

# Is Capital Account First Strategy Harmful for a General Unemployment Economy?

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This paper challenges the argument of the 'current account first' strategy under a general unemployment economy. Based on the second best theory, the strategy is often justified by saying that removing capital controls in the presence of tariff will enlarge the welfare cost of tariff protection. We show that this may not be true if there is a general unemployment in the labor market. In case that liberalizing capital leads to capital outflows, welfare would be worse off via the capital liberalization. However, if capital inflows is the case then welfare may be better off when tariff level is not too high.

- I. Introduction
- II. Model
- III. Effects of Tariff without Capital Flows
- IV. Effects of Tariff-induced Capital Flows
- V. Conclusion

## I. Introduction

Since 1970s while liberalization policies are widely adopted in most developing countries, e.g. Argentina, Chile and others in Latin America<sup>1</sup>, liberalization order of the current account and the capital account has become a very popular issue in the trade literature.

Based on the second best theory, economists generally agree that the

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capital account should be liberalized after the current account. For example, McKinnon (1982) and Frenkel (1982) addressed that since the speed of adjustment in the capital account is much higher than that of the current account (a property of asset market), it is safer to liberalize the current account before the capital account. Edwards and van Wijnbergen (1986) shows that the physical capital inflows induced by the capital account liberalization in the presence of tariff is welfare deteriorating. It is worth noting that Edwards and van Wijnbergen's argument is consistent with Jones' (1984) finding, namely, a tariff-induced capital flows no matter in or out, is always harmful via enlarging the welfare cost of the current tariff<sup>2</sup>. Under the framework of a Keynesian economy, Rodrik (1987) addressed the point that 'current account first' strategy is good in the following sense. Anticipating a tariff reduction will switch the current expenditure to the future (intertemporal price arbitrage effect), if capital controls are removed. This will cause a decline in the demand for current goods which in turn will decrease current production as well as the employment. Thus, welfare will be worse off in the short run.

Except for a few papers like Rodrik (1987), Kähkönen (1987), Huang, Shea and Lin (1990) etc., most of the liberalization articles implicitly or explicitly assume well-functioned domestic markets, ignoring the common fact of financial repression and unemployment in most developing countries. This paper takes unemployment into consideration. Instead of considering the unemployment under a Keynesian economy, and the role of facilitating the intertemporal adjustment for the capital liberalization as is in Rodrik (1987), we focus on the role of physical capital flows for the capital account as is analyzed in Edwards and van Wijnbergen (1986). In other words, we will ask whether the tariff-induced capital flows will ameliorate or deteriorate the welfare when unemployment exists.

We find that after introducing the employment effect, the removal of

capital controls in the presence of tariff may not be harmful. The intuition behind this result is as follows. Although tariff protection generates a welfare loss due to the shrinkage of volume of trade (the base for traditional tariff inefficiency argument), it also generates welfare gains (losses) from increasing the amount of labor employed if the import sector is labor (capital) intensive. Allowing the capital to move across border at this point will shrink the volume of trade even further, a negative effect on welfare, irrelevant to the pattern of capital flows. Furthermore, there will be an employment effect which may be positive or negative depending on whether the foreign capital flows in or out. In the case of capital outflows, the rate of unemployment will be enlarged, enhancing the welfare loss of tariff inefficiency. On the contrary, if capital inflows is the case then the rate of unemployment will decline, a positive effect on welfare and making the total welfare effect ambiguous. In other words, if capital liberalization in the presence of tariff leads to capital inflows then there may be welfare improving, a case against "current account first" strategy.

The remains of this paper are organized in the following way. Section II describes the model; section III studies the benchmark case in which the capital flight is prohibited; section IV calculates the effects of capital liberalization in the presence of tariff. Section V concludes this paper.

