DETERMINANTS OF OUTPUT EXPANSION
IN AN OPEN DEVELOPING ECONOMY WITH A
LIMITED DEGREE OF INPUT-OUTPUT INTEGRATION

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Abstract

This paper presents a Kaleckian-oriented theoretical model of output expansion for an open developing economy with a limited degree of input-output integration, in the sense of depending on imported capital goods and on exports of primary products. The absence of a local capital goods sector means that an expansion of private investment will bring about an increase in imports. In addition, an increase in private investment outlays will raise the capacity to produce consumer goods. But unless there is an increase in workers' ability to consume these products, the economy will face an insufficiency of final demand. In the short run, output expansion could be sustained by an increase in government expenditure. However, in the absence of changes in the input-output structure of production, the use of government spending to stimulate the economy could lead to growth-constraining internal and external disequilibria. One possible alternative to this inevitable tendency toward slow growth will require a policy capable of producing changes in the structure of production by increasing investment in industries with strong domestic backward and forward linkage effects. The major inferences and key implications of the theoretical model developed in this paper present an ideal opportunity for conducting an empirical examination of three issues.

Keywords: Kaleckian, Developing Economy, Deficit Spending, Output Expansion, Balance of Payments

INTRODUCTION

Inspired by the deflationary experience of the 1930s, Kalecki ([1939] 1954) constructed a model of the determinants of national income and consumption. In the imperfectly competitive, industrialized economy of that historical period of capitalism, the main obstacle to economic expansion was a deficiency of effective demand which led to unemployment and underutilization of productive capacity. Kalecki, however, did not believe the primary limit to economic growth in the 'underdeveloped' economies was an insufficiency of effective demand, but rather a scarcity of capital equipment. In Kalecki's words *(This paragraph and the idea for these citations originated in Blecker (1998:122))*: In developed capitalist economies … unemployment arises on account of inadequacy of effective demand … The situation may, therefore, be tackled by measures designed to stimulate effective demand, such as loan financed government expenditure. Unemployment and underemployment in underdeveloped countries are of an entirely different nature. They result from the shortage of capital equipment rather than from a deficiency of effective demand (Kalecki [1960] 1976:3).

The crucial problem facing the underdeveloped countries is thus to *increase investment considerably*, not for the sake of generating effective demand, as was the case in an underemployed developed economy, but in order *to accelerate expansion of productive capacity* indispensable for the rapid growth of the national income [italics added] (Kalecki [1965] 1976:23).

It therefore becomes pertinent to ask what impact an increase in private investment spending on capital goods will have on output expansion in an open developing economy with a limited degree of input-output integration, in the sense of depending on imports of capital goods and on exports of agricultural products. The aim of this paper is to answer this question by analyzing the determinants of output expansion in an open developing economy through the lens of a Kaleckian-based macro-economic framework that incorporates other recently developed theoretical approaches. This approach is based upon several basic underlying premises consistent with socio-economic conditions found in many developing economies (See Kalecki (1955, 1976), Rowthorn (1982), Casar and Ros (1983), Dutt (1984), Jimenez (1987), You (1991), and Seguino (1994)).

First, the economy has a three-fold socio-economic structure: capitalists, workers and small proprietors. The last group consists of small shopkeepers, artisans, and poorer peasants. Workers and small proprietors are assumed to spend all of their income on consumer goods. Hence, total saving is equal to the saving out of profits of the capitalist class. These groups also have different marginal propensities to import out of wages and profits. While workers and small proprietors consume locally-produced goods, capitalists are assumed to indulge in foreign-

produced luxury goods. Second, the economic environment of the industrial sector is characterized by an imperfectly competitive market structure and a preponderance of excess capacity. This assumption makes it likely that producers cover profits and overhead by setting prices as a mark-up over prime costs *à la Kalecki*. Increases in mark-up power exert a decreasing effect on labor's and small proprietors' share of national income. Third, there exists a large reservoir of labor, either in the form of a reserve army of labor, or as employed in a subsistence sector with a limited degree of input-output linkages with the manufacturing sector. This assumption makes it likely that workers have limited negotiating strength over real wages and that labor power is available to the industrial sector in perfectly elastic supply. Fourth, the investment decision is a positive function of both the share of profit in the value added of the industrial sector and the rate of capacity utilization, measured by the ratio of output to capital (Q/K) of the industrial sector. Thus, the higher the profit share and the rate of capacity utilization, the greater the amount of investment firms will want to undertake. Fifth, the process of economic growth is structurally dependent on imports of intermediate and capital goods; hence, the faster the pace of economic expansion, the greater the demand for imports of materials and equipment. Sixth, the economy is highly dependent of exports of primary products, and thus having little input-output linkages.

