacturing. These data are necessarily reflected by sectoral growth rates, as shown in Figure 4. Real output from agriculture grew positively but more slowly than any other major sector, while manufacturing grew the most rapidly. Services grew, on average, at roughly the same rate as GDP. Equivalently, Figure 5 shows that the growth of value added in manufacturing

[4] Elsewhere (Warr 2013), it is shown that capital privately owned by Thai firms was the major component of this expansion of capital stock (74 per cent), followed by the publicly owned component, consisting of infrastructure and state-owned firms (16 per cent) and foreign-owned capital, derived from FDI, which represented an average of 10 per cent of growth of the total capital stock.

accounted for the largest, and a growing, share of overall GDP growth, while the contribution of agriculture contracted.

In this study, we are particularly interested in the possible relationship between structural change and other variables of interest. To facilitate this, the characteristics of structural change need to be quantified. The above discussion identifies two principal components of structural change: (i) the rate of decline of agriculture's share of GDP, and (ii) the proportion of that decline that is taken up by industry and services.

The overall rate of structural change over a given period will be defined as the average annual change of agriculture's output share:

A. overall rate of structural change (output shares):

$$[S_t^{YA} - S_{t-\tau}^{YA}]/\tau, \quad (1)$$

where S_t^YA denotes the output (Y) share of agriculture (A) in year t, and τ is the number of years comprising that period. A decline in the output share of agriculture will necessarily be matched by an increase in the combined output shares of industry and services.

The industrialization component of that mix over the same period is measured by the following index:

B. industrialization component of structural change (output shares):

$$[S_t^{YI} - S_{t-\tau}^{YI}]/[S_t^{YA} - S_{t-\tau}^{YA}]. \quad (2)$$

The industrialization component index will be a proportion—possibly, but not necessarily—lying between 0 and 1.

The first two columns of Table 2 summarize the data on these two output-based measures of structural change. Over the full period, 1981 to 2017, agriculture's share of GDP declined at an average rate of 0.33 percentage points per year. This decline was most rapid during the pre-boom and boom periods, especially the latter. During the crisis years, agriculture's output share increased, making this a period of reverse structural change. During the post-crisis period, the contraction of agriculture's output share resumed, as before the crisis, but at roughly half of its pre-crisis rate.

The industrialization component of structural change based on output shares (measure B above) indicates that over the entire period from 1981 to 2017 industrial growth accounted for all of the contraction of agriculture (index 1.09). This proportion has varied over time. The industrialization component was particularly strong during the pre-crisis period, especially during the boom decade, when the index reached 1.44. The increase in industry's output share coincided with a decline in the output shares of both agriculture and services, but the industrialization component declined markedly following the Asian financial crisis (index 0.18). Some export-oriented manufacturing industries performed very well, as discussed below, but the decline in agriculture's output share was taken up primarily by an expansion of services rather than industry.

Comparing the first two columns of Table 2 with Table 1, it is notable that the ranking of the four periods in terms of both the overall rate of structural change and the industrialization component of structural change, both defined by output shares, is the same as the ranking by average growth rates (II, I, IV, III, in descending order). Faster growth coincided with both more rapid structural change and a higher industrial component in that structural change. This has an important

implication for our later discussion. It will not be feasible to distinguish between the effects of more rapid aggregate growth and either rapid structural change or a high industrialization component in that structural change (measured by output) because the three variables are so highly correlated.

3.2 Employment shares

A typical feature of middle-income developing economies is that agriculture's employment share far exceeds its share of GDP, and the discrepancy between these shares persists during much of the process of economic development. The difference disappears only when the country has reached high income levels like those of Japan, western Europe, and the United States today (Timmer 2014). Thailand's experience shows that this disparity can actually increase as growth proceeds.

Whereas the employment share of agriculture was 81 per cent in 1960 (Figure 6), its share of output (agricultural value added/GDP) was 34 per cent (Figure 3). Agriculture's employment share was 2.3 times as large as its output share. These facts alone imply that incomes within agriculture were far below the average of those of people employed elsewhere. In 1986 these shares were 66 and 18 per cent, respectively, a ratio of 3.7. In 2000 the shares were 48 and 12 per cent, a ratio of 4, and in 2017 the shares were 32 and 8 per cent, still a ratio of 4. Over almost six decades, the ratio of shares has increased.

This feature of Thailand's structural transformation has consequences for the distributional effects of economic growth. As economic growth and structural change proceed, the incidence of absolute poverty declines everywhere, including within agriculture, but agricultural incomes continue to lag behind average incomes. The remaining pocket of people with incomes below the poverty line is increasingly concentrated in rural areas. Moreover, in Thailand, these poor rural households are highly concentrated within the north and north-east regions. As we will argue later in this paper, these raw statistical facts have had significant political consequences within Thailand.

Figures 3 and 6 reveal another crucial difference between structural change measured in terms of output and employment. Whereas the declining GDP share of agriculture was mirrored by an increasing GDP share of manufacturing, with the share of services changing much more moderately, the opposite was true of employment. The decline of agricultural employment was mirrored by an expansion of services, not manufacturing. Between 1960 and 2017, agriculture's employment share contracted by almost 50 per cent of the total workforce (from 81.3 to 31.5 per cent). The employment share of manufacturing expanded by 12.4 per cent (4.3 to 16.7 per cent). However, the employment share of services expanded by 32.2 per cent (13.5 to 45.7 per cent). Figure 7 shows that for most of the five decades covered, employment grew more rapidly in manufacturing than in services, but it started from a much lower base.

Rates of structural change, measured in terms of employment shares, can be defined in an identical manner to output shares, as above. Using superscript E to signify employment,

C. overall rate of structural change (employment shares):

$$[S_t^{EA} - S_{t-\tau}^{EA}]/\,\tau \tag{3}$$

D. industrialization component of structural change (employment shares):

$$[S_t^{EI} - S_{t-\tau}^{EI}]/\,[S_t^{EA} - S_{t-\tau}^{EA}]. \tag{4}$$

The third and fourth columns of Table 2 summarize these two measures, respectively. Over the full period, agriculture's employment share contracted at an average of around one percentage point per year. The pre-boom rate was only a quarter of this long-term rate, but during the boom the rate accelerated to double the long-term rate. After the crisis, the long-term average rate resumed. Over the full period, industrial employment absorbed 35 per cent of the workers released from agriculture. This proportion was 55 per cent during the boom but only 11 per cent pre-boom. Clearly, industrial development dominated the boom period. During the Asian financial crisis, industrial employment collapsed. Subsequently, the contraction of agriculture's employment share resumed at roughly the long-term rate.

Over the half-century ending in 2017, abstracting from the growth of the total population, for every 100 workers leaving agriculture, 25 went to employment in manufacturing, 65 to services, and the remaining 10 to a non-manufacturing industry. These proportions varied markedly over time. It would be crudely inaccurate to describe this process as relocation of workers from agriculture to manufacturing (or industry). Relocation from agriculture to services was far more important. Structural transformation looks very different when viewed in terms of employment rather than output. The reason is that manufacturing is so much more capital-intensive than any other major sector. Its expansion absorbs a high proportion of new investment in physical capital, generating a high proportion of new output, but it absorbs a much smaller proportion of relocated employment.

The ranking of the four main periods by rates of structural change measured in employment shares differs from their ranking in terms of output shares. From the last two columns of Table 2, the ranking by the overall rate of structural change measured in employment shares is: II, IV, III, I, and their ranking by the industrialization component is: II, IV, I, III. The crisis period (III) might well be ignored for the purpose of these rankings, but even then, the ranking of the other three periods is different when output shares and employment shares are used as the basis for calculating structural change.

Underlying the account so far is that structural change in Thailand has been the outcome of two different factor allocation processes:

A. movement of *the existing labour force* out of agriculture and towards activities with higher productivity, consisting primarily of movement into the services sector and only secondarily into capital-intensive manufacturing or other industrial activities, with the important exception of the boom decade;
B. the allocation of *new private investment in physical capital,* primarily towards industry, especially export-oriented manufacturing, and only secondarily towards services.[5]

[5] This new investment was financed primarily from domestic savings and only secondarily from foreign borrowing and foreign direct investment, with foreign aid playing almost no role. See Warr (2014) for a full discussion of sources

Obviously, structural change in terms of employment is determined by process (A). Structural change in terms of output has been driven overwhelmingly by the growth of physical capital inputs, described by process (B).

3.3 Trade shares

Over the six decades covered by this study, the Thai economy became dramatically more open. Figure 8 shows that between 1962 and 2017 the share of gross exports in GDP expanded from 15 to 52 per cent. From Figure 3, the GDP share of manufacturing increased most rapidly during the boom decade of 1987 to 1996. This manufacturing expansion was strongly export oriented. The share of manufacturing in total exports rose from 2 to 78 per cent (Figure 9). Since 2000 some export-oriented manufacturing industries, most notably the automotive sector, have been spectacularly successful (Warr and Kohpaiboon 2018). This increasingly manufacturing-oriented structure of exports mirrored a decline in the export shares of raw and processed agricultural products.

4 Productivity and structural change

Economic development involves more than just an increase in output per worker, but it certainly requires it. Figure 10 summarizes labour productivity (average value added per worker at constant prices) in the four major sectors—agriculture, manufacturing, non-manufacturing industry, and services—and in aggregate.[6] How does structural change affect the growth of labour productivity?

The basic decomposition can be derived, in discrete form, as follows.[7] By definition, real GDP in year *t* is given by $GDP_t = \sum_j V_t^j$, where V_t^j is real value added in sector *j* at time *t*. Real GDP per worker = $GDP_t/L_t = g_t$. Its growth rate, $\hat{g}_t$, is given by

$$\hat{g}_t = 100(g_t - g_{t-1})/g_{t-1}. \quad (5)$$

Sectoral real value added per worker in sector *j* is given by

$$v_t^j = V_t^j/L_t^j, \quad (6)$$

where L_t^j is employment in sector *j* at time *t*. The growth of sectoral real value added per worker is

$$\hat{v}_t^j = 100(v_t^j - v_{t-1}^j)/v_{t-1}^j \quad (7)$$

---

of investment in Thailand. Nevertheless, as the boom decade progressed, the share of foreign borrowing in this mix increased unsustainably, culminating in the crisis (Warr 1999).

[6] It is important that these calculations of 'labour productivity' measure the average product per worker and not the marginal product of labour. Changes in average product may or may not indicate changes in marginal product. As Hicks famously showed, an increase in labour's average product may even coincide with a *reduction* in its marginal product if (i) the cause of the rise in average product is labour-augmenting technical change, and (ii) the elasticity of factor substitution is low enough (Hicks 1962; Acemoglu 2010).

[7] For an earlier analysis along these lines, see Gollin (2010, tables 4 and 5).

The GDP share weighted growth of real sectoral value added is approximated by

$$[(S_t^j + S_{t-1}^j)/2]\,\hat{v}_t^j, \tag{8}$$

where $S_t^j = V_t^j / GDP_t$ is the share of sector *j* in GDP. The residual (structural change contribution to growth of aggregate real GDP per worker) is then

$$\hat{g}_t - \sum_j [(S_t^j + S_{t-1}^j)/2]\,\hat{v}_t^j. \tag{9}$$

Table 3 sets out the data used in the calculation of these components, covering the period 1981 to 2017, divided into four sub-periods, as in Figure 1.[8] The ranking for these four periods is again the same as that obtained above for aggregate GDP growth and structural change, measured by output: II, I, IV, III. Because of this correlation, it will not be feasible to distinguish the impacts of these variables.

Over the full period, 1981 to 2017, the average growth rate of labour productivity in agriculture exceeded that of both industry and services.[9] This finding contrasts with the fact that the average growth rate of total output from agriculture was lower than that from industry or services. The difference arises because both the numerator and denominator of the expression for sectoral labour productivity, equation (6), change over time. Agriculture shed labour dramatically at the same time as its real output grew. The level of labour productivity in agriculture in 1981 was low. Over time, the gap between agricultural and non-agricultural labour productivity slowly narrowed but was not eliminated. In 1981 labour productivity in agriculture was only 10.3 per cent of its level in industry and 12.7 per cent of its level in services. In 2017 these proportions were 12.6 and 25.4 per cent, respectively. The ratio of the level of labour productivity in 2017 relative to its level in 1981 was 2.96 for agriculture, 2.41 for industry, and 1.48 for services.

Despite the agricultural productivity growth that has been achieved, Thai agriculture remains a vast sink of low-productivity, and hence poor, people. The implication is that significant potential exists for continued structural transformation to raise the living standards of these people.

Figure 11 presents the decomposition given by equation (9), using a three-year moving average to smooth annual fluctuations, and Table 4 summarizes the decomposition over the four periods discussed above. A key point is that the contribution of structural change to aggregate productivity growth was large: 45 per cent over the full period. Although productivity growth in agriculture was more rapid than industry or services, agriculture's declining share of GDP as it shed labour meant that productivity growth within it contributed (column [2]) only 20 per cent of total sectoral productivity growth within all sectors (column [5]) and 11 per cent of aggregate labour productivity growth (column [1]). Productivity growth in industry is often assumed to be the most important component of productivity growth in aggregate. Over the full period, industry contributed 25 per cent of the growth of aggregate productivity, more than either agriculture (11 per cent) or services (19 per cent). Structural change was the largest component, contributing 1.8 times as much as industry.

