

## A Dynamic, Keynesian Model of Development

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The Harrod-Domar growth model is extended in a way that introduces the possibility of persistent excess capacity as a potential source of slow growth. This extended model has five growth rates, which must be equal for there to be a full-employment, full-capacity dynamic equilibrium, instead of the three growth rates in the standard Harrod-Domar model. These growth rates will be called the justified, the actual, the warranted, the potential and the natural rate of growth. This model is held to provide a consistent framework for discussing many disparate views of economic development. Specifically, much of development theory can be divided into three types of theories, which focus on different structural rigidities in the economy. First, there are theories that emphasize a lack of saving and thus propose mechanisms for augmenting saving. Second, theories emphasizing a shortage of investment and thus the existence of excess capacity. Third, there are theories emphasizing inadequate labor absorption and the need to develop or employ labor by using capital saving technology. It is argued that the essence of Keynesian development economics is the belief that the development process is served better by pursuing policies that enhance growth with existing obstacles than by simply trying to remove these obstacles in the hope that development will then occur.

### I. Introduction

The Harrod-Domar growth model, as it has been formulated and applied to development economics, is as much neoclassical as it is Keynesian. There is no possibility of persistent excess capacity in the usual application of the Harrod-Domar model because planned investment is assumed to equal planned saving. The idea that some savings might not be invested was central to Keynes' s view of the economy.<sup>1</sup> The typical Harrod-Domar model is only partly Keynesian. Unemployment might exist because the economy is growing too slowly. By assumption, this slow growth is not due to low investment but to a low saving rate.<sup>2</sup> The equations of the model are used to find the saving rate needed to achieve a given rate of growth. Hence, development economists like Albert O. Hirschman, who are

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1. This possibility is the key assumption in Palley' s modification of the Solow model to generate a Keynesian growth model that is explicitly based on a neoclassical production function. See Palley (1996).
2. A rigid wage rate or a rigid production technology, in these models, prevents the capital-output ratio from adjusting to absorb the unemployed labor, which would create a higher growth rate.

sympathetic to Keynes, have rejected the Harrod-Domar model as being neoclassical.<sup>3</sup>

In this paper, we argue that a properly defined Harrod-Domar model provides a framework for much of the thinking and theorizing on economic development that has occurred since World War II. A dynamic, Keynesian model will be developed which allows for the possibility that planned investment could be less than planned saving. Hence, as we will see, this model will incorporate the possibility of persistent excess capacity as a potential source of slow growth with unemployment. This model has five growth rates, which must be equal for there to be full-employment, full-capacity dynamic equilibrium, instead of the three growth rates in the standard Harrod-Domar model. These growth rates will be called the justified, the actual, the warranted, the potential and the natural rate of growth. The model will be developed in the next section. Then various views of development will be presented in terms of coping with rigidities that prevent adequate growth rates within the context of the model. These rigidities are discussed in terms of factors preventing adequate investment, saving or labor absorption. Finally, the implications of the model for understanding economic development theory will be summarized.

## II. The Keynesian Growth Model

Like any model, the model is constructed on many simplifying assumptions. First, saving,  $S$ , is assumed to be proportional to income,  $Y$ . So,  $S = sY$  where  $s$  equals the average and marginal propensity to save. The labor force is assumed to grow at a constant exogenous rate  $n$  and thus  $\hat{L} = \frac{\dot{L}}{L} = n$ . In addition, for ease of exposition, technical innovation and capital depreciation will not be introduced into the model. Goods and capital are assumed to be produced by a single, fixed proportion production function written as

$$Y = \min \left( \frac{K}{v}, \frac{L}{u} \right), \quad (1)$$

where  $v$  and  $u$  are, respectively, constant capital-output and labor-output ratios.

