

Are Foreign Workers Responsible for the Increasing Unemployment Rate in Taiwan?

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Abstract

This paper investigates the current important issue in Taiwan that the impact of foreign workers on the rising unemployment rate by constructing a dynamic intertemporal general equilibrium model.

The results show that foreign workers rob jobs from the local unskilled labor and raise the unemployment rates during the past decade. However, extending the time frame to a longer term, an increasing importation of foreign workers may lower unemployment rates under some circumstances. In contrast to existing literature, this paper conditionally supports the view that immigration increases unemployment rates.

An appropriate policy regarding foreign workers for a small open economy like Taiwan needs to consider the state of the global economy. By considering the current ambiguity of world economic recovery and the high unemployment rate, a cautious policy for the Council of Labor Affairs to adopt is to maintain the current level of imported foreign workers.

JEL classification: C61; C68; D91; J21; J61; J68

1. Introduction

In line with the recent world recession, Taiwan's unemployment rate jumped from 2.99% in year 2000 to 4.57% in 2001 and to 5.17% in 2002. In comparison with other countries, this figure may not be compelling. However, compared to its own historical record, during the past four decades, Taiwan's unemployment rates were stable staying below 3% and for most years, below 2%. This new record in Taiwanese history over half a century has caused panic in the public psyche creating an outcry aimed at saving jobs.

A direct target of blame for job losses is the importation of foreign workers. Taiwan legalized the importation of foreign workers in October 1989. The two main reasons for the Taiwanese government taking this step were: first, there was a shortage of native unskilled labor. This situation impeded the continuation of the national Fourteen Major Construction Projects and the Six-year National Development Plan. Second, the unskilled wage had increased high enough to drive firms to look for cheaper workers overseas. This accelerated Taiwan's outward foreign direct investment and drained capital out of the country. The importation of foreign workers was aimed at resolving the above problems, impelling the Taiwanese economy to move forward. In 1991, foreign workers were directly recruited to the governmental major construction projects. Since 1992, there has been a gradual opening to allow an increasing number of industries to hire foreign workers. This shows that a high local unskilled wage dominates the increasing importation of foreign workers thereafter. One decade has elapsed since the first entry of foreign workers and a range of problems related to foreign workers, not only economic

but also social, have emerged and have become very important public policy issues in Taiwan. In particular, during this time of high unemployment, a popular perception is that foreign workers rob jobs from native workers.

The impression of foreign workers being job robbers is also popular in other countries, especially those countries accommodating a significant number of immigrants. A large body of literature investigating the effect of immigration on native workers has been undertaken by U.S., Canada and Australia studies. Most of the findings suggest that immigration is not a cause of unemployment, or even that it reduces the rate of unemployment (Withers & Pope 1993, Tian & Shan 1999, Lalonde & Topel 1991, Altonji & Card 1991, Borjas 1994, Friedberg & Hunt 1995). However, Lee (1992) finds evidence of immigration contributing to the high unemployment rate in Canada. All existing research in this area is based on empirical studies in which the analysis is conducted by using cross-section or time series data.

Immigrants in Taiwan used to be a minor issue, therefore to date it has been given little attention. Because the importation of foreign workers is continuous, this has the same effect as accepting immigrants into the Taiwanese labour market. By taking the suggestion in Borjas (1994) into account that we do not "understand the dynamic process through which natives respond to these supply shocks and reestablish labor market equilibrium", this paper takes the first step towards using a novel approach, dynamic

intertemporal general equilibrium modeling¹, to investigate the effect of foreign workers on Taiwan's unemployment. A relatively comprehensive dynamic framework is constructed, in which both short- and long-run transitions of the unemployment rate followed by foreign workers' shocks are disclosed. By calibrating this theoretical model with Taiwanese data, the simulation results provide empirical implications and are compared to existing literature from studies of other countries.

Section 2 provides the theoretical framework of the model, section 3 presents the calibration of the model, section 4 shows the simulation results in comparison with the reality, section 5 discusses the policy implications and section 6 summarizes the conclusions.

2. The Model

A framework with one type of good, two types of labor (skilled and unskilled) and three agents (firms, households, and government) is established. The framework of this model is as follows. The whole economy is treated as one aggregate entity. Firms produce the goods by hiring physical capital, skilled labor and unskilled labor, they then sell these goods to the households for consumption, to the government for education capital investment and to themselves for physical capital investment. The objective of each firm is to maximize its intertemporal profit under constraints of capital accumulation and of investment with an adjustment cost. The ownership of firms belongs to households.