## **II. Model**

We consider a small open economy in which two goods, importable and exportable, are produced. For convenience, we take exports as the numeraire, and  $p^*$  the world price of imports. Assume that an initial tariff,  $t$ , is levied on the imports such that the domestic price of imports  $p = p^* + t$ . We also assume that the labor and capital endowments of the economy equal  $\bar{L}$  and  $\bar{K}$  respectively. Let  $L$  be the amount of labor employed, thus  $\bar{L} - L$  is

unemployed. By allowing the foreign capital to flow in or out, the amount of capital in use,  $K$ , may not equal its endowment. Instead,  $K$  is equal to  $\bar{K} + K^f$  where  $K^f$  denotes the net foreign capital inflows. Thus the budget constraint for the economy can be described as follows:

$$E(p, U) = G(p, L, K) + t[E_p(\cdot) - G_p(\cdot)] - r^* K^f \quad (1)$$

where  $U$  is the utility level, and  $E(p, U)$  is the expenditure function derived from minimizing the total expenditure to achieve  $U$  at price  $p$ . Thus  $E_p(\cdot)$ , the partial derivative of  $E(\cdot)$  with respect to  $p$ , is the compensated demand for imports. Similarly,  $G(\cdot)$  represents the gross domestic product (GDP), the revenue function derived from maximizing the total revenue given the price,  $p$  and factor inputs<sup>3</sup>,  $L$  and  $K$ . Therefore,  $G_p(\cdot)$  is the domestic output of imports. On the right hand side of eq. (1), it states that the GNP equals the gross domestic product,  $G(\cdot)$ , plus the tariff revenue,  $t.[E_p(\cdot) - G_p(\cdot)]$ , minus the payments to foreign capital,  $r^* K^f$ .

To endogenize capital flows, we need the following condition:

$$G_K(p, L, \bar{K} + K^f) = r^* \quad (2)$$

that is, the rate of return to capital at home equals the level in the world market,  $r^*$ , which is exogenous to the small open economy.

Line  $KK$  in figure 1 is to depict the capital market equilibrium condition. The slope of  $KK$ -line is  $-G_{KL}/G_{KK} > 0$  and the price change will shift the line upward or downward according to the sign of  $-(G_{Kp}/G_{KK})$ . By Stolper-Samuelson theorem, if the import sector is capital intensive, then raising the price of imports (via imposing tariff for example) would increase the return to capital, that is,  $G_{Kp} > 0$ . Thus  $-(G_{Kp}/G_{KK}) > 0$  (Noting that  $G_{KK}$  is always negative for decreasing return to capital), i.e.,  $KK$ -line will shift up, denoting a tendency of capital inflows. On the contrary, if the import good is labor intensive, then increasing  $p$  would shift the line down, denoting a tendency

of capital outflows.

Now let us turn to the labor market. Let  $\bar{W}$  be the wage rate which is assumed rigid for some unknown reasons. Therefore, the following condition is required to close the model.

$$\bar{W} = G_L(p, L, \bar{K} + K^f) \quad (3)$$

The equation (3) is depicted in figure 1 as line LL, in which the slope equals  $-G_{LL}/G_{LK} > 0$  and tariff will shift the line leftward or rightward according to the sign of  $-G_{Lp}/G_{LL}$ . Again, by Stolper-Samuelson theorem, if the import good is capital (labor) intensive then  $G_{Lp} < 0$  ( $> 0$ ), thus  $-G_{Lp}/G_{LL} < 0$  ( $> 0$ ). Hence, tariff (making  $p$  up) would shift the LL-line left (right) denoting a tendency of decreasing (increasing) the employment, provided that the import sector is capital (labor) intensive.

For stability we consider only the case that KK-line is flatter than LL-line, that is  $-G_{LL}/G_{LK} > -G_{KL}/G_{KK}$ , i.e.  $G_{LL} \cdot G_{KK} - G_{LK} \cdot G_{KL} > 0$ .

Totally differentiating the above three equations, and denoting the change in the real income  $dy$  as:<sup>4</sup>

$$dy \equiv (E_U - t \cdot E_{pU}) dU$$

where  $E_U - t \cdot E_{pU} = E_U [1 - t \cdot (\partial E_p / \partial E)]$  is positive by assuming that both goods are normal (refer to Edwards and van Wijnbergen 1986), we have

$$\begin{bmatrix} 1 & tG_{pK} & -(\bar{W} - tG_{pL}) \\ 0 & G_{KK} & G_{KL} \\ 0 & G_{LK} & G_{LL} \end{bmatrix} \begin{bmatrix} dy \\ dK^f \\ dL \end{bmatrix} = \begin{bmatrix} t[E_{pp} - G_{pp}]dt \\ -G_{Kp} \cdot dt + dr^* \\ -G_{Lp} \cdot dt + d\bar{W} \end{bmatrix} \quad (4)$$