There is the possibility that some capital, labor or both will not be utilized. The amount of capital that is utilized will be called required capital and will be denoted as  $K_r$ . Total capital is denoted as  $K$  and is utilized plus unutilized capital. Potential output is the output that would be produced if there is no unutilized or idle capital and if there is no binding labor constraint. Potential output is

$$Q = K/v \quad (2)$$

and actual output is

$$Y = K_r/v, \quad (3)$$

3. See Hirschman (1982).

where  $v$  is the underlying capital-output ratio defined in Equation (1). Obviously  $K_r$  cannot exceed  $K$ . Planned investment,  $I_p$ , is defined as an increase in utilized capital and is assumed to be

$$I_p = \dot{K}_r = rY, \quad (4)$$

where  $r$  is assumed to be exogenous.<sup>4</sup> Note that this model differs from the usual Harrod-Domar formulation, where no distinction is made between  $K$  and  $K_r$ , or between  $I$  and  $I_p$ .<sup>5</sup>

The rate of growth of actual output or income, see Equation (3), is

$$\hat{Y} = \frac{(\dot{K}_r / v)}{Y}. \quad (5)$$

Substituting from Equation (4) into (5) yields

$$\hat{Y} = r/v, \quad (6)$$

where  $r/v$  is the actual rate of growth,  $G_a$ . Note that  $G_a$  is determined only by the marginal propensity to invest,  $r$ , and the capital-output ratio,  $v$ .

The rate of growth of growth of capacity,  $\hat{Q}$ , where  $Q$  is given in Equation (2), is

$$\hat{Q} = \frac{(\dot{K} / v)}{Q}. \quad (7)$$

Total investment,  $I = \dot{K}$ , equals total saving, or

$$\dot{K} = sY. \quad (8)$$

Substituting Equation (8) into (7) yields

$$\hat{Q} = \frac{sY / v}{Q} = \frac{s(Y / Q)}{v} = \frac{s}{v_r}, \quad (9)$$

where  $v_r = v(\frac{Q}{Y})$ . The growth of potential output,  $\hat{Q}$ , will be called the warranted rate

4. The assumption that investment is exogenous is made in many Keynesian models where investment is determined by expectations of future returns to investment and is thought to be insensitive to interest rates.

5. It should be emphasized that the Harrod-Domar model differs in some ways from the original views of either Harrod or Domar.

of growth and will be denoted as  $G_w$ .<sup>6</sup>

Before considering the labor supply, the dynamic stability of the model will be considered. First, note that if  $r$  and  $s$  are constants then the model is stable. Assume that initially  $Y = Q$ , implying that  $v = v_r$ . If  $r = s$  then  $G_a = G_w$  and the economy continues to grow at the equilibrium rate. However, if  $r < s$ , planned investment is less than saving, then initially  $G_a < G_w$  and excess capacity appears. As a result  $v_r$  rises until  $G_a = G_w$ . For this flow equilibrium to be maintained, entrepreneurs would have to become accustomed to wasted investment and idle capital as an inevitable element of investment and production. Otherwise, when facing excess capacity firms might decrease planned investment, reducing  $r$ . If  $r$  falls, the equilibrium would be unstable. Again,  $G_a < G_w$ , which would generate additional excess capacity, raising  $v_r$ , lowering  $G_w$  and leading to further reduction in  $r$ . A similar argument will apply in a situation where  $G_a > G_w$ . Hence, the economy would be unstable. For the economy to be stable, without excess capacity,  $r$  would have to rise when there is unplanned investment and excess capacity in the economy and fall when demand exceeds capacity.<sup>7</sup>

Note that our treatment of Harrod-Domar differs from the standard treatment in that excess capacity is incorporated into the equations. In the usual treatment,  $s/v$  is called the warranted rate of growth. To interpret  $s/v$ , note that  $s/v$  is the warranted rate only when there is no excess capacity. If excess capacity builds up, the warranted rate will fall.  $s/v$  is accordingly called the potential rate of growth,  $G_p$ . It represents the rate of growth that would eventually be maintained if  $r$  rose (or fell) to equal  $s$ . Similarly,  $r/v_r$  can be interpreted as the justified rate of growth,  $G_j$ .  $G_j$  is the rate of growth justified by investment. It is the rate of growth of full capacity output that would be achieved if  $s$  fell (or rose) to  $r$ . Again, if  $r = s$  were maintained,  $v_r$  would fall (or rise) approaching  $v$  and  $r/v_r$  would approach  $r/v$ .