¹ The model follows the general approach of the G-Cubed model (McKibbin and Wilcoxon (1999)). The endogenized skill formation and education production follow the model in Chang (1999) with the first-time application on the migration-employment issue of Taiwan studies.

Households supply unskilled labor to firms and skilled labor to both firms and the government in order to earn wages, together with the dividends from renting physical capital to firms, so as to finance the purchase of the goods and education. Leisure is consumed by households with an opportunity cost of not working. Unemployment provides disutility in households' utility function. In line with the existence of unemployment, the objective of households is to maximize utility by an optimal distribution of consumption between goods and leisure under their budget and time constraints and the choice of investment in education to upgrade their skill. The government buys goods from the firms and transforms it into education capital. This capital is combined with skilled labor hired by the government to produce education. The role of government as an education supplier is essential. This model captures the reality of government supplying education in consideration of the associated beneficial externalities. The government balances its budget by collecting labor income tax and selling education to households². The accumulation of physical capital, skill formation, education capital and financial assets drives the dynamic evolution of the economy over time.

By taking into account the reality in Taiwan, the role of foreign workers in this economy is characterized as follows. Foreign workers, categorized as unskilled labor, join in the production of the goods with natives and are assumed to have the same productivity as native unskilled labor but receive a lower payment than do the natives³. In consideration

² To avoid unnecessary complexities, a subsidy rate on investment and a tax rate on financial dividends is assumed to be balanced out.

³ Foreign workers are protected under the Labor Standard Law in Taiwan and most are paid the regulated minimum wages. On average, foreign workers' wages are between 50% to 60% of natives'.

of the demand side of foreign workers, this model explicitly captures the foreign workers' consumption of goods⁴. By so doing, the domestic households' consumption in the utility function carries a fraction variable by which the proportion of domestic contribution to the production of goods is measured⁵. Foreign workers are assumed to pay the same tax rate as natives and not to join the activities in the financial markets.

Cobb-Douglas functional forms are used for goods production, education production and utility function to assist in the simulation of this calibrated model. The model framework and the steady state are presented in Appendix 1.

3. Calibration of the Model

All data are from the official sources including the Directorate-General of Budget Accounting and Statistics (DGBAS), Ministry of Education (MOE), the Council of Labor Affairs (CLA) and the Council for Economic Planning and Development (CEPD). The monthly average wage data by education attainment is from the Manpower Utilization Survey, which is published by DGBAS. The real wage is the nominal wage deflated by the consumer price index (CPI) measured with 1991 as the base year. Following the convention in the literature, workers who have a degree of college or above are designated as skilled labor and the rest are unskilled labor. To manipulate the raw data,

⁴ Foreign workers in Taiwan have no consumption on education.

⁵ This fraction variable is defined as the total wage-weighted domestic labor force divided by the total wage-weighted labor force including the foreign workers in the economy. The weights state higher wage groups consume more goods. Before the entry of foreign workers, the fraction variable is equal to one. In each period, the numbers of domestic skilled and unskilled labor are endogenized, hence, this fraction variable is also endogenized.

which includes several categories in the group of unskilled labor⁶, the weighted average monthly wage is applied with the weights as the population proportion of each category in the group.

Since the restriction on the importation of foreign workers in Taiwan was lifted from October 1989 and the official data of numbers of foreign workers commenced in 1991, the base year for the calibration is 1990⁷. The only exception is the shares of skilled labor and unskilled labor in the production function which are estimated by running ordinary least square (OLS) on related data from 1978 to 2000. A detailed calibration is listed in Appendix 2.

4. Simulation Results and Reality

Foreign workers are allowed to stay in Taiwan for a maximum period of two years. A one-year extension is available only once. An additional six-month extension might be granted under special circumstances for foreign workers engaged in major construction projects. For each foreign worker, the stay in Taiwan is temporary. However, from the standpoint of the Taiwanese economy, to continue recruiting new foreign workers is tantamount to a permanent stay of foreign workers.

⁶ They are illiterate, self-educated, primary school, junior high (including junior vocational) school, senior high school, vocational school, and junior college.

