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## Introduction

The theory of 'big push' first put forward by P.N. Rosenstein-Rodan is actually a stringent variant of the theory of 'balanced growth'. The crux of this theory is that the obstacles of development are formidable and pervasive. The development process by its very nature is not a smooth and uninterrupted process. It involves a series of discontinuous 'jumps'. The factors affecting economic growth, though functionally related with each other, are marked by a number of "discontinuities" and "hump."

Therefore, any strategy of economic development that relies basically upon the philosophy of economic "gradualism" is bound to be frustrated. What is needed is a "big push" to undo the initial inertia of the stagnant economy. It is only then that a smooth journey of the economy towards higher levels of productivity and income can be ensured.

Unless big initial momentum is imparted to the economy, it would fail to achieve a self-generating and cumulative growth. A certain minimum of initial speed is essential if at all the race is to be run. A big thrust of a certain minimum size is needed in order to overcome the various discontinuities and indivisibilities in the economy and offset the diseconomies of scale that may arise once development begins.

According to Rosenstein-Rodan, marginal increments in investment in unrelated individual spots of the economy would be like sprinkling here and there a few drops of water in a desert. Sizable lump of investment injected all at once can alone make a difference.

### **Rationale for the Big Push:**

The basic rationale of the 'Big Push' like the 'Balanced Growth' theory is based upon the idea of 'external economies'. In the theory of welfare economics, external economies are defined as those unpaid benefits which go to third parties. The private costs and prices of products fail to reflect these. And the market prices have to be corrected if an account of these external economies is to be taken. However, the concept of external economies has a different connotation in growth theory. Here, they are pecuniary in nature and get transmitted through the price system.

To explain the emergence of such external economies and their transmission, let us consider two industries A and B. If the industry A expands in order to overcome the technical indivisibilities, it shall derive certain internal economies. This may result in the lowering of the price for the product of the industry A. Now if the industry B uses A's output as an input, the

benefits of A's internal economies shall then be passed on to the industry B in the form of pecuniary external economies. Thus, "the profits of industry B created by the lower prices of product. A call for investment and expansion in industry B, one result of which will be an increase in industry B's demand for industry A's product. This in turn will give rise to profits and call for further investment and expansion of industry A."

Following such a line of argument, Prof. Rosenstein-Rodan contends that the importance of external economies is one of the chief points of difference between the static theory and a theory of growth. "In the static allocative theory there is no such importance of the external economies. In the theory of growth however," remarks Prof. Rodan, "external economies abound because given the inherent imperfection of the investment market, imperfect knowledge and risks, pecuniary and technological external economies have a similarly disturbing effect on the path towards equilibrium."

Now, the basic contention of the "big push" theory is that such a mutually beneficial way of output expansions is not likely to occur unless the initial obstacles are overcome. There are "non-appropriabilities" or "indivisibilities" of different kinds which if not removed through a "big push" will not permit the emergence and transmission of 'external economies' – which lie at the back of a self-generating development process.

Associated with the removal of each set of indivisibilities is a stream of external economies. A 'bit by bit' approach to development would not enable the economy to cross over certain indivisible economic obstacles to development. What is required is a vigorous effort to jump over these obstacles. As such, for the economy to be successfully launched on the path of self-generating growth a "big push" in the form of a minimum size of investment programme is necessary. In essence, therefore, an all-or-nothing approach to development is stressed in big-push approach to development.

### **Requirements for Big Push:**

The hallmark of the 'big-push' approach lies in the reaping of external economies through the simultaneous installation of a host of technically interdependent industries. But before that could become possible, we have to overcome the economic indivisibilities by moving forward by a certain "minimum indivisible step". This can be realised through the injection of an initial big dose of a certain size of investment.

Prof. Rodan distinguishes three kinds of indivisibilities and externalities with a view to specify the areas where big push needs to be applied.

### **They are:**

- (i) Indivisibilities in the production function, i.e., lumpiness of capital, especially in the creation of social overhead capital.
- (ii) Indivisibility of demand, i.e., complementarity of demand.
- (iii) Indivisibility of savings, i.e., kink in the supply of savings.

Let us study each of these individually so as to bring out their importance in providing a self-generating stimulus to the development process.