Noting that this is a recursive system, we can solve for  $dK^f$  and  $dL$  in the first step, and then substitute the result into the first equation of the system to solve  $dy$ . Hence, we have

$$dK^f = \frac{1}{\Delta} [-G_{Kp} \cdot G_{LL} + G_{KL} \cdot G_{Lp}] dt \gtrless 0 \quad (5)$$

$$dL = \frac{1}{\Delta} [G_{LK} G_{pK} - G_{KK} G_{Lp}] dt \gtrless 0 \quad (6)$$

where  $\Delta = G_{LL} G_{KK} - G_{LK} G_{KL}$  and is positive for stability as noted before. The capital flows and employment effects are depicted by figure 2. As mentioned earlier, if import sector is capital (labor) intensive then KK-line will shift up (down) and LL-line will shift to the left (right) as depicted by LL' and KK' (LL'' and KK''). Obviously, in either cases the effects on capital flows and labor employment are ambiguous, depending on the relative magnitude of the shifts of LL-line and KK-line.

Substituting (5), (6) into the first equation of system (4) yields

$$dy = t[E_{pp} - G_{pp}]dt - tG_{pK} \left[ \frac{dK^f}{dt} \right] dt + (\bar{W} - tG_{pL}) \left[ \frac{dL}{dt} \right] dt.$$

Rearranging the above equation yields

$$dy = t\{[E_{pp} - G_{pp}] - G_{pK} \frac{dK^f}{dt} - G_{pL} \frac{dL}{dt}\}dt + \bar{W} \cdot \frac{dL}{dt} \cdot dt \quad (7)$$

Equation (7) states that two parts are included in the welfare effect of tariff. They are firstly, the volume of trade effect (or tariff revenue effect)  $t\{[E_{pp} - G_{pp}] - G_{pK} \cdot (dK^f/dt) - G_{pL} \cdot (dL/dt)\}$ , and secondly, the wage income effect,  $\bar{W} \cdot (dL/dt)$ . The volume of trade effect involves three elements. Firstly,  $[E_{pp} - G_{pp}]$  is the traditional tariff-inefficiency effect resulting from price change. Secondly,  $G_{pK} \cdot (dK^f/dt)$ , noting  $G_{pK}$  as the effect on import production of capital, is the effect of tariff-induced capital flows on the domestic output of imports (a positive sign implies the tariff-induced capital flow is harmful). Thirdly,  $G_{pL} \cdot (dL/dt)$  is the effect of tariff-induced employment on the

domestic output of imports. (Similarly, a positive sign means the tariff-induced employment effect is harmful via the expansion of the domestic import sector.)

### III. Effects of Tariff without Capital Flows

For the purpose of this paper we will focus on the welfare effects of tariff-induced capital flows. Hence, the case that capital flows are prohibited will be used as the benchmark. In this case the effects of tariff can be derived by substituting  $dK^f = 0$  into equations (5), (6) and (7). The results are written as follows:

$$\left. \frac{dL}{dt} \right|_{(dK^f=0)} = -G_{Lp}/G_{LL} \gtrless 0, \text{ if } G_{Lp} \gtrless 0 \quad (8)$$

$$\left. \frac{dy}{dt} \right|_{(dK^f=0)} = t\{[E_{pp} - G_{pp}] - G_{pL} \cdot \left. \left( \frac{dL}{dt} \right) \right|_{(dK^f=0)}\} + \bar{W} \cdot \left. \left( \frac{dL}{dt} \right) \right|_{(dK^f=0)} \quad (9)$$

In figure 3, LL-line shifts leftward to LL' is to illustrate the employment effect of tariff when import sector is capital intensive (which implies  $G_{Lp} < 0$  and thus  $dL/dt|_{(dK^f=0)} < 0$ ). The employment declines along the line  $K^f = K_0^f$  from point A to B. On the contrary, line LL'' and point B' are to demonstrate the case that the import sector is labor intensive.