⁷ Foreign workers were numbered much less before 1992 than after and before 1992 all of them were working for the government major construction projects.

The simulation is undertaken in the following way. At year t , there is no information of the imported quantity of foreign workers at $t+1$ and after. Therefore, the movement of the whole economy, including the transitions of the unemployment rate, depends on the effect from the current and past quantities of foreign workers, i.e. the shock for year t includes the quantities of foreign workers up to year t and remains the same as year t hereafter. A transitional path of the rate of unemployment captures the actual path to a fair extent (shown as Figure 1). This provides a good tool to forecast the unemployment rate including the effect of foreign workers. Policies such as an increasing or decreasing growth rate of the importation of foreign workers can be tested and these policy implications are presented in the next section.

Figure 1. Unemployment Rate (Unit: Percentage Point)

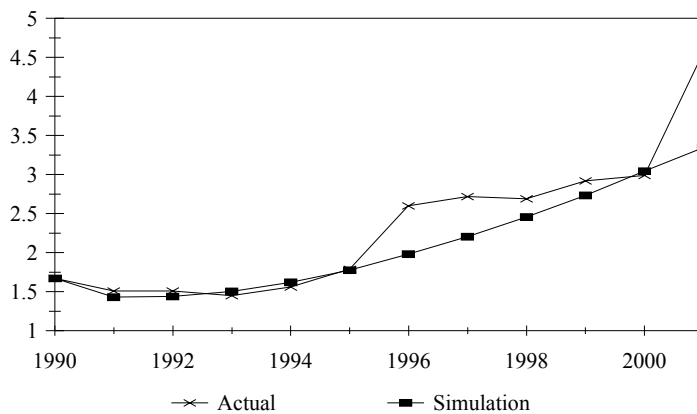


Figure 1 shows that prior to 1996 and at the year of 2000 the simulation path closely follows the actual path. The simulated unemployment rate drops in 1991, so as the actual rate, and increases over time after that. Simulations also result in that the employment of the local unskilled labor changes oppositely to the quantity of imported foreign workers,

except for the year of 1991⁸. From 1996 to 1999, the simulated unemployment rate falls below the actual rate and follows a smooth increasing path. The smooth transition can be explained by the fact that the actual amount of imported foreign workers stays a stable annual growth rate ranged from 1 to 1.25 times. In 2001, the amount of imported foreign workers drops to 0.93 percent of the amount in 2000. This opposite change of the shock to its ten-year pattern slightly slows down the pace of the increasing simulated unemployment rates. The intuition for picturing the overall simulated transition of unemployment rates by giving a shock of importing foreign workers is as follows. Except for the year of 1991, foreign workers crowd out the local unskilled labor in the goods production, more foreign workers means more dismissal of the local unskilled labor. The pressure motivates the local unskilled labor to upgrade their skills via investment in education and drives all locals to work harder by reducing leisure. In the short run, due to skill formation being time consuming, the replaced unskilled labor suffer from loss of jobs. Over time some of them equip themselves with a higher level of skills and have a better chance of being hired. The Taiwanese economy adjusts itself to supply and to demand more skilled labor. In line with hiring a fixed number of unskilled foreign workers, *ceteris paribus*, the economy should have been able to experience non-increasing unemployment rates.

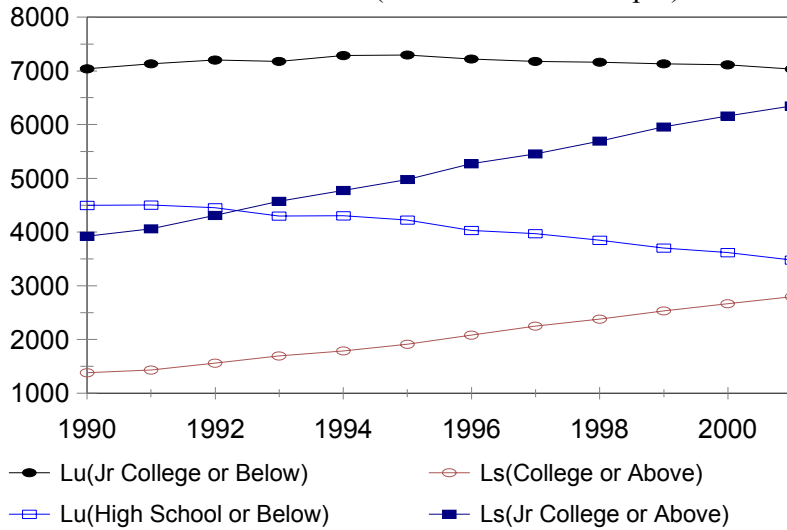
Since more foreign workers means more dismissal of local unskilled labor, foreign workers are the substitute or job robbers of local unskilled labor during the past decade. A popular opinion that the foreign workers are the complementary inputs at the early

