



## Theoretical Approach of Public Infrastructures' Role in The Economic Growth

### KEYWORDS

economic growth, Government, externality, public infrastructures.

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**ABSTRACT** *The assumption that there is a positive relationship between economic growth and public infrastructures through the state is shared by several schools of thought. While in the process, this thesis differs from one author to another, the one currently in vogue is the endogenous growth model developed by Barro (1990). According to this theory, the positive impact of public services on economic growth can therefore be understood as an incentive to private investment. We come to the conclusion that public infrastructure provide positive externalities useful for productive activity.*

### Introduction

The analysis of infrastructures' role on the evolution of the economical activity has known a great development through time. This fact is particularly due to the polemic aroused by the State's role in the economical sphere. In fact, until the beginning of the twentieth century, the economical trends which follow one another (mercantilism, physiocrat, and classicist) granted little significance to the State in the process of the growth (Darreau and Pondaven, 1998). According to the classicists, especially, the State's interference in the economical mechanism is the source of distortions disrupting the normal functioning of the market.

However, these last years, the public infrastructures' usefulness to the growth of an economy has known a revival of interests. This is fully discussed in the economical literature. The economical works, the reorientation of help efforts towards some forces of growth leading to the reduction of the poverty and the adoption of MDO (OMD) on the occasion of the United States' summit in 2000 have started to rehabilitate the image of the role of infrastructures in the growth process of an economy [(Jacquet P., Charnoz, 2003). In fact, if according to numerous empirical analysis (Brox and Fader (1990), Dessus and Herrera (1996)...)], the infrastructures are perceived as physical capital which allows to the economy to work efficiently and to the main urban and rural services to be produced and distributed, it would be judicious in a theoretical context to have a general idea of the different economical trends which allowed this evolution. It is in this framework that it is necessary to go back to the exploration of certain key concepts of the economical literature before tackling the different approaches of the relation between economic growth and public infrastructures.

### Some key concepts of the economical literature

Trying to report a theoretical phenomenon, logically, implies first of all to define the nature. From that time, the apprehension of the relation between public infrastructures and economic growth requires firstly the definition of certain concepts of which the comprehension proves to be later on important for some analysis. Far from staying on the multiple controversies which arouse these concepts, I will just try to introduce the link with my topic.

### The concept of public infrastructures

The infrastructures are defined as mixed public goods re-

sponsible for the productive activity (Veganzones, 2000). This definition refers to two fundamental notions that must be explained. The question is about the notion of public property and that of externality.

### The notion of public property

A public property is a property which usage is characterized by the double criterion of non-rivalry and non-exclusion. The criterion of non-rivalry of a property implies that its consumption by an economic agent not to deny that of another agent who could simultaneously do the same. In reality, this means that the utilization of this property by an individual does neither affect that of another nor the available quantity. After, comes a total use of that public property which cannot be distributed between varied consumers.

As for the criterion of non-exclusion of public property, it is explained by the fact that any another agent cannot be spared from the profits of its utilization which could not be fragmented. This depends on the nature of this property of which somebody who wishes it can use it.

Settled like that, the criterion of non-rivalry and non-exclusion dedicate the invisible characteristic the public property, which is the impossibility to subdivide it. This characteristic of public property brings sometimes the State to compete to its production and to compete for its production and to intervene in order to eventually regulate its utilization. This is the case of public infrastructures that Hirschman (1958) defines as the goods and services which make possible the economic activity; and of which Hansen (1965) presented an original classification. The author distinguishes the social infrastructures defined as those which function is to maintain and to develop the human capital (like Education, Health and Social Centers) of economical infrastructures that he considers as those of which the characteristic is to participate to the production process. This categorization has recently been taken again by the World Bank (2000) which considers the material and economical infrastructures (Telecommunication, Electricity, Transport, Water and Stabilization), Social infrastructures (Health, Education) and a third element namely the financial sector's infrastructure.