This paper is organized as follows. In the next section, an examination of the determinants of output expansion by assuming an open economy without a government sector is conducted. The role of government deficit-spending as a source of effective demand and its impact on the trade balance is explored in Section 3. The last section presents a summary, policy implications, and suggested applications.

OUTPUT EXPANSION IN AN OPEN DEVELOPING ECONOMY WITHOUT A GOVERNMENT SECTOR

This section is based on Casar and Ros (1983). In an economy with international trade and no government sector, the value of gross national product on the expenditure side is equal to the sum of gross private investment in fixed capital and inventories (I_p), capitalists' expenditures on consumer goods (C_k), workers' and small proprietors' consumption (C_w), and the exports-imports surplus ($X - M$).
Thus,

$$Y = I_p + C_k + C_w + (X - M) \tag{1}$$

From this it follows that private investment (I_p) is

$$I_p = (Y - C_k - C_w) + (M_{nk} - X) \tag{2}$$

Moreover, since private saving (S_p) is income (Y) minus capitalists' consumption (C_k) and workers' and small proprietors' consumption (C_w), we can write private investment (I_p) as

$$I_p - S_p = (M_{nk} - X) = F \qquad (3)$$

Where, F is foreign capital inflows (or net foreign saving). Assuming for the moment no interest payments, no profit repatriation, and supposing nothing else changes, following Thirlwall (2003) we can show that foreign capital inflows can exert a favorable effect on the growth of income.

That is,

$$g = (I_p/Y)\sigma \qquad (4)$$

Where, $\sigma = \Delta Y/I_p$, and since $I_p = S_p + F$, we have

$$g = [(S_p/Y) + (F/Y)]\sigma \qquad (5)$$

The first term in the right-hand side of Equation (5) is the ratio of gross domestic savings to national income and the second is the ratio of foreign borrowing to national income.

The relationship between private capital investment and imports of capital goods can be expressed by the following equation:

$$I_{pk} = M_k \qquad (6)$$

Imports of capital goods (M_k) are in turn equal to:

$$M_k = (1 - r)I_p \qquad (7)$$

Imports of non-capital goods (M_{nk}) are related to economic expansion through a measure of the marginal propensity to import out of income (m) and to fixed investment in equipment through a parameter which measures the impact on the domestic production of previously imported non-capital goods that results from an increment in productive capacity (c), to the capital stock (K), and to autonomous imports of these goods (j), where $j > 0$.

$$M_{nk} = mY - cK + j \qquad (8)$$

It follows from equation (8) that changes in imports of non-capital goods (M_{nk}) are a function of the following relationship:

$$\Delta M_{nk} = m\Delta Y - cI_p \qquad (9)$$

The import-substitution parameter (c) can have the following two effects on imports of non-capital goods. The first results when investment is fully concentrated in 'new industries' which

have an incremental output-capital ratio equal to $\Delta Y/\Delta K$ and whose production substitute an equal amount of imports so that expansion of imports of non-capital goods (ΔM_{nk}) is reduced by an amount equal to the addition to output resulting from the generation of new capacity (cI_p $=(\Delta Y/\Delta K)\ I_p =\Delta Y$). That is, the allocation of investment towards new import-substituting industries is such that the increased production of non-capital goods of these industries more than compensates for the negative impact of imports of these goods on the level of output. This import substitution mechanism generates an expansion of production and internal effective demand which in turn expands investment in a process of cumulative causation. Hence, investment in capital goods in an open developing economy with a limited degree of input-output integration can only exert an expansionary effect on output through its indirect impacts on import substitution.

The second occurs when investment mainly takes place in industries whose production does not substitute an equal amount of imports and/or whose entire output is exported. In these circumstances, the value of the import-substitution parameter (c) is equal to zero. Thus, the economy faces a tendency toward slower growth because the marginal propensity to imports out of income (m) is 'too high' relative to the import-substitution effects of the new investment; i.e. the value of the parameter (c). The reason for this is that when investment is totally concentrated in non-import substituting industries, the condition for continuous expansion is not fulfilled; because the expansion of capacity does not generate any import substitution effects and, due to the absence of a local capital goods industry, the impact of investment on capital goods on effective demand is consequently zero.