A simple algebra<sup>s</sup> will show that if the import sector is capital intensive then raising tariff is harmful ( $dy/dt < 0$ ) for in this case the optimal tariff level is negative. On the contrary, if the import sector is labor intensive then the welfare effect is ambiguous ( $dy/dt \gtrless 0$ ), depending on the initial tariff level.

### IV. Effects of Tariff-induced Capital Flows

If capital flight is permitted then point B or B' in figure 3 is not the end

of the story. KK-line will shift upward (downward) if the import sector is capital (labor) intensive. Figure 4 illustrates the case that the import sector is capital intensive. Since KK-line will shift up, any point along LL' above C could be the equilibrium, i.e., foreign capital may increase or decrease and the effect on employment is also ambiguous. Unlike the case of no unemployment<sup>6</sup> as considered in Jones (1984), import sector's capital intensity will not assure a tariff to induce capital inflows. Similarly, labor intensity of import sector will not guarantee a capital outflows by imposing tariff.

### A. Capital flows and employment effects

Geometrically, the factor adjustments due to capital liberalization are shown in figure 4 as a movement from point B along the LL'-line to the point where "new" KK-line and LL'-line intersect, e.g., D for line KK' or D' for KK". Mathematically, they are  $dK^f/dt$  for the tariff-induced capital flows and  $dL/dt - dL/dt|_{(dK^f=0)}$  for associated employment effect.

### B. Welfare Effects

The related welfare effects<sup>7</sup> are

$$Dy \equiv \frac{dy}{dt} - \frac{dy}{dt}|_{(dK^f=0)} = -tG_{pK} \left[ \frac{dK^f}{dt} \right] + (\bar{W} - tG_{pL}) \left[ \frac{dL}{dt} - \frac{dL}{dt}|_{(dK^f=0)} \right] \quad (10)$$

which is derived by subtracting eq. (9) from (7). Using eqs. (5), (6) and (8), eq. (10) can be simplified to

$$\begin{aligned} Dy &= -tG_{pK} \left[ \frac{dK^f}{dt} \right] + (W - tG_{pL}) \cdot (-G_{LK}/G_{LL}) \left[ \frac{dK^f}{dt} \right] \\ &= \frac{t[-G_{pK}G_{LL} + G_{pL}G_{LK}]^2}{G_{LL} \cdot \Delta} - \frac{\bar{W} \cdot G_{LK}[-G_{pK}G_{LL} + G_{pL}G_{LK}]}{G_{LL} \cdot \Delta} \end{aligned} \quad (11)$$

Intuitively, the first term captures the volume of trade effect, or tariff revenue



effect which is always negative (since  $G_{LL} < 0$  and  $\Delta > 0$ ) irrelevant to capital inflows or outflows. The second term, ambiguous in sign, captures the wage income effect as a result of employment change. Two cases are analyzed in the following:

**(i)  $dK^f < 0$ , that is capital outflows**

In this case  $[-G_{pK}G_{LL} + G_{pL}G_{LK}] < 0$  by eq. (5), and the tariff-induced capital flows are harmful ( $Dy < 0$ ). In other words, *if liberalizing capital in the presence of tariff leads to capital outflows then the welfare would be worse off*. It should be emphasized here that the result has nothing to do with the factor intensities, only the directions of capital flows matter.

The intuition behind this result can be seen from figure 4 in which  $KK'$  intersects  $LL'$  at point D. That is liberalizing capital in the presence of tariff moves the equilibrium from point B to D, denoting a capital outflows which in turn will decrease the employment and wage income. In addition to the negative tariff revenue effect, this makes the total welfare deteriorate even further.

**(ii)  $dK^f > 0$ , i.e., capital inflows**

In this case  $[-G_{pK}G_{LL} + G_{pL}G_{LK}] > 0$  by eq. (5), the second term in eq. (11) is then positive. Thus,  $Dy$  becomes ambiguous. However, if the tariff level  $t$  is large enough, then the first term of tariff revenue effect will dominate the result and  $Dy$  becomes negative. In other words, *if liberalizing the capital in the presence of tariff leads to capital inflows, then the welfare may be better off or worse off. However, if the tariff level is higher enough then liberalizing capital may deteriorate welfare*.