⁸ In 1991, foreign workers were directly recruited to the governmental major construction projects and the number of them was small. Making a move of the governmental major construction projects boost the internal demand and therefore resulted in a decreased unemployment rate.

several years lacks theoretical and empirical support. The fact is that a high unskilled wage, discussed earlier, predominates over the argument of the shortage of unskilled labor for the afterward importation of foreign workers. The above popular opinion overstates the “laziness” of the Taiwanese for refusing to undertake the governmental construction work at the early stage. One thing that should be born in mind is that the amount of foreign workers only occupied by a small percentage of the Taiwan’s labor force, from 0.03% in 1991 to 3.34% in 2000 and drops to 3.1% in 2001. Therefore, the simulation results can only provide the explanation of the effects on the actual unemployment rate to a small extent. The gap between the simulated and the actual path should be filled in by other factors which are beyond the scope of this research.

To substantiate the simulation result with a continuing importation of foreign workers there is a decreasing supply for the local unskilled labor and an increasing supply for the local skilled labor, Figure 2 shows the actual labor supply during 1990-2001. The education system in Taiwan is slightly different from other countries. There is a category called “junior college”. Students spend two, three, or five years to get a degree which is in a lower rank than a four-year college degree. The subjects offered in junior colleges are similar to those offered in colleges. Therefore, in Figure 2, the labor force is split based on two cases: first, take the conventional definition of college or above as the skilled labor and the rest as the unskilled labor; second, the junior college or above as the skilled labor and the rest as the unskilled labor.

Figure 2. Labor Force in Taiwan (Unit: Thousand People)



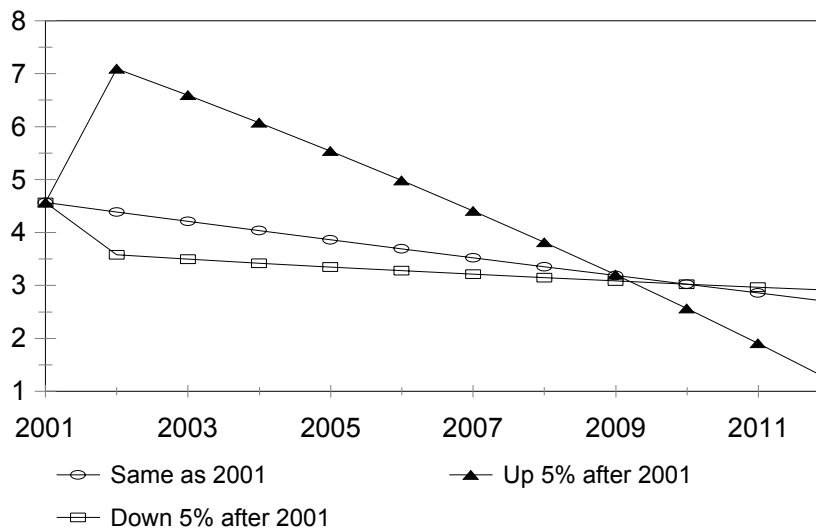
In terms of the first case, the local skilled labor did increase the supply since importation of foreign workers. However, the local unskilled labor showed a stable trend. Over the whole period, in 2001, the supply of unskilled labor had a minor reduction compared to that in 1990. The second case firmly substantiates the theoretical simulation that the local skilled labor and unskilled labor respectively increases and decreases the supply. This further confirms that foreign workers are the competitors, even job robbers, for the jobs used to be undertaken by graduates with a degree of high school or below.

5. Policy Implications

Recent disputes over the negative impact of foreign workers on unemployment have urged the Taiwanese Government to reduce the number of foreign workers in 2001. Meanwhile, the local employers argue that foreign workers are engaged in jobs in which natives show little interest, therefore, they demand more cheap foreign workers.