[8] Discussion of labour productivity is not especially meaningful when output is constrained by a deficiency of aggregate demand as it was in the crisis period, but this period is included in the table for completeness of coverage.

[9] This was also true for every sub-period except the pre-boom (1981–86) years.

As an intuitive aid to understanding the role of structural change in driving aggregate productivity growth, a hypothetical illustration may be helpful. Consider the case where the initial levels of productivity per worker differ among sectors but where productivity growth is zero in every sector. Does this mean that aggregate productivity growth is also zero? Not if labour moves from sectors with low *levels* of average productivity to sectors of higher productivity. For this relocation to happen without reducing average productivity in the sectors to which the labour moves, the relocated labour must become more productive. This relocation effect is measured by the last term of equation (3), corresponding to the last column (labelled [6]) in Table 4.[10]

Figure 12 reveals that during the pre-boom period (1960–86) and especially the boom decade (1987–96), both within-sector and between-sector productivity growth (arising from structural change) were important contributors to aggregate productivity growth. However, both of these contributions diminished during the post-crisis period since 2000.

5 Poverty, inequality, and inclusive growth

Two different definitions of inclusive growth can be found in the literature, turning on whether they focus on poverty reduction or inequality reduction. As with the term pro-poor growth, also widely used in the development literature, some authors interpret inclusive growth to mean growth that benefits the poor in absolute terms (poverty-reducing), while others define it as growth that benefits the poor proportionately more than the rich (inequality-reducing).[11] We will show that Thailand's growth has been unambiguously inclusive according to the first definition. According to the second definition, growth has been inclusive in the long term, as covered by our data, but not in all sub-periods.

In this study, inclusive growth is defined to mean growth of real GDP per capita that reduces poverty, whether or not it also reduces inequality. Nevertheless, changes in inequality are of interest in themselves and warrant attention, whether inequality is incorporated in the definition of inclusive growth or not. Regarding inclusive growth measured in terms of poverty reduction, the important question is not simply the binary one of whether growth is or is not inclusive. Most instances of positive growth of real GDP per capita coincide with some decline in poverty incidence. Exceptions are rare.

The more important empirical question is the *degree* to which growth reduces poverty. Accordingly, we will define the *growth inclusiveness index* to be the reduction of poverty incidence (change in the headcount measure, expressed as a percentage of the total population) per unit change in the level of GDP per capita. By construction, the change in poverty incidence over a given period is the product of the rate of growth of GDP per capita over that period and the inclusiveness index of that growth.

---

[10] The above calculations are ex post descriptions of the data, derived from an identity—the definition of GDP. Equation (3) is an identity that the data must necessarily satisfy. This should be distinguished from ex ante prescriptions of the requirements for structural change that will raise aggregate GDP per worker. For that, the focus must be on structural change that moves labour from sectors of lower marginal product to sectors of higher marginal product.

[11] The analytical relationship between these two definitions is discussed in detail in Warr (2005).

5.1 Poverty incidence

Figure 13 summarizes the World Bank's (2020a) Povcal data on poverty incidence in Thailand for the period 1981 to 2017 using four poverty lines—US$1.90, US$3.20, US$5.53, and US$10.00, all at 2011 purchasing power parity (PPP). US$1.90 and US$3.20 are the World Bank's recommended poverty lines for low-income and middle-income countries, respectively. US$5.53 is a poverty line computed by the authors from the Povcal database to replicate the Thai government's official poverty line. This was done using Povcal by finding the poverty line that produced a level of poverty incidence for Thailand in 2015 that matched the Thai government's reported headcount level of poverty incidence for that year, 7.6 per cent. US$10.00 is another poverty line specified in the World Bank's Povcal database.

The estimated level of poverty incidence is necessarily higher using a higher poverty line, but the four series seem to be otherwise similar. At all four poverty lines, measured poverty incidence declined continuously from 1981 to 2015 except during the economic contraction of the Asian financial crisis, when all four series increased.

5.2 Income inequality

Figure 14 shows data on the Gini coefficient of income inequality at the national level, covering the years 1962 to 2017.[12] Gross Gini and net Gini mean that the calculation is based on incomes before and after taxes and transfers, respectively. The two measures tell a very similar story except that the level of the net Gini is slightly lower. In summarizing the data, we shall focus on the gross Gini coefficient and overlook short-term fluctuations.

A. Over the long term (five and a half decades covered by these data), the measured Gini fell from 0.503 in 1962 to 0.380 in 2017.
B. Over the medium term, two sub-periods can be identified:[13]
   i. 1962 to 1986: Gini rose from 0.503 to 0.521;
   ii. 1986 to 2017: Gini fell from 0.521 to 0.380.

One possible description of this pattern is that high levels of output growth, labour productivity growth, and structural transformation lead to rising income inequality, and lower levels of these drivers lead to reduced inequality. Sub-periods (i) and (ii) seemingly fit the hypothesis. But within sub-period (ii) the boom years 1986 to 1992 showed the highest rates of growth and structural change but a small decline in the Gini coefficient. The large decline in the Gini from these high levels began after 1992, when growth began to slow. A seemingly more accurate description of these data would emphasize changes in the growth rate rather than the level: rising (slowing) growth rates coincide with increasing (declining) levels of inequality.

Another, not necessarily inconsistent, account rests on changes in the functional distribution of incomes and postulates that when labour's share rises inequality falls and vice versa. Figure 15 shows the share of GDP at factor cost received by labour, including all wages and imputed family labour used on family farms and small businesses and the residual return to capital, covering the

[12] The data presented are drawn from the World Bank's Povcal database, based on the Socio-economic Survey, conducted by the Thai government's National Statistical Office (NSO). The NSO survey data were first collected in 1957 but were not processed in digital format until the 1988 survey.

[13] Both the gross and net Gini values reported on the Povcal website reached their maximum in 1986. The numbers above refer to the gross Gini.

years 1971 to 2014. Over the full period, labour's share fell from 0.454 in 1971 to 0.393 in 2014, while the Gini coefficient also fell. This long-term observation is not consistent with the hypothesis. Nevertheless, over the medium term, this explanation performs relatively well. Sub-periods (i) and (ii) fit the hypothesis well. The turning point for both variables was roughly similar: 1986 to 1992 for the Gini and roughly 1990 for the labour's share.

Neither of the above explanations is fully consistent with the data, and the two are not mutually exclusive. Other factors, not considered in the above discussion, undoubtedly influenced changes in economic inequality as well. Overall, the notion that growth and structural change drive changes in inequality in the medium term is not well supported by the empirical evidence and is strongly rejected in the long term.

Two further points are important. First, in the Thai context, the important story is not so much about *changes* in inequality over time but rather the high *level* of inequality over the entire period. Table 5 summarizes the distribution of household incomes across quintile groups (poorest 20 per cent of the population, next richest 20 per cent, and so forth) in four years, 1986, 1996, 2006, and 2017. Table 6 converts these data to income shares. The outcome of three decades of economic growth, in which average incomes rose by a factor of 2.85 (despite the Asian financial crisis), was that every quintile group benefited, in absolute terms. Measured inequality declined over this period, which meant that in *proportional* terms the poor gained more than the rich. The per capita incomes of the poorest quintile rose by a factor of 3.28, and those of the richest quintile rose by a factor of 2.60. The per capita incomes of the richest decile (richest 10 per cent) rose by a factor of 2.56 and those of the richest centile (richest 1 per cent) rose by a factor of 2.53.

The high level of inequality meant that over the three decades of economic growth (overlooking the Asian financial crisis), the *absolute* gains per person received by the richest quintile were 4.6 times as large as the poorest quintile (Table 7, final column). The richest decile gained 14 times as much per person as the poorest quintile, and the richest centile gained 38 times as much per person. Because the level of economic inequality remained high, the benefits of economic growth were received disproportionately by the rich.

The second point is that the component of economic inequality that is most politically sensitive within Thailand is not inequality between rich and poor *households* but between rich and poor *regions* of the country. Section 6 develops this theme.

5.3 Inclusive growth: the growth inclusiveness index

Was Thailand's economic growth inclusive? The answer depends on the definition. If we use the definition that inclusive growth means growth that reduces inequality, the answer lies in Figure 14. Because inequality declined over the full period, the answer is yes, for the entire period taken as a whole. Inequality increased prior to 1986 and declined thereafter, so according to this definition the growth was inclusive after that year but not before.

If we adopt the definition that inclusive growth is growth that reduces poverty, the answer is yes for the full period and for every sub-period excluding the crisis years, when growth was negative and poverty incidence increased. The average rate of poverty reduction over the full 34 years of the data was 2.40 percentage points per year. But what was the poverty-reducing power of the growth? Consider the degree to which poverty incidence declines per unit of GDP growth per person. We shall call this the growth inclusiveness index and compute it for each of the four periods shown and, crucially, for each of the four poverty lines shown in Figure 13.

The growth inclusiveness index is defined as

$$I^L_{t,t-\tau} = (P^L_t - P^L_{t-\tau})/(Y_t - Y_{t-\tau}), \quad (10)$$

where P^L_t denotes the headcount measure of poverty incidence using poverty line *L* in year *t*. Year $t - \tau$ is the first year of each period shown, and year *t* is the last year of that period. Obviously, τ is the number of calendar years in each period. Similarly, Y_t and $Y_{t-\tau}$ denote real GDP per capita in the corresponding years.

Table 8 summarizes the poverty data used in these calculations, expressed as the average change of poverty incidence per year over the period concerned. These annual rates of change are shown for each of the four poverty lines described above. Table 9 summarizes the growth inclusiveness index and shows that in all periods of positive growth (I, II, and IV) the index was negative because poverty incidence declined in each case.[14] The striking point is that the ranking of these three periods according to the index depends heavily on the poverty line that is chosen. At the lowest poverty line (US$1.90), growth during the pre-boom period I (1981–88) was the most inclusive and growth during the post-crisis period IV (2000–17) the least so. At the highest two poverty lines (US$5.53 and US$10.00) the opposite applies. At a poverty line of US$3.20, the boom period (1988–96) shows the most inclusive growth.

The reason for the apparent anomaly is that (i) the four poverty lines detect changes in different segments of the distribution of incomes, and (ii) the measured responsiveness of poverty incidence to growth is necessarily different in these segments. Consider a graph of the cumulative distribution function (CDF) showing the logarithm of real incomes per person on the horizontal axis and on the vertical axis the cumulative proportion of households with incomes below the levels shown on the horizontal axis. The poverty line is a vertical line corresponding to the logarithm of a specified level of real income. Measured poverty incidence is the value on the vertical axis where the poverty line intersects the CDF. The CDF is typically S-shaped—relatively flat at the bottom and the top and much steeper in between. This simple geometric fact explains the above findings.

The change in measured poverty incidence when growth shifts the CDF to the right depends on the slope of the CDF in the local neighbourhood of the poverty line.[15] The S-shape means that this slope is very different in various parts of the distribution. This in turn means that different poverty lines, intersecting different parts of the CDF, may imply very different changes in poverty incidence for any given horizontal shift in the CDF.

At low poverty lines (such as $1.90), poverty incidence may be substantial at low levels of average income, as in the pre-boom period (I). Reductions in measured poverty incidence in response to growth during this period are significant because the poverty line intersects the CDF in its middle, upward-sloping segment. At higher levels of average income (as the post-crisis period [IV]), poverty incidence at $1.90 is extremely low. In this case poverty does not decline much as average incomes rise because we are focusing on the relatively flat, lower part of the CDF. At high poverty lines (such as $10.00) the reverse applies. Measured poverty incidence is then very high at low

[14] The index was also negative when growth was negative (period III) because poverty incidence increased.

[15] The slope of the CDF in the neighbourhood of the poverty line corresponds inversely to the degree of income inequality within this neighbourhood. The higher the slope, the lower the local inequality. It is this slope—the *local* degree of inequality—that determines the poverty-reducing effect of growth and not the *overall* level of inequality.

levels of average income (as those during the pre-boom period [I]) and does not change much during this period in response to growth of average incomes because we are now examining the relatively flat upper part of the distribution.

Lower poverty lines show a greater responsiveness of poverty incidence to growth (a higher growth inclusiveness index) when average incomes are low. Higher poverty lines do the opposite. These observations are relevant for the relationship between structural transformation and the inclusiveness of growth. At low poverty lines, measuring extreme poverty, the decline of the agriculture's share of GDP as economic growth proceeds means that the contribution that economic growth makes to poverty reduction also declines. At high poverty lines, this conclusion is reversed. There is a clear message. If we are to define the inclusiveness of growth to mean the reduction in poverty incidence per unit of economic growth, it is meaningful to discuss the inclusiveness of growth over time only in relation to a particular poverty line. The data for Thailand show that changing the poverty line can easily reverse the qualitative conclusions that might otherwise be drawn about the inclusiveness of growth in different periods.

5.4 Structural transformation and inclusive growth

Is there a tension between structural transformation and inclusive growth? Our interest is in the medium-term and long-term relationships among these variables rather than annual fluctuations. Regarding the long term, radical structural change in Thailand has coexisted with both massive reductions in poverty incidence and a moderately large long-term reduction in income inequality, according to the available data. The Thai experience therefore does not confirm a long-term tension between structural change and inclusive growth, whether the definition of inclusive growth includes inequality or not.