In the previous example, for fixed  $r < s$ , the economy will reach stable rates of growth  $G_j < G_a = G_w < G_p$  where there is disequilibrium in the sense that not all the growth rates are equal. Another potential source of inequality between growth rates occurs when the size of the labor force is explicitly entered into the model. Recall that  $\hat{L} = n$ , which is called the natural rate of growth. Hence, the equality of the potential and actual growth rates does not assure equilibrium in the sense that  $G_j = G_a = G_w = G_p = n$ . The economy might not grow rapidly enough to absorb new workers. If  $G_j = G_a = G_w = G_p < n$ , both saving and planned investment must be increased or  $v$  must be reduced in order to reach the full employment growth path. As we previously mentioned, this version of the model has been used for rough planning purposes to calculate the proportion of income that must be saved and invested in

6. Harrod defined the warranted rate as the ratio of planned savings, and presumably planned investment, to the equilibrium capital requirement. The warranted rate has been interpreted as  $s/v$ , which implies no excess capacity in equilibrium. With excess capacity ( $r < s$ ), the warranted rate is  $s/v_r$ .  $s/v$  will be called the potential rate. See Harrod (1973).

7. Note that this knife edge problem differs from Harrod's treatment of the so called knife's edge, which Harrod rejects. "Nothing I have ever written (or said) justifies this description of my view." See Harrod (1973, p. 32). He refers to instability as a tendency for a force to move equilibrium more than would be implied by the size of the initial force, Harrod, pp. 32-33. This amplification of an initial force occurs in our model through the resulting change in  $v_r$ .

order to achieve a particular targeted rate of growth. Indeed, the model has been almost exclusively identified with this purpose. Since planned investment and planned saving are assumed equal in these planning exercises, the model is robbed of its original Keynesian content. By focusing on the complete model and, in turn, other sources of disequilibrium, we will be able to encompass additional aspects of development theories.

### III. Sources of Disequilibrium

There are four parameters that determine the five growth rates in the Keynesian model. They are  $r$ ,  $s$ ,  $v$  and  $n$ . In terms of this model, many theories of development can be discussed in terms of the values of one or more of the parameters being inconsistent with equilibrium in the sense that all the growth rates are equal. The proposed solutions are either to reform and liberalize the market, which removes barriers to adjustment, or to directly act on  $r$ ,  $s$ ,  $v$  or  $n$  in the belief that these barriers to adjustment are in some sense intrinsic to the less developed economy. Both types of remedies will be explained when investment,  $r$ , is too low, saving,  $s$ , is too low, or labor absorption,  $v$ , is inadequate. Before discussing the implications of each type of disequilibrium, we will briefly outline the possible sources.

First, consider the operation of the Keynesian model when  $r < s$ . Suppose that there is initially no excess capacity. Hence,  $G_a < G_w$  (i.e.,  $\frac{r}{v} < \frac{s}{v_r}$ , where initially  $v_r = v$ ). Excess capacity would develop causing  $v_r$  to rise. If  $r$  and  $s$  remain at their initial level,  $G_w$  would fall to  $G_a$  as excess capacity develops. However, firms will likely respond by further reducing planned investment,  $r$ , making this situation worse. This source of disequilibrium could be eliminated if capital markets existed and functioned well. We might, for example, expect interest rates to fall when saving exceeds planned investment. These lower interest rates might stimulate planned investment and reduce saving by an amount sufficient to equilibrate the economy.<sup>8</sup> Instantaneous interest rate adjustment could guarantee that  $G_j = G_a = G_w = G_p$ , i.e.,  $I_p = S$ ,  $Y = Q$  and  $v = v_r$ .<sup>9</sup>