Simulations with the same level as 2001, an ascending 5% and a descending 5% of numbers of foreign workers after 2001 have been done to provide policy suggestions to the Council of Labor Affairs. The forecast of unemployment rates from different policies of importing foreign workers are shown in Figure 3. An ascending number of foreign workers by 5% per annum causes a jump in the unemployment rate in the first period after the shock and the increased unemployment rate drops annually over time at a relatively quick pace. A policy of decreasing by 5% the number of imported foreign workers drives the unemployment rate to drop in the short run and the effect on reduction of unemployment becomes sluggish in the long run. If the amount of foreign workers stays at the same level as 2001, the unemployment rate gradually decreases over time. Basically, the above three tests support the argument that foreign workers have a positive relationship with the unemployment rate in the short run, i.e. less foreign workers less job losses. In the long run, after the economy has adjusted to accommodate more foreign workers, (no matter which policy) the rate of unemployment decreases. An interesting point is that a policy of ascending number of foreign workers has the potential to reduce the unemployment rate at a quicker pace in the long run. It could be that foreign workers have pushed the economy into a positive growth path and with an increasing goods production more job opportunities can be created. In line with this argument, at this point of time with a high rate of unemployment, the Council of Labor Affairs should consider imposing a non-increasing number of foreign workers' policy to prevent a further escalation of the unemployment rate.

Figure 3. Policy Implications: Forecast of Unemployment Rate in Taiwan



The effect of foreign workers on local employment could be different during an economic downturn. During a recession, the drop of world demand highlights the importance of a low cost competitiveness. Foreign workers in Taiwan provide a possible reduction in the production costs and, over the past one decade, Taiwanese manufacturing and construction sectors have come to rely on the supply of foreign workers to some extent. Therefore, intuitively, foreign workers should be the impetus to upgrade the competitiveness of goods made in Taiwan and should be the source to sustain the economic growth during a recession. A reduction in the importation of foreign workers in 2001 has an adverse effect on the Taiwanese economy and literally causes an increased unemployment of the local skilled labor if firms fail to survive. Although the simulation result substantiates the argument that foreign workers take jobs from local unskilled labor, the current jump in the unemployment rate in line with the world recession seems beyond the job robbing explanation because an actual reduction of foreign workers

occurred in 2001. This sheds light on an appropriate policy on foreign workers for a small open economy like Taiwan needs to consider the state of the global economy. During a recession, in order to avoid a second wave of job losses from shutting down firms by keeping production costs low, importing a stable non-decreased number of foreign workers may be an alternative in the issue of unemployment.

To sum up, by considering the ambiguity of world economic recovery and the current high unemployment rate in Taiwan, a contemporary policy for the Council of Labor Affairs to adopt might be keeping the current imported level of foreign workers.

6. Conclusion

This paper investigates a current and very important issue in Taiwan, the impact of foreign workers on the rising unemployment rate. A dynamic intertemporal general equilibrium model is constructed and calibrated by Taiwanese data to deliver simulations and policy implications.

The results show that, generally speaking, foreign workers crowd out the native unskilled workers in goods production and raise the unemployment rate in Taiwan during the past decade. At the stage of a sluggish Taiwanese economy such as the situation in 2000, the relatively cheaper foreign workers may be important to firms to maintain their competitiveness and to sustain the level of employment. Therefore, an increased quantity of foreign workers during a recession may indirectly reduce the possibility of a soaring

unemployment rate caused by a shut down of firms. The simulation result correspondingly shows that a decreased number of foreign workers in 2001 compared to the previous year did not decrease but increase the unemployment rate in that year.

Three tests including an ascending, a descending and a zero growth rate of quantity of foreign workers after 2001 were conducted to investigate the variations of unemployment in order to provide policy suggestions for the Council of Labor Affairs. The results support the argument that foreign workers have a positive relationship with the unemployment rate in the short run, i.e. less foreign workers, less job losses. In the long run, however after the economy has adjusted to accommodate more foreign workers, regardless of which policy is used, the rate of unemployment decreases. The intuition is as follows. In a growing Taiwanese economy, even though more foreign workers replace more native unskilled labor, in terms of the unemployment as a whole more unskilled foreign workers generate an increased demand for skilled labor, i.e. more job opportunity for locals, in the long run. Therefore, the overall unemployment rate may stay at a stable or even at a lower level. In comparison with existing literature, this paper conditionally supports the view that immigration increases the unemployment and proposes that it is only true in terms of short run, but not necessarily true in the long run. An appropriate policy on foreign workers for a small open economy like Taiwan also needs to consider the economic tendency of the world. By considering the current ambiguity of world economic recovery and the high unemployment rate, a cautious policy for the Council of Labor Affairs to adopt is to keep the current imported level of foreign workers.

