# The Impact of Globalization on Income Equality and Youth Employment: Evidence from Taiwan

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***Abstract:*** Due to the process of the international fragmentation of production, the outsourcing of production has been implemented by most multinational companies; wage disparities between highly-skilled and less-skilled workers are likely to rise, causing income inequality to rise. In fact, since the late 1980s, the unequal income distribution among the Taiwanese has started to worsen. Taiwan's experience has revealed that the relationship between economic growth and income distribution has failed to support the inverted U-shaped Kuznets curve. In many cases, the fruits of economic growth are only enjoyed by capital owners and skilled workers in the high-tech sectors, and not by unskilled workers. Of late, Taiwan's labor market has been marred by persistently stagnant growth in wages, high unemployment and even higher youth joblessness. High and persistent unemployment is likely to increase fiscal burden through higher social welfare spending. A higher fiscal burden will in turn jeopardize future economic growth capacities. Rising unemployment rate for graduate degree holders is a result of the widening gap between their graduate training and the demands of the business world.

## 1. Introduction

The main theme of globalization is to improve the economic growth and welfare of countries through the free transfer or movement of goods, services and capital around the world. Globalization, rapid capital globalization in particular, has been accelerated by economic, political and technological drives. Globalization is therefore restructuring the nature of global production networks (Fujita and Hamaguchi, 2016). Due to the process of the international fragmentation of production, the outsourcing of production has been implemented by most multinational companies; wage disparities between highly-skilled and less-skilled workers are likely to rise (Eckel, 2003; Johnson, 2014; Timmer *et al.*, 2014),causing income inequality to rise. Global income inequality has been steadily rising since the 1980s. The middle class is therefore eroding within society with income inequality. At a time of slow global economic growth, income inequality is likely to have a profound effect on the intergenerational justice and fairness in a society, in particular in Taiwan.

Globalization has not solved the problem of income inequality; instead globalization has become the main factor underlying the rise in income inequality in many emerging economies such as South Korea and Taiwan (Stiglitz, 2013). In addition to globalization, factors such as institutional transformation in the labor market, demographic shifts and technological progress such as the information and communication technology (ICT) revolution have all had a profound impact on income inequality (Lau, 2015).

Since the 2008 global financial crisis, income inequality in both developed and developing countries has been worsened by the process of globalization. Worsening income inequalitymay not only swell public discontent, but may also restrain the drivers of economic growth. Moreover, following the 2008 global financial crisis, the so-called easy monetary policy "Quantitative Easing (QE)" has been adopted by the U.S., Europe and Japan. Due to the free movement of capital around the world, an increase in the monetary base (QE) policy tends to raise asset prices (e.g., housing and equity). Higher asset prices or asset inflation mostly benefits the high-income and high-wealth class through capital gains, since they hold more equities or housing than the poor and middle classes. Consequently, the degree of income inequality tends to rise (Coibion *et al.*, 2012; Saiki and Frost, 2014).

Taiwan is a small and open economy,that has become more open and liberalized due to the effect of globalization. The expansion of foreign direct investment (FDI) from the emerging economies turned out to be a salient feature of globalization beginning in the early 1980s. Taiwan transformed itself from a capital recipient country to a capital export one. Taiwan's outward investment (OFDI) saw a rapid fourfold increase from US$930.99 million in 1989 to US$5,077.06 million in 2000, and reached US$11,573.2 million in 2017.

Since overseas investment has become a major component of globalization, more capital exports have led to a decline in the supply of capital goods in the home country. As a result, firms' production costs have increased. To avoid operational losses, firms have needed to cut down on their activities, which in turn has caused a rise in unemployment in the home country. Taiwanese firms have relocated their production which is indeed likely to exacerbate domestic income inequality and unemployment (Chen, 2011; Liu *et al.*, 2015). Recent available statistics seem to confirm the severity of Taiwan's unemployment problem. Indeed, the unemployment problem in Taiwan can be described as a phenomenon of "growth recession", which is characterized by slow or moderate economic growth without job creation. Unemployment rate is an important

indicator of economic growth. A persistently high unemployment rate indicates an unproductive utilization of resources, a lower aggregate demand and an erosion of human capital. The foremost target of economic policies for countries regardless of their development stage is therefore to promote economic growth and reduce unemployment. In addition, a higher unemployment rate results in higher rates of crime, suicide and divorce. A persistently high unemployment rate is likely to havea negative impact on the well-being of individuals. Furthermore, high and persistent unemployment is likely to increase fiscal burden through higher social welfare spending. A higher fiscal burden will in turn hinder future economic growth capacities as well.

Taiwan has experienced rising income inequality since the late 1980s, while higher housing prices and stagnant wages have worsened this problem.Taiwan's income distribution gap between the highest and lowest 5% of households in terms of earnings has worsened from 32.74 times in 1998 to a record 96.56 times in 2011(Chu and Kang, 2015).The worsening problem of income inequality in Taiwan society has become the main driving force behind recent social movements.

Economic issues such as income distribution rather than political issues became salient for Taiwan's presidential election in January 2016. Kuomintang (KMT) presidential candidate Eric Chu proposed a raising of the basic wage from NT$20,008 to NT$30,000 during his four-year term as president. Moreover, Chu provided aid to small and medium enterprises and low-income households and proposed higher taxes on the wealthy and lower taxes on the middle class for a more equitable income distribution. Democratic Progressive Party (DPP) presidential candidate Tsai Ing-wen presented the New Model for Economic Development with job creation and an equitable income distribution. To solve the problem of soaring housing prices, both candidates were competing with each other on the supply of public housing units. For example, Tsai proposed building 200,000 public housing units within eight years, while Chu sought to create 200,000 social housing units in four years by turning existing unused properties into social housing units.

The worsening problem of income inequality and unemployment (youth unemployment in particular) in Taiwan society has become the main driving force behind recent social movements. As expected, In addition to cross-Strait relations, they turned out as two critical issues for 2020 presidential election. Therefore, this study uses the case study of Taiwan to explore how globalization has effect on income equality and youth employment. The remainder of this

paper is organized as follows. The next section presents the industrial transformation and income inequality in Taiwan. The third section described Taiwan's growing overseas production. The fourth section presents youth unemployment. The fifth section explores oversupply of higher education. The penultimate section explains social welfare spending, and the final section presents the conclusions drawn from this study.

## 2. Industrial Transformation and Income Inequality

Taiwan successfully transformed itself from an import-substitution into an export-promotion economy in the mid-1960s. Until the 1980s, Taiwan had been globally recognized as one of the fast-growing economies with a relatively equal distribution of income. The reduction in income inequality was driven by factors such as a successful land reform program, an increase in farmers' income and workers' wages and an increase in the education level (Schultz, 1997).Taiwan's relatively equal income distribution indicated that the marginal propensities of consumption were not likely to differ that much between the upper and lower income groups (Chinn, 1997).

The Gini coefficient was employed to measure the extent of income inequality, where "0" denotes perfect income equality and "1" stands for absolute income inequality. Taiwan's economic success was marked by average economic growth rates of 9.46% in the 1950s, 8.36% in the 1960s, and 9.89% in the 1970s. Meanwhile, the Gini coefficient was 0.321 in 1964, and it fell to 0.291 in 1972 and 0.280 in 1976 (see Table 1). The successful development of industrial exports transformed Taiwan from an agricultural society into a labor-intensive economy in the 1960s and 1970s. The earnings of the low-income group increased significantly, which in turn narrowed down the income disparity.