Regarding the medium term, the conclusions depend very much on the precise definition of inclusive growth. The approach of this paper has been to divide the historical period 1981 to 2017 into four distinct sub-periods, as in Figure 1, and to compare the rankings of these four sub-periods in terms of the variables of interest. Our empirical findings are summarized in Tables 10 and 11. A crucial point from Table 10 is that the rankings of the four periods in terms of GDP growth per capita, growth of labour productivity, two output-based measures of structural change (the overall rates of structural change and the industrialization component), and two measures of growth contributions (sectoral productivity and structural change) are identical. Because these variables are so highly correlated in the data, it is not possible to isolate the impact of structural change from any of those other variables. They move together. We are at best looking at the joint effect of changes in all of those variables, taken together—not just structural change. We shall call this joint variable growth/structural change.

Turning to the distributional outcomes of interest, Table 11 shows first the ranking of the four periods, measured in rates of poverty reduction per year. At a poverty line of $1.90 per day, the ranking of the four periods is again identical to their ranking according to growth, structural transformation and so forth in Table 10. At this poverty line, no tension is evident between the annual rate of poverty reduction and rates of growth/structural change. The faster the growth/structural change, the better. The same conclusion applies to the growth inclusiveness index.

When poverty incidence is calculated at a poverty line of $1.90, faster growth/structural change means faster poverty reduction per unit of growth as well. Comparing the pre-boom (1981–88) and post-crisis (2000–17) periods, I and IV, at the poverty line of $1.90, the annual rate of poverty

reduction in the former was almost six times the latter.[16] Inequality increased during period I and declined in period IV. These outcomes coincided with average growth rates of real GDP per capita of 3.41 per cent and 3.13 per cent during these two periods, respectively. The explanation for the difference in poverty outcomes is not that this small difference in growth rates was sufficient to overcome the difference in inequality outcomes. The main explanation is that at a poverty line of $1.90 we are examining different segments of the cumulative distribution of incomes in the two periods: the middle, upward-sloping segment in period I and the lower, flat segment in period IV. All this has very little to do with changes in overall levels of inequality.

At higher poverty lines, the above empirical observations change to a surprising extent. The crisis period was the worst, in terms of poverty incidence, at all poverty lines. The boom period was the best at all poverty lines except $10.00, when it was second best. Leaving aside the crisis period when poverty incidence increased, at a poverty line of $10.00 per day the rankings of the other three periods are exactly reversed from their ranking at $1.90. The methodological implication is again that a meaningful definition of inclusive growth must specify not just whether changes in inequality are to be counted but also the poverty line at which poverty incidence is to be measured.

Finally, the ranking of the four periods by annual changes in overall inequality is summarized in the last column of Table 11. It is different from the ranking by either annual rates of poverty reduction or the growth inclusiveness index for any poverty line. The crisis period recorded the most rapid reduction in inequality of any of the four periods. Its effects on the incomes of Thai people were negative among all income groups, but the proportional change was largest among those better-off households with capital to invest, causing measured inequality to decline significantly. Even when the crisis period is disregarded, a ranking according to changes in overall inequality is inconsistent with a ranking by annual rates of poverty reduction or the growth inclusiveness index, at any poverty line. The reason is clear from the earlier discussion: The impact that growth has on poverty incidence depends on local inequality in the neighbourhood of the poverty line—as given by the local slope of the CDF—and not overall inequality. Changes in overall inequality over time are a poor predictor of changes in poverty incidence or the inclusiveness of growth.

6 The political economy of structural change and inclusive growth

Since the Asian financial crisis, Thailand has experienced political turmoil. A succession of mass demonstrations against elected governments and two military coups (September 2006 and May 2014) followed by military-led governments has coincided with a rate of GDP growth below the long-term average, which is mainly attributable to a reduced rate of private investment (Warr 2019). At the risk of some oversimplification, the view advanced here is that the primary political conflict in Thailand is *regional*. On one side is the central region, including the capital, Bangkok, plus the southern region, loosely called 'yellow shirt'. On the other side are the north and north-east regions, loosely called 'red shirt'. There are yellow shirt supporters in the north and north-east but not many. There are also vast numbers of red shirt supporters residing in Bangkok and surrounding regions, but most are relatively recent migrants from the north and north-east, with political allegiance to their home region.

[16] Remarkably, the growth inclusiveness index during the pre-boom period was double its value post-crisis (Table 9).

The essential political conflict is not between the rich and poor. Because the red-shirt-supporting north and north-east regions are on average considerably poorer than the yellow-shirt-supporting central and southern regions, external observers have often mistaken the conflict as one between better-off and worse-off people. Although there is some salience to that view, it misses the main point. Economic inequality is high within regions as well as between them. The primary conflict is not between the rich and poor within the central and southern regions or within the north and north-east regions. It is regional and crosses income distributional boundaries within regions.

Regional tensions are not new to Thailand. They extend back at least to the 19th century and earlier (Baker and Phongpaichit 2014).[17] Democracy gave a political voice to these grievances. Additionally, the debacle of the Asian financial crisis undermined confidence in the competence of the traditional-ruling Bangkok elite to manage economic change. Underlying regional resentments emerged, and Thai politics changed permanently. A new political group appeared, led by the successful and extremely wealthy entrepreneur Thaksin Shinawatra, a native of the northern city of Chiang Mai. Thaksin saw a political opportunity arising from the crisis and exploited it brilliantly.

A simplified version of Thaksin's central political message is as follows. Over recent decades, the central and southern regions of the country, especially Bangkok, benefited at the expense of the much poorer north and north-east regions. The latter, especially rural people within them, were left out of the benefits of economic growth because the government represented the central and southern regions and favoured them in its decisions. This public sector focus on Bangkok in particular took the form of better public infrastructure, educational facilities, and health care. There is abundant empirical evidence to support these claims of regional bias in public expenditure policy (Webster 2005).

Thaksin claimed that the north and north-east regions remained poor, relative to the rest of the country, because of unfairness in the regionally biased way the government operated. In particular, it favoured the Bangkok-based elite. According to Thaksin, the north and north-east lost out because they lacked a political champion. Thaksin and his new political movement offered themselves in that role. The message worked spectacularly. A combined population of 52 per cent of the national total, the voting power of the north and north-east regions, combined with Thaksin's huge popularity there enabled his red shirt political parties to win every election contested between 2001 and 2011.

Thaksin's message has been described as populist in that he successfully portrayed the problems of the country as a consequence of the dominance of the traditional political elite. The yellow shirt establishment both feared and hated him. Thaksin was divisive. There was an important redistributive component to his policies. His governments introduced highly successful moves towards universal health care (the THB30 health card), reduction of farmer debt (through debt-reduction subsidized loans), and a system of fiscal transfers to rural villages (the village fund programme).

There was a rural-urban dimension to this conflict. The central region, especially Bangkok, is heavily urbanized. The north and north-east regions are more heavily rural. The most popular policy measures of the red shirt government of Thaksin Shinawatra (2001–06) were ones that favoured, or were meant to favour, rural people. Thaksin and later his younger sister Yingluck

[17] Baker and Phongpaichit (2014) show that since the end of absolute monarchy in 1932, Thailand has experienced 12 military coups, with 21 charters or constitutions, an average of one every four years.

presided over a disastrous attempt to assist their rural base by supporting the producer price of rice through a government rice purchasing scheme. This scheme was not about assisting poor people. The price supports favoured those farmers who were the largest sellers of rice, the largest farmers—not poor farmers, whose net sales of rice were small or even zero. While rural-urban differences within the central region and within the north and north-east regions certainly exist, they have not been the principal focus of political conflict, which has been predominantly about differences between regions.

As background to this story, Figures 16 and 17 summarize data on inequality within and between regions in Thailand from 1988 to 2017. From Figure 16, inequality (Gini coefficient) has not changed markedly within regions, except for a moderate increase within Bangkok and a reduction within the central region outside Bangkok. Inequality within the north, north-east, and southern regions barely changed. Figure 17 focuses on inequality between regions by showing average incomes in each of the five major regions relative to the national average, with the national average indexed to 100. The important point is the persistence of high levels of inequality between regions since 1986, with Bangkok Metropolitan Region the wealthiest, followed by the central and south regions, with the north and north-east well behind and not catching up. Regional tensions can be expected to continue as long as these regional disparities are ignored.

7 Conclusions

Over the six and a half decades between 1951 and 2017, Thailand's real GDP per person grew at an average annual rate of 4 per cent. In the process, the structure of the Thai economy changed radically, but this structural change looks very different when measured in output or employment terms. The output share of agriculture contracted, and the share of manufacturing expanded almost continuously. The employment share of agriculture also contracted even more rapidly than its output share but starting from a much higher level. The employment share of services grew correspondingly. Structural change contributed to economic growth, as relatively unskilled people moved from low-productivity rural employment to more productive urban and peri-urban employment in industry and services. The social and economic flexibility to undergo this dramatic structural change clearly facilitated the massive reduction in extreme poverty that occurred.

Economic policy contributed to urbanization through the infrastructure and policy measures described above. Physical transport infrastructure facilities linking the various parts of Thailand are excellent by developing country standards, even within rural areas, and have been so since the 1960s. In addition, public policy did not obstruct the relocation of workers to the new industrial regions, even though urban areas were already highly congested.

Did Thailand's structural transformation affect inclusive growth and inequality? The Thai data on growth of output, growth of labour productivity, and structural change are so highly correlated that it is analytically impossible to separate their individual impacts. Growth and structural change must be conceived as a joint package. The Thai experience suggests that in the long run Thailand's growth and structural change have promoted inclusive growth and reduced inequality. In the medium term, the Kuznets (1955) hypothesis of an inverted U-shaped pattern of inequality is supported by the Thai data.

Somewhat surprisingly, the medium-term impact that growth and structural change have on inclusive growth depends heavily on the poverty line used in the calculation of poverty incidence. This measured impact depends on the slope of the cumulative distribution of incomes in the neighbourhood of the poverty line, which corresponds to local inequality within this

neighbourhood. This finding of the present study is apparently new. Regarding what has recently been called 'Kuznetsian tension' (Alisjahbana et al. 2020)—the coexistence of high rates of structural change and increased levels of inequality—the Thai data do not support such a relationship over either the long term or the medium term.

The common but false claim that declining inequality maximizes the rate of poverty reduction rests on two errors. First, it ignores the possible trade-off between rates of growth and changes in inequality. If more rapid growth leads to rising inequality, then it is possible that the highest rates of poverty reduction are achieved when growth is most rapid, even if inequality increases. The Thai data demonstrate exactly this outcome. Second, by focusing wrongly on the overall level of inequality it ignores that changes in poverty incidence in response to growth depend solely on inequality in the neighbourhood of the poverty line (the slope of the CDF in this region) and not on the overall level of inequality. For example, changes in the upper end of the distribution can have large effects on measured overall inequality, but if they do not change the distribution in the neighbourhood of the poverty line, they have no impact on measured poverty incidence.

The available data show that the incomes of people living in or near the capital, Bangkok, and in the southern region (excluding the three southern-most, predominantly Muslim provinces) have remained much higher than those of people in the heavily rural north and north-east regions, despite a massive inflow of poorly educated, low-skilled people from other parts of the country. The differentials between these income levels have barely changed over recent decades. The fruits of economic growth, especially industrial growth, have accrued overwhelmingly to residents of the central and southern regions, especially in the capital, Bangkok, and its surrounds, including massive numbers of new residents recently migrating from other regions. The important issue is the persistence of a high *level* of regional inequality—not changes in it. If there is a 'developer's dilemma' in Thailand, it is not that growth and structural transformation accentuate the gap between rich and poor households. It is that economic development has not diminished the longstanding and politically toxic economic disparities between rich and poor regions.

There has been a longstanding inconsistency within government policy regarding these regional matters. On one hand, the government's investments in public infrastructure to support export-oriented industrial development were heavily concentrated on the greater Bangkok region, promoting urbanization within it. The crucial advantage of this part of the country was its ready access to sea and air transport. This arm of policy assumed that potential workers would relocate from other parts of the country to wherever new jobs were created.

On the other hand, the Board of Investment simultaneously offered inducements, mainly in the form of tax advantages, to industrial firms, foreign and domestic, to locate outside greater Bangkok, where average incomes (and wages) were much lower. The assumption was that industry could be induced to locate to wherever the cheapest labour force resided, provided suitable incentives were offered. This longstanding policy thrust failed comprehensively and has recently been abandoned. The locational advantages of greater Bangkok and its fringes far outweighed the low-wage advantages of poorer regions plus any tax incentives that the Board of Investment was able to deliver. Massive relocation of workers to the greater Bangkok area in particular has been the result.

Manufacturing-based industrialization expanded most notably from the mid-1980s onwards. A brief narrative account of this process is roughly as follows. Prior to this shift, industrial development in Thailand had been dominated by highly protected and inefficient import substitution. Changes in international trading opportunities, including the exchange rate adjustments that followed the Plaza Accord of 1985, made export-oriented manufacturing more

profitable within Thailand and neighbouring south-east Asian countries. The Thai government responded to these events more proactively than its neighbours in two key respects:[18]

A. by investing heavily in the public physical infrastructure required to support export-oriented manufacturing and associated enterprises supplying the intermediate goods that the exporters required;
B. by relaxing policy restrictions on export-oriented foreign investment. These liberalizations included abolition of restrictions on the degree of foreign ownership and abolition of local content requirements.