Moreover, in several works, the public infrastructures are considered as factors of production through their ability to

generate externalities.

### The notion of externality

The notion of externality calls on the productive characteristics of public infrastructures. There is externality (or external effect) when the production or the consumption of an agent has a direct influence on the production or consumption of another agent via another canal apart from the market. In another words, there is externality when an economical exchange affects a third and that this effect does not so via the system of costs. In the current literature, the externality can be defined as a set of production of a firm influenced by the action of another agent (Hal Variant, 1999). Next, the word "externality" is used when the activities of an economical agent affect the well being of another agent without an existence of transactions among themselves. When the consequence of the well being is profitable, one may talk of a positive externality, in the contrary, the externality is disastrous. The positive externality actually means a situation in which the third finds again an advantage or profit while the disastrous externality presents a situation in which the third is damaged.

The positive externalities of infrastructures are broadcasted on the whole economy through various mechanisms [(DFID, 2000), (Booth Hanmer and Lovell, 2002)], which depend on both the dynamic demand (infrastructures' expenses are a composite of the demand of investment) and the offer. The infrastructures call first some equipment policies and some public works likely, in the period of contraction of activity or of under-production in relation to the potential of the economy, to have an impact in creating some works and in exercising a positive cyclic effect, they reduce the costs of transaction and facilitate the commercial exchange inside or between the borders; they allow the economical actors to answer to new demands in new areas; they bring down the cost of input necessary for the production of almost all the goods and service, they make profitable some non-profitable activities without them and make more profitable again the existing activities (Jacquet and Charnoz, 2003).

In short, the positive externalities of public infrastructures (State property) are perceived through their favorable actions on the production. The infrastructures' particularity resides in the ability to improve the utilization of other factors of production. It is about here an increase indirect effect of the productivity of other factors of production (Meade, 1952).

### The concept of the economic growth

Here, the concept of the economic growth must be apprehended in a more technical sense. This calls on the notion of production of which it depends on the evaluation.

### The notion of production

The production is an action through which some goods (products or services) are produced and put at the disposal of economical agents for the satisfaction of their needs, in general, solvent. From the economical analysis's point of view, the productive activity has retained the attention of several authors all along history. According to physiocrats, the production is essentially agricultural with this consisting in producing food-stuff and certain useful raw materials for the community. Nowadays, the notion of production changed and became very larger. It embraces all three sectors (primary, secondary and tertiary) of the economic activity. In consequence, by production, one can understand the economic activity which has as object the trans-

formation and the developing of the natural environment in order to obtain goods intended for the satisfaction of the economic agents.

In the sense of the national accountancy, the production can be defined as the activity, organized socially, meant to create some goods and services from some factors of production (work force, capital, etc.) acquired in the market.

This is, in fact, with regard to this consideration that the growth production is analyzed as the reaction of the economic activity facing a variation of a factor or the combination of factors used. This is, in other words, the variation induced by a modification of the structure of production which conditioned the economic growth.

### The measure of the economic growth

To characterize the growth of an economy, the economical analysis retains several indicators among which I can mention the nation's income and the national gross product (NGP), the GDP (gross domestic product), the capital per unit of product, the capital ratio per unit of work or the capitalistic intensity (Ballaro, 2008).

From all the indicators, it is the GDP that seems to be the most used in the economical theory. It is the real growth rate that serves as proxy to the measure of the economic growth. One generally reflects in terms of growth and it is necessary to state precisely the basic period on which the growth rate is defined and most of the time, it is the year. In a formal way, the growth rate can then be defined as the relative variation of the real GDP during two consecutive periods (years).

With these notions defined, I would now tackle the list of economical trends which have highlighted the necessary implication of the State in the economic growth through infrastructures.