### **(i) Indivisibilities in the Production Function:**

Prof. Rodan argues that it is possible to generate enormous pecuniary external economies by overcoming the 'indivisibilities of inputs, processes and outputs.' The emergence of such externalities would bring about a wide range of increasing returns. To corroborate his contention he cites the case of United States. He feels that the fall in the capital-output ratio in U.S.A. from 4:1 to 3:1 over the last eighty years was chiefly due to the increasing returns made possible by the levelling down of production indivisibilities.

The most important case of indivisibilities and external economies on the supply side resides in the social overhead capital which is now called infrastructure. The most important effect of jumping over this indivisibility is the "investment opportunities created in other industries". Social overhead capital consists of all the basic industries such as transport, power, communications, and such other public utilities.

The construction of these infrastructures involves 'lumpy' capital investments. And the capital-output ratio in the social overheads is considerably higher than in other industries. Moreover, these services are only indirectly productive and involve long gestation periods. Besides, their "minimum feasible size" is large enough. As such it is well-nigh difficult to avoid excess capacity in these, at least in the initial periods. Above all, there is a "minimum industry mix of public utilities" that must be required to divert at least 30 to 40 per cent of their total investment in the creation of social overhead capital.

In this view, therefore, it is possible to distinguish four types of indivisibilities of creating social overhead capital.

**They are:**

#### **(a) Indivisibility of Time:**

The creation of social overhead capital must precede other directly productive industries so that it is irreversible or indivisible in time.

#### **(b) Indivisibility of Durability:**

The infrastructures generally last long. The overhead capital with lesser durability is either technically not feasible or is very poor in efficiency.

#### **(c) Indivisibility of Long Gestation Periods:**

The investments in social overhead capital, by all counts, involve a highly protracted period of time for their fruition as compared with investments in other directly productive channels.

#### **(d) Indivisibility of an Irreducible Industry Mix of Public Utilities:**

Social overhead capital must grow collectively. There is an irreducibly minimum industry mix of different public utilities that have to be created all at one stroke.

As it is impossible to import the infrastructures, they have got to be produced domestically. And because of the existence of above explained indivisibilities, it is necessary to make 'lumpy' investments in them. And their creation is a precondition to the investments in directly productive and other quick-yielding productive activities. Only then the way for a self-

generating economy can be paved. Thus the absence of adequate social overhead capital constitutes the most important bottleneck in the development of developing countries.

**(ii) Indivisibility of Demand:**

This refers to the complementarity of demand arising from the diversity of human wants. The very fact that there is an indivisibility of complementarity of demand requires simultaneous setting up of interrelated industries in countries to initiate and accelerate the process of development.

Indivisibility of demand generates interdependencies in investment decisions. As such, if each investment project was undertaken independently, it is in most cases likely to flop down. This is because individual investment projects generally have “high risks because of uncertainty as to whether their products will find a market.” This point can be clarified with the help of the following well known example given by Rosenstein-Rodan for a closed economy.

To start with, let us suppose that 100 disguisedly unemployed workers in an underdeveloped country were withdrawn and employed in a shoe factory. The wages of the newly employed workers would provide an additional income to them. Now, if they spend all their newly received purchasing power on the shoes, an adequate market for the shoe industry would be ensured. As a result, the industry would succeed and survive.

But the fact is that human beings having diversity of wants cannot simply afford to survive simply by the consumption of shoes and nothing else. As such, they will not spend all their earnings on the purchase of shoes. The market for the shoe industry will, therefore, remain limited as before. Therefore, the incentives to invest will be adversely affected. As a result, the shoe factory investment project might end in a fiasco.

Now let us make a somewhat different assumption to see how an atmosphere congenial to the undertaking of investments can occur. Suppose that instead of only 100 workers being engaged in the shoe factory, 10,000 workers are put to work in 100 different factories producing a variety of consumer goods. These new factories provide larger employment and thus purchasing power to their workers. There is an increase in the total volume of purchasing power and the total size of the market. This is because the “new producers would be each other’s customers”.

In a way, what has happened is that due to the complementarity of demand, the risk of limitedness of market is greatly reduced. The result is that the incentives to invest are increased. “Thus provided that the total volume of employment and purchasing power is increased by a minimum indivisible step, each factory Will have enough market to reach full capacity production and the point of minimum cost per unit.”

We, therefore, find that the indivisibility of demand requires the simultaneous production of a “bundle” of large number of wage goods on which the newly employed workers could spend their income. That alone would ensure adequate market for the product of each producer. In terms of investment the implication is that “unless there is assurance that the necessary complementary investments will occur, any single investment project may be considered too risky to be undertaken at all.”