Now let's assume that workers and capitalists have different marginal propensities to import out of wages and profits, respectively. Workers consume wage-goods produced domestically, while capitalists tend to have a high indulgence for foreign-produced luxury goods (Kalecki [1955] 1976:59; Arestis and Howells 1995:153; You 1990:125). The second component of this hypothesis is based on the view that the limited size of the domestic market constitutes an obstacle which prevents local entrepreneurs from undertaking the necessary investment decisions in the production of luxury consumer goods for the capitalist class. The underlying basis for this assumption is that production of these goods might be subject to important economies of scale, with efficient plant size being large compared to the domestic needs of a country with a small market and with a system of severely constrained real wages. The production of lavish goods might also require a sufficient supply of physical and human capital since it may involve skill-intensive techniques of production, which a small country does not possess (This discussion is a reformulation of Baer and Kerstenetzky (1964)). As a result, in a small open economy without a capital goods sector profits are determined by capitalists'

expenditures on domestically-produced consumer goods (C_{kd}) and the surplus of exports over imports of intermediate and consumer goods ($X - M_{nk}$). Thus,

$$R = C_{kd} + (X - M_{nk}) \tag{10}$$

Expressing equation (10) as:

$$R = [(X - M_{nk}) + A]/(1 - \lambda_d) \tag{10'}$$

It therefore follows that any variations in the net export surplus will have a direct effect on gross profits and national income, other things being equal, as follows:

$$\Delta R = [\Delta(X - M_{nk}) + A]/(1 - \lambda_d) \tag{11}$$

$$\Delta Y = [\Delta(X - M_{nk}) + A]/[(1 - \lambda_d)]p \tag{12}$$

Furthermore, it is easy to see that a shift in the distribution of income from wages to profits can be expected to produce a direct upward effect on imports of luxury goods and a downward impact on capitalists' expenditures on domestically-produced consumer goods (C_{kd}), as capitalists are inclined to consume foreign-produced luxury goods. If we differentiate Equation (12) with respect to time, as in Jimenez (1987:131), we obtain

$$(\partial Y/\partial t) = [1/(1 - \lambda_d)p]\ [\partial X/\partial t] - [\partial M_{nk}/\partial t] \tag{13}$$

Equation (13) shows that with a given marginal propensity to save out of profits, national income will expand if and only if there is a surplus of exports (X) over imports of non-capital goods (M_{nk}) which compensates for the dampening effect of constrained workers' consumption on aggregate demand resulting from a re-distribution of income from wages to profits.

A concept increasingly used in empirical investigations of the importance of exports and imports income demand elasticity differentials for output expansion, under a given growth rate of world demand, is the balance of payments constrained growth rate of domestic income developed by Thirlwall (1979, 1982, 1983). This variant of the Harrod foreign trade multiplier posits as an initial assumption that the merchandise and service accounts are continuously balanced. Assuming the Marshall-Lerner condition is satisfied, stable long-run terms of trade, and no net capital inflows, Thirlwall's modification of the Harrod foreign trade multiplier can be used to show that to achieve a higher rate of output expansion consistent with a balance of payments equilibrium will require a rise in the supply of goods with a higher income elasticity of demand (ε), an increase in world demand (z), and/or a reduction in the demand for imports with

a higher income elasticity of demand (π). In equation form, the balance of payments constrained growth rate of domestic income is as follows:

$$y^* = (\varepsilon/\pi)z \tag{14}$$

However, several important factors can work against this prospect. If a significant portion of total exports consists of agricultural products, then the income elasticity of demand for these products can generally be lower than that for manufactured goods. This proposition is based on Engels law and suggests that a rise in income in the developed world will not necessarily translate into a higher demand for these products from the less developed countries.

Secondly, economic growth in an economy that is highly dependent on the production of primary products will tend to have a limited impact on vertical and horizontal specializations through the backward and forward linkage effects (Chenery and Watanabe 1958; Hirschman 1958; Rostow 1963). The potential importance of a particular sector's ability to generate and stimulate output expansion in other sectors of the economy depends upon the strength of these stimuli, particularly the backward stimulus. These repercussions, in turn, depend on the size of the domestic market and on how well-integrated the system of industries is. Failure to reach this stage prevents the growth process from becoming self-reinforcing. The backward linkage dynamic in particular: "is essential for achieving an industrial structure of any depth" (Hirschman 1989:212).