This case is depicted by point D' in figure 4, at which line  $KK''$  and line  $LL'$  intersect. Starting from point B, D' denotes a positive employment effect

due to capital inflows. It is this positive employment effect that makes the welfare change ambiguous.

Intuitively, whether the employment effect will dominate the result (such that welfare effect is positive) or not, depends on the current tariff level and production technology such as elasticity of substitution, factor intensities etc. Against the traditional wisdom, there may exist cases such that liberalizing capital in the presence of tariff is welfare improving.

## **V. Conclusion**

This paper challenges the argument of 'current account first' strategy under a general unemployment economy. Based on the second best theory, the above mentioned argument is in general justified by saying that liberalizing the capital account will increase the welfare cost of tariff protection. We have shown that this may not be true if there is a general wage rigidity in the labor market.

For an economy with general unemployment, we have shown that (i) if liberalizing capital in the presence of tariff leads to capital outflows, then the welfare would be worse off, i.e., traditional wisdom of current account first strategy applies. However, (ii) if it leads to capital inflows then the welfare effect is ambiguous. This ambiguity is due to the positive welfare effect of employments which is opposite to the traditional tariff-inefficiency effect. It is worth noting that these results are irrelevant to factor intensities, only the directions of capital flows matter. Since the higher the tariff the more likely the harmful effect occurs for this capital liberalization policy, it seems reasonable to suggest, if anything can be said about liberalization order, that tariff should be lifted before removing capital controls while tariff level is "high". On the other hand if tariff level is "low", and liberalizing capital can induce capital inflows, then the economy may be better off from liberalizing capital.

## Notes

1. See Krueger (1978), McKinnon (1982), and Edwards (1984) for a discussion about the liberalization experience in the Latin America.
2. Neary (1988) extends Jones (1984) further to the case of quota, and VER protection policies.
3. More input than output is required to assure the revenue function  $G(.)$  is twice differentiable and  $G_{LL}$ ,  $G_{KK}$  both are not equal to zero. We suppress other inputs in the  $G(.)$  for convenience. For the properties of the revenue function and the expenditure function refer to Dixit and Norman (1980).
4. This definition is the same as in Jones (1967), (1984) and Edwards and van Wijnbergen (1986).
5. The optimal tariff  $t^*$  in this case can be derived by setting  $dy=0$  and solving for  $t$ . This will yield  $t^* = -\bar{W} \cdot (dL/dt) / [(E_{pp} - G_{pp}) + G_{pL}^2 / G_{LL}] > 0 (< 0)$  if  $dL/dt > 0 (< 0)$ . In other words, the optimal tariff is positive for a small open economy if tariff can increase (decrease) employment i.e., importables are labor (capital) intensive. The result is consistent with the traditional findings as in Batra and Seth (1977).
6. In this case, the LL-line would become vertical. Thus a upward shift of KK-line will assure a higher  $K^f$ , and Jones' (1984) result applies.
7. It is worth noting that the optimal tariff under this case can be derived from eq. (9) by setting  $dy=0$  and using eqs. (5) and (6).

$$t^* = -[\bar{W} \cdot dL/dt] / \{[E_{pp} - G_{pp}] - G_{pK} \cdot dK^f/dt - G_{pL} \cdot dL/dt\}.$$

which is negative if the import sector is capital intensive (i.e.,  $G_{pK} > 0$ ,  $G_{pL} < 0$ ) and there are capital inflows and unemployment ( $dK^f/dt > 0$ , and  $dL/dt < 0$  as depicted by point D' in figure 4). On the contrary  $t^*$  is positive if  $G_{pK} < 0$ ,  $G_{pL} > 0$ ,  $dK^f/dt < 0$  and  $dL/dt > 0$ .

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Figure 1.