However, the average economic growth rates in the 1980s and 1990s were lower, namely, 6.67% and 6.84%, respectively, compared to 9.89% in the 1970s. As shown in Table 1, the Gini coefficient was low in the late 70's and early 80's. The year 1980 had the lowest Gini coefficient of 0.278. Starting in the 1980s, Taiwan's labor-intensive industries started to gradually transform themselves into capital- and technology-intensive industries. Since then, the demand for skilled workers has been strong (Lee, 2010); this has inevitably widened the wage gap between skilled workers and less-skilled workers, which in turn has worsened income inequality. After 1984, income inequality started to deteriorate. The Gini coefficient rose to 0.303 in 1988.

The collapse of the Thai baht in July 1997 was followed by an unprecedented financial crisis in East Asia and, as a result, Taiwan witnessed a gradual widening of the income distribution gap. Moreover, Taiwan's ICT production began to claim a lion's share of the global market in the 1990s. As a result of industrial transformation, Taiwan's income inequality deepened (Tang and Tseng, 2004). The Gini coefficient stood at 0.312 in 1990 and increased to 0.325 in 1999, indicating that Taiwan's growth-with-equity model had begun to change.

The Nobel Laureate Simon Kuznets proposed that income inequality tends to rise in the early stages of a country's economic development, and to ultimately decline in the later stages as the average income among middle-class households improves. Economic development and income inequality are best represented by an inverted U-shaped curve or the Kuznets curve (Kuznets, 1955).In fact, since the late 1980s the unequal income distribution among the Taiwanese has started to worsen. Taiwan's experience has revealed that the relationship between economic growth and income distribution has failed to support the inverted U-shaped Kuznets curve (Lee, 2008). Taiwan's exports are highly reliant on the information and communication technology sector, exposing the economy to fluctuations in world demand. In line with the bursting of the information technology bubble in 2001, Taiwan had its first recorded negative economic growth (–1.26%), and the Gini coefficient (0.350) hit a record high.

**Table 1: Taiwan's Economic Growth Rate and Income Inequality**

| Year | 1964 | 1968 | 1970 | 1972 | 1974 | 1976 | 1977 | 1978 | 1979 | |
|---|---|---|---|---|---|---|---|---|---|---|
| Economic Growth Rate(%) | 12.63 | 9.71 | 11.51 | 13.87 | 2.67 | 14.28 | 11.41 | 13.56 | 8.83 | |
| Gini coefficient | 0.321 | 0.326 | 0.294 | 0.291 | 0.287 | 0.280 | 0.284 | 0.287 | 0.285 | |
| **Year** | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 |
| Economic Growth Rate(%) | 8.04 | 7.11 | 4.80 | 9.04 | 10.05 | 4.81 | 11.52 | 12.70 | 8.02 | 8.75 |
| Gini coefficient | 0.278 | 0.281 | 0.283 | 0.287 | 0.287 | 0.291 | 0.296 | 0.299 | 0.303 | 0.303 |
| **Year** | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 |
| Economic Growth Rate(%) | 5.65 | 8.36 | 8.29 | 6.80 | 7.49 | 6.50 | 6.18 | 6.11 | 4.21 | 6.72 |
| Gini coefficient | 0.312 | 0.308 | 0.312 | 0.315 | 0.318 | 0.317 | 0.317 | 0.320 | 0.324 | 0.325 |
| **Year** | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
| Economic Growth Rate(%) | 6.42 | -1.26 | 5.57 | 4.12 | 6.51 | 5.42 | 5.62 | 6.52 | 0.70 | -1.57 |
| Gini coefficient | 0.326 | 0.350 | 0.345 | 0.343 | 0.338 | 0.340 | 0.339 | 0.340 | 0.341 | 0.345 |
| **Year** | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | |
| Economic Growth Rate(%) | 10.63 | 3.80 | 2.06 | 2.20 | 4.02 | 0.81 | 1.51 | 3.08 | 2.63 | |
| Gini coefficient | 0.342 | 0.342 | 0.338 | 0.336 | 0.336 | 0.338 | 0.336 | 0.337 | 0.338 | |

*Source:* Directorate-General of Budget, Accounting and Statistics (DGBAS), Taiwan.

Nevertheless, Taiwan's excessive dependence on exports has made the economy vulnerable to fluctuations in world market demand and extraordinarily sensitive to global economic trends. Due to the 2008 global financial crisis, income inequality in Taiwan has deteriorated. In 2008, the Gini coefficient increased to 0.341from 0.339 in 2006. In 2009, the Gini coefficient reached a record high of 0.345 since 2003. Taiwan's income inequality became an electoral issue in the 2008 presidential election.

## 3.   Taiwan's Growing Overseas Production

Owing to the rising land prices and labor costs in the late 1980s, the production costs of Taiwanese labor-intensive industries have increased dramatically (Lien *et al.*, 2005). They have begun to lose their competitive advantage. The globalization of economic activities has further intensified the competition they face.

Taiwan had accumulated tremendous trade surpluses and foreign exchange reserves in the early 1980s. As the Taiwanese government lifted the controls over foreign exchange in 1987, small and medium-sized labor-intensive companies therefore looked for overseas manufacturing bases for low-cost labor (Chang, 2007). In order to maintain their competitiveness and make a profit, many Taiwanese companies have set up manufacturing facilities overseas to take advantage of other countries' lower labor costs, i.e., China and Southeast Asian nations such as Indonesia, Malaysia, the Philippines, Thailand and Vietnam.

Moreover, in the first half of the 1990s, Taiwan opened its doors to immigrant workers from Southeast Asia and also began to allow outward investment in China. China has become the "export platform" of Taiwan. Since the relaxation of restrictions on the high-tech industry's investment in China in 2002, instead of focusing on small and medium-sized labor-intensive industries, Taiwanese companies have increased their investments in the electronics industry in China. As Taiwan's companies move forward along the global supply chain, Taiwan is becoming one of the major investors around the world (Chow, 2012).

The recently strengthened economic linkages between Taiwan and China have mainly come about through trade and investment. Due to geographical proximity and peaceful cross-Strait development, Taiwanese investment in China has surged over the past several years. By the end of 2009, Taiwanese outward FDI in China had reached a record high of US$24.331 million and accounted for 66.8% of Taiwan's total OFDI. China has become the largest recipient of Taiwan's OFDI.

Taiwan relies heavily upon exports. Domestic demand is unlikely to provide enough momentum for economic growth and employment. Due to the recent expansion of production networks of Taiwanese companies in China, a wave of overseas production has emerged. That is, Taiwan-based companies receive export orders at home but produce overseas. Meanwhile, Taiwanese companies' increased overseas production has led to an increase in unemployment among domestic lower-skilled workers (Tsai and Huang, 2007; Chen, 2011).

The ratio of overseas production has consistently risen from 13.3% in 2000 to 46.1% in 2007, to 51.5% in 2013 and to 53.2% in 2017. Taiwan's economy is very much reliant on China as more than 90% of its export orders for overseas production have gone to China. However, Taiwan's companies continue to relocate their production activities overseas, and Taiwan's sluggishness in setting up high value-added industries has resulted in worsening unemploymentand weaker economic growth (Driffield and Chiang, 2009).