The rate of return to private investment in physical capital within manufacturing increased markedly, leading in the late 1980s to very high rates of new investment, both foreign (especially Japanese) and domestic. The new manufacturing enterprises were highly capital intensive and heavily export oriented. Employment within manufacturing increased, though less dramatically than the level of investment, and the demand for services increased as a consequence of the new incomes generated, stimulating employment within services. These developments contributed to the boom decade of 1987 to 1996 and to post-crisis industrial growth.

The key point is that externally driven changes in rates of return to industrial investment, supported by the public infrastructure investments and policy liberalizations outlined above, drove the growth of manufacturing, and through that, the rate of aggregate growth. The public infrastructure investment occurred overwhelmingly within the greater Bangkok region, adjacent to sea transport, and not elsewhere. Industrial development in outer regions has been minor. Regional inequality was perpetuated by this form of industrial development.

Finally, we argue that compounding the regional tensions that have dominated Thai politics, especially since the Asian financial crisis, lies an equally longstanding developmental dilemma: the country's archaic and wasteful education system. The quality and accessibility of public primary and secondary education are poor throughout the country but especially within the most disadvantaged, heavily rural regions of the north and north-east. Successive Thai governments have acknowledged this problem and promised to remedy it but have then failed to do so (Khoman 1993). This is both a consequence and an ongoing cause of sustained regional economic inequalities. Without a comprehensive and nationwide education reform, Thailand will be unable to make the transition up the value chain from a middle-income producer of unskilled and semi-skilled labour-intensive products and services to a high-income, innovative producer of skill-intensive products and services. The regional disparities will not diminish.

[18] Warr and Kohpaiboon (2018) provide a detailed discussion of these policy reforms.

References

Acemoglu, D. (2010). 'When Does Labor Scarcity Encourage Innovation?' *Journal of Political Economy,* 118: 1037–78.

Alisjahbana, A., K. Kim, K. Sen, A. Sumner, and A. Yusuf (2020). 'The developer's dilemma: a survey of structural transformation and inequality dynamics'. WIDER Working Paper 35. Helsinki: UNU-WIDER. https://doi.org/10.35188/UNU-WIDER/2020/792-7

Baker, C., and P. Phongpaichit (2014). *A History of Thailand*, 3rd ed. Cambridge: Cambridge University Press.

Corden, W. M., and H. V. Richter (1967). 'The Exchange Rate System and the Taxation of Trade'. In T. H. Silcock (ed), *Thailand: Social and Economic Studies in Development*. Canberra: Australian National University Press, 81–103.

Feenstra, R. C., R. Inklaar, and M. P. Timmer (2015). 'The Next Generation of the Penn World Table'. *American Economic Review*, 105(10): 3150–82.

Gollin, D. (2010). 'Agricultural Productivity and Economic Growth'. In P. Pingali and R.E. Evenson (eds), *Handbook of Agricultural Economics*, 4. Amsterdam: North Holland, 3825–66.

Hicks, J. R. (1962). *The Theory of Wages*, 2nd ed. London: Macmillan.

Ingram, J. C. (1971). *Economic Change in Thailand: 1850–1970*. Stanford, CA: Stanford University Press.

Khoman, S. (1993). 'Education Policy'. In Peter Warr (ed), *The Thai Economy in Transition*. Cambridge: Cambridge University Press, 325–54.

Kuznets, S. (1955). 'Economic Growth and Income Inequality'. *American Economic Review,* 45: 1–28.

Nidhiprabha, B. (2019). *Macroeconomic Policy for Emerging Markets: Lessons from Thailand*. London: Routledge.

Ravallion, M., and G. Datt (1996). 'How Important to India's Poor Is the Sectoral Composition of Economic Growth?' *World Bank Economic Review*, 10: 1–25.

Timmer, C. P. (2009). *A World Without Agriculture: The Structural Transformation in Historical Perspective*. Washington, D.C.: AEI Press.

Timmer, C. P. (2014). 'Managing Structural Transformation: A Political Economy Approach'. *WIDER Annual Lecture,* 18. Helsinki: UNU-WIDER.

Timmer, M. P., G. J. de Vries, and K. de Vries (2015). 'Patterns of Structural Change in Developing Countries'. In J. Weiss and M. Tribe (eds), *Routledge Handbook of Industry and Development*. London: Routledge, 65–83.

Vines, D., and P. Warr (2003). 'Thailand's Investment-driven Boom and Crisis'. *Oxford Economic Papers*, 55: 440–64.

Warr, P. (1999). 'What Happened to Thailand?' *The World Economy*, 22: 631–50.

Warr, P. (2005). 'Pro-Poor Growth'. *Asia Pacific Economic Literature*, 19: 1–17.

Warr, P. (2013). 'Thailand's Development Strategy and Growth Performance'. In Augustin K. Fosu (ed), *Achieving Development Success: Strategies and Lessons from the Developing World*. Oxford: Oxford University Press, 72–98.

Warr, P. (2014). 'Thailand: Economic Progress and the Move to Populism'. In Robert E. Looney (ed), *Handbook of Emerging Economies*. London: Routledge, 416–39.

Warr, P. (2019). 'Poverty Reduction Experiences of Southeast Asian Countries'. In Yongnian Zheng and Jiwei Qian (eds), *Development and Poverty Reduction: A Global Comparative Perspective*. London: Routledge, 191–223.

Warr, P. (2020). 'Economic Development of Post-war Thailand'. In Pavin Chachavalpongpun (ed), *Handbook of Contemporary Thailand*. London: Routledge, 36–51.

Warr, P., and A. Kohpaiboon (2018). 'Explaining Thailand's Automotive Manufacturing Success'. *Journal of Southeast Asian Economies*, 35(3): 425–48.

Webster, D. (2005). 'Urbanisation'. In Peter Warr (ed), *Thailand Beyond the Crisis*. London: Routledge.

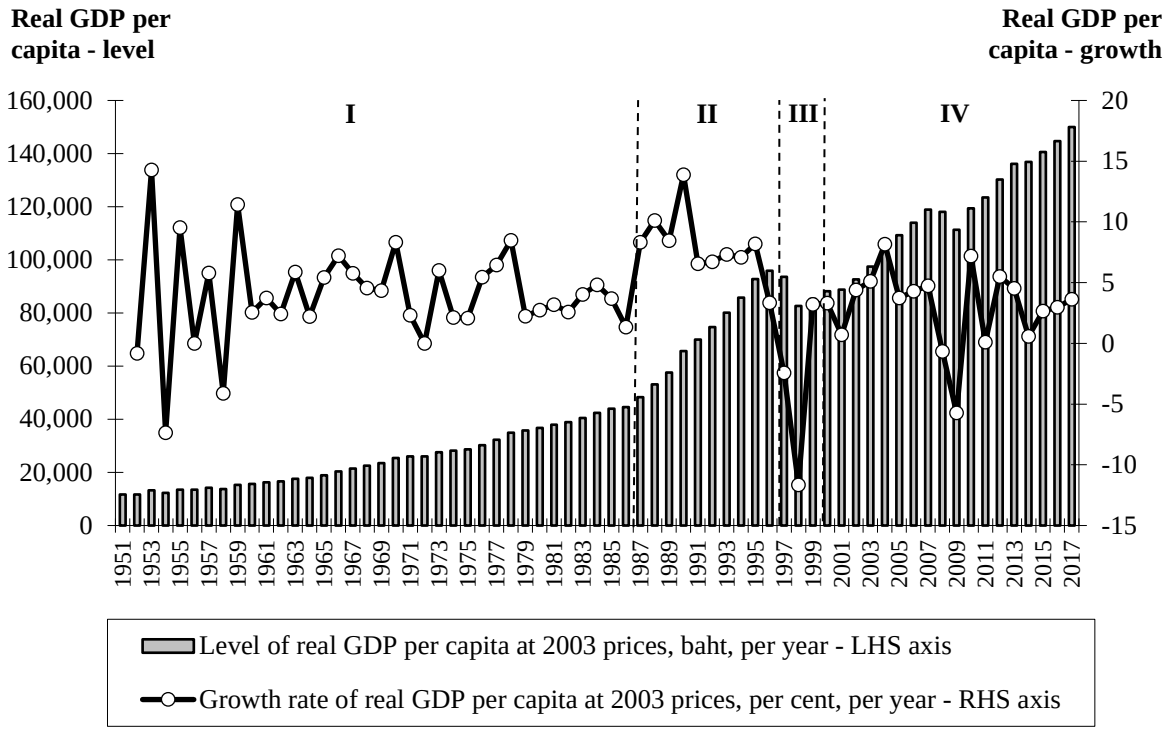
World Bank. (1993). *The East Asian Miracle*. New York, NY: Oxford University Press. 1997.

World Bank (2019). 'World Development Indicators'. Available at: https://databank.worldbank.org/source/world-development-indicators (accessed 15 February 2019).

World Bank (2020). 'PovcalNet'. Available at: http://iresearch.worldbank.org/PovcalNet/povOnDemand.aspx (accessed 31 March 2020).

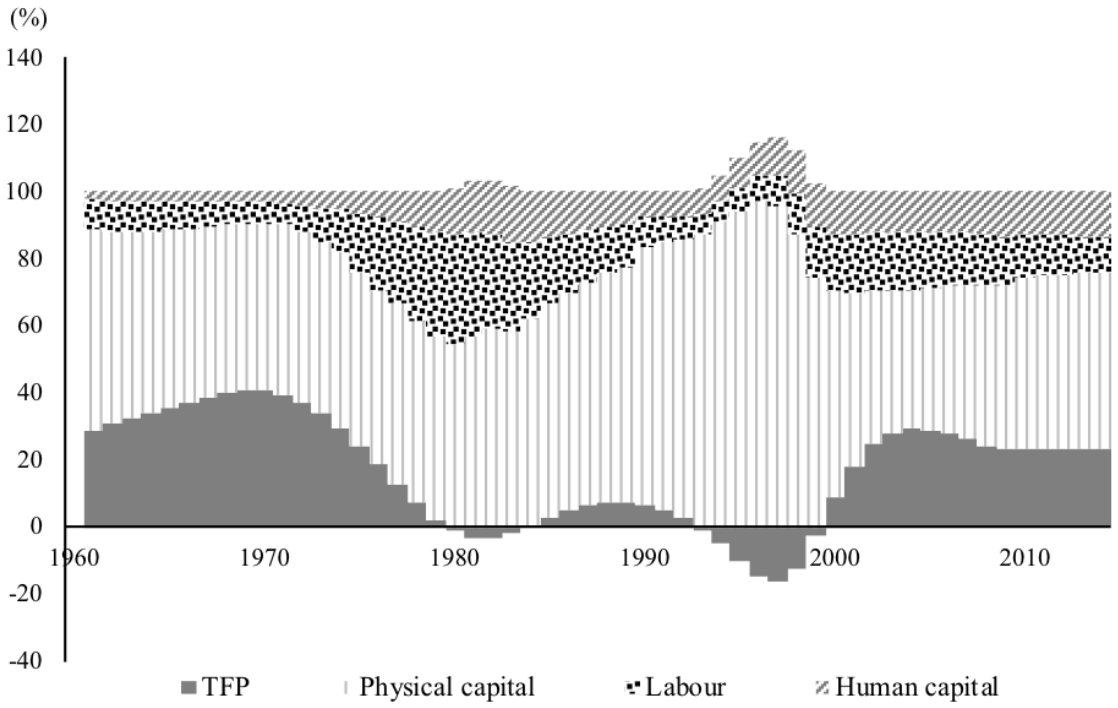
Figures and tables

Figure 1: Real GDP per capita and its growth rate in Thailand, 1951–2017



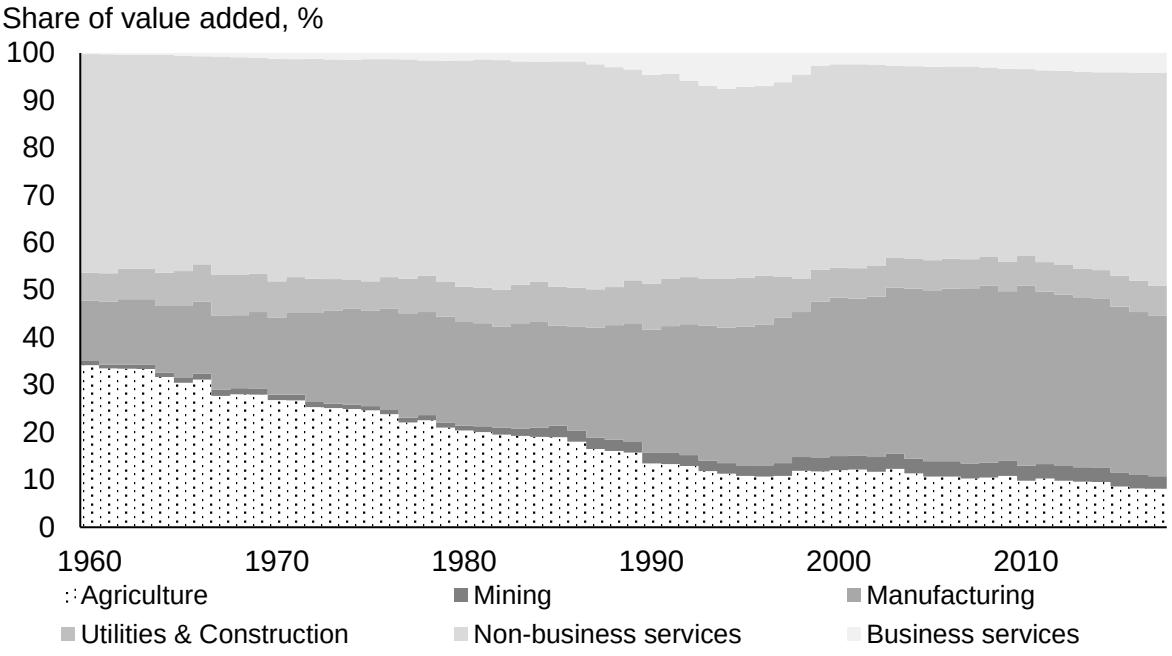
Source: authors' calculations based on data from the National Economic and Social Development Council (NESDC), Bangkok. Available at: https://www.nesdc.go.th/nesdb_en (accessed 17 June 2019).