A second source of disequilibrium involves the natural rate of growth,  $n$ . Specifically,  $G_j = G_a = G_w = G_p < n$ . Thus, the growth path would not be one of full employment. However, this source of disequilibrium could be avoided if labor markets exist in which the wage rate adjusts to excess supply or demand for labor. In this case, the excess supply of labor would drive down the wage rate until demand and supply are equal. In terms of the Keynesian model, since it is assumed that initially  $I_p = S$ , and  $G_j = G_a = G_w = G_p$ , then  $v = v_r$ . The labor market adjustment to an excess supply of labor could lower  $v$  and  $v_r$ . In other words, the production process would become more labor intensive. This would cause  $G_j$ ,  $G_a$ ,  $G_w$ , and  $G_p$  to rise to equality with  $n$ , the natural rate of growth.<sup>10</sup>

8. Keynes and many Keynesians emphasized the possibility that either a liquidity trap or an interest inelastic demand for investment could keep this adjustment mechanism from equilibrating the economy.

9. The Harrod-Domar model is stable for random disturbances from the equilibrium path for heteroscedastic shocks. See Kiernan and Madan (1989).

10. Keynes contended that wage rates are rigid and that rigid wage rates could be beneficial to the economy when

Thus if labor and capital intensity can be varied and capital and labor markets exist, are perfectly competitive, and adjust instantaneously to disequilibrium, then  $G_j = G_a = G_w = G_p = n$  will always hold. In other words, full employment, equilibrium growth occurs. This is, of course, the world of neoclassical growth economics where the rate of growth depends on  $n$ , the rate of growth of labor.<sup>11</sup> If one allows for an exogenous rate of technical change,  $m$ , then the overall rate of growth depends on  $n$  and  $m$ . The saving rate cannot, in the long-run, affect economic growth.<sup>12</sup>

Of the two models, neoclassical and Keynesian, the latter seems to be most appropriate for analyzing the problems of less developed countries. In these countries capital markets may not exist or, if they do, may function imperfectly. In addition, labor markets may not exist, especially in rural areas, and where they do they may again be subject to significant distortions.

The recognition of incomplete markets and other sources of rigidity has led to the formulation of two types of development theories. The first type calls for market reform and liberalization. The second type accepts the existence of these rigidities and calls for action that could make the economy perform better within its existing structure. Both types of theories will be illustrated within the context of the dynamic Keynesian model.

#### IV. Low Saving

Low saving could be the result of an unfavorable income distribution, the lack of adequate rewards for saving and numerous related reasons. For example, Shaw has argued that financial repression of capital markets in less developed countries has led to serious economic problems.<sup>13</sup> He argued that many less developed nations have repressed the real growth of the financial system through a variety of policies. For example, limiting the rates that can be paid on loans and consequently to depositors within an inflationary environment very often leads to low or negative rates of return. This financial repression reduces saving and prevents the efficient allocation of the saving that does occur. A policy of financial reform and liberalization will both increase saving and improve its allocation among investment alternatives.

In the simple Keynesian model outlined in this paper, financial repression could result in an interest rate below equilibrium with planned investment exceeding saving. The result is

aggregate demand falls. This point was emphasized by Leijonhufvud (1968) and incorporated into general equilibrium models. See Malinvaud (1977) and Solow (1980). In these models the type of disturbance determines whether a decline in the wage rate will reduce unemployment in models with quantity adjustments in the sense of Clower. For demand shocks a decline in the wage rate will increase unemployment. It is only for supply shocks that a lower wage rate reduces unemployment.

11. See Solow (1970).

12. The growth models called the "New Growth Theory" endogenize both savings and the rate of technical change.

In these models, savings is suboptimal. For textbook treatments of such endogenous growth models see Barro and Sala-I-Martin (1995), Grabowski and Shields (1996) and Jones (1998).

13. See Shaw (1973) and McKinnon (1973).

of course a shortage of saving and disequilibrium. Investment must be rationed because planned investment exceeds the investment that can occur. Financial liberalization would allow interest rates to clear the market resulting in planned investment and saving being equal. Thus, this source of disequilibrium would be reduced.