In particular, due to Taiwan's role in the global supply chain, the overseas production ratio is rather high in the ICT industry. According to the exporters' overseas production survey report conducted by the Ministry of Economic Affairs (MOEA), the overseas production ratio in China increased from 43.8% in 2010, to 47.4% in 2012 to 49.4% in 2016 and dipped to 47.9% in 2017. The figure for in-house production was only 46.8% in 2017. China accounted for 47.9% of all overseas production, implying that, of each US$100 export order received from abroad, China had the lion's share of US$47.9. In particular, the overseas production ratio is rather high in the ICT industry. In 2017, 93.5% of export orders for the ICT industry involved overseas production, of which 89.2% went to China. The ICT industry therefore has no significant job creation effect for Taiwan. Meanwhile, many Taiwanese tycoons have dropped their money earned overseas in the real estate market, which in turn has led to skyrocketing housing prices in the big cities.

Although Taiwan's semiconductor fabrication operations remain competitive in the global supply chains, companies focusing on integrated circuit (IC) design, packaging and testing are now losing their competitive advantage. Besides, the Achilles heel of Taiwan's ICT sector is its inability to become a brand marketer in the global supply chains.

With increasing international competition, as companies focus more onproduct and service quality, rather than low cost, the nature of competition is changing. Taiwanese companies have entered a new era of cut-throat competition. Nevertheless, the value-added of the Taiwanese manufacturing

sector declined with each passing year for the period 1996-2011, from 26.7%in 1996 to 22.3% in 2006, and to 21.9% in 2011. The figure has then risen to 23.7% in 2013 and to 30.3% in 2016. Due to increasing raw material costs, the figure dipped to 29.7% in 2017.

Transforming and upgrading Taiwan's industrial structure remains the crucial measure for boosting Taiwan's competitive advantage. Without innovation, Taiwanese companies have to stick to profit margins and low value in their supply chains. Given its high-quality human resources and strong research and development capabilities, instead of moving jobs overseas, Taiwanese companies should strengthen their R&D capabilities and innovation, which in turn will help them move to high profit margin products.

## 4. Deteriorating Youth Unemployment

In the process of economic development, both knowledge and skills of human resources are pivotal driving forces. Education has been a crucial element in the economic development of Taiwan. Higher education has long been considered a key to enriching talent and enhancing Taiwan's competitive advantage. Taiwan has made enormous progress in the realm of higher education. As shown in Table 2, the percentage of educational attainment for junior college and above in total employment has increased rapidly from 19.6% in 1994, to 43.4% in 2010 and to 50.2% in 2017. In fact, in response to intensive competition triggered by globalization, Taiwan embarked on a striking industrial transformation from labor-intensive industries to information-intensive ones in the 1980s. However, social justice and the unemployment problem were not given the same treatment, leading to the current asymmetrical result of unskilled workers not enjoying the fruits of the industrial transformation.

### Table 2: Employment by Level of Education, 1981–2017

Unit: %

| Year | Total | Junior High & Below | | | Senior High & Vocational | | | Junior College & Above | | |
|------|-------|---------|--------------------------------|----------------|---------------|----------------|----------------|---------------|-------------------|----------------------------------------|
| | | Subtotal | Primary School & Below | Junior High | Sub-total | Senior High | Voca-tional | Sub-total | Junior College | University & Graduate School |
| 1981 | 100.0 | 68.8 | 49.6 | 19.2 | 20.4 | 7.1 | 13.2 | 10.9 | 5.6 | 5.2 |
| 1982 | 100.0 | 67.3 | 48.0 | 19.4 | 21.5 | 7.2 | 14.3 | 11.1 | 5.9 | 5.3 |

*contd. table 2*

|  |  | Subtotal | Primary School & Below | Junior High | Sub-total | Senior High | Voca-tional | Sub-total | Junior College | University & Graduate School |
|---|---|---|---|---|---|---|---|---|---|---|
| 1983 | 100.0 | 66.1 | 46.7 | 19.3 | 22.4 | 7.0 | 15.4 | 11.5 | 6.0 | 5.5 |
| 1984 | 100.0 | 64.5 | 45.1 | 19.5 | 23.4 | 7.2 | 16.3 | 12.1 | 6.4 | 5.7 |
| 1985 | 100.0 | 63.3 | 43.5 | 19.9 | 24.2 | 7.2 | 17.0 | 12.5 | 6.9 | 5.6 |
| 1986 | 100.0 | 61.6 | 41.7 | 19.9 | 25.5 | 7.2 | 18.2 | 12.9 | 7.1 | 5.8 |
| 1987 | 100.0 | 59.6 | 39.8 | 19.8 | 26.6 | 7.4 | 19.2 | 13.8 | 7.7 | 6.2 |
| 1988 | 100.0 | 57.4 | 37.6 | 19.8 | 27.9 | 7.8 | 20.0 | 14.7 | 8.2 | 6.6 |
| 1989 | 100.0 | 55.7 | 35.8 | 19.9 | 28.9 | 8.0 | 20.9 | 15.3 | 8.5 | 6.8 |
| 1990 | 100.0 | 53.8 | 33.9 | 19.9 | 29.9 | 8.5 | 21.4 | 16.3 | 9.2 | 7.2 |
| 1991 | 100.0 | 52.8 | 32.6 | 20.2 | 30.5 | 8.8 | 21.6 | 16.7 | 9.5 | 7.2 |
| 1992 | 100.0 | 51.1 | 30.7 | 20.4 | 31.2 | 8.6 | 22.5 | 17.7 | 10.2 | 7.4 |
| 1993 | 100.0 | 48.8 | 28.8 | 20.0 | 32.3 | 8.7 | 23.6 | 19.0 | 10.9 | 8.1 |
| 1994 | 100.0 | 47.7 | 27.5 | 20.2 | 32.7 | 8.7 | 24.1 | 19.6 | 11.4 | 8.2 |
| 1995 | 100.0 | 46.2 | 26.1 | 20.1 | 33.2 | 8.5 | 24.7 | 20.6 | 11.8 | 8.8 |
| 1996 | 100.0 | 43.6 | 24.2 | 19.4 | 34.1 | 8.7 | 25.5 | 22.3 | 12.8 | 9.5 |
| 1997 | 100.0 | 42.3 | 23.0 | 19.2 | 33.9 | 8.8 | 25.1 | 23.9 | 13.6 | 10.2 |
| 1998 | 100.0 | 40.5 | 21.4 | 19.1 | 34.6 | 9.2 | 25.4 | 24.9 | 14.1 | 10.8 |
| 1999 | 100.0 | 38.5 | 19.3 | 19.1 | 35.3 | 9.3 | 26.0 | 26.2 | 14.9 | 11.3 |
| 2000 | 100.0 | 37.1 | 18.2 | 18.9 | 35.6 | 9.2 | 26.3 | 27.4 | 15.5 | 11.8 |
| 2001 | 100.0 | 35.4 | 17.1 | 18.3 | 35.9 | 9.2 | 26.8 | 28.7 | 16.3 | 12.5 |
| 2002 | 100.0 | 33.6 | 16.2 | 17.4 | 36.2 | 9.1 | 27.2 | 30.2 | 16.7 | 13.4 |
| 2003 | 100.0 | 32.0 | 15.2 | 16.8 | 36.5 | 9.1 | 27.4 | 31.5 | 17.0 | 14.5 |
| 2004 | 100.0 | 30.4 | 14.1 | 16.3 | 36.7 | 9.0 | 27.7 | 32.9 | 17.1 | 15.8 |
| 2005 | 100.0 | 29.0 | 13.1 | 15.9 | 36.3 | 8.8 | 27.5 | 34.8 | 17.3 | 17.4 |
| 2006 | 100.0 | 27.4 | 11.9 | 15.5 | 35.9 | 8.6 | 27.4 | 36.7 | 17.4 | 19.3 |
| 2007 | 100.0 | 26.1 | 11.0 | 15.1 | 35.7 | 8.6 | 27.1 | 38.1 | 17.1 | 21.0 |
| 2008 | 100.0 | 24.6 | 10.2 | 14.4 | 35.2 | 8.5 | 26.8 | 40.1 | 17.2 | 23.0 |
| 2009 | 100.0 | 23.3 | 9.4 | 13.8 | 34.5 | 8.4 | 26.2 | 42.2 | 17.2 | 25.0 |
| 2010 | 100.0 | 22.5 | 9.0 | 13.5 | 34.1 | 8.3 | 25.8 | 43.4 | 17.1 | 26.2 |
| 2011 | 100.0 | 21.6 | 8.5 | 13.1 | 34.0 | 8.3 | 25.7 | 44.4 | 16.9 | 27.4 |
| 2012 | 100.0 | 20.9 | 8.1 | 12.7 | 33.8 | 8.4 | 25.5 | 45.3 | 16.7 | 28.6 |
| 2013 | 100.0 | 20.3 | 7.8 | 12.5 | 33.4 | 8.3 | 25.1 | 46.3 | 16.5 | 29.8 |
| 2014 | 100.0 | 19.2 | 7.1 | 12.1 | 33.2 | 8.4 | 24.8 | 47.7 | 16.3 | 31.4 |
| 2015 | 100.0 | 18.4 | 6.7 | 11.7 | 33.0 | 8.4 | 24.5 | 48.6 | 16.1 | 32.5 |
| 2016 | 100.0 | 17.8 | 6.4 | 11.5 | 32.7 | 8.4 | 24.3 | 49.4 | 16.0 | 33.5 |
| 2017 | 100.0 | 17.3 | 6.0 | 11.2 | 32.5 | 8.4 | 24.2 | 50.2 | 15.9 | 34.3 |