Figure 2: Growth decomposition by factor and TFP, 1960–2014



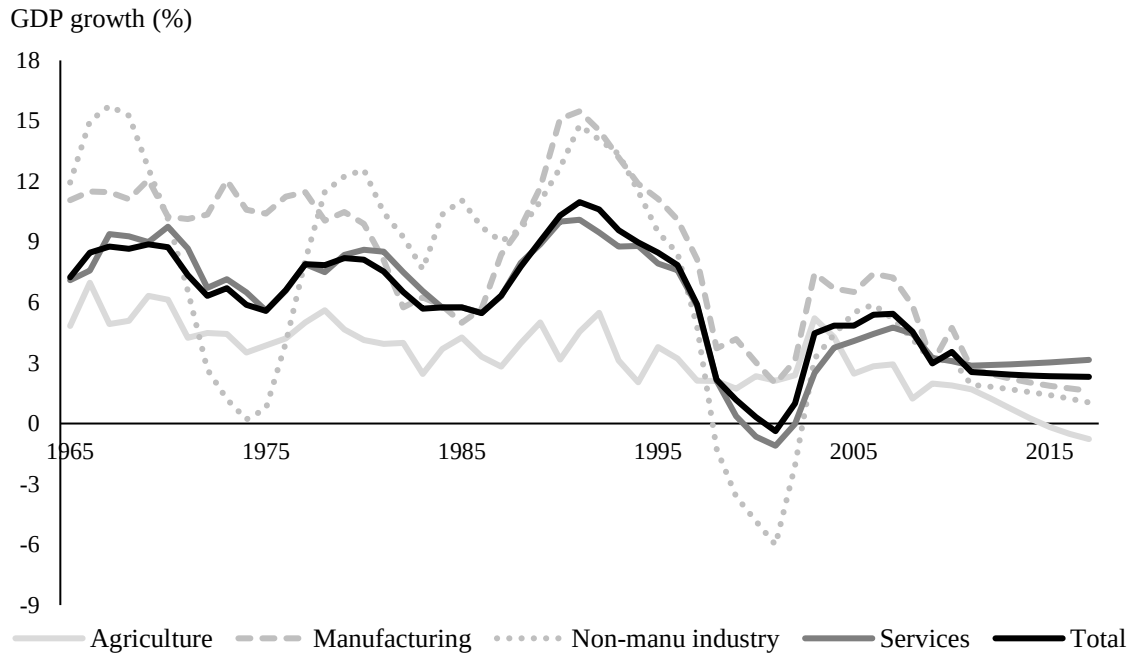
Source: authors' calculations based on data from the GGDC 10-Sector Database (Timmer et al. 2015).

Figure 3: GDP shares by sector, 1960–2017



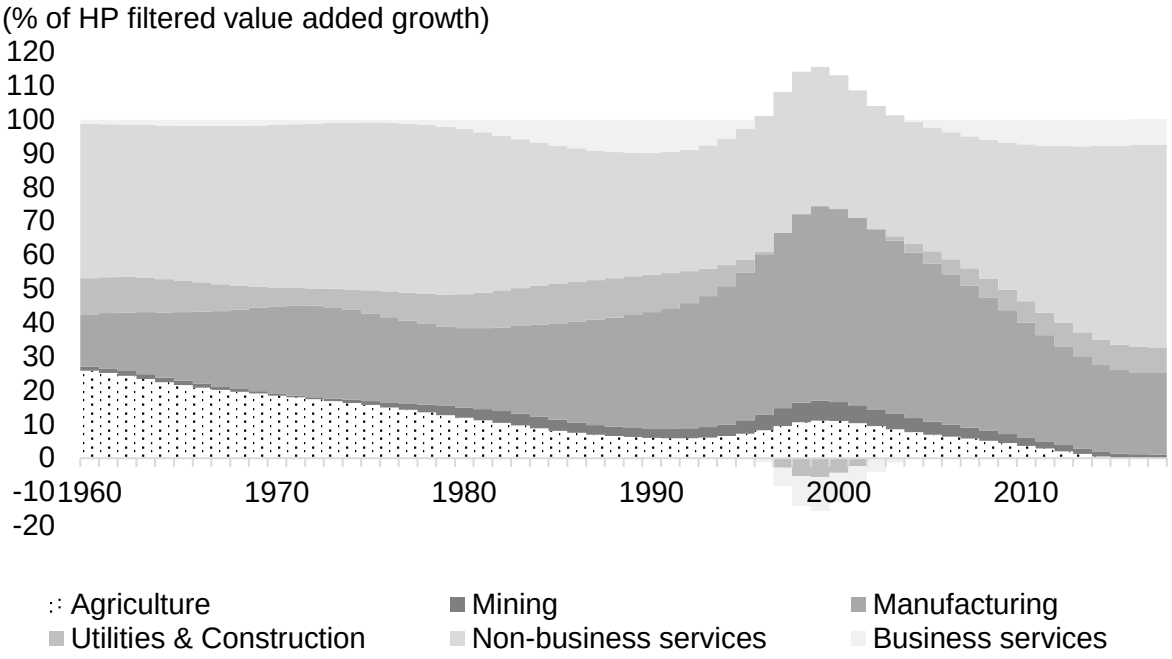
Source: authors' calculations based on data from the GGDC 10-Sector Database (Timmer et al. 2015).

Figure 4: Sectoral growth rates, 1965–2017



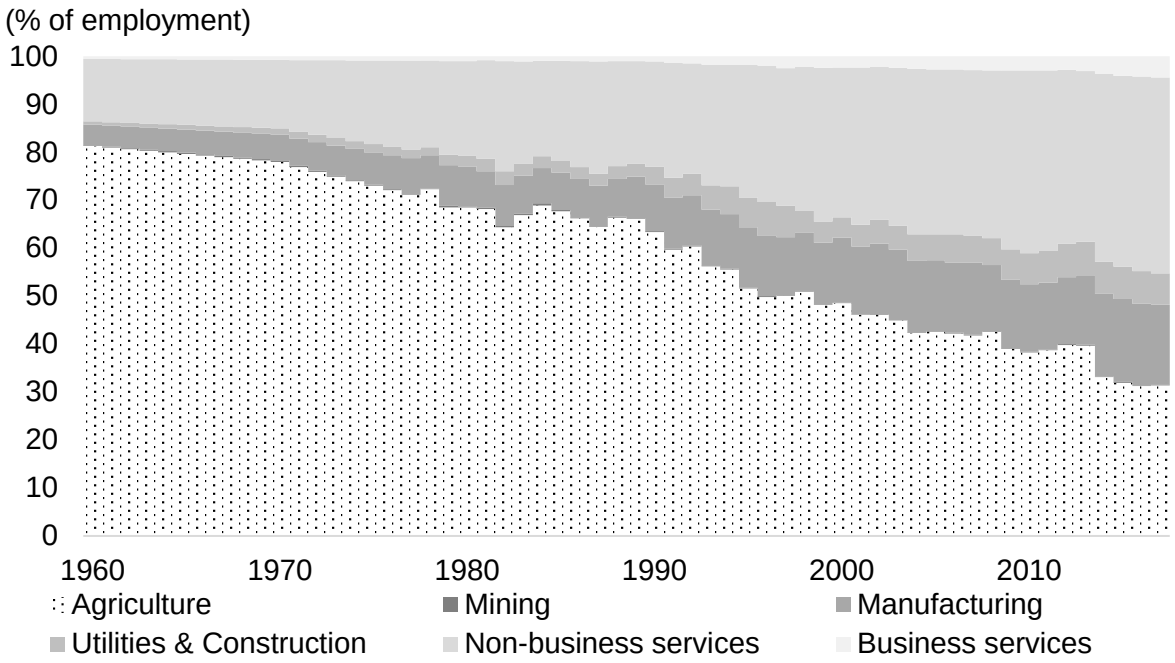
Source: authors' calculations based on data from the GGDC 10-Sector Database (Timmer et al. 2015).

Figure 5: Growth decomposition by sector, 1960–2017



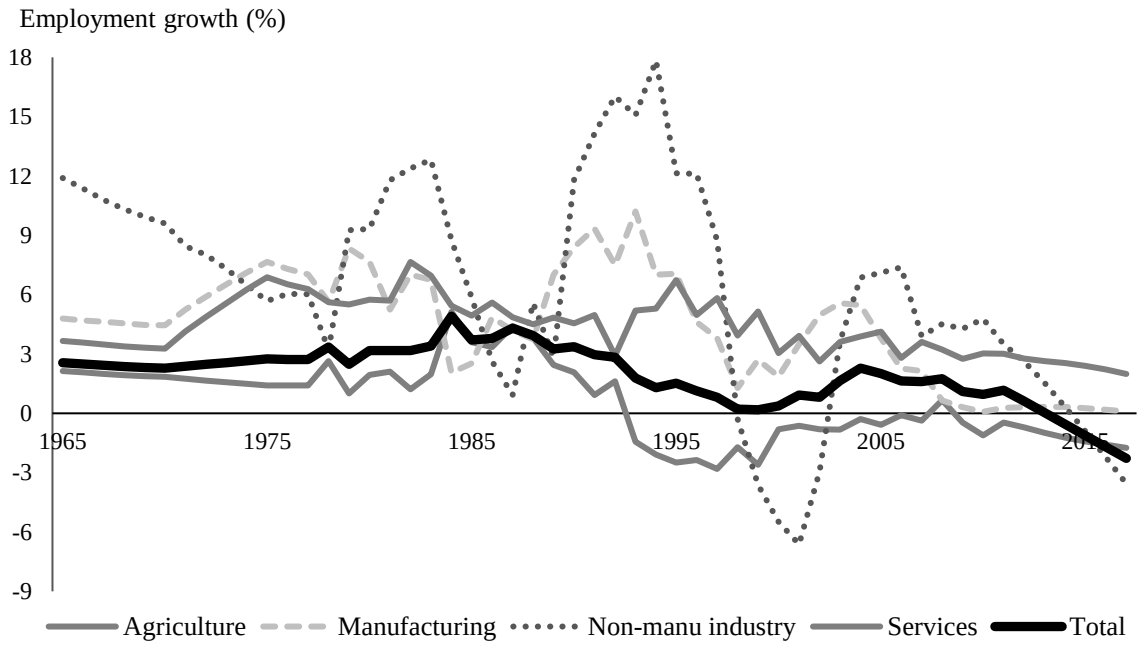
Source: authors' calculations based on data from the GGDC 10-Sector Database (Timmer et al. 2015).

Figure 6: Employment shares by sector, 1960–2017



Source: authors' calculations based on data from the GGDC 10-Sector Database (Timmer et al. 2015).

Figure 7: Employment growth, 1965–2017

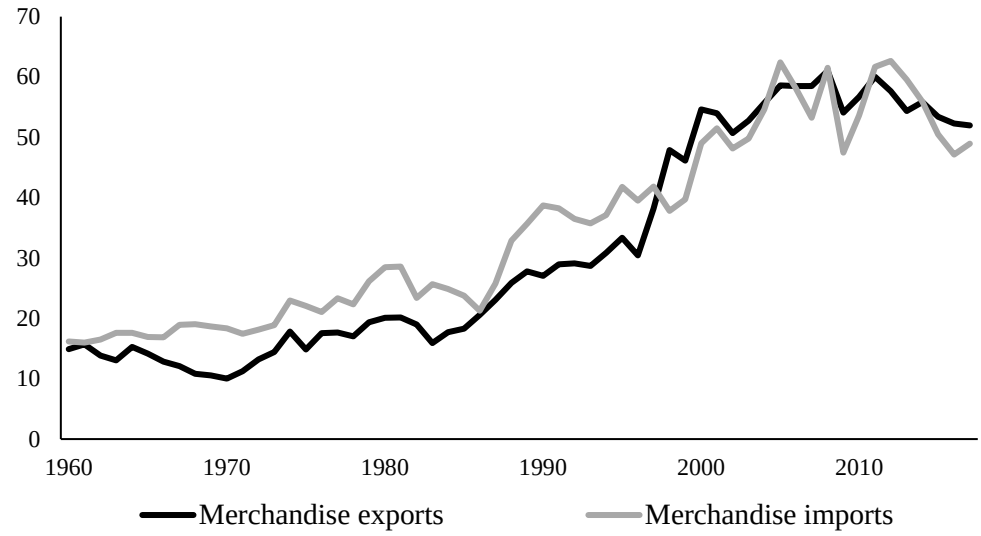


Note: employment growth is measured as a five-year moving average.

