NATIONAL POLICY AND BIG-PUSH THEORY OF DEVELOPMENT IN NIGERIA: MOVING AWAY FROM LOW-LEVEL ECONOMIC EQUILIBRIUM

Abstract. The paper analyzes the policy implications of the big-push model for development in Nigeria. The highlights of the analysis include existence of three interrelated perceptions namely, poverty trap, big push (BP) and takeoff. The basic idea is that poor countries are in poverty, hence needs BP linking amplified investment, leading to takeoff in national income and development. This indeed rationalizes necessity for overseas aid. In effect, minimum infrastructure and educational resources be apportioned to development programme to achieve success. However, nations that have implemented coordinated investment programs can achieve industrialization of each sector and thus be able push forward sequence of development.

Keywords: development, big-push, take-off, infrastructure, Nigeria

1. Introduction

Theory of “BP” model of development which is credited to Rosenstein-Rodan (1943), stresses firm's decision to industrialize depends on expectation of what other firms would do. To this model, through “bit by bit” distribution, no economy can transit path of economic development, rather a definite amount of investment should be earmark for economic development. It upholds cost-cutting and oligopolistic market structure in clarifying option of industrialization.
1.1. “BP” Theory of Development

With the “BP” theory, countries needed to jump from underdevelopment to development by huge volumes of investments in infrastructure and education. It holds as a policy relating to high minimum investment to suppress impediments to development in developing nations and kick start it in the pathway of progress.

Crux of the theory is that only a big and wide-ranging investment package stimulates economic development, that is, definite amount of resources should be dedicated for developmental programs.

Accordingly, the “BP” theory emphasizes condition for take-off with understanding that a “bit by bit” investment programme will not impact the growth process required for development.

The model put emphasis on underdeveloped countries that they need large investments to propel the path of economic progress from contemporary state of backwardness. The dependence of many mutually supporting industries on each other spurs welfares from economies of scale. Such external economies which are attained through definite investment encourage economic development. Given that developing countries might not invest passably in human capital, it created for an aid-financed “big push” to rejuvenate the economy from low savings.

1.2. Indivisibilities of “BP” Model of Development

The “BP” theory recognizes three indivisibilities for developing countries. These indivisibilities lead to marginal economies. Hence provides aid-financed “BP”.

1.2.1. Indivisibility in Production Function

The indivisibility leads to increasing returns which is made manifest in economies of scale and could necessitate a high size of a firm. This is achievable in developing nations meanwhile at minimum optimal measure firm can be established in many industries. Then, investment in social overhead capital includes investment in industries like power, transport or communications which can be places ahead of productive investment activities.

The capital requirements for social overhead cannot be possibly imported from nations elsewhere making provision for about 30 to 40% of total investment undertaken by underdeveloped countries needs to be made in social overhead capital (Collier, 2004; Graham and Temple, 2004).

1.2.2. Indivisibility of Demand

Given that unindustrialized countries are described by their low per-capita income, purchasing power and small markets. An ample number of industries need to established so that
people can be gainfully employed, consume output of other industries and create complementary demand.

Consider that Nigeria makes enormous investments in “power” sector. All the disguisedly engaged labor from the other industries finds work and source income leading to rise in production of “power” and own incomes.

This increased income is not expended only on “power” purchase. Increased incomes will lead to increased spending on other commodities within the economy. Though, no equivalent supply of these other goods to satisfy the increased demand. In line with the basic market forces of demand and supply, the prices of these other goods will increase. So, investment will be spread between different industries.

In the open developing economy, new industrial output substitutes former imports and find market through exports. The analysis is straight forward: despite world market serves as a substitute for domestic demand, a “big push” investment is still required, although, the necessary size of “BP” could then be smaller given international trade.

1.2.3. Indivisibility in Savings

Going by economic theory, high investment requires high savings. Given that huge investments are made in diverse sectors of developing economy not only once; domestic savings are important for development. Unfortunately, low national income have made savings a challenge to developing economies.