*Sources: Taiwan Statistical Data Book 2018*, National Development Council, Taiwan.

Recently, Taiwan's labor market has been marked by persistently stagnant growth in wages, high unemployment and even higher youth joblessness. Both the sluggish economy and failure of education to match the needs of the workers are blamed for the relatively high unemployment rate of Taiwanese youth. As shown in Table 3, the unemployment rates for the 15 to 19 year-old age group, 20 to 24 year-old age group and 25 to 29 year-old age group in 2018 were 8.46%, 11.98% and 6.37%, respectively. The figures are much higher than the average unemployment rate of 3.71%, indicating that a serious problem of youth unemployment exists in Taiwan.

Taiwan's sluggish economy mixed with an expansion in higher education has resulted in an excessive number of college graduates. In turn, this has led to a high unemployment rate for college graduates. As shown in Table 4, in 2018, the unemployment rate stood at 4.61% for university and graduate school graduates, higher than the average unemployment rate of 3.71%.

If hidden unemployment is taken into account, the unemployment rate for youth could be much higher than the official figure. In reality, the rapid growth in the number of colleges in the past decade has resulted in an oversupply of college and post-graduate students. It is not easy for Taiwan's labor market to absorb roughly 270,000 students graduating from higher education in each year. Indeed, this is the problem that needs to be tackled for the sake of Taiwan's future generations.

Highly educated youth are an important form of human capital. However, Taiwan's best-educated generation has found itself underpaid and underemployed. The higher educated youth unemployment rate not only entails an economic cost, but also results in a social and political conundrum. On the other hand, the rising unemployment rate for graduate degree holders is caused by the widening gap between graduate school disciplines and the demands of the business world (Chien *et al.*, 2013). The training provided by universities is generally far away from the demands of businesses (Wu, 2011). Graduates from many university departments are simply not what businesses are looking for. University curricula do not match job market demands. Instead, Taiwan's manufacturing sector is suffering from a shortage of blue-collar workers.

## 5. Oversupply of Higher Education

From an economic growth perspective, investment in human capital is the primary engine of growth. Human capital is an important component in the

**Table 3: Unemployment Rate by Age, 1981–2018**

Unit: %

| Year | Unemployment Rate | 15-19 year-old | 20-24 year-old | 25-29 year-old | 30-34 year-old | 35-39 year-old | 40-44 year-old | 45-49 year-old | 50-54 year-old | 55-59 year-old | 60-64 year-old | 65 years & over |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1981 | 1.36 | 3.75 | 3.50 | 1.12 | 0.50 | 0.40 | 0.35 | 0.34 | 0.44 | 0.38 | 0.17 | 0.04 |
| 1982 | 2.14 | 5.18 | 5.45 | 2.02 | 0.98 | 0.88 | 0.64 | 0.56 | 0.88 | 0.71 | 0.59 | - |
| 1983 | 2.71 | 6.60 | 6.49 | 2.65 | 1.44 | 1.18 | 0.90 | 0.99 | 1.26 | 1.22 | 0.57 | - |
| 1984 | 2.45 | 5.85 | 6.24 | 2.65 | 1.30 | 1.00 | 0.71 | 0.72 | 0.98 | 1.02 | 0.69 | 0.12 |
| 1985 | 2.91 | 7.53 | 7.12 | 3.05 | 1.76 | 1.21 | 1.13 | 0.91 | 1.25 | 1.20 | 0.79 | 0.20 |
| 1986 | 2.66 | 6.76 | 6.79 | 2.95 | 1.50 | 1.22 | 1.05 | 1.01 | 0.95 | 0.82 | 0.89 | 0.24 |
| 1987 | 1.97 | 5.57 | 5.39 | 2.13 | 1.04 | 0.84 | 0.62 | 0.65 | 0.66 | 0.62 | 0.44 | 0.12 |
| 1988 | 1.69 | 5.02 | 4.78 | 1.95 | 0.94 | 0.70 | 0.56 | 0.57 | 0.43 | 0.40 | 0.55 | 0.12 |
| 1989 | 1.57 | 5.03 | 4.39 | 1.88 | 0.89 | 0.68 | 0.50 | 0.55 | 0.47 | 0.42 | 0.25 | 0.22 |
| 1990 | 1.67 | 5.68 | 4.79 | 1.92 | 0.99 | 0.84 | 0.64 | 0.64 | 0.52 | 0.36 | 0.22 | 0.03 |
| 1991 | 1.51 | 4.93 | 4.41 | 1.91 | 0.91 | 0.76 | 0.62 | 0.49 | 0.55 | 0.41 | 0.23 | 0.11 |
| 1992 | 1.51 | 4.98 | 4.70 | 2.00 | 1.00 | 0.64 | 0.53 | 0.52 | 0.48 | 0.35 | 0.31 | 0.08 |
| 1993 | 1.45 | 4.78 | 4.60 | 1.94 | 0.96 | 0.68 | 0.53 | 0.48 | 0.45 | 0.40 | 0.25 | 0.10 |
| 1994 | 1.56 | 4.96 | 4.67 | 2.19 | 1.19 | 0.74 | 0.65 | 0.60 | 0.45 | 0.43 | 0.29 | 0.13 |
| 1995 | 1.79 | 5.59 | 5.16 | 2.55 | 1.36 | 1.00 | 0.82 | 0.78 | 0.70 | 0.42 | 0.31 | 0.12 |
| 1996 | 2.6 | 7.47 | 6.72 | 3.65 | 2.08 | 1.65 | 1.49 | 1.37 | 1.20 | 1.05 | 0.65 | 0.15 |
| 1997 | 2.72 | 7.35 | 6.76 | 3.68 | 2.15 | 1.84 | 1.63 | 1.61 | 1.76 | 1.31 | 0.80 | 0.28 |
| 1998 | 2.69 | 8.26 | 7.01 | 3.61 | 2.06 | 1.76 | 1.60 | 1.64 | 1.60 | 1.20 | 0.68 | 0.19 |
| 1999 | 2.92 | 9.03 | 6.83 | 3.82 | 2.42 | 2.08 | 1.87 | 1.89 | 1.79 | 1.35 | 0.87 | 0.29 |
| 2000 | 2.99 | 9.04 | 6.89 | 3.77 | 2.59 | 2.24 | 1.98 | 1.93 | 1.85 | 1.61 | 0.92 | 0.24 |
| 2001 | 4.57 | 13.64 | 9.65 | 5.46 | 4.19 | 3.72 | 3.36 | 3.34 | 3.08 | 2.41 | 1.33 | 0.06 |