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Appendix 1

The Model

Firms:

$$\text{Max. } \int_0^\infty [Q_t - W_{s,t} \cdot L_{s,t}^F - W_{u,t} \cdot L_{u,t} - \eta \cdot W_{u,t} \cdot L_{m,t} - I_t] \cdot e^{-r \cdot t} \cdot dt$$

Subject to

$$(1) \quad \frac{dK}{dt} = J_t - \delta \cdot K_t,$$

$$(2) \quad I_t = J_t \cdot \left(1 + \frac{\phi}{2} \cdot \frac{J_t}{K_t}\right),$$

$$(3) \quad Q_t = L_{s,t}^{\alpha} \cdot (L_{u,t} + L_{m,t})^{\beta} \cdot K_t^{1-\alpha-\beta},$$

Households:

$$\text{Max. } \int_0^\infty U(C_t, l_t, N_t) \cdot e^{-\theta t} \cdot dt$$

Subject to

$$(3) \quad \frac{dF}{dt} = r \cdot F_t + (1 - \tau) \cdot (W_{s,t} \cdot L_{s,t} + W_{u,t} \cdot L_{u,t}) - V \cdot C_t - P_{E,t} \cdot S_{E,t},$$

$$(4) \quad \frac{dL_s}{dt} = J_{s,t} - \delta_s \cdot L_{s,t},$$

$$(5) \quad J_{s,t} = f(H_t, P_E \cdot S_E) = H^\Omega \cdot (P_E \cdot S_E)^{1-\Omega},$$

$$(6) \quad l_t = T - L_{s,t} - L_{u,t} - N_t - H_t,$$

$$(7) \quad F_t = \lambda_t \cdot K_t,$$

$$(8) \quad U(C_t, l_t, N_t) = \left(\frac{l_t}{N_t}\right)^\gamma \cdot C_t^{1-r},$$

Government:

$$(9) \quad S_{E,t} = f(K_{E,t}, L_{s,t}^G) = K_{E,t}^\xi \cdot L_{s,t}^{1-\xi},$$

$$(10) \quad \frac{dK_E}{dt} = I_{E,t}^G - \delta_E \cdot K_{E,t},$$

$$(11) \quad I_E^G + W_{s,t} \cdot L_{s,t}^G = \tau \cdot [W_{s,t} \cdot L_{s,t} + W_{u,t} \cdot (L_{u,t} + \eta \cdot L_m)] + P_{E,t} \cdot S_{E,t}.$$

Model in the Steady State

Equations

$$\begin{aligned} Q_t &= L_{s,t}^F \cdot (L_{u,t} + L_m)^\beta \cdot K_t^{1-\alpha-\beta} \\ J_t &= \delta \cdot K_t \\ I_t &= J_t \cdot [1 + (\phi/2) \cdot (J_t / K_t)] \\ Q_{Ls} &= W_s/P \\ Q_{Lu} &= W_u/P \\ \lambda &= 1 + \phi \cdot \delta \\ Q_K &= (r + \delta)\lambda - \phi \cdot \delta^2/2 \\ 0 &= r_t \cdot F_t + (1 - \tau_t) \cdot (W_s \cdot L_{s,t} + W_u \cdot L_{u,t}) - V \cdot C_t - P_{E,t} \cdot S_{E,t} \\ V &= (W_s \cdot L_{s,t} + W_u \cdot L_{u,t}) / [W_s \cdot L_{s,t} + W_u \cdot (L_{u,t} + \eta \cdot L_m)] \\ J_{s,t} &= \delta_s \cdot L_{s,t} \\ F_t &= \lambda_t \cdot K_t \\ J_{s,t} &= f(H_t, P_E \cdot S_E) = H^\Omega \cdot (P_E \cdot S_E)^{1-\Omega} \\ l_t &= T - L_{s,t} - L_{u,t} - N_t - H_t \\ U_C &= \mu_1 \\ U_{Lu,t} &= -\mu_1 \cdot (1 - \tau) \cdot W_u \\ \mu_2 &= \mu_1 \cdot P_E \cdot (1 + \Phi \cdot \delta_s) \\ r_t &= \theta \\ U_{Ls} &= (\theta + \delta_s) \cdot \mu_2 - \mu_1 \cdot [(1 - \tau) \cdot W_s + P_E \cdot (\Phi \cdot \delta_s^2) / 2] \\ L_{s,t} &= L_{s,t}^G + L_{s,t}^F \\ S_{E,t} &= K_{E,t}^\xi \cdot L_{s,t}^{1-\xi} \\ I_E^G &= \delta_E \cdot K_E \\ I_E^G + W_{s,t} \cdot L_{s,t}^G &= \tau \cdot [W_{s,t} \cdot L_{s,t} + W_{u,t} \cdot (L_{u,t} + \eta \cdot L_m)] + P_{E,t} \cdot S_{E,t} \\ Q_t &= C_t + I_E^G + I_t \end{aligned}$$