Low saving rates have been placed by many economists as the key problem for less developed countries in obtaining higher growth.<sup>14</sup> In terms of the Keynesian growth model  $r > s$ , planned investment exceeds saving. As a result, there is a capacity shortage, i.e.,  $Y > Q$  and  $v_r < v$ . Thus, we have a flow equilibrium,  $G_d = G_w$ , but not a stock equilibrium. The situation can be summarized as

$$\frac{s}{v_r} > \frac{r}{v} = \frac{s}{v_r} = n > \frac{s}{v}, \quad (10)$$

with  $r > s$  and  $v > v_r$ . This situation cannot last long in that aggregate demand is growing faster than real capacity. The likely result is inflation with the real rate of growth being constrained by the real growth in capacity, measured by  $s/v$ . If additional saving could be found,  $s$  would rise and the shortage of capacity would begin to decline,  $v_r$  will rise. Eventually,

$$\frac{r}{v_r} = \frac{r}{v} = \frac{s}{v_r} = \frac{s}{v} = n, \quad (11)$$

with  $r = s$  and  $v = v_r$ . As the reader will note, it is being assumed that  $r$  is large enough such that  $\frac{r}{v} = n$ . In other words, if savings could be obtained to finance investment, the natural rate of growth could be obtained. Again, the problem here is not the lack of investment, but the lack of saving.

Many theories have dealt with the process by which saving can be increased. One of the best known theories comes from the work of Lewis on dualistic development.<sup>15</sup> This approach was elaborated and extended by Ranis and Fei.<sup>16</sup> Basically the economy is divided into two sectors: modern and traditional. The modern sector uses capital, saves, and maximizes profit, while the traditional sector does none of these things. The key to growth in these models is to transform the nation from low to high saving. This occurs by increasing the relative importance of the modern sector. Simply put, society's income or output must be concentrated into the hands of those who will save and accumulate capital. In these models of dualistic development, those who save are the owners of capital in the modern sector. It should be noted that those who own the capital could be individuals making up the capitalist class or the state.

14. See Nurkse (1953).

15. See Lewis (1954).

16. See Ranis and Fei (1964).

Of course domestic saving can be augmented by foreign saving. Specifically, foreign private saving can be made available to less developed nations through direct investment, portfolio investment, and commercial bank lending. There are few issues in development economics that generate as much controversy as the role and impact of such activities, especially direct investment on growth in less developed countries. Direct investment generally involves multinational corporations that, supporters argue, provide much needed saving, employment opportunities, and new technology.<sup>17</sup> In terms of the Keynesian model, proponents believe that foreign savings will increase  $s$  in Equation (10) which permits a more rapid rate of growth absorbing more of the growing labor force. In addition, the new technology augments the natural rate of growth to

$$n' = n + m, \quad (12)$$

where  $m$  is the rate of technological progress.

Critics of multinational investment argue that these firms tend to invest in capital intensive sectors and utilize more capital intensive technologies.<sup>18</sup> This tends to raise  $v$  in Equation (10), offsetting, at least partly, the rise in  $s$  brought about by multinational investment. Some even argue that little net contribution to saving is actually made since much of the profits earned are repatriated to the home country. As a result, the critics maintain that investment by multinational corporations may actually harm less developed countries.