### Review of approaches of the link between public infrastructures and economic growth

Taking into account its determining role in the development of an economy, several economists were interested in the concept of economic growth. But all the reflections do not come to the same result. While others, fundamentally the classicists did not find necessary the State's interference in the economic activity, others in contrary thought that the State can likely play a determining role, mostly from the infrastructures. However, in order to beacon this wide theoretical field, it seems useful to have a preliminary general idea on the first economical theories which have dealt with the growth in long term. This seemed more important by way of historical curiosity even if in their founding, these theories marked their aversion to any State's intervention.

### The contemporary theories

The synthesis of the contemporary theories on the economic growth is necessary since it is seen as part of a preamble to the conjecture of the link between infrastructures and economic growth.

### The classicist's theory

The reflection of economists on the economic growth dated back at the beginning of the industrial revolution where they were interested to the progress' condition which implies the material development of the society (Ballaro, 2005). To this preoccupation Adam Smith (1776) answered that the economic growth is a permanent and steady phe-

nomenon which finds its origin in the division of work. He therefore found that besides the Regalian's functions (army, justice, police, diplomacy) that it exclusively dealt with, the State should equally build some infrastructures too little profitable in order to provoke private initiative. While readjusting the thesis of "permanence and steadiness" developed by Adam Smith, David Ricardo (1817), found at his turn that the economic growth (essentially induced by the agricultural activity) in its evolution clashes with the nature's damage (decreased profit of the earth) leading to a stationary state of the economy. Agreeing with Ricardo's position related to the instability of the growth, Malthus (1836) puts forward the idea that in addition of the decrease of the output, there is a necessity to consider other explanatory factors of this situation of instability. He mainly mentions: the demographic pressure, the underlying decline of profit that according to the Marxist analysis is responsible for the breathlessness of the growth.

### The Marxist theory

Marx (1848) prolongs the premise of the value-work to which the classicists became highly attached to. As for Marx, he totally agrees with Ricardo's point of view which is concerned with the accumulation of the excess. Nevertheless, he makes capitalism responsible for that and accuses it of maintaining the irregular aspect of the economic growth. The authors explains that in his abusive quest of profit, capitalism substitutes the capital to the work creating then the unemployment that causes the decline of wages which leads to the fall of the private consumption and consequently that of the demand. The economic growth decreasing as soon as the cycle resumes, this inevitably leads to a situation of capitalism into destruction.

One then agrees with the pioneers who have dealt with the economic growth that this does not depend on the State's interference even if, by way of exception, one admits the role of public infrastructures. It is neither according to the pioneers stable and declines with the time being. But with the consecutive crises especially that of the 1929, the idea of convergence of the economy towards a stationary state, cherished by the classicists, was quickly eclipsed to see the reflection redirected towards the re-focusing of the State's role in the economic activity. This change of course is the starting point of a series of theoretical researches of which Keynes (1936) is the forerunner.

### The traditional approaches of the public infrastructures' role in the growth

Among the former approaches having based their arguments on the likely role played by the State through the infrastructures in the growth of an economy, one may mention the Keynesian approach of the multiplying effect of public expenses and that of Big Push inspired by Rosenstein and Rodan (1943).

### The Keynesian approach

In the breaking off of the classicists' consideration of the State's role in the production process, Keynes (1936) in his "General theory of employment, of interest and of the currency" thinks that to overcome unemployment and to stimulate the productive activity, one of the policies that the State should adopt is the realization of great works. In fact, through this economic policy of great works, it is the public investment in infrastructures that is targeted. The productive effect of this kind of investment is then explained by the fact that the incomes generated by their realization allow to boost the demand of goods and services and to increase then the national product.

The Keynesian multiplying is the macro-economic mechanism through which the public investment in infrastructures affects the production. The economic interpretation which result from this is that the infrastructures bring into play by the State allows compensating for the feeble of private expenses in order to increase the production. One deduces that the realization of the infrastructures by the State generates additional incomes of which one part is spent and the other is saved. This expend part responsible for the rise of the internal inquiry addressed to firms forced to increase their productive capacities, generating the growth of investment and of the work force as well as the wages to distribute. The originality of the Keynesian theory lies in the fact that the extra of public expenses leads to a cumulative effect (a multiplying effect) that encourages more the activity since the incomes are less saved, less imposed and that the consumption's demand is mainly addressed to national firms. To sum up, the realization of infrastructures by the State allows, through the distribution of extra incomes, increasing the demand which at its turn boosts the productive activity (national product). One may then conclude that: the more the State puts itself in the realization of infrastructures, the more the effect on the demand accentuates and the more the economic activity will earn.