2. How “BP” works to Drive Development

Developing nations are branded by loads of sectors which are small such that any productivity increase of one sector has no influence on the economy. If there are $n$ workers in economy and $N$ sectors. Each sector therefore has $(n/N)$ workers.

By means of outmoded technology, sector would likely produce $(n/N)$ output, with individual worker turn out one unit of the commodity. Using modern technology, a sector produces supplement as productivity exceeds one unit per worker. However, a modern sector would require some workers, say, $g$ to perform administrative tasks.

In Figure 1, production in traditional sector is curve $G$ and production in modern sector is curve $H$. The curve $H$ has positive intercept on the x-axis, implying with zero production; there is minimum of $g$ workers who still remain employed for running administrative activities. With assumption of $(n/N)$ workers, modern sector have more workers. The slope of both production functions is $(1/s)$, where $s$ is the marginal labor vital to yield an additional output.
Payment of Wages: Assume that traditional sector pays workers one unit of output which is afterward spent equally by them in all sectors. The modern sector pays higher wages to workers. Demand for output of each sector is \( D_i = 1/d \) such that:

1. With low wages given by \( w_1 \), a firm which faces demand \( (D_1) \) employs \( n^* \) workers for innovation at cost, \( w_1n^* \). Given that wages are low, it thus implies that \( w_1n^* < D_1 \). Hence, labour costs \( (w_1n^*) \) falls short of earnings \( (D_1) \) and as result, firm makes a profit. This induces the firm to transform even if other firms do not.

2. With high wages given by \( w_2 \), a firm which faces demand \( (D_1) \) will make losses if no other firms choose to modernize. This is because \( w_2n^* > D_1 \). The effect is that labour costs \( (w_2n^*) \) are higher than the earnings \( (D_1) \). However, with innovation, firm’s demand \( (D_2) \) rises, due to high workers’ income of modernized firms. The firm makes profits, \( w_2n^* > D_2 \).
3. BP Model and Coordination Problem

When sectors such as, oil and gas, education, power, agricultural sectors etc. have all together implemented cumulative returns technologies, they all generate income and demand for goods in other forward and backward linked sectors. Such income creation and demand enhancement enlarges market and leads to industrialization.

As it were, the arguments of a big-push investment are further rooted on the:

- interactions between firms across industries,
- interactions between demands and supplies.

These in turn (a) create demand spillovers, (b) increase market size, (c) generate a sustainable growth path that enhances industrialization over agriculture and small-scale production (Misra and Puri, 2010).

The force of “BP” could be history-dependent or expectations-driven. For example, the model has played successful role in Southern American economy through infusion of capital outlay in roads, schools, waterworks, power plants, dams, airfields, hospitals etc.

Coordination problem occurs when countries fail to coordinate its development plans and results in an outcome of underdevelopment leaving economic agents worse off in state of economic stagnation. Hence, coordination failure generate underdevelopment equilibrium. For example, developing nations could fail to coordinate policies of trade liberalization because of fears about the deteriorating effects on their income should any country reneg, whereas if they could all agree to liberalize trade policy simultaneously, all countries would benefit.

Coordination failure most often leads to multiple equilibria, independent market will not take the economy to preferred outcome. Consider that developing country makes its output \( E_i \) decisions based on average output \( E^* \) of other countries.

When home country produces as other countries’ average \( E_i - E^* \), the economy enjoys optimal growth equilibrium. As seen below, the curve of the reaction function represents possible output decisions for the economy, and it intersects 45 degree track at three equilibria.

Given that the domestic country is better off with more output, point “A” equilibrium is optimal and most desirable. However, the country’s production is dogged by what other countries plan to produce.

In an ideal world, all countries could coordinate to produce an output level that corresponds to optimal point “A” equilibrium, but, if they fail to coordinate their plans, they might finish producing at an underdevelopment equilibrium points D and B. Thus, “low effort” equilibrium point, D with “middle-effort” point “B” equilibrium exemplifies a coordination failure as against the high “jointed-effort” point “A” equilibrium arising from coordination.