This, as Prof. Higgins remarks, results into indivisibility in the decision-making process. A large-scale investment programme based on complementarity of demand undertaken as a unit

may bring forth large increases in national income. But each of the individual investment projects undertaken singly may not fructify at all.

The essence of the whole analysis is that a high minimum quantum of investment in interdependent industries is needed to overcome the indivisibility of demand and hence that of decision-making. That, according to the big push theory, is the only reliable way of overcoming the smallness of the market size and low inducement to invest in the developing economies.

**(iii) Indivisibility in the Supply of Savings:**

A high minimum package of investment cannot be undertaken without an adequate supply of savings. But it is not possible to have such high volume of savings in underdeveloped countries due to an extremely low price and high income elasticities of the supply of savings. The savings are low primarily because incomes are low. This, thus, constitutes the third indivisibility. "The way out of the vicious circle," remarks Rosenstein-Rodan, "is to have first an increase in income and to provide mechanisms which assure that in every second stage the marginal rate of savings will be very much higher than the average rate of savings." The Smithian advice that 'frugality is a virtue and prodigality a vice' has to be adapted to a situation of growing income." But in the ultimate analysis the initial big increase in income has got to be provided through an initial big increase in investment.

The existence of the three indivisibilities outlined above make it abundantly clear that the solution to all these lies in a high minimum quantum of investment. Thus, a big push through a minimum indivisible step forward in the form of a high minimum quantity of investment could alone make it possible to jump over the economic obstacles to development in the underdeveloped countries.

Lastly, Resenstein-Rodan considers the role of international trade vis-a-vis the strategy of big push in generating a self-sustaining process of development. In this regard he is of the view that international trade cannot be a substitute for "big push." The provision of some of the needed wage goods through imports can at best help in narrowing down the range of fields which call for a 'big push'. The historical experience provided by the nineteenth century corroborates Rosenstein- Rodan's conclusion that international trade cannot by itself obviate the need for 'big push' altogether.

Once the process of development by an initial application of 'big push' is underway, its sequel course would tend to follow simultaneously three sets of balanced growth relations.

**They are:**

- (i) A balance between the social overhead capital and the directly productive activities (in both the consumer and capital goods sectors).
- (ii) A vertical balance between capital goods and consumer goods (including the intermediate goods).
- (iii) Lastly, there should be the horizontal balance between various consumer goods industries due to complementary nature of expanding consumer demand.

### **The Need for Balanced Growth of Centralised Planning:**

The mutual benefits arising from the external economies for industrialisation cannot be included in the cost calculations of entrepreneurs to the fullest possible extent without recourse to some sort of centralized 'balanced growth' planning. This is because of a number of reasons. First, due to the imperfections in the market, the free market price system does not adequately give proper signal to the private investors for the future possibilities of expansion in complementary industries.

Second, in developing countries due to the imperfections of knowledge and risks, the response of the private entrepreneurs to any given price signal is quite imperfect and unsatisfactory. Thus, due to the failure to take advantage of the external economies to the fullest extent, investments which may be profitable in terms of 'social marginal net product' remain unprofitable in terms of 'private marginal net product'. In this view, therefore, there is a need for an integrated investment scheme to be carried out in complementary industries. The best way to do that would be to carry out the investment programme under the direction of some centralised planning authority. An individual entrepreneur in a developing country cannot hope to have all the necessary data which the central planning authority can draw upon.

The crash programme of investment envisaged by the 'big-push' theory cannot by its very nature be made just at random. It has to take into consideration the various balances – horizontal as well as vertical. Only then could the achievement of self-generating, cumulative and harmonious growth of the economy is possible. For this what is necessary is a unified decision-making process. "Allocation of capital," remarks Prof. Higgins, "on the basis of individual estimates of short-run returns on various marginal investment projects is the very process by which the underdeveloped countries got where they are."

The basic reason for government action to promote development is that each of a set of individual private investment decisions may seem unattractive in itself, whereas a large scale investment program undertaken as a unit may yield substantial increase in national income." Prof. Rosenstein-Rodan's theory is essentially a theory of development and thus helps us to examine the path towards development rather than restricting itself simply to the study of conditions at the point of equilibrium. The theory highlights the inefficiency of price system of signalling the desirable directions for investment. It is big-push investment through a centralised planning that could put the developing countries on a self-generating development process.