| Year | Unemployment Rate | 15-19 year-old | 20-24 year-old | 25-29 year-old | 30-34 year-old | 35-39 year-old | 40-44 year-old | 45-49 year-old | 50-54 year-old | 55-59 year-old | 60-64 year-old | 65 years & over |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2002 | 5.17 | 14.59 | 11.31 | 6.46 | 4.64 | 3.87 | 4.00 | 3.84 | 3.60 | 2.78 | 1.45 | 0.13 |
| 2003 | 4.99 | 13.84 | 10.95 | 6.26 | 4.16 | 3.61 | 3.85 | 3.97 | 3.77 | 3.77 | 2.69 | 0.14 |
| 2004 | 4.44 | 13.00 | 10.44 | 5.69 | 3.86 | 3.12 | 3.18 | 3.22 | 3.56 | 3.01 | 2.19 | 0.07 |
| 2005 | 4.13 | 11.97 | 10.33 | 5.75 | 3.63 | 2.84 | 2.81 | 2.89 | 2.91 | 2.63 | 2.08 | 0.43 |
| 2006 | 3.91 | 11.46 | 10.10 | 5.92 | 3.80 | 2.86 | 2.40 | 2.31 | 2.50 | 2.25 | 1.60 | 0.28 |
| 2007 | 3.91 | 11.13 | 10.56 | 5.87 | 3.87 | 2.76 | 2.81 | 2.47 | 2.33 | 1.95 | 1.29 | 0.16 |
| 2008 | 4.14 | 11.42 | 11.89 | 6.38 | 3.89 | 2.97 | 2.63 | 2.76 | 2.65 | 2.33 | 1.38 | 0.17 |
| 2009 | 5.85 | 13.55 | 14.67 | 8.77 | 5.82 | 4.64 | 4.23 | 4.27 | 4.14 | 3.54 | 2.00 | 0.13 |
| 2010 | 5.21 | 10.93 | 13.51 | 8.15 | 5.19 | 4.10 | 3.77 | 3.89 | 3.50 | 3.06 | 1.50 | 0.19 |
| 2011 | 4.39 | 11.22 | 12.71 | 7.11 | 4.32 | 3.32 | 3.02 | 2.99 | 2.66 | 2.44 | 1.57 | 0.15 |
| 2012 | 4.24 | 9.80 | 13.17 | 7.08 | 4.34 | 3.37 | 2.76 | 2.55 | 2.35 | 2.14 | 1.69 | 0.17 |
| 2013 | 4.18 | 9.65 | 13.75 | 7.11 | 4.20 | 3.37 | 2.51 | 2.59 | 2.26 | 2.15 | 1.32 | 0.14 |
| 2014 | 3.96 | 8.78 | 13.25 | 6.84 | 4.04 | 3.26 | 2.58 | 2.37 | 2.12 | 2.04 | 1.23 | 0.10 |
| 2015 | 3.78 | 8.63 | 12.59 | 6.55 | 3.97 | 3.14 | 2.37 | 2.36 | 2.06 | 1.76 | 1.16 | 0.14 |
| 2016 | 3.92 | 8.94 | 12.62 | 6.76 | 3.79 | 3.41 | 2.66 | 2.51 | 2.15 | 1.92 | 1.63 | 0.17 |
| 2017 | 3.76 | 8.77 | 12.38 | 6.58 | 3.53 | 3.26 | 2.63 | 2.26 | 2.05 | 1.65 | 1.71 | 0.12 |
| 2018 | 3.71 | 8.46 | 11.98 | 6.37 | 3.39 | 3.37 | 2.56 | 2.20 | 2.03 | 1.68 | 1.97 | 0.14 |

*Source:* DGBAS, Taiwan.