Source: authors' calculations based on data from the GGDC 10-Sector Database (Timmer et al. 2015).

Figure 8: Trade shares, 1960–2017

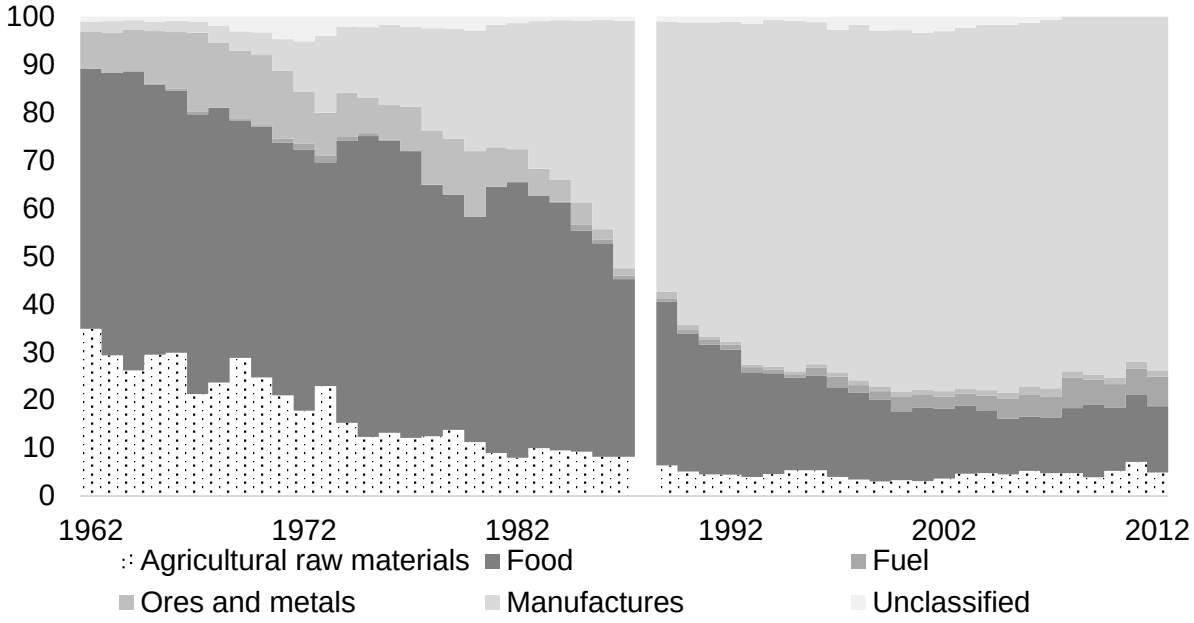
% of GDP



Source: authors' calculations based on data from the World Development Indicators (World Bank 2019). Available at: https://data.worldbank.org/indicator/TG.VAL.TOTL.GD.ZS?locations=TH&view=chart (accessed 15 February 2019; data last updated 24 January 2019).

Figure 9: Composition of total exports, 1962–2016

(% of exports)

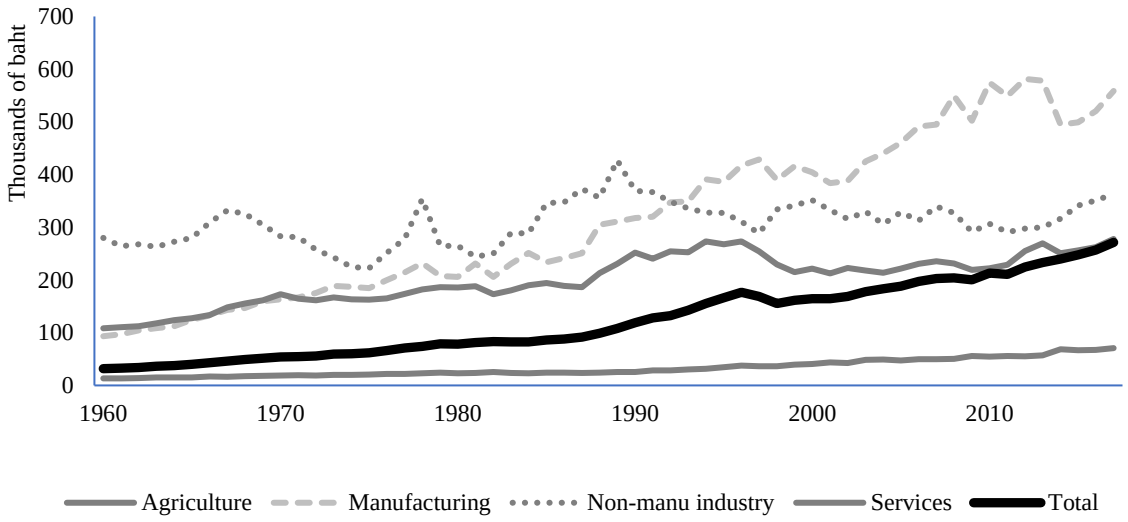


Note: data for 1988 are not available.

Source: authors' calculations based on data from the World Development Indicators (World Bank 2019). Available at: https://data.worldbank.org/indicator/TG.VAL.TOTL.GD.ZS?locations=TH&view=chart (accessed 15 February 2019; data last updated 24 January 2019).

Figure 10: Labour productivity by sector, 1960–2017

VA per worker

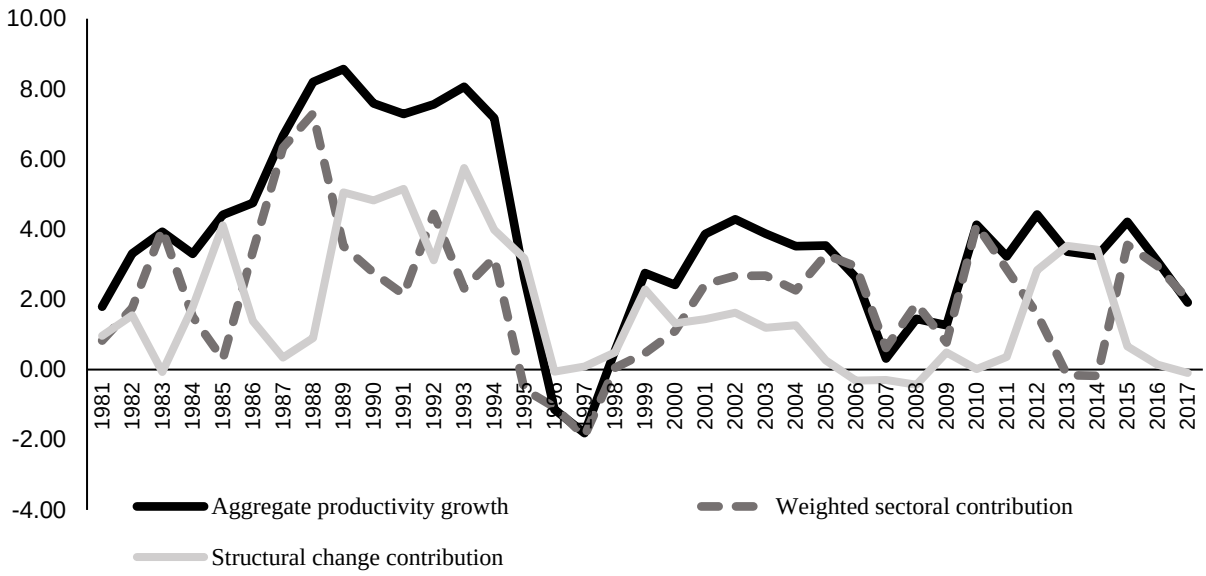


Note: units are thousands of baht per worker at constant 2011, using the GDP deflator.

Source: authors' calculations based on data from the GGDC 10-Sector Database (Timmer et al. 2015).

Figure 11: Productivity growth and structural change

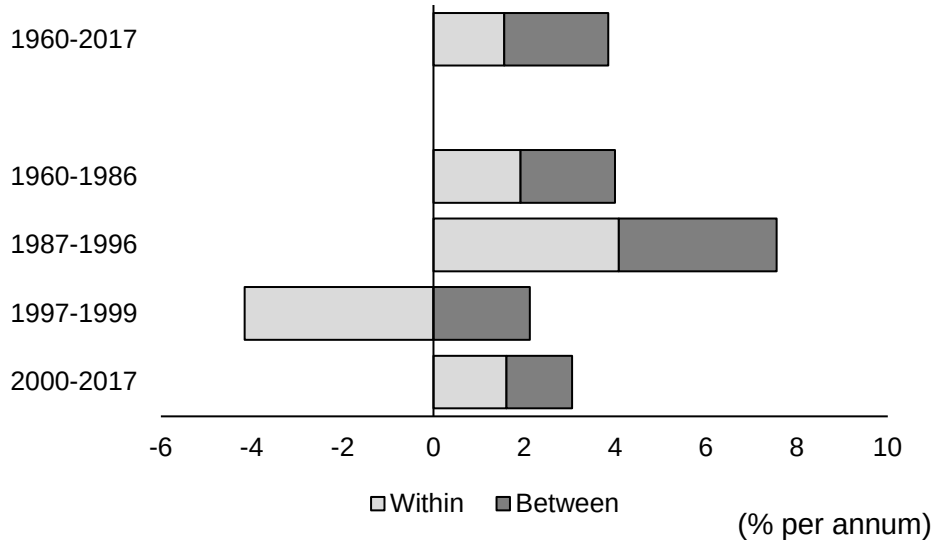
Percent change per year



Note: the data are smoothed using a three-year moving average.

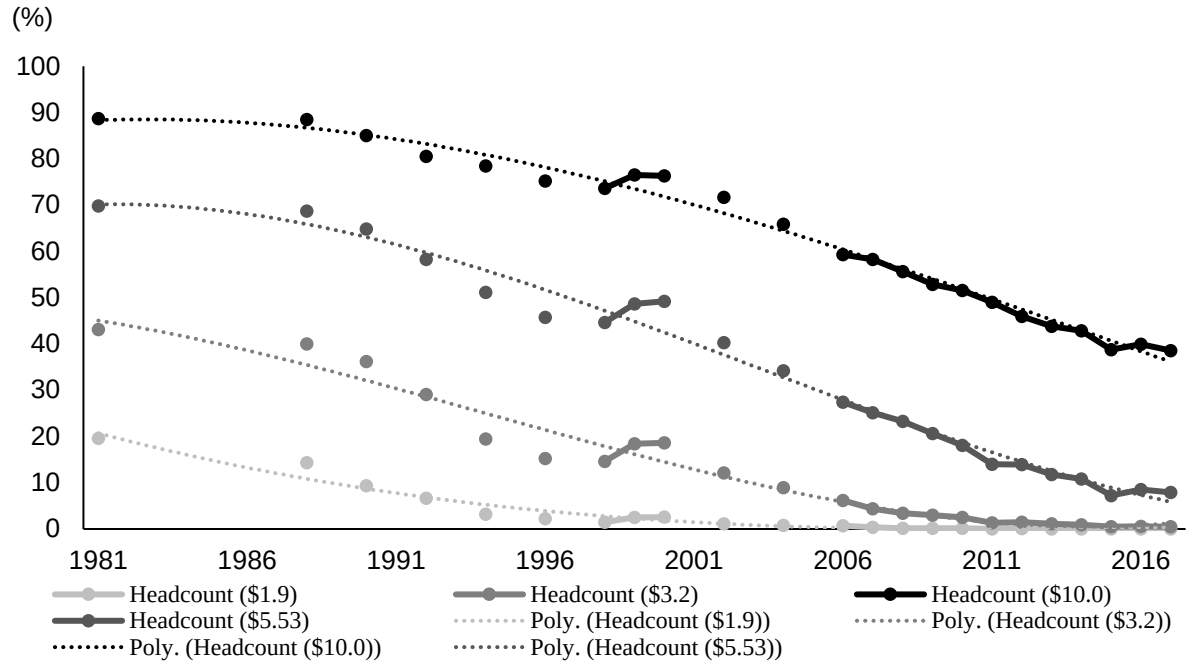
Source: authors' calculations.

Figure 12: Sources of labour productivity growth within and between sectors



Source: authors' calculations.

Figure 13: Poverty incidence, 1981–2017



Notes: 'Headcount ($X)' means the headcount measure of poverty incidence, as a percentage of the total population, at a poverty line of $X per person per day at 2011 PPP. 'Poly. (Headcount ($X))' means a polynomial function fitted to the time series data of Headcount ($X).