The relevant question is, “can two developing nations with similar technologies, resources, and policies exhibit differences in development performance? The answer is yes under the condition of a coordination failure. This is diagrammatically depicted below:
Fig. 2. Coordination failure, multiple equilibra
The 45 degrees line represents the situation in which all countries coordinate to make same choices. In presence of coordination failure among complementary industries, the poor economies can never grow. If industrialization is simultaneously achieved, industries are profitable, even though no sector is profitable if it chooses to industrialize singlehandedly. Coordination failure generates underdevelopment trap, poverty trap, middle-income trap and the low-level equilibrium trap.

3.1. Middle Income Trap

This is condition in which an economy begins development only to reach the middle-income level and finds it chronically unable to progress to high-income level. Accordingly, the “middle-income trap” is the occurrence of speedily growing economies stagnating at middle-income level and failing to graduate into the ranks of high-income countries (Galor, 2005).

This tendency is aggravated by low capacity for innovation or low capacity for absorption of advanced technology, and may be exacerbated by high inequality in income. Thus, the “middle-income trap” is indeed exceptional circumstance of growth slowdown, which is identified as sustained deviation from growth path predicted by uncomplicated model of conditional convergence such as Solow growth model.

Eichengren, Park, and Shin (2012), define a growth slowdown episode as one in which three conditions are satisfied:

a) A condition of growth in the preceding period equals 3.5 percent per annum;

b) A condition where the difference in growth between the current and preceding periods equals 2 percentage points each annum; and

c) A condition where the country’s per capita income exceeds US$10,000 in 2005 constant international prices.

In line with growth convergence theories, poor countries tend to grow faster than the rich countries, largely because imitation is easier than invention (Azariadis, Costas, and John Stachurski, 2005; Sachs, 2005). This imply not every poor country of five decades ago has caught up, that is, not every developing country has actually grown.

If every developing country had caught up, all would grow and get developed. In fact, most countries at middle income in 1960 remained so in 2008. Only 4 countries escaped this middle income trap, becoming high-income economies in 2008. One of these successful countries is Greece.

3.2. Underdevelopment Trap

According to Nelson (2012), sickness of infantile economies is detected as equilibrium level of per capita income of a survival measure. Thus, countries remains stuck in subsistence agriculture. In effect, it is a scenario of difficulty to escape poverty in unindustrialized nations characterized with high population growth, little levels of education, simple technologies, insufficient domestic resources, resentment to commercial enterprises and unstable political systems.
3.3. Poverty Trap

This is a self-perpetuating condition where an economy caught in a vicious cycle of low income suffers from insistent underdevelopment. Nurkse (1953) argued that underdevelopment persists because of the slimness of domestic market. This in turn is due to low incomes, low savings, scarcity of goods, low level of capital accumulation, low investment and low productivity.

Poverty trap explains why certain aid programs which cannot provide enough level of support may be ineffective at raising individuals from poverty. Indeed, “poverty trap” is a powerful case for policy activism.

3.4. Low-level Equilibrium Trap

The theory of the “low-level equilibrium trap” states that as per capita income remains below a critical level, a population growth that exceeds the income growth rate will always bring the economy back to a “low-level equilibrium trap of underdevelopment”. The implication is that developing countries dwell in low equilibrium of national income.

3.5. Criticisms of “BP” Model

The “BP” model faces these criticisms.

Difficulties in Implementation: The execution of related projects during the course of industrialization by a range of government parastatals and agencies involved in process of development is difficult. The task of closely coordinating, evaluating and revising plans continuously is challenging for the governments of Nigeria.

Dearth of Absorption: This has to do with weak institutions affecting industrialization programmes and Dutch disease challenge (Misra and Puri, 2010)

Co-existence Problem: Here, operations of private sector are distorted arising from insufficient information on government policies and the general economic situation.