### **Evaluation of Rosenstein's Big Push Strategy:**

However, Prof. Rosenstein-Rodan's all-or-nothing approach is not perfect in itself in all respects. It suffers from a number of lacunae.

First, the main implication of the 'big-push' theory is State intervention and centralised planning. It is argued that due to imperfections of market the free price system fails to register and thus communicate properly the economic events, much less their future course. But the pertinent question involved here is – will the prevailing circumstances of the developing countries warrant a conclusion to the contrary? The actual fact of the matter is that the current institutional and administrative set-up of the government machinery of the poor developing countries is too weak to cope with the dictates of the 'big push' theory. It is, therefore, quite

doubtful whether the government sponsored brand of communication system about the future events would at all be more effective than the free price mechanism.

The governments of developing countries may somehow manage to draw up their initial integrated economic plans. But they are bound to be faced with tremendous difficulties in the execution of these plans. In any comprehensive programme comprising a complex set of related projects, delays and continued revision of the original time-bound schedules are inevitable. "The greater the interdependence", remarks Prof. Myint, "between the different components of the plan, the greater the repercussions of an unexpected or an unavoidable change in one part of the plan on the rest and the greater the need to keep the different parts of the plans continually revised in the light of the latest information available." These are indeed formidable hurdles for the developing countries to cross.

Besides, on account of the poor and incompetent institutional set-ups of the developing countries, there is bound to be insufficient knowledge about the local conditions and an "inefficient feedback of this vital local knowledge from different parts of the country to the central planning machinery." Mere improvement in the standard type of statistical information would not remedy all this.

Above all, the process of unified decision-making and coordination becomes all the more difficult in mixed economies like India. This is so because not often, the public and private sectors rather than being complementary are in fact competitive with each other. Thus, it may so happen that the "private enterprise is inhibited by uncertainties not only about the general economic situation but also about the future intention of the government regulations."

Thus, it is quite clear that the application of a 'big push' programme in the developing countries with their weak and incompetent institutional and administrative machinery is likely to die its own death. In fact, as Prof. Myint remarks, it can be compared to "an attempt to impose a complete and brand new 'second floor' on the weak and imperfectly developed one floor economy of these countries."

Secondly, the chief plank on which the 'big push' theory is founded is the emergence of a wide range of external economies. Prof. Viner has shown that international trade can provide much more external economies than does the domestic investments. However, the developing countries being primarily primary producing countries, engage a large part of their total investment for their exports and marginal import substitutes, the field where the external economies are found to be very- negligible.

Thirdly, the 'big push' theory concentrates mainly on the industrial sector – viz., capital goods, consumer goods and social overhead capital. The manufacturing sector is considered inherently to be a better vehicle of economic growth. But in the developing countries, the most dominant sector is composed of agricultural and primary production. For a balanced growth of the economy, agriculture also requires a corresponding 'big push'. Any neglect of the agricultural sector in these countries is bound to jeopardise the 'big push' effort.

Fourthly, the major part of the 'lumpy' investments involved in the 'all-or-nothing' approach is called for by the 'technical indivisibilities' embodied in the creation of social overhead capital. Not only is the quantum of investment enormously 'lumpy' but also the capital-output ratio high in the provision of social overhead services than in other directions. Thus, due to the inherent capital scarcity in the developing countries, it is really a matter of dubious wisdom to

require these countries to overstrain their meagre resources in the provision of a complete outfit of infrastructures.

The 'big push' theory recommends a 'starting from scratch' concerted action in the creation of social overheads. This is on the implicit assumption that these services are totally non-existent in these economies. However, for most of these countries, remarks Prof. Myint, "the practical question is not whether to have a completely new outfit of these services starting from scratch but how to extend and improve the existing facilities."

Further, the 'big push' theory by its very nature requires the 'lumpy' investments in different social overheads to be made simultaneously and once for all. With the very long gestation periods usually associated with such investments, there are bound to be inflationary pressures in the economy due to the shortage of consumption goods. In an inflationary atmosphere, the process of construction of the social overheads is bound to be a protracted one. In this light it would be better to spread the infrastructure-building activity over a period of time through phasing and changing the time dimension of the projects. This requires selection of a suitable economic size of the social overhead investments.