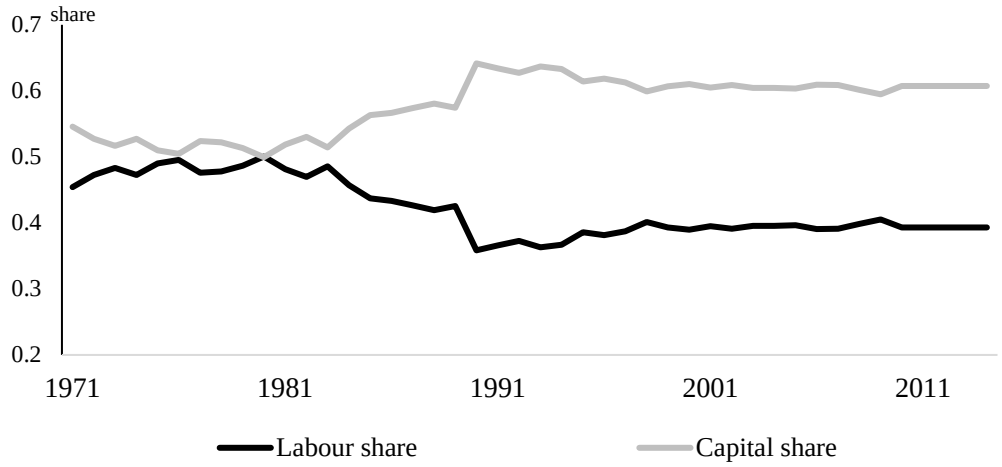
Source: authors' calculations, with assistance from Kyunghoon Kim, based on data from PovcalNet (World Bank 2020).

Figure 14: Gini coefficient, gross and net, 1971–2017 (per cent)

Note: the dotted lines connecting the data points are three-period moving averages.

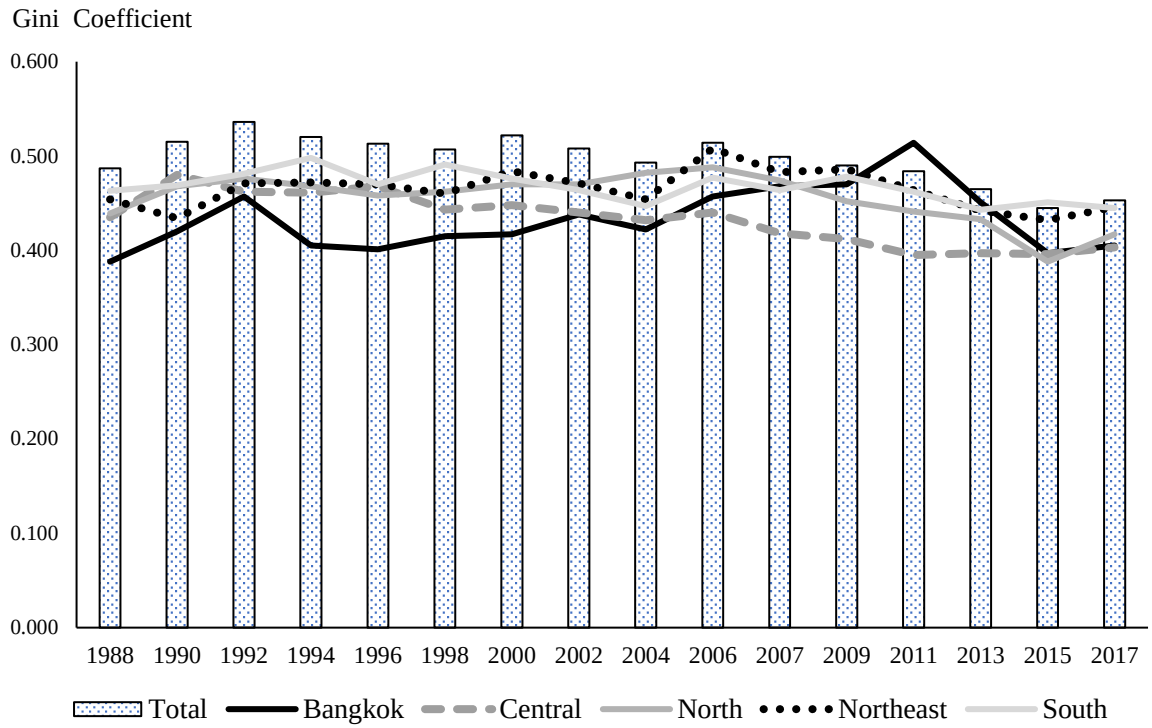
Source: authors' calculations, with assistance from Kyunghoon Kim, based on data from PovcalNet (World Bank 2020).

Figure 15: Capital and labour shares of GDP at factor cost, 1971–2014



Source: authors' calculations based on data from Penn World Table version 9.0 (Feenstra et al. 2015).

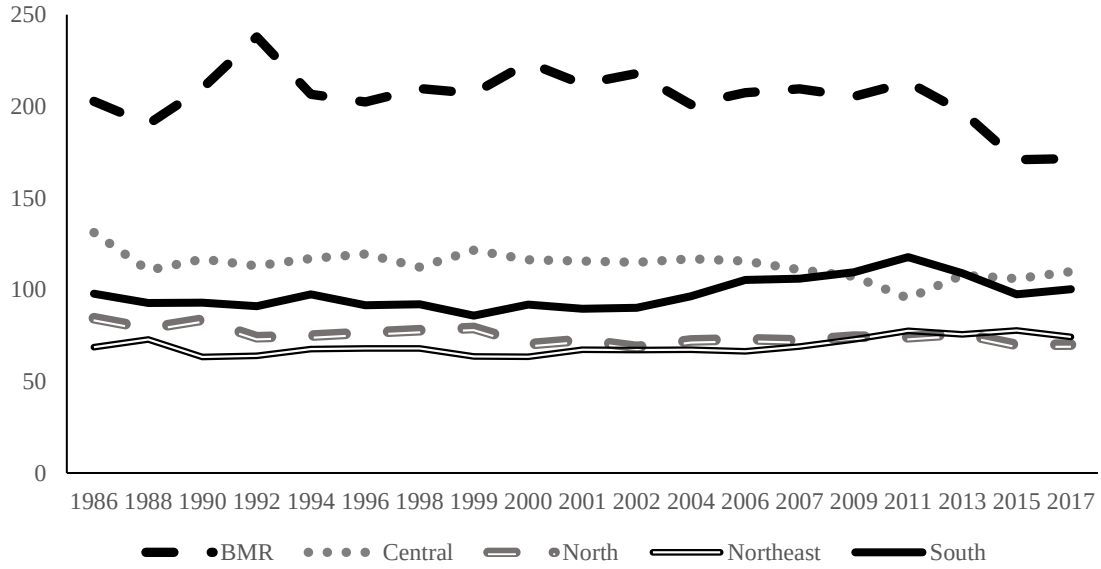
Figure 16: Gini coefficient, national level and within regions



Source: authors' calculations based on data from the NESDC, derived from the Socio-economic Survey conducted by the National Statistical Office (NSO). Available at: http://social.nesdc.go.th/SocialStat/StatReport_Final.aspx?reportid=685&template=1R1C&yeartype=M&subcatid=68 (accessed 31 March 2020).

Figure 17: Average regional incomes relative to national average

(Whole Kingdom = 100)



Source: authors' calculations based on data provided upon request by the NESDC, derived from the Socio-economic Survey conducted by the National Statistical Office (NSO). Available at: http://social.nesdc.go.th/SocialStat/StatReport_Final.aspx?reportid=685&template=1R1C&yeartype=M&subcatid=68 (accessed 31 March 2020).

Table 1: Growth of real GDP and its sectoral components, 1981–2017 (per cent per annum)

Period	Total GDP	Agriculture	Industry	Services
I. Pre-boom 1981–88	6.7	4.5	8.5	6.8
II. Boom 1988–96	9.3	2.7	12.7	8.6
III. Crisis 1996–2000	-1.9	1.7	-2.9	-2.4
IV. Post-crisis 2000–17	4.1	2.0	3.8	4.4
Whole period 1981–2017	5.7	3.0	4.4	5.8

Notes: roman numerals refer to the periods identified in Figure 1, except for Period I. The data available for sectoral shares of GDP require that the starting year for Period I in the above table is 1968.

Source: authors' calculations.

Table 2: Measures of structural change: overall rate and industrialization component

	Output shares		Employment shares	
Period	Overall rate	Industrialization component	Overall rate	Industrialization component
I. Pre-boom 1981–88	-0.57	-1.03	-0.25	-0.11
II. Boom 1988–96	-0.68	-1.44	-2.07	-0.55
III. Crisis 1996–2000	0.34	0.23	-0.33	1.44[a]
IV. Post-crisis 2000–17	-0.22	-0.18	-1.00	-0.32
Whole period 1981–2017	-0.33	-1.09	-1.02	-0.35

Notes: the four columns correspond to equations (1) to (4) in the text, respectively. [a] During the crisis period (1996–2000, Period III), agriculture's employment share declined by 1.32 percentage points and industry's share declined by 1.88 percentage points. The workers released from these two sectors were partially absorbed by services, partially unemployed.

Source: authors' calculations.

Table 3: Labour productivity by sector (per cent per year)

Period	Mean annual growth of real GDP per worker	Mean annual growth of sectoral real VA per worker		
		Agriculture	Industry	Services
I. Pre-boom 1981–88	3.41	1.41	4.29	1.21
II. Boom 1988–96	7.55	5.82	3.31	4.70
III. Crisis 1996–2000	0.58	4.58	0.51	-1.90
IV. Post-crisis 2000–17	3.13	3.21	1.97	1.95
Whole period 1981–2017	3.78	3.52	2.42	1.53

Note: VA means value added.

Source: authors' calculations

Table 4: Contribution of structural change to aggregate productivity growth, 1981–2017 (per cent per year)

Period	Mean annual growth of real GDP per worker	Mean annual growth of GDP share weighted sectoral real VA per worker			Contribution of sectoral productivity growth	Contribution of structural change
		Agriculture	Industry	Services	[5] =	[6] =
	[1]	[2]	[3]	[4]	[2] + [3] + [4]	[1] – [5]
I. Pre-boom 1981–88	3.41	0.27	1.39	0.59	2.25	1.17
II. Boom 1988–96	7.71	0.80	0.79	1.76	3.35	4.36
III. Crisis 1996–2000	-1.81	0.37	0.47	-2.74	-1.73	0.08
IV. Post-crisis 2000–17	3.13	0.34	0.89	0.87	2.10	1.03
Full period 1981–2017	3.78	0.42	0.94	0.71	2.08	1.70
(Percent contributions 1981–2017)	(100)	(11)	(25)	(19)	(55)	(45)

Source: authors' calculations using data from Table 3.

Table 5: Real income per person, 1986–2017 (constant 2015 prices, Consumer Price Index [CPI] deflator)

Quintile group	1986	1996	2006	2017
Quintile 1 (poorest)	730.6	1,056.0	1,319.6	2,398.8
Quintile 2	1,282.1	1,907.9	2,654.2	4,359.2
Quintile 3	2,022.7	2,987.4	4,235.4	6,530.9
Quintile 4	3,350.4	5,027.8	7,014.2	10,008.9
Quintile 5 (richest)	9,349.3	14,265.7	19,568.4	24,367.1
Population mean	3,347.4	5,050.6	6,958.4	9,533.0
Decile 10 (richest)	13,169.9	20,164.0	27,826.0	33,646.5
Centile 100 (richest)	36,257.1	57,257.9	82,213.5	91,810.7

Source: authors' calculations based on data from the NESDC. Available at: http://www.nesdb.go.th/Default.aspx?tabid=322 (accessed 15 June 2019).

Table 6: Income shares in Thailand, 1986–2017 (percent of total income)

Quintile group	1986	1996	2006	2017
Quintile 1 (poorest)	4.36	4.18	3.79	5.03
Quintile 2	7.67	7.55	7.63	9.14
Quintile 3	12.09	11.83	12.17	13.70
Quintile 4	20.02	19.91	20.16	21.00
Quintile 5 (richest)	55.87	56.53	56.25	51.12
Total	100	100	100	100
Decile 10 (richest)	39.38	39.95	39.98	35.29
Centile 100 (richest)	10.77	11.34	11.76	9.63

Notes: income share means the total income of the group shown relative to the sum of all household incomes. For example, in 2017, the poorest one-fifth of the population received 5 per cent of all household incomes while the richest one-fifth received 51 per cent. The richest one-tenth of the population received 35 per cent of all incomes, and the richest 1 per cent received just under 10 per cent of all incomes.

Source: authors' calculations from Table 5.

Table 7: Change in real expenditure per person, 1986–2017 (constant 2015 prices, CPI deflator)

Quintile group	1986–96	1996–2006	2006–17	1986–2017
Quintile 1 (poorest)	220.9	316.0	915.3	1,452.2
Quintile 2	319.0	579.2	1,267.5	2,165.7
Quintile 3	363.9	917.7	1,653.4	2,935.0
Quintile 4	493.9	1,337.6	2,115.4	3,947.0
Quintile 5 (richest)	1,714.9	2,447.3	2,558.9	6,721.1
Population mean	622.8	1,118.9	1,702.1	3,443.8
Decile 10 (richest)	2,538.1	3,031.6	2,582.6	8,152.3
Centile 100 (richest)	9,050.6	3,816.4	2,293.9	15,161.0

Source: authors' calculations based on data from the NESDC. Available at: http://www.nesdb.go.th/Default.aspx?tabid=322 (accessed 15 June 2019).

Table 8: Annual change in poverty incidence and inequality, 1981–2017 (percentage point change per year)

Period	Poverty incidence (headcount) Poverty line (US$ per person per day at 2011 PPP)				Gini coefficient
	US$1.90	US$3.20	US$5.53	US$10.00	
I. Pre-boom 1981–88	-0.75	-0.45	-0.16	-0.04	0.07
II. Boom 1988–96	-1.51	-3.09	-2.88	-1.66	-0.29
III. Crisis 1996–2000	0.08	0.85	0.87	0.27	-0.59
IV. Post-crisis 2000–17	-0.13	-1.07	-2.43	-2.22	-0.54
Whole period 1981–2017	-0.54	-1.19	-1.72	1.39	-0.37

Note: annual changes in inequality are measured as average change per year in the Gini coefficient, measured as a percentage.