One needs therefore to admit that the Keynesian analysis is limitative. His conception of public infrastructures' role in the economic growth takes only into account the short term productive effect. In fact, as admitted by Veganzones (2000), during thirty years, the public investment in infrastructures has been seen as a boosting factor in the demand of an optic of Keynesian tradition and its long productive role is put aside. This insufficiency has consequently inspired Domar (1946) and Harold (1948) in their attempt of prolonging the Keynesian analysis. Domar studies Keynes analysis for a long period on the instability of the market economy. He considers that investment has a double impact on the economy. By his aspect "demand" (multiplier), he determines the income and the global demand, it increases the production capacity. The growth is balanced if the supply equals that of the demand. By introducing the anticipations of the growth in the investment determination, he concludes by stating that the relation determining the growth rate is unstable. Moreover, the investment's multiplying effect is without common measure with its impact on the supply growth (accelerative effect).

After Domar, Harold (1948) takes this analysis again and shows that the economic growth is by nature unstable and that the equality among the effective growth rates ( $g$ ), guaranteed ( $g_w$ ) (balanced macro-economic between the saving and the investment) and natural ( $g_n$ ), (total labor of the productivity and the population growth rate) cannot be realized on the "Razor's Edge".

Kaldor (1958) tried later on to lessen the pessimism on Harold-Domar by using the saving as a variable adjustment. According to him, the economic growth would be stable when the productivity to be saved varies in term of the sharing of incomes. He deduced that the saving rate is an increasing function from the profits in the national product. He explains that the guaranteed growth rate also becomes profits rate function. This leads him to the conclusion that the existence of a stable long term growth of which the rhythm does not only depend on the evolutions of the population and the technology and not the economic manner, nor the public infrastructures.

In other words, the public infrastructure's role in the eco-

conomic activity has also been the starting point of the 'Big-Push' theory which lies on the necessity of an initial investment push (mainly in public infrastructure) by the State's interference.

### The public infrastructure in the "Big-Push" theory

The theory of "Big-Push", inspired by Rosenstein-Rodan (1961), bases its analysis on the importance of the industrial sector. The argumentation laid on the fact that the State's intervention through its actions on infrastructures will permit the creation of a vast market which would not only contribute to reducing transportation costs but also to favor the correlation and the interweaving between the different sectors of the economy. All in all, the State's intervention in terms of infrastructures will be explained by the reduction of production costs and the opportunities that it causes. The underlying idea is that the industrial sector depends on the base of the increasing productivity scale, what a large household needs demand for lack of which externalities will not be produced with the externalities responsible for the profitable investments. To end with this, let's bear in mind that Rosenstein-Rodan knows the importance of public infrastructures in the same way that he favors the industrial sector that he considers as the sector of economic took off.

This analysis had before been evoked by Nurkse (1952) and Hirschman (1958) who agreed on the idea of a strong State's intervention. However, these two authors did not agree to each other on the methodology of the theory's implementation. While Nurkse prioritized the balanced growth based on the development of consumption goods, Hirschman was defending the thesis of an unbalanced growth pulled by the sector of intermediary goods and the heavy sector.

In fact, Nurkse (1952) had pointed out that the mechanism of prize was functioning so slowly and this lead to a feeble growth up to stagnation. The thinking solution was to exceed the problem of uncertainty of private investment in each industry and to lunch a vague investment in the different industries in the view of accelerating the growth. And this is the role of the State.