Foreign aid can also provide foreign savings to less developed countries. Obviously, this would increase  $s$  in Equation (10), raising overall growth. If enough foreign aid is made available, then the natural rate of growth could be obtained.<sup>19</sup> Critics of foreign aid have argued that foreign aid merely substitutes for domestic saving by permitting increased consumption.<sup>20</sup>

## V. Low Investment

All of the above theories have been based upon the notion that it is a lack of saving which is limiting the economic growth of less developed nations. Another line of thinking is based upon the idea that it is a lack of investment, and a lack of demand that inhibits economic development. In terms of the Keynesian growth model  $s > i$ , saving exceeds planned investment. As a result, excess capacity develops, i.e.,  $Y < Q$  and  $v_r > v$ . Thus, we have a flow equilibrium,

$G_a = G_w$ , but not a stock equilibrium. The situation can be summarized as

17. See Vernon (1972) and Vernon (1971).

18. See Santos (1970) or Müller (1979).

19. See Gillis, Perkins, Roemer, and Snodgrass (1983).

20. See Griffen and Enos (1970).



$$\frac{r}{v_r} < \frac{r}{v} = \frac{s}{v_r} < \frac{s}{v} = n, \quad (13)$$

with  $v_r > v$  and  $s > r$ . Thus, growth is being constrained by the lack of investment or demand. Note that it is being assumed that  $s$  is large enough so that  $s/v = n$ . More intuitively, if savings could be fully utilized, the natural rate of growth could be attained.

The lack of investment might be due to the fact that no potential investor anticipates investment by others and therefore none of them anticipates a market large enough to justify an investment. For example, if a shoe factory is built, workers are trained and income is generated as a result of production. The workers only spend a portion of their income on shoes and the shoe factory finds that it is not possible to sell all of its shoes. If, however, a wide range of industries are established simultaneously, then a large enough market would be established so that all of the firms would be able to sell their output.<sup>21</sup> This sort of approach has been labeled the balanced growth or big push theory of economic development. The key is to raise  $r$ , through an across-the-board program of investment.

There have been many critics of the balanced growth theories. Most of them involve the notion that if a less developed nation could carry out such a scheme it would not be less developed. That is, most of these societies do not have the managerial and innovational attitudes and capability and the initial necessary productive complex to carry out such a program. Much of Hirschman's theoretical work is concerned with this type of situation.<sup>22</sup> There are four features of less developed countries that are important in this view of development. First, there is an inadequacy of entrepreneurship. Second, there is often excess capacity in the economy. In terms of the Keynesian model outlined above,  $r$  and  $s$  are insensitive to interest rates with  $r < s$ . Furthermore,  $r$  is rigid, because of the habitual behavior of entrepreneurs, so that the economy is equilibrated by excess capacity,  $v_r > v$ . This excess capacity is hidden because much of what appears to be planned investment is really an unproductive use of capital. Third, and largely outside the model, demand cannot be created by export expansion because the demand for exports is inelastic. Fourth, the reason for slow growth is not a lack of saving. Saving may be more than sufficient to achieve the natural rate of growth. The problem is low investment and a low actual rate of growth. Thus Equation (13) is relevant.

Investment opportunities must be created in this demand oriented view by encouraging investment by local producers. There are two ways in which this investment can be encouraged. The first is through what Hirschman calls forward linkages. A forward linkage refers to the supply of intermediate inputs to production. For example, electricity is an input to many products. Building a hydroelectric dam (through government spending) could lower the cost of production for many industries and perhaps induce producers to invest in some of these industries, which will raise  $r$  in the Keynesian model. The second way of increasing investment involves establishing industries characterized by backward linkages. Industries with backward linkages make use of inputs from other industries. For example, automobile

21. See Rosenstein-Rodan (1943).

22. See Hirschman (1958).

manufacturing involves the use of the products of machinery and metal-processing plants, which in turn make use of steel. Building an automobile manufacturing plant will therefore create demand for machinery and steel and local entrepreneurs may be stimulated to set up their own plants,  $r$  will rise.

In summary, Hirschman sees the development process as inherently unbalanced. In fact, the government's role in the early process of development is to deliberately unbalance the economy so as to stimulate the development of entrepreneurship and thus to create additional investment. Within the context of export pessimism, one way of doing this is to place restrictive tariffs on selected industries in the hope that domestic production will fill the gap. This strategy, called import substitution, has reputedly been widely practiced in less developed nations.