Source: authors' calculations.

Table 9: Growth inclusiveness index, 1981–2017: Change in poverty incidence/change in real GDP per capita

Period	Poverty line (US$ per person per day at 2011 PPP)			
	US$1.90	US$3.20	US$5.53	US$10.00
I. Pre-boom 1981–88	-0.35	-0.21	-0.07	-0.01
II. Boom 1988–96	-0.28	-0.58	-0.54	-0.31
III. Crisis 1996–2000	-0.04	-0.44	-0.45	-0.14
IV. Post-crisis 2000–17	-0.04	-0.29	-0.67	-0.61
Whole period 1981–2017	-0.17	-0.38	-0.55	-0.45

Notes: units are change in poverty incidence per unit change in GDP per capita per year, measured in thousands of baht per year. During the crisis period (1996–2000), the change in real GDP per capita was negative and the change in poverty incidence was positive.

Source: authors' calculations.

Table 10: Summary of period rankings: growth, labour productivity, and structural transformation

Period	GDP growth per capita	Labour productivity growth	**Rate of structural change (output measure)**		**Rate of structural change (employment measure)**		Growth contributions	
			Overall rate	Industrialization component	Overall rate	Industrialization component	Sectoral productivity	Structural change
I. Pre-boom 1981–88	2	2	2	2	4	3	2	2
II. Boom 1988–96	1	1	1	1	1	1	1	1
III. Crisis 1996–2000	4	4	4	4	3	4	4	4
IV. Post-crisis 2000–17	3	3	3	3	2	2	3	3

Note: rankings of GDP growth per capita, labour productivity growth, rates of structural change, and growth contributions are summarized from Figure 1 and Tables 3, 2, and 4, respectively.

Source: authors' calculations.

Table 11: Summary of period rankings: annual changes in poverty and inequality and the growth inclusiveness index

Period	Annual reduction in poverty incidence Poverty line (US$ per person per day at 2011 PPP)				Growth inclusiveness index Poverty line (US$ per person per day at 2011 PPP)				Annual increase in inequality (Gini index)
	US$1.90	US$3.20	US$5.53	US$10.00	US$1.90	US$3.20	US$5.53	US$10.00	
I. Pre-boom 1981–88	2	3	3	3	1	4	3	3	1
II. Boom 1988–96	1	1	1	2	2	1	2	2	2
III. Crisis 1996–2000	4	4	4	4	*n.a.*	*n.a.*	*n.a.*	*n.a.*	4
IV. Post-crisis 2000–17	3	2	2	1	3	3	1	1	3

Notes: annual changes in poverty incidence and inequality are summarized from Table 8. The growth inclusiveness index is summarized from Table 9. *n.a*. means not applicable. The crisis period is not included in the ranking of the growth inclusiveness index because it could be misleading. A negative number in Table 9 means a reduction in poverty incidence per unit of positive growth (a desirable outcome), except for the crisis period when it means an increase in poverty incidence per unit of negative growth (hardly desirable). In the final column, periods are ranked by the change in the Gini coefficient. Period I is ranked 1 because the Gini increased only in that period. Period II is ranked 2 because the reduction in the Gini was smaller in absolute value than the reductions in periods III and IV. The absolute reduction was largest in period IV.

Source: authors' calculations

Appendix: comparison with overview paper

Three questions posed in the overview paper (Alisjahbana et al. 2020) and in each of the country studies are: (i) Does the country fit the regional characterization summarized in the overview paper?, (ii) How has the country's industrialization pattern changed over the four periods studied?, and (iii) Does growth-enhancing structural change raise inequality in that country (Kuznetsian tension)? Regarding question (i), Thailand does fit the regional category 'Developing East Asia'. Regarding questions (ii) and (iii), Appendix Tables A1 and A2 locate the empirical findings for Thailand in terms of Figures 4 and 9 of the overview chapter, respectively.

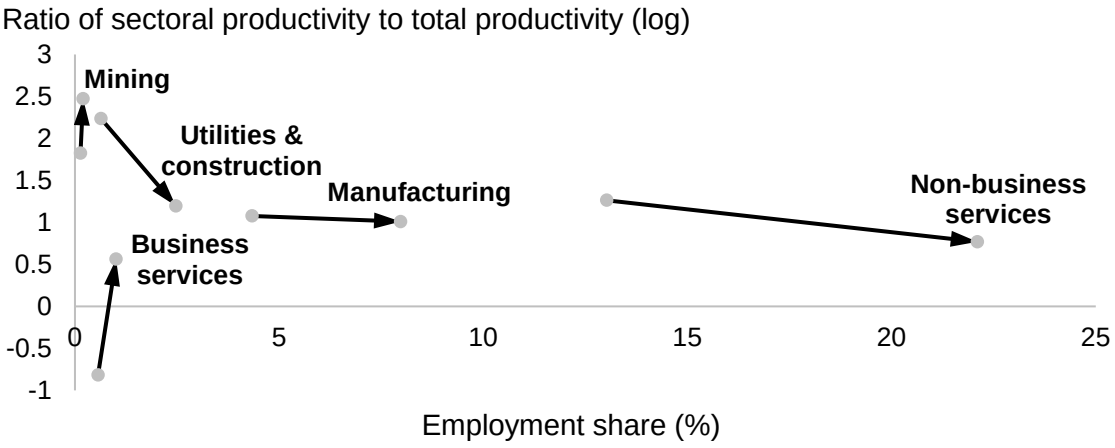
Appendix Table A1 indicates that both output and employment shares in manufacturing increased in each of the four periods, but the increases were significant only in periods II and IV. These two periods are therefore characterized as 'upgrading industrialization' and the other two as 'stalled industrialization'. The full period 1981–2017 as a whole is characterized as 'upgrading industrialization'.

In Appendix Table A2, growth-enhancing structural change means a decline in agriculture's GDP share. In the medium term, growth-enhancing structural change occurred in all periods except III. Inequality declined in all except I. Periods I and II combined showed the highest rates of growth/structural change, and inequality increased over these two periods combined and declined over periods III and IV combined. Growth and structural change were more rapid in period II than I, whereas inequality increased in period I and declined by a small amount in period II. The existence of Kuznetsian tension is not supported by these data. Over the long term, the evidence is even clearer. High rates of growth and structural change coexisted with a large decline in measured inequality. The Thai data do not indicate long-term Kuznetsian tension. They suggest the opposite.

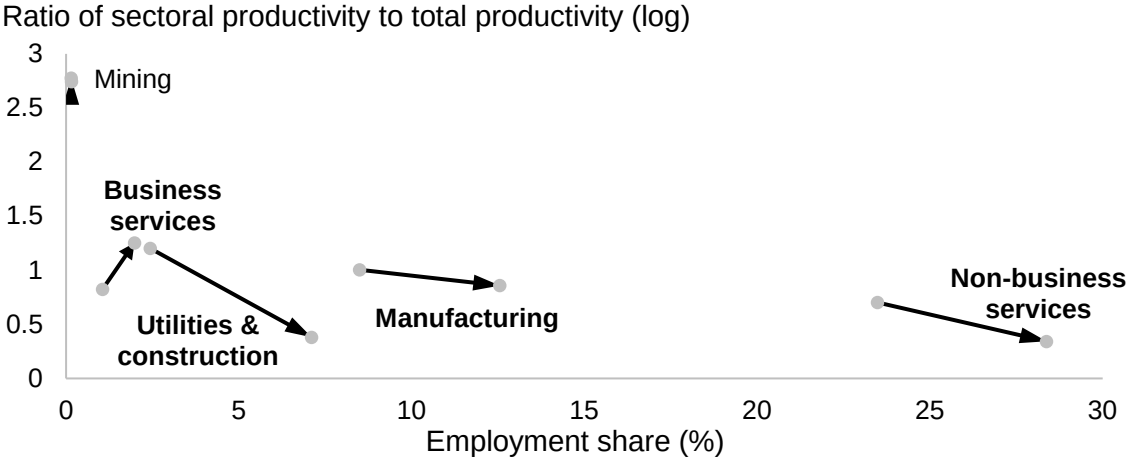
Finally, Appendix Figure A1 summarizes productivity and employment by sector.

Figure A1: Changes in labour productivity and employment share, Thailand, 1960–2017

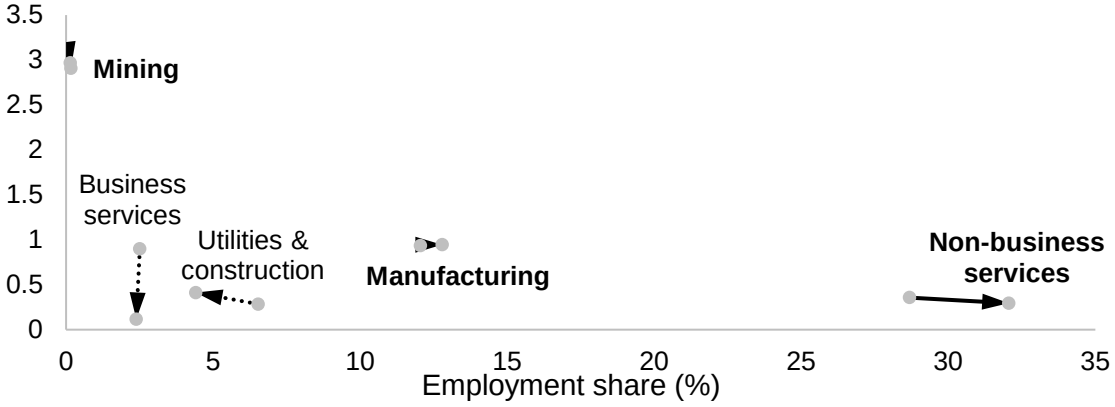
1960–86



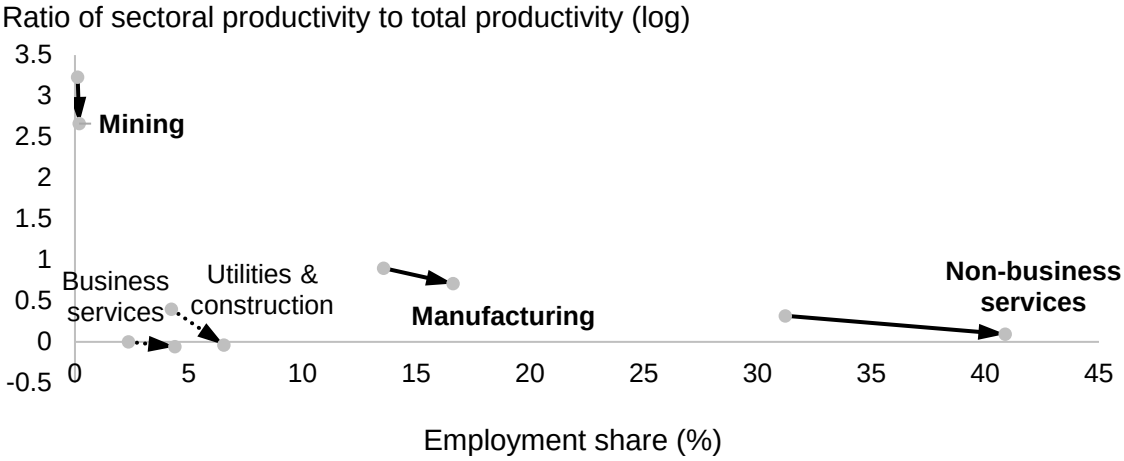
1987–96



1997–99



2000–17



Notes: sectors with higher than economy-wide average labour productivity that experienced an increase in employment share are in bold.

Source: authors' calculations based on data from the GGDC 10-Sector Database (Timmer et al. 2015).

Table A1: The form of industrialization

Period	Manufacturing share: Value added	Manufacturing share: Employment	Variety of industrialization
I. Pre-boom 1981–88	(+)	(+)	Stalled industrialization
II. Boom 1988–96	+	+	Upgrading industrialization
III. Crisis 1996–2000	(+)	(+)	Stalled industrialization
IV. Post-crisis 2000–17	+	+	Upgrading Industrialization
Whole period 1981–2017	+	+	Upgrading Industrialization

Notes: (+) means increasing but only slightly. + means increasing significantly. 'Variety of industrialization' means the quadrant of Figure 4 in Alisjahbana et al. (2020) that corresponds to the Thailand data for that period.

Source: authors' calculations.

Table A2: Growth-enhancing structural change and changes in inequality

Period	Growth-enhancing structural transformation	Inequality	Kuznetsian tension
I. Pre-boom 1981–88	+	+	Strong
II. Boom 1988–96	+	(-)	Ambiguous
III. Crisis 1996–00	–	–	Ambiguous
IV. Post-crisis 2000–17	+	–	Weak
Whole period 1981–17	+	–	Weak

Note: + means increasing significantly, – means decreasing significantly, and (-) means decreasing but only slightly. Kuznetsian tension means the quadrant of Figure 9 in Alisjahbana et al. (2020) that corresponds to the Thailand data for that period.

Source: authors' calculations.