**Table 4: Unemployment Rate by Educational Attainment, 1981–2018**

*Unit:%*

| Year | Total | Junior High & Below | | | Senior High & Vocational | | | Junior College & Above | | |
|------|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| | | Subtotal | Primary School & Below | Junior High | Sub-total | Senior High | Voca-tional | Sub-total | Junior College | University & Graduate School |
| 1981 | | 0.81 | 0.46 | 1.69 | 2.72 | 2.25 | 2.97 | 2.23 | 2.57 | 1.86 |
| 1982 | | 1.42 | 0.91 | 2.66 | 3.81 | 3.63 | 3.89 | 3.14 | 3.46 | 2.78 |
| 1983 | | 1.78 | 1.23 | 3.07 | 4.69 | 4.43 | 4.81 | 4.04 | 4.60 | 3.42 |
| 1984 | | 1.50 | 1.02 | 2.59 | 4.27 | 4.01 | 4.38 | 3.85 | 4.20 | 3.46 |
| 1985 | | 1.91 | 1.33 | 3.13 | 4.78 | 4.48 | 4.90 | 4.22 | 4.68 | 3.65 |
| 1986 | | 1.68 | 1.12 | 2.85 | 4.41 | 4.22 | 4.49 | 3.76 | 3.99 | 3.49 |
| 1987 | | 1.19 | 0.74 | 2.08 | 3.28 | 3.01 | 3.38 | 2.73 | 2.96 | 2.44 |
| 1988 | | 1.02 | 0.62 | 1.77 | 2.69 | 2.33 | 2.83 | 2.36 | 2.60 | 2.06 |
| 1989 | | 0.96 | 0.58 | 1.62 | 2.45 | 2.46 | 2.44 | 2.11 | 2.31 | 1.85 |
| 1990 | | 1.01 | 0.58 | 1.73 | 2.50 | 2.38 | 2.55 | 2.27 | 2.46 | 2.03 |
| 1991 | | 0.97 | 0.56 | 1.61 | 2.16 | 2.12 | 2.18 | 2.04 | 2.23 | 1.80 |
| 1992 | | 0.90 | 0.49 | 1.52 | 2.13 | 2.05 | 2.17 | 2.15 | 2.05 | 2.28 |
| 1993 | | 0.84 | 0.47 | 1.38 | 1.91 | 1.82 | 1.95 | 2.18 | 2.25 | 2.07 |
| 1994 | | 1.00 | 0.60 | 1.53 | 1.98 | 1.80 | 2.04 | 2.23 | 2.12 | 2.38 |
| 1995 | | 1.18 | 0.69 | 1.80 | 2.25 | 2.12 | 2.29 | 2.42 | 2.35 | 2.52 |
| 1996 | | 2.02 | 1.40 | 2.77 | 3.00 | 2.82 | 3.06 | 3.13 | 3.14 | 3.13 |
| 1997 | | 2.45 | 1.77 | 3.25 | 3.02 | 2.89 | 3.06 | 2.76 | 2.85 | 2.63 |
| 1998 | | 2.28 | 1.65 | 2.97 | 3.09 | 2.85 | 3.18 | 2.80 | 2.90 | 2.67 |
| 1999 | | 2.64 | 1.99 | 3.28 | 3.23 | 2.92 | 3.35 | 2.93 | 3.10 | 2.69 |
| 2000 | | 2.80 | 2.05 | 3.50 | 3.34 | 2.96 | 3.48 | 2.80 | 2.90 | 2.67 |
| 2001 | | 4.71 | 3.56 | 5.75 | 5.12 | 4.86 | 5.21 | 3.72 | 4.03 | 3.32 |
| 2002 | | 5.14 | 3.87 | 6.28 | 5.92 | 5.55 | 6.04 | 4.28 | 4.60 | 3.89 |
| 2003 | | 5.17 | 4.10 | 6.11 | 5.60 | 5.28 | 5.71 | 4.09 | 4.32 | 3.82 |
| 2004 | | 4.31 | 3.35 | 5.13 | 4.87 | 4.52 | 4.98 | 4.06 | 4.02 | 4.11 |
| 2005 | | 3.76 | 2.71 | 4.61 | 4.54 | 4.44 | 4.57 | 4.01 | 3.78 | 4.23 |
| 2006 | | 3.21 | 2.31 | 3.89 | 4.36 | 4.13 | 4.43 | 3.98 | 3.55 | 4.36 |
| 2007 | | 3.22 | 2.26 | 3.91 | 4.31 | 3.97 | 4.41 | 4.00 | 3.36 | 4.51 |
| 2008 | | 3.76 | 2.66 | 4.52 | 4.34 | 4.36 | 4.33 | 4.21 | 3.44 | 4.78 |
| 2009 | | 5.84 | 4.35 | 6.83 | 6.19 | 6.07 | 6.23 | 5.57 | 4.96 | 5.98 |
| 2010 | | 4.83 | 3.27 | 5.84 | 5.58 | 5.43 | 5.63 | 5.12 | 4.33 | 5.62 |
| 2011 | | 3.69 | 2.52 | 4.44 | 4.66 | 4.75 | 4.63 | 4.51 | 3.40 | 5.18 |
| 2012 | | 3.52 | 2.32 | 4.27 | 4.22 | 4.45 | 4.15 | 4.58 | 3.18 | 5.37 |
| 2013 | | 3.53 | 2.29 | 4.29 | 4.11 | 4.25 | 4.06 | 4.50 | 3.11 | 5.26 |
| 2014 | | 3.20 | 2.04 | 3.87 | 3.83 | 3.79 | 3.85 | 4.35 | 3.09 | 4.99 |
| 2015 | | 2.77 | 1.84 | 3.29 | 3.83 | 3.80 | 3.84 | 4.13 | 2.75 | 4.79 |
| 2016 | | 3.09 | 2.31 | 3.52 | 3.90 | 3.99 | 3.87 | 4.23 | 2.91 | 4.84 |
| 2017 | | 2.90 | 2.20 | 3.27 | 3.74 | 3.86 | 3.69 | 4.06 | 2.77 | 4.65 |
| 2018 | | 2.96 | 2.39 | 3.25 | 3.60 | 3.80 | 3.53 | 4.02 | 2.70 | 4.61 |

*Source:* DGBAS, Taiwan.

production process, which affects technological progress. The stock of human capital enhances the capabilities of labor in absorbing and digesting innovative information in a knowledge-based economy. As the quality of human capital improves, this in turn will lead to an increase in economic growth and welfare. The empirical evidence further indicates that human capital promotes the long-run economic growth rate (Barro, 1991; Barro and Sala-i-Martin, 1992; Mankiw *et al.*, 1992). Moreover, human capital is a decisive resource in the continuation of firms and a key component in strengthening a country's competitive advantage.

As a result of Taiwan's launching export-oriented industrialization in the early 1960s, the expansion of higher education in Taiwan began immediately afterwards. As part of an effort by the Taiwanese government to enhance investment in human capital, numerous five-year junior colleges were established to provide commercial vocational education and training for economic growth. Indeed, Taiwan's high quality human capital has been the key characteristic of the high growth of its economy (Chung, 1999; Lin, 2003).

In order to accelerate the development of high technology industriesand enhance their international competitive advantage, in 1980 Taiwan established the Hsinchu Science-based Industrial Park.The high-tech industry gradually became the key to economic growth, and this created a need for various kinds of human capital. Particularly since the lifting of martial law in 1987, Taiwan's higher education system has entered an era of dramatic development (Chou, 2008). Many politicians lobbed the government to build new colleges or universities in their respective constituencies. There was an unprecedented expansion in both in the number of colleges or universitiesin the early 1990s (Lin and Wang, 2005). To meet the new demand, more higher education institutions were needed to enrich higher-level human resources (Schafferer and Szanajda, 2013). Hence, the number of higher education institutions was increased from 105 in 1985 to 150 in 2000.

By setting up new universities and transforming junior colleges into four-year colleges or universities, higher education in Taiwan has grown dramatically from only 1 university and 3 colleges in 1949 to157 higher education institutions in 2017, among which were 70 universities & colleges, and 87 technical colleges (see Table 5). There is at least one institution of higher education in every county on the island. In 2017, Taiwan had a total student body of 1,274,191 or 5.41% of Taiwan's population. Furthermore, there were 168,783 in masters programs, and 28,346 in Ph.D. programs. As a result, Taiwanese higher education has been transformed from elitism to mass education (Wang, 2003). In 2018,

**Table 5: Higher Education in Taiwan, 2001–2017**

| Year | No. of Schools | | | No. of Students | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | Universities & Colleges | Technical Colleges | Total | Change (%) | Junior Colleges | Change (%) | Bachelor Program & Above | Change (%) |
| 2001 | 154 | 68 | 86 | 1,187,225 | 8.71 | 406,841 | -8.41 | 780,384 | 20.44 |
| 2002 | 154 | 68 | 86 | 1,240,292 | 4.47 | 347,247 | -14.65 | 893,045 | 14.44 |
| 2003 | 158 | 70 | 88 | 1,270,194 | 2.41 | 289,025 | -16.77 | 981,169 | 9.87 |
| 2004 | 159 | 70 | 89 | 1,285,867 | 1.23 | 230,938 | -20.10 | 1,054,929 | 7.52 |
| 2005 | 162 | 70 | 92 | 1,296,558 | 0.83 | 180,886 | -21.67 | 1,115,672 | 5.76 |
| 2006 | 163 | 70 | 93 | 1,313,993 | 1.34 | 153,978 | -14.88 | 1,160,015 | 3.97 |
| 2007 | 164 | 71 | 93 | 1,326,029 | 0.92 | 133,890 | -13.05 | 1,192,139 | 2.77 |
| 2008 | 162 | 69 | 93 | 1,337,455 | 0.86 | 117,653 | -12.13 | 1,219,802 | 2.32 |
| 2009 | 164 | 71 | 93 | 1,336,559 | -0.07 | 108,555 | -7.73 | 1,228,004 | 0.67 |
| 2010 | 163 | 71 | 92 | 1,343,723 | 0.54 | 102,789 | -5.31 | 1,240,934 | 1.05 |
| 2011 | 163 | 71 | 92 | 1,352,225 | 0.63 | 101,300 | -1.45 | 1,250,925 | 0.81 |
| 2012 | 162 | 71 | 91 | 1,355,490 | 0.24 | 101,424 | 0.12 | 1,254,066 | 0.25 |
| 2013 | 161 | 70 | 91 | 1,346,221 | -0.69 | 101,659 | 0.23 | 1,244,562 | -0.76 |
| 2014 | 159 | 71 | 88 | 1,340,012 | -0.46 | 99,270 | -2.35 | 1,240,742 | -0.31 |
| 2015 | 158 | 71 | 87 | 1,332,637 | -0.55 | 97,466 | -1.82 | 1,235,171 | -0.45 |
| 2016 | 158 | 71 | 87 | 1,309,670 | -1.72 | 95,684 | -1.83 | 1,213,986 | -1.72 |
| 2017 | 157 | 70 | 87 | 1,274,191 | -2.71 | 90,838 | -5.06 | 1,183,353 | -2.55 |

*Source: Taiwan Statistical Data Book 2018, National Development Council, Taiwan.*

the university acceptance rate stood at 90.88%. Because of the significant increase in the numbers of students, it has become extremely difficult for universities to maintain high academic quality.