Notation:

Q: Production; L_s^F : Skilled labor hired by firms; L_s^G : Skilled labor hired by government;
 L_s : Total skilled labor; L_u : Unskilled labor; L_m : Foreign Workers; K: Capital; l : Leisure;
J: Fixed capital formation; I: Capital investment; W_s : Skilled wage; W_u : Unskilled wage;
P: Goods price (defined as 1); F: Financial asset; C: Consumption; N: Unemployment;

S_E : Amount of education buying; J_s : Fixed skill formation; T : Time constraint;
 I_E : Household's education investment; U_Z : Marginal utility of Z ; P_E : Price of education;
 r : Interest rate; K_E : Education capital; τ : Tax rate; I_E^G : Government education investment;
 α, β : Input shares in goods production function; λ : Shadow price of capital;
 δ : Depreciation rate of capital; δ_s : Depreciation rate of skill; θ : Rate of time preference;
 μ_1 : shadow price of financial asset; μ_2 : shadow price of skill; H : Schooling;
 η : Wage proportion of foreign workers to local unskilled labor;
 ξ : Input share in education production function; Ω : the share in skill formation;
 δ_E : Depreciation rate of education capital.
 ϕ : Adjustment cost parameter of Capital investment.

Appendix 2

$$\begin{aligned} T &= 8760; & \tau &= 0.201; & I_E^G &= 62; & \alpha &= 0.53; \\ \beta &= 0.26; & \delta &= 0.2; & \delta_s &= 0.09; & \delta_E &= 0.2; \\ \theta &= 0.0775; & \xi &= 0.3; & \gamma &= 0.56; & \eta &= 0.52; \\ \phi &= 0.1; & P_E &= 0.17; & \Omega &= 0.5; \end{aligned}$$

Note:

1. The shares of skilled labor (α) and unskilled labor (β) in the production function are estimated by running ordinary least square (OLS) using data from 1978-2000.
2. The depreciation rate of skill (δ_s) is estimated by using data of skilled labor of 1990 and of 1991 and graduates from university or above (J_s) in 1990.
3. The wage proportion of foreign workers to local unskilled labor (η) is estimated by the basic monthly wage (NT\$9750) as a proxy of foreign workers' wage divided by the average monthly unskilled wage (NT\$18699) in 1990.
4. The input share in education production function (ξ) is estimated by the government capital investment on education.
5. The unit of I_E^G is measured by NT\$billion.
6. The price of education (P_E) is an approximate estimation by using households' spending on education and recreation divided by households' spending on all others in 1990.
7. Interest Rate (θ) is the interest rate per annum for the bank's 3-month term deposit.
8. Tax rate τ is the tax burden in Table 9-9 of Taiwan Statistical Data Book 2001.
9. Time (T) is measured by the number of hours in one year.
10. Physical Capitals δ and δ_E are based on the 5-year depreciation time frame.
11. The share of leisure/unemployment (γ) is assumed slightly higher than the share of consumption goods ($1-\gamma$).
12. Spending of money to buy education and spending of time to study are assumed to be equally important for skill formation (Ω).

Data Source:

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