Starting from the idea that any development's policy should search for the final impact beforehand and the following impact so as to fully use the underused resources, as for Hirschman (1958), he did not agree with the approach of Nurkse (1952). For him, the State should deliberately create imbalanced by launching investments that necessitate "inputs" that could be locally produced (but were not). So, by virtue of its demand, the State could stimulate private investment and reach beyond the problem of making entrepreneurial decision mainly in developing countries' economy.

The theses of the balanced and unbalanced growth have contributed to filling out the perception of the public investment's role in infrastructures in the economic growth, but in short term. All these theses are based on the existence of externalities of demand and the presence a sufficiently vast internal market (Veganzones, 2000).

Furthermore, another form of the "Big-Push" theory appeared at the end of the 1980's was the works of Murphy, Shleifer and Vishny (1989). In its formulation, basing on Rosenstein-Rodan's basic principle, the authors have presented three models which were distinguishable one another by nature of the externality. However, only one of

these models revealed the productive role of infrastructures with establishment, at reduced cost would be the result of the investment meant to reinforce firms' demand. The subjacent hypothesis is that the productivity's scales of modern sector user of infrastructures are increasing whereas those of traditional sector are constants. But as stated by Veganzones (2000), the Big-Push models are properly seen as growth models: in addition that they stand as a comparative static approach, they wander on the other hand from neoclassicists hypotheses of constant productivity scale in basing their thesis on the superiority of industrialization in terms of collective well being. The current evolution of the growth theory is more inspired of new models of growth.

### The current approaches of the growth with the State inclusion

Since the years 1980 to 1990, the theories of growth are acquainted with a renewed interest. It is in this very active perspective of research that the endogenous' models of growth will emerge in response to critics formulated against the neoclassicists' model of growth of Solow. Among these models exist that of Barro (1990) who grants a particular importance to public infrastructures.

### The Solow's model

In his work, "a contribution of the economic growth theory", Solow (1956) criticized the post Keynesian of using some hypotheses' analysis of short period to study the long period (Montoussé, 2003). His analysis is based on the flexibility of production's techniques on the long term. He then uses a function of neoclassicist's production that clears him from the obstacle that constitutes the "Razor's Edge". The growth is therefore balanced inasmuch as the flexibility of costs of factors of production (interest for the capital and the wage for the work) allow reaching to the full employment: the capitalistic intensity and the quantity of capital fit to the quantity of work. However, Solow underlines the necessary taking into account of the residual factor that he introduces as the time factor; this standing as the progress technique defined as exogenous factor (being the result of external data to the growth). According to Solow, the economic growth is balanced and its determinants are exogenous; that is independent from the economic sphere.

Finally, according to Solow, the economic growth can neither depend on the State nor on public infrastructures. It would then depend on two factors such as the demographic growth and the technical progress without which intervention the economy would be blocked to a stationary state due to decreased outputs. Nevertheless, the technical progress according to Solow is not explained by the model but considered as the data. It is introduced as an exogenous factor. In that case, it is seen as a "heaven-sent manna".

Basing on Solow, several empirical verifications have been done to measure the respective contributions of variables. For the American economy, from 1909 to 1949, the technical progress would explain 80% of the growth, the combining action of factors of production (capital and work) explaining just 20%. As far as France is concerned, on the period from 1959 to 1969, the work explains only 6% of the growth rate whereas the capital explains 30%. The waste being the technical progress remains too higher

and equals to 64%1. The reliability of these empirical results has revealed the non robustness of Solow's model to explain the fundamentals of the economic growth; what lead Arrow and Kutz (1970) to extend the aforementioned model.

### The growth model Arrow and Kutz

In extending the model of Solow but in an approach of recognition of the productive role of public infrastructures, Arrow and Kutz (1970) consider the public capital as an argument of the function of production. To that fact, the authors formalize the public capital's performance that they consider as taxation which is related to the private investment. This private investment that the authors compare to the saving rate which at his turn is function of the disposal income is the available income. In these hypotheses, the taxations seem determining in the economic growth's performance on which they broadcast two opposed effect namely the eviction and the private capital productivity. The first effect results from the reduction of the private capital through that of the saving one whereas the second effect is the fact of using infrastructures which favors the increase of the private factors' productivity. One would then determine a threshold critic of the taxation rate beyond which the growth could be observed.