Confucian values have deeply influenced Taiwanese students' attitudes toward the pursuit of higher education for gaining a higher social status, and hence universities offer graduate programs leading to masters or Ph.D. degrees. By July 2017 there were 58,453 holders of masters and Ph.D. degrees. Since there is a widening gap between university training and industry demands, many of these advanced degree holders are still struggling to find a job. There is an urgent need to restructure Taiwan's higher education. Otherwise, the high unemployment rate for masters and Ph.D. degree holders will persist in the future.

## 6.   Social Welfare Spending

In terms of Taiwan's democracy, voters themselves would clearly like to see substantial increases in government spending, but they are fiercely resistant to increases in taxation. While taxation is likely to have a limited impact on income distribution, public spending is expected to have a crucial impact on income inequality (Martínez-Vazquez *et al.*, 2012). Social welfare spending is a favored strategy often employed by Taiwan's ruling party to enhance their prospects of re-election, while avoiding any significant tax increases. As a result, social welfare spending is increasingly significant in influencing income distribution. Social welfare spending has thus become the main policy tool for narrowing down income inequality.

It seems clear, however, that turning social welfare policy into an election tool in such a way will not only create budget deficit problems but also distort the efficient distribution of public resources. The sustained budget deficits could reduce national savings and further have a substantial negative impact on long-term economic growth. During the period 1955–1980, national defense constituted the lion's share of all government spending. As shown in Table 6, since 1990, however spending on social welfare has exhibited an upward trend. Social welfare expenditures account for large shares of the annual budget, respectively accounting for 20.1% and 22.3% of the total in 2013 and 2017. As shown in Table 7, in 2017, Taiwan's income distribution gap between the highest and the lowest 20% of households in terms of earnings without government transfer payments and social welfare was 7.25 times, and 6.07 times, respectively, that with government transfer payments and social welfare. The income distribution gap was thus reduced by 1.18 times.

We can attribute the narrowing income gap to the government's efforts to promote social welfare policies for the low income class. Nevertheless, rapid increases in social welfare spending have made it a heavy burden for the government's fiscal budget.

**Table 6: Taiwan's Government Expenditure Shares–**
**by Administrative Activity**

Unit: %

| FY | Expenditures for National Defense | Expenditures for Socials Welfare | Expenditures for Education, Science & Culture | Expenditures for Economic Development | Expenditures for General Administration |
|---|---|---|---|---|---|
| 1985 | 24.8 | 6.3 | 20.4 | 25.3 | 11.3 |
| 1990 | 19.2 | 8.8 | 20.7 | 27.5 | 11.5 |
| 1993 | 14.4 | 8.3 | 19.9 | 31.1 | 11.9 |
| 1994 | 17.6 | 8.7 | 20.9 | 25.6 | 11.8 |
| 1995 | 14.1 | 12.1 | 18.7 | 22.9 | 11.6 |
| 1996 | 15.5 | 15.7 | 20.3 | 17.9 | 13.2 |
| 1997 | 15.5 | 15.7 | 20.0 | 15.7 | 13.0 |
| 1998 | 15.7 | 14.2 | 20.7 | 16.8 | 12.9 |
| 1999 | 14.0 | 13.7 | 20.9 | 17.1 | 13.6 |
| 2000 | 11.4 | 16.9 | 20.9 | 15.1 | 14.9 |
| 2001 | 10.9 | 17.5 | 18.9 | 17.6 | 14.5 |
| 2002 | 10.5 | 15.1 | 20.4 | 18.9 | 15.2 |
| 2003 | 10.7 | 15.7 | 20.9 | 18.1 | 15.0 |
| 2004 | 11.3 | 15.5 | 20.9 | 18.4 | 14.9 |
| 2005 | 10.8 | 15.6 | 20.6 | 18.8 | 14.9 |
| 2006 | 10.6 | 16.7 | 21.9 | 15.4 | 15.6 |
| 2007 | 11.2 | 16.3 | 21.5 | 16.7 | 15.0 |
| 2008 | 11.2 | 15.7 | 21.1 | 18.4 | 15.0 |
| 2009 | 11.1 | 14.5 | 21.8 | 22.5 | 13.4 |
| 2010 | 11.2 | 16.2 | 21.6 | 20.1 | 14.4 |
| 2011 | 11.1 | 17.1 | 22.5 | 18.1 | 14.4 |
| 2012 | 11.3 | 20.2 | 22.2 | 15.1 | 14.5 |
| 2013 | 11.0 | 20.1 | 22.5 | 14.8 | 14.3 |
| 2014 | 11.0 | 19.5 | 23.4 | 15.1 | 14.4 |
| 2015 | 11.5 | 20.1 | 24.0 | 13.3 | 14.5 |
| 2016 | 11.5 | 20.0 | 24.2 | 14.4 | 14.0 |
| 2017 | 11.0 | 20.3 | 24.9 | 14.0 | 13.7 |

*Source: Taiwan Statistical Data Book 2018*, National Development Council, Taiwan.

**Table 7: The Ratio Differences in Disposable Income Due to Government
Social Welfare and Tax Effects (Ratio of Income
Share of Highest 20% to That of Lowest 20%)**