Thus, given the structural deficiency of domestic demand, as well as the limited potential for achieving an export surplus, government expenditure becomes crucial to maintain the level of output expansion. We now turn to analyze the impact government deficit spending on economic growth.

GOVERNMENT DEFICIT SPENDING AND OUTPUT EXPANSION

In an open economy with government expenditure and taxation, the value of gross national product on the expenditure side is equal to the sum of total (private and public) I_t investment, capitalists' consumption of locally-produced consumer goods (C_{kd}), workers' and small proprietors' consumption (C_w), net exports ($X - M_{nk}$), and the difference between government taxation (T) and expenditures on goods and services (G):

$$Y = I_t + C_{kd} + C_w + (X - M_{nk}) + (T - G) \tag{15}$$

Profits are, in turn, determined as follows:

$$R = C_{kd} + (X - M_{nk}) + (T - G) \tag{16}$$

Let's assume that the government initiates a deficit-financed program of public works. Equation (15) now becomes equal to the sum of capitalist's consumption of locally-produced goods (C_{kd}), workers' and small proprietors' consumption, the surplus of exports over imports of non-capital goods ($X - M_{nk}$), and the excess of government expenditure on goods and services (G) over government revenue (T), which is equal to the budget deficit (BD).

$$Y = I_t + C_{kd} + C_w + (X - M_{nk}) + (BD) \qquad (15')$$

Kalecki refers to budget deficits as 'domestic exports' (Kalecki [1934] 1971). This is so for when the government of a given nation initiates a deficit-financed program of public works the local private sector receives more benefits from the additional government spending than it pays in taxes. It therefore follows that any variations in the budget deficit will have a direct effect on gross profits and national income, other things being equal, as follows:

$$\Delta R = [(X - M_{nk}) + \Delta(BD) + A]/(1 - \lambda_d) \qquad (17)$$

$$\Delta Y = [C_w + (X - M_{nk}) + \Delta(BD) + A]/[(1 - \lambda_d p)] \qquad (18)$$

Equations (17) and (18) show that aggregate profits and aggregate income will expand if and only if there is an excess of government spending over government revenues which sufficiently compensates for the dampening effect on output expansion resulting from the rise in the marginal propensity to save out of profit income. A rise in the budget deficit allows profits to increase above the level determined by capitalists' consumption of domestically-produced goods and the export surplus. To assess this, let's divide equation (16) by the level of national income (Y), as in Casar and Ros (1983:263):

$$(R/Y) = [(C_{kd}/R) \times (R/Y)] + [(X - M_{nk})/Y] + (T - G)/Y] \qquad (19)$$

Which, after rearranging, implies

$$(1 - \lambda_d)p = [(X - M_{nk}/Y) + (T - G)/Y] \qquad (20)$$

Where, as previously defined, p is the share of profits in national income (R/Y) and λ_d is the ratio of capitalists' consumption of domestically-produced goods to total profits (C_{kd}/R). The left-hand side of Equation (20) is the marginal propensity to save out of profit income. If we assume that both sides of this equation are constant, this would mean that if the ratio of the net export surplus to national income is decreasing, then the ratio of the government deficit to national income must be increasing. If we were to drop this assumption, then if one of the right-hand side components were to increase and this rise was not compensated by a drop in the other

component, then this would lead to an increase in the marginal propensity to save out of profit income, exerting a contractionary effect on output expansion.

In addition, a government deficit will concomitantly lead to a further dependence of local capital formation on foreign savings. To see this, and following Blecker (1998:123), if we modify Equation (3) total investment (I_t) becomes equal to the sum of total private saving (S_p), foreign saving ($F = M_{nk} - X$), and the excess of government revenue (T) over government consumption spending (G), or the budget surplus for operating expenses (BS):

$$I_t = S_p + (M_{nk} - X) + (BS) \qquad (21)$$

However, as we saw above in Equations (17) and (18), aggregate profits and aggregate income will only expand if there is an excess of government spending over government revenues. As a result, the last term on the right-hand side of Equation (21) will not be positive, but rather negative, causing total investment to depend on total private savings (S_p) and on foreign savings (F). Private savings will also have to accommodate the increased borrowing needs of the government.