Moreover, if this model is worth to apprehend the public capital as productive factor, one must recognize that this only interferes in the determining of the level the balanced income; what actually constitutes a limit to the interest it would arouse. However, even in the mid of the 1980's, some more relevant explanations of the growth have been made by a new trend of the endogenous growth including that of Barro (1990) which gave an important place to public infrastructures.

### The endogenous growth's theory prompted by Barro

The models of the endogenous growth are growth models by neoclassicists in which the individual product increases in long term at a positive and growing rate (Schubert, 1996). It is in fact a matter of the models which growth rate is not explained only by endogenous variables. It also depends on other parameters characteristic of the economy under consideration that the theory tries to identify. In so doing, it gives a great importance to the external effects. Therefore, while rejecting the short term policies of the State, the theory finds in contrary out that this can generate favorable effects to the economy. It is those external effects (externalities) that are perceived as the founding of the justification of the State's intervention.

Four ways have been explored to identify the sources of the growth caused by the external effects: the accumulation of knowledge (Romer, 1986); the accumulation of human capital (Lucas, 1988), the accumulation technological capital due to the innovation and the research-development (Romer, 1990), the public infrastructures' expenses (Barro, 1990). In fact, according to this last source, the intervention of the State by investing in the infrastructures can lead to the improvement of the firms' productivity and the redirecting of the economy towards a higher growth of the total product. The public and private sectors became then complementary.

The model of Barro (1990) constitutes today referring

1 Bernier, B. and Simon, Y. *Initiation to the macro-economy*; Dunod, 8<sup>th</sup> edition, 2001.

framework for the theoretical analysis of the links between public capital and the growth of the productive activity. The specificity of this model consists in bringing out the stock of the public capital in the production process and consequently to highlight the explicit link between governmental policy and the economic growth of long term. The described model then leans on the function of production having three factors of production namely; two private sectors (work and private capital) and the third factor, public expenses in infrastructures. The functional form, regularly used, is the Cobb-Douglas one. This has the advantage to allow a direct reading of elasticities and the outputs' scale and an easy discussion of the presence or non presence of public wealth's externalities. As a matter of fact, there are externalities engendered by factors if the outputs' scale are decreasing or constant in private factors and increasing on the whole factors, private and public (Barro, 1990).

From this thesis seems emerging two series of critics of which the first is related to the existence of a likely disastrous effect. The financing of a public capital's rise induces those of interest rate which reduce the private capital output to which the public capital is substituted.

To answer to this problematic, Barro explains that in presence of a market failure, there cannot exist a market of public property. In this case, its production will be insufficient from the social optimum's point of view. But, the private sphere cannot substitute itself to the State to be financed. To sum up, basing on Barro's theory, the private firms use two types of factors to produce: the private capital and the 'public capital'. The private capital has usual properties: it is confronted to decreased outputs. To constant public expenses, its marginal productivity decreases. This is a classic case of a model called Solow where only one factor is gradually increasing and where the growth suffocates or is out of breath. The public capital is actually an expense financed by the State but it is not necessary for the goods produced to be so, basing on a nationalized capital productive.

The second chain of comments concerns the likely existence of a disastrous effect of the tax which would depress the production's rate. In fact, the taxation meant to finance the public expenses comes from the income of which it is proportional. But, the public debt maintains pessimistic expectations of the private sector with regard to the risk of the State's deficiency which may resort to the tax inflation and tax increasing to pay back debts. After that comes a decline revision of the demand of investment coming from private firms.