Scarcity of Capital: Developing states are deficient in capital essential to provide the “BP” necessary for prompt advancement. In adequate capital supply poses threat to economic expansion.

Disregards Agricultural Sector: Emphasizes on industry to neglect of agriculture. This is a cavernous flaw in the theory, as this sector is largest and has surplus of labour in developing countries (Nelson, 2012)

Inflationary Gravities: Given the neglect of agricultural sector such that food shortage occurs in addition to investment lag in social overhead capital to yield returns, demand increases in the short-run. This imposes inflationary pressures on the domestic economy. High costs could cause projects to be postponed and the development process in general to slow down.
Disregard for National Restructuring: The “BP” model focuses on indivisibility to the neglect of societal restructurings which are fundamental if nations are to grow based on own resources without communal agitations (Misra and Puri, 2010)

4. Policy Predictions of Big-Push Model for Nigeria

a) Development does not occur via only “BP” of fundamental investment but rather through massive investment in infrastructure and education, elimination of poverty trap plus subsequent take-off which result in social benefits exceeding social costs.

b) Coordinated investment in education, research plus development can generate big push over the required threshold, giving a high human capital and high national output equilibrium. Coordinated failure enhances low national output per person and thus provides an explanation for the underdevelopment that confronts developing countries of the World.

c) Large-scale investment programmes in power, transport, communications and mining are indispensable. Such basic investment has long gestation periods.

d) National (economic) development does not take place mainly through the “BP”. Given economics of the three kinds of indivisibilities, (production, demand plus supply of savings) essentials of development are achieved. Each supports in giving “aid” a central role in economic development.

e) Aid creates support to “BP” investment and the take-off into self-sustained growth. In short, the takeoff is the typical solution to suffering bedeviling developing countries. The “take-off” is an indication of the transition within recent decades from a regime of zero growth to one of stable and high positive growth of per capita income.

4.1. Role of the State

State’s role in this model is to invest in public overhead capital. The government intervention should be such that ensure investment is carried out on those industries that have higher forward and backward linkages. The fact holds that many investments are profitable via social marginal net product but not via private marginal net product. This indeed leaves the private individual entrepreneurs no incentive to invest and take benefit of external economies.

According to UN Millennium Project Repot (2005), developing countries have been in a “poverty trap.” Escaping the trap requires big push of fundamental investment in:

a) public administration,

b) human capital development measured in nutrition, health, education,

c) key infrastructures as roads, electricity, ports, water and sanitation etc.
Consequently, a combination of investments well attuned to indigenous wants and conditions, environmental management, accessible land for affordable housing can enable African economies to halt poverty trap.

5. Conclusion

Three inter-related concepts of the contemporary development model exists. These include the poverty trap, the BP and the takeoff. The basic idea is that poor nations are in poverty, hence needs BP linking intensified investment, leading to takeoff in national development. This certainly justifies necessity for overseas aid.

Hence, for a developing nation like Nigeria to close traps that confronts their developmental course, the following steps are recommended to Government:
1. Improve the techniques of production.
2. Give agriculture and mineral mining some boost.
3. Favor the socio-economic and political environment.
4. Seek foreign aid without embezzlement to support investment.
5. Create more jobs and block leakages.
6. Clean up revenue generating process.
7. Diversify economy from oil and clean up revenue generating process.
8. Increase proportion of capital investment in all sectors.
9. Device policies that could increase domestic savings.
10. Maximum infrastructural and educational funding be apportioned to development programme to achieve success.

Nevertheless, nations that have implemented coordinated investment programs can achieve industrialization of each sector and accordingly push forward passage of development. In Nigeria where private and public sectors co-exist, development environment will not be conducive except there is complementarity between sectors. Otherwise, competition between private and public sectors is mostly induced with government parastatals keeping their plans confidential to avoid speculations.
Bibliography