The rationale for such a strategy is that it could stimulate demand in areas where the economy could respond. The resulting increase in investment would increase  $r$  and reduce  $v_r$ , resulting in higher aggregate rates of growth. This success depends, however, on the assumption that the economy is characterized by excess capacity and a lack of entrepreneurship. As long as import substitution increases  $r$  for  $G_a < \frac{s}{v}$ , the import

substitution strategy could increase growth rates. Once  $\frac{r}{v} = \frac{s}{v}$ , however, increased investment in one sector competes directly with investment in other sectors for available savings.

A number of criticisms have been made of the import substitution strategy for development. It is argued that a strategy of import substitution is inefficient. Obviously, it may lead to an allocation of resources that is inconsistent with existing comparative advantage. However, if there is excess capacity, as illustrated in the Keynesian growth models, import substitution might result in higher output of all goods by employing unused resources and entrepreneurial abilities. This, of course, is very similar to the infant industry theory. As domestic producers gain experience in production they will learn by doing and costs will fall and production rapidly expand. Another way of saying this would be that by protecting certain industries, entrepreneurial skills are stimulated, investment expands, and overall growth rises.

Of course it could be argued that there are less costly ways to stimulate the demand for particular goods, i.e., protect certain industries.<sup>23</sup> Specifically, it is now commonly accepted that if a country seeks to promote the production of a particular commodity, subsidies are a much more efficient way to do so. In static terms, a tariff imposes both production and consumption costs. Specifically, resources are allocated in a manner contrary to current comparative advantage and consumers are forced to pay a higher price for the commodity. The advantage of using a subsidy is that it does not impose the consumption cost on society. However, the revenue for the subsidy must be raised through some sort of neutral tax, neutral in the sense that it does not affect the allocation of resources. Examples of such a readily applied tax are difficult to find. A further problem is, of course, carrying out such a subsidy,

23. See Johnson (1965).

tax scheme may be beyond the capabilities of many less developed nations. Thus the use of tariffs or quotas may, at least in the early stages of development, be the only viable alternative.

The limits to an import-substitution strategy are indeed obvious. The extent to which demand can be stimulated is ultimately limited to the size of the domestic market. If complete substitution has occurred and there is still excess capacity, then the economy must turn outward. The import substitution strategy provided incentive for production for the home market. Now, incentives must be provided to produce for foreign markets. The source of the growth, demand or investment stimulation, does not change, but the means for carrying it out must. In other words, the nation must move from a policy that discriminates in the favor of domestic production to one that is neutral with respect to production for home or foreign markets.<sup>24</sup>

The above is sometimes labeled the export promotion, export substitution, or outward oriented model of economic growth. This type of development model should not be identified with a laissez faire approach. The same arguments previously made concerning the existence of excess capacity and the possibilities of learning by doing apply to production for export as well. It will likely be necessary to subsidize certain exports in order to induce farmers and manufacturers to invest in production for export markets. However, these policies will likely involve direct subsidies, tax relief, import duty rebates, and reduced interest rates. Also, exchange rates must provide incentives for domestic producers to sell their crops, manufactures, and services on world markets.<sup>25</sup>

It should be emphasized that export promotion and import substitution are not opposites. They are simply alternative ways of stimulating investment when resources are underutilized. It is perfectly reasonable for a country to begin substitutions for an imported product and then switch to export promotion. Also, it is perfectly consistent for a country to follow import substitution for some goods and export promotion for others.

Obviously, once the equilibrium natural rate of growth is attained, either as the result of increased savings or investment, further growth must also result in increases in the natural rate of growth. Within the simple model outlined in the previous section this can only be achieved by raising the population growth rate. In a more complex model, this can also be achieved by increasing the rate of technical change.