Dealing with this observation, Barro suggests that the public expense has two opposed effects. The first one is the one suggested previously: it allows the private capital to be more productive and to help avoiding that its marginal productivity to be progressively cancelled when the income increases. Nevertheless, the tax has a slump effect on this productivity since it reduces its private output by taking from firms a part of the income produced by their production.

According to Barro, one may first of all show that for a small seize of a State (public expenses), the first effect will prevail and besides one can determine an optimal public expense. At this level, an extra public expense of one dollar costs more in productivity than what it earns. At last, this reasoning of the depressive effect is only admissible in the short term since the eviction effect via the financ-



ing does not negatively affect the formation of the private capital. For a short or a long term, the rise of the public capital's stock in drifting the growth higher will make the tax wider so that today's deficit will be financed tomorrow in a context of development.

In this model, an endogenous growth appears. The public expenses allow the growth of the income which allows the growth of the tax base. This induces a growth of public expenses which at their turn make possible the accumulation of the capital. The growth path, the relation of the public expenses to the income remains constantly equal to the taxation rate.

Finally, one remark that the nature of the growth bound to the public expenses is actually an externality. The service of an agent, specially, the State has some effects on another agent's service, the private firms.

The second step of criticisms concerns, the existence of a probable negative effect of taxation that would delay the acceleration.

In fact, the tax intended to finance the public expenditure comes from the income of which it is proportioned and yet the public debt support the pessimistic anticipation of the private sector as far as the risk of default of state is concerned which can appeal to the inflation tax and to the increment of tax in order to get out of debt. It follows a modification to lower the investment requests from the private enterprises.

Tackling that observation, Barro underlines that the public expenditures have two contradictory effects. The first one ; as mentioned above makes the private capital more productive and avoids his marginal productivity to progressively fade when the incomes increases. Yet, the tax has a depressive effect on that productivity for it reduces its private output, by hindering the enterprises of a portion of income drawn from their production.

To synthesize his thesis Barro showed that for a small size of government (political expenditures), the first effect predominates and we can determine as such an optimal political expenditure). Doing so, we shall study, the case in which one dollar of extra politic expenditure costs more in productivity than what it gains. Barro finds besides, that this argument of depressive effect valid except in short term: as the effect of eviction via the financing, only affect the training of private capital in a short period. At middle and long terms, the public stock increment, by affirming the increment, will increase the fiscal plate, so that the present deficits will be financed by themselves in the future. in a context of growth.

In that model an endogenous growth appears the public expenditure in infrastructure will allow the income growth. The income growth will condition the fiscal base growth which, at its turn induces the growth of public expenditure: what makes possible the capital accumulation. On the path of growth, the link between the public expenditure to the income remains constantly equal to the taxation rate.

We can draw the conclusion that the nature of the growth connected to the public expenditure in infrastructure is uncontestably an externality. The state activity has effects on those of the private enterprises.

#### 4 Conclusion

The economic growth can be rendered by a long term increment of the production. It is as such a cumulative phenomenon. In a capitalist system that accumulation is essentially private what makes private investment the heart of the economic growth and one of its characteristics is the decrease with the time of the marginal productivity of the capital (Koudougou, 2005). That insufficiency justifies the necessary intervention on the state in order to avoid the breathlessness of the productive machine at long term. In the economic literature and in a perspective of long term, if many actors have tackled their theories in the sense of that intervention (Keynes, Rosenstein-Rodan,..), few economists however laid a particular accent on the promotion of public infrastructures in Barro's manner. (1990). In fact, at the benefit of model of the endogenous growth. Barro (1990) found the state intervention (by the basis of infrastructures) to overcome the decrease of the marginal productivity of the capital, allowing that way to stimulate the accumulation (therefore the investment) and to guarantee a well-kept growth. Presently in fashion, that theory of Barro inspiration (1990) depends on the principle according to which the public investment in infrastructure in a factor of improvement of productive performances. That very active principle made up bed to an impressive contingent of empiric work in the developing countries as well as in the developed ones.

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