| Year | Without Current Transfers From Government | With Current Transfer Income From Government | | With Current Transfers to Government Disposable Income | | With Current Transfers |
|---|---|---|---|---|---|---|
| | A | B | Social Welfare Effects (Ratio Difference C=A-B) | D | Tax Effects (Ratio Difference E=B-D) | Ratio Difference F=C+E |
| 1991 | 5.31 | 5.07 | 0.24 | 4.97 | 0.10 | 0.34 |
| 1992 | 5.57 | 5.34 | 0.23 | 5.24 | 0.09 | 0.32 |
| 1993 | 5.76 | 5.51 | 0.26 | 5.42 | 0.08 | 0.34 |
| 1994 | 5.79 | 5.49 | 0.31 | 5.38 | 0.11 | 0.41 |
| 1995 | 5.93 | 5.43 | 0.50 | 5.34 | 0.09 | 0.59 |
| 1996 | 6.17 | 5.49 | 0.68 | 5.38 | 0.11 | 0.79 |
| 1997 | 6.25 | 5.53 | 0.72 | 5.41 | 0.12 | 0.84 |
| 1998 | 6.49 | 5.65 | 0.84 | 5.51 | 0.14 | 0.98 |
| 1999 | 6.47 | 5.65 | 0.82 | 5.50 | 0.15 | 0.97 |
| 2000 | 6.57 | 5.69 | 0.88 | 5.55 | 0.14 | 1.02 |
| 2001 | 7.67 | 6.54 | 1.13 | 6.39 | 0.15 | 1.28 |
| 2002 | 7.47 | 6.29 | 1.18 | 6.16 | 0.13 | 1.31 |
| 2003 | 7.32 | 6.20 | 1.12 | 6.07 | 0.12 | 1.24 |
| 2004 | 7.41 | 6.17 | 1.24 | 6.03 | 0.15 | 1.39 |
| 2005 | 7.45 | 6.18 | 1.26 | 6.04 | 0.15 | 1.41 |
| 2006 | 7.45 | 6.16 | 1.29 | 6.01 | 0.15 | 1.45 |
| 2007 | 7.52 | 6.12 | 1.40 | 5.98 | 0.14 | 1.54 |
| 2008 | 7.73 | 6.20 | 1.53 | 6.05 | 0.16 | 1.69 |
| 2009 | 8.22 | 6.47 | 1.75 | 6.34 | 0.13 | 1.88 |
| 2010 | 7.72 | 6.30 | 1.42 | 6.19 | 0.11 | 1.53 |
| 2011 | 7.75 | 6.32 | 1.43 | 6.17 | 0.16 | 1.59 |
| 2012 | 7.70 | 6.29 | 1.42 | 6.13 | 0.16 | 1.58 |
| 2013 | 7.53 | 6.22 | 1.31 | 6.08 | 0.14 | 1.45 |
| 2014 | 7.40 | 6.20 | 1.20 | 6.05 | 0.14 | 1.34 |
| 2015 | 7.33 | 6.19 | 1.14 | 6.06 | 0.14 | 1.28 |
| 2016 | 7.28 | 6.21 | 1.07 | 6.08 | 0.14 | 1.21 |
| 2017 | 7.25 | 6.21 | 1.04 | 6.07 | 0.14 | 1.18 |

*Source:* DGBAS, Taiwan.

Globalization can have an adverse effect on the share of labor income in GDP. Since the global labor market has become a buyer's market, ordinary workers have lost their bargaining chips. As labor costs are higher in Taiwan than in other countries, an increase in international competition will encourage Taiwanese companies to adopt labor-saving production technology to minimize production costs and remain competitive. Such labor-saving technology tends to increase the wage gap between skilled workers and unskilled workers (Jiang and Su 2006). As a result, the labor share tends to decline, while capital gains or corporate profits tend to increase.

For the period from 1989 to 1995, the labor share was more than 50%, and the share of the operating surplus accounted for an average of only 29.8%. In 1993, the labor share reached 51%, while capital accounted for 29%. However, in 2007, labor's share dipped to 44.8%, while that of the capitalists jumped to 34.9%. In 2017, the labor share, the share attributable to the compensation of employees in GDP, fell to 44.2% from 45.5% in 2013. On the other hand, the share of the operating surplusof companies in GDP increased to 34.7% from 32.0% in 2012 (see Table 8).

**Table 8: Composition of Gross Domestic Product and Factor Incomes**

*Unit: %*

| Year | GDP | Taxes on Production and Imports Less: Subsidies | Consumption of Fixed Capital | Compensation of Employees | Operating Surplus |
|------|--------|------|------|------|------|
| 2006 | 100.00 | 5.6 | 14.5 | 45.6 | 34.3 |
| 2007 | 100.00 | 5.4 | 14.9 | 44.8 | 34.9 |
| 2008 | 100.00 | 5.1 | 16.6 | 46.3 | 31.9 |
| 2009 | 100.00 | 4.8 | 17.5 | 45.1 | 32.7 |
| 2010 | 100.00 | 5.2 | 16.4 | 43.8 | 34.6 |
| 2011 | 100.00 | 5.4 | 16.8 | 45.2 | 32.5 |
| 2012 | 100.00 | 5.3 | 17.1 | 45.5 | 32.0 |
| 2013 | 100.00 | 5.4 | 16.3 | 44.3 | 34.0 |
| 2014 | 100.00 | 5.4 | 15.9 | 43.8 | 34.8 |
| 2015 | 100.00 | 5.4 | 15.5 | 43.9 | 35.2 |
| 2016 | 100.00 | 5.6 | 15.6 | 43.8 | 35.0 |
| 2017 | 100.00 | 5.6 | 15.6 | 44.2 | 34.7 |

*Source:* DGBAS, Taiwan.

A falling labor share suggests that productivity gains do not translate into labor; instead, a larger share of the benefits of growth indeed accrues to owners of capital such as the operating surplus. That is likely to have adverse effects on social coherence and political stability. A declining labor share in GDP has therefore worsened income inequality.

## 7. Conclusions

It is noteworthy that Taiwan has tried to ameliorate income inequality by expanding government transfer payments and social welfare. As a result, income inequality has slightly improved. Taiwan's income inequality conundrum lies in its lack of domestic investment. Following the 2008 global financial crisis, the growth rate of domestic fixed capital formation in real terms fell to –11.3% in 2008 and –8.81% in 2009, then increased to 19.31% in 2010 and fell to -0.63% in 2017.

Taiwan's excess savings rate increased to rise to 14.57%or NT$2.6 trillion in 2017, its highest level in 30 years. The excess saving rate was 1.09% in 1998 and then jumped to 10.0% in 2009 and 12.35% in 2014. Excess savings imply that private-sector capital cannot find investment opportunities and that the funds have become idle and cannot contribute to economic growth. Sluggish domestic investment cannot create enough jobs to deal with unemployment, which is also unable to enhance labor productivity and wages. Indeed, there is a need to encourage domestic investment for the growth of the economy to regain momentum. The active domestic investment is likely to create more jobs and provide a new business model to resolve the fundamental problem of an inequitable income distribution.

A growing economy is typically likely to see wages grow faster than inflation. However, the increasing competition brought about by the ICT revolution and globalization has reduced the demand for labor in the labor market. As globalization and Internet technology continue to develop, competition will become increasingly international. Of course, Taiwan is not excluded from this global trend, and the real wage rate in Taiwan has stagnated since 1997. Moreover, most companies in Taiwan are small and medium-sized enterprises, and are reluctant to pay higher wages.

Moreover, low wages are the main factor driving the outflow of skilled workers from Taiwan, which has become an obstacle for Taiwan's economic growth. Globalization is an unavoidable trend for Taiwan, and could lead to an increase in income inequality.

Due to the effects of globalization, adverse global economic conditions can have a significant impact on Taiwan's economy. In light of lingering uncertainties caused by the global economic slowdown, US- China trade spat, economic downturn in China and the adverse effect of COVID-19 pandemic on global economy, Taiwan's economy will worsen unless the right policies to elevate economic growth have been adopted.

Taiwan's electronics manufacturers do not enjoy a significant advantage in the area of technology; they do not control core technologies, and neither do they enjoy the benefits that a global brand would bestow. Basically, Taiwan is a contract manufacturing center. Taiwan is an export-led economy and the demand for domestic investment is highly reliant on export performance. Technological progress has long been regarded as a critical ingredient for achieving sustained economic growth. Companies with core competencies in manufacturing and processing technology have an advantage in using research and development (R&D) to increase their production technology thanks to their technological skills and experience. Thus, a daunting challenge currently facing Taiwan is how quickly it can transform its industrial structure and diversify exports more than its ICT products. In the absence of such structural reforms, Taiwan could lose its international competitiveness in the global supply chain, which would further impede employment and wage growth and increase income inequality

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