## **VI. Low labor Absorption**

Low labor absorption caused perhaps by distortions in the labor market have, according to many, played an important role in the poor performance of many less developed countries. With respect to the labor market, it is argued that the wage rate for unskilled labor in the modern sectors of many nations is frequently above social opportunity costs due to minimum wage legislation, labor union pressure, and the wage policies of foreign

24. A. Kruger actually argues that incentives should be tilted towards production of export. See Kruger (1980).

25. For recent studies of the trade regimes of ten countries, see the volumes by Krueger (1978) and Bhagwati (1978).

corporations operating in those countries.<sup>26</sup> As a result, firms are induced to use techniques that are capital intensive in nature. Thus the growth in employment opportunities is sharply reduced and the impact of economic growth on poverty sharply reduced. One solution is again market liberalization in which the wage rate reflects the social opportunity cost of labor. Another solution is to provide incentives to invest in more labor using, capital saving techniques.

In terms of the Keynesian model, policies that raise the cost of labor above social opportunity costs reduce the labor intensity of production. In an environment in which excess capacity does not exist,  $v = v_r$ , this raises  $v$  and  $v_r$  such that  $G_j = G_a = G_w = G_p < n$ . Growth would fail to absorb the growing supply of labor. Liberalization would reduce the cost of labor relative to capital, reducing  $v$  and  $v_r$ . Thus,  $G_j$ ,  $G_a$ ,  $G_w$ , and  $G_p$  would rise to equality with  $n$ . As a result, growth would generate more employment opportunities and have a more important role to play in reducing poverty.

Of course, the success of market liberalization policies depends upon the flexibility of existing production technologies. It may very well be that the elasticity of factor substitution of the existing technology, for the types of goods currently produced, may be very low. Thus, policies aimed at market liberalization may generate very little change in the factor proportions actually used in less developed countries. The techniques of production used are most often developed in the industrialized nations, which are relatively capital abundant and labor scarce. As a result, available technologies are likely to be capital intensive in nature.<sup>27</sup>

The solution to the above problem is of course to promote the use of appropriate technologies. This can be done through a variety of mechanisms. For example, governments could encourage a shift in the composition of goods produced. Thus, the production of labor intensive goods could be encouraged. In addition, resources could be used to adapt foreign technologies or to develop altogether new technologies more appropriate to the needs of less developed countries.<sup>28</sup> Again, these appropriate technologies are aimed at reducing  $v$  and  $v_r$ .<sup>29</sup>

## VII. Conclusions

In development economics we are often confronted with an overwhelming number of theories that do not seem to fit a consistent overall framework. It was argued in this paper that a Keynesian growth model can provide such a consistent framework when the possibility of persistent excess capacity is introduced into the model. Specifically, much of development theory can be divided into the emphasis placed on three basic impediments to growth and obtaining equilibrium where  $G_j = G_a = G_w = G_p = n$ . First, there are those theories that emphasize a lack of saving, which restricts growth, and thus propose mechanisms for

26. See Wayne Nafziger (1984).

27. See Edwards (1974).

28. Ibid

29. Caution needs to be exercised in introducing changes in production technique into dynamic models like this. See Shields (1989).

augmenting saving. Second, theories emphasizing a shortage of investment and thus the existence of excess capacity. Third, there are theories emphasizing inadequate labor absorption and the need to develop or employ labor by using capital saving technology.

There are two basic ways of analyzing these obstacles to equilibrium. First, there are theories aimed at market reform and liberalization. These theories assume that there are specific and removable obstacles to smoothly functioning markets. Once these obstacles are removed, the economy will perform better. The required changes might be viewed as simply a change in government policy away from market intervention on behalf of some group or class, as an institutional change or as the provision of a key public good. Second, there are theories that take structural problems as given and analyze the process of development within these constraints. In other words, the lack of efficiently operating labor or capital markets are taken as institutional parameters causing  $G_a \neq G_p \neq n$ . It is of course recognized that these institutional parameters will slowly change partly as a result of the development process. However, ignoring the existence of obstacles to smoothly operating markets or minimizing their intransigence to change may cause counter productive policy. The development process itself may be the major cause of more smoothly operating markets. The essence of Keynesian Economics is the belief that the development process is served better by pursuing policies that enhance growth with existing obstacles than by simply trying to remove these obstacles in the hope that development will then occur.

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