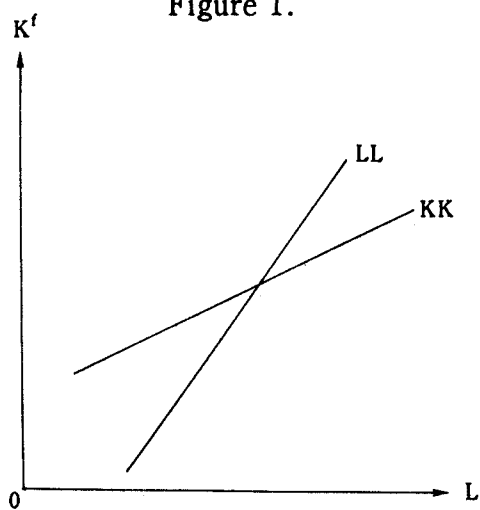


Figure 2.

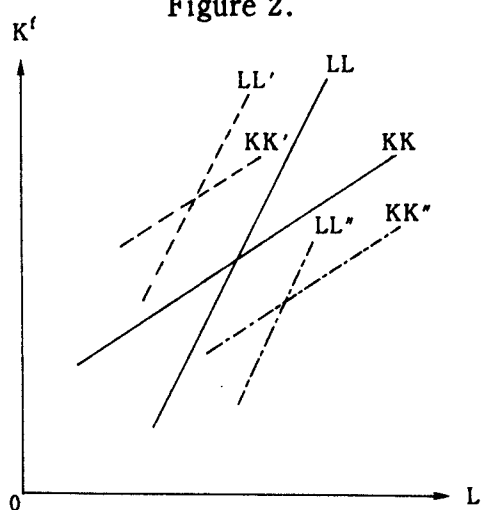


Figure 3.

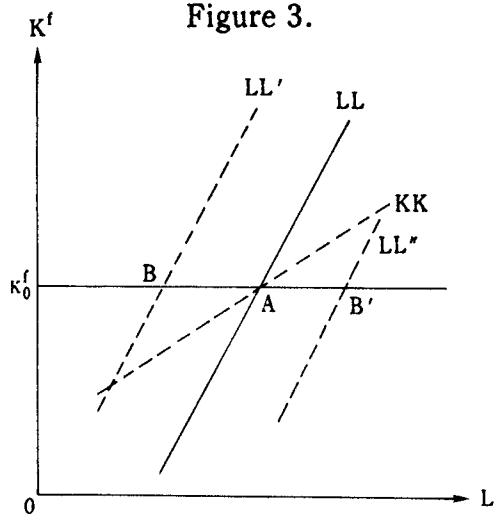
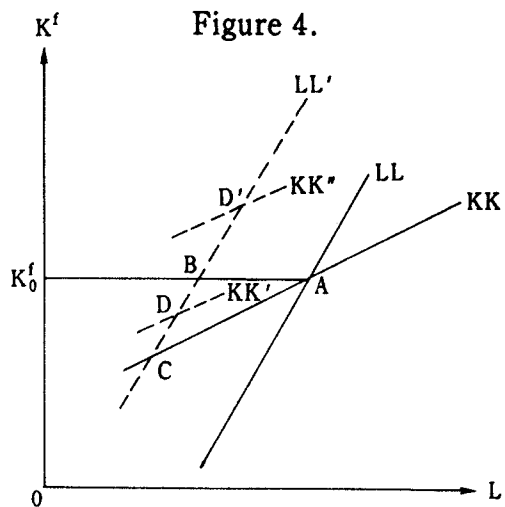


Figure 4.



# 資本帳優先的自由化政策不好嗎？ ——未充分就業經濟體系的考慮

黃登興

## 摘要

本文在探討在一般性失業經濟下，資本帳先行自由化是否會使福利惡化。傳統充分就業模型的結論是，在沒有任何其他市場扭曲情況下，先於經常帳的資本自由化將使關稅的扭曲成本因資本流動而擴大，形成福利惡化。我們證明在未充分就業的情況下，資本移動除了擴大關稅的扭曲成本之外也可能(i)因資本流入而提高就業形成正的福利效果。若關稅水準不高，則正面的就業效果可能超過負面的關稅成本效果使福利提高。(ii)反之若資本自由化引起資本外流，則就業量因而降低使福利更加惡化。因此就自由化的順序而言，在有一般性失業下，若關稅“很高”，則應先行降低關稅，俟其降到“夠低”水準後方可考慮資本帳的自由化。