Equation (21) also demonstrates that as a result of the productive system's dependence on foreign-produced intermediate and capital goods and the limited possibility for increasing export earnings, the use of a government deficit policy to stimulate the level of profits and economic expansion will necessarily produce an increasing current account deficit. Because the ratio of non-capital goods imports (M_{nk}) to national income (Y) will be constant, and unless the share of exports (X) in total income (Y) is rising, an increasing current account deficit or a decreasing current account surplus as a proportion of national income [($X - M_{nk})/Y$)] will necessarily imply that the budget deficit as a proportion of national income [($BD)/Y$)] will also have to increase to maintain the level of national income. However, because of the import-dependent structure of production, any fiscal-deficit-induced increase in aggregate demand will result in an increase in imports of raw materials and intermediate products (M_r) and capital goods (M_k) as the demand for these goods is endogenously determined by the level of domestic economic activity. As a result of the economy's high dependence on foreign-produced intermediate inputs and capital goods, coupled with the limited possibility for increasing export earnings, the country's latitude for adjusting to disequilibrium in its balance of trade becomes significantly reduced.

SUMMMARY, POLICY IMPLICATIONS, AND SCOPE FOR FURTHER RESEARCH

The theoretical model developed in this paper demonstrates that output expansion in an open developing economy with a limited degree of input-output integration, in the sense of depending

on imported capital goods and on exports of primary products, faces a number of growth-constraining challenges. The absence of a local capital goods sector means that an expansion of private investment out-lay will bring about an increase in imports since the import demand function for capital goods is income-elastic and price-inelastic. Moreover, the process of economic growth is expected to increase the demand for foreign-produced intermediate inputs, thereby failing to generate any local multiplier effects via backward and forward linkage effects. An expansion of private sector spending on capital goods will also increase the capacity to produce consumer goods. But unless there is an increase in workers' effective demand, economic expansion will be constrained by an insufficiency of domestic demand. An expansionist fiscal policy in this environment can, in the short-run, neutralize the likelihood of this inherently under-consumptions tendency.

However, the use of 'domestic exports' to stimulate output expansion can lead to a significant deterioration of public finances and to a savings-investment gap. This, in turn, implies that the government might have to cut its investment spending in education, health, and infrastructure and re-direct the resultant savings towards debt servicing. Nevertheless, in the long-run, this policy can have an adverse impact on economic competitiveness. In addition, because the income elasticity of demand for imports is greater than unity, which causes imports to increase at a faster rate than that of domestic output, and because the income elasticity of demand for exports is below unity, which results in exports expanding at a slower pace than foreign output, then the use of 'domestic exports' as a stimulus to aggregate demand will lead to a deterioration in the balance of trade, resulting in a growth-constraining external disequilibrium.

One possible alternative to this inevitable tendency toward slower growth will involve a public policy capable of offsetting the limited degree of input-output integration by increasing the allocation of investment towards new domestic 'key' sectors offering the greatest potentials for inducing and spreading input-demanding and output-supplying opportunities. In addition to promoting a domestically-sustained system of input-output expansion that can reduce imports of intermediate and light consumer goods with high income demand elasticities, this policy can lead to an increase in the supply of exports of light manufactures with income demand elasticities higher than those of primary products.

The major inferences and key implications of the theoretical model developed in this paper present an ideal opportunity for conducting an empirical examination of the following issues. First, the Mundell-Fleming Model argues that fiscal expansion produces upward pressures on interest rates, causing an increase in capital inflows, and an appreciation of the exchange rates. Thus, an interesting exercise would be to investigate the existence of co-integration and causal associations between an expansive fiscal policy and interest rates,

capital inflows, exchange rates and the trade balance. Second, Neoclassical economics posits a causal link running from savings to investment to economic expansion. On the other hand, Keynesian theory suggests that investment causes economic growth, thereby bringing about higher savings. These two propositions recommend testing for the existence of co-integration and causality between savings, investment and output growth. The third theme to explore would be Thirlwall's Law of balance-of-payments constrained growth and its prediction that a country's rate of economic growth is determined by the relation between its trading partners' rate of output expansion, their income elasticity of demand for its exports, and the developing country's income elasticity of demand for imports.

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