Transport and development policies in China

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Abstract: *The paper presents the results of an analysis on the determinants of economic development in China and in particular it analyzes the role played by the transport infrastructures as a factor of dualism that developed between the coastal and the interior areas.*

Keywords: development, incentives, foreign direct investment, transport

1. Abstract

The expansion of China as an economic power was supported mainly by a fiscal policy favourable to foreign investors who acted as driving force for attraction of foreign investment.
As a result of strong economic growth, a dualistic development between coast and inland areas occurred; that dualism has stimulated a strategy of rebalancing with the policy of *Go West*[1].
Among the issues that more affected the gap, the geographic position of coastal areas played a central role, in that it encouraged foreign investment[2], together with the existence of a gap in the equipment of the transport infrastructures among the Chinese provinces[3]; in fact, it is shared opinion (Argimón *et al.*, 1993; Evans and Karras, 1994; Holtz-Eakin and Schwartz, 1994; Munnell, 1993) that the infrastructure of a given country plays a key role on its level of economic development.
In this context, the role of the transport infrastructures' politics is analysed in order to explain the Chinese economy's high rate of growth from the "open door policy" and, therefore, the subsequent policy rebalancing of the *Go West*.
In particular, we want to see if the economic growth in China's transport infrastructure played a key role together with other determinants, such as incentives and foreign direct investments, by also considering if the most recent policies, implemented by the government in the transport sector, managed to pursue the aim of reducing the dualism between coastal and inside areas.

2. The cluster analysis

At present, some authors (Chen and Fisher, 1996; Mody and Wang, 1997; Raiser, 1998; Wu, 1999; Demerger, 2000; Bosworth and Collins, 2007) already considered that issue: however, in our view, an analysis of the Country of China as a single aggregate could not grasp the different impacts, which took place in different provinces, as a result of the policies put in place.
Our analysis, carried out at a large scale (China), as well as at a greater level of detail (provincial), shows the differences obtained through these two approaches.
Indeed, in order to construct a production function that allows to assess the weight of the various determinants of development, to consider China as a single aggregate appears ineffective, while much readable results can be obtained by taking for homogeneous areas; however, that must be

[1] The Chinese government announced the "Go West Policy" in 1999; it promised to invest billions of yuan in the construction of public infrastructures in the internal provinces Tibet, Chongqing, Gansu, Shaanxi, Xinjiang, Yunnan, Ningxia, Qinghai, Guizhou, Sichuan, Guangxi.
[2] About 70% of foreign investments were allocated to coastal areas from 1980 to 2005; this last occupy about 7.6% of the territory of China.
[3] The other provinces, except coastal areas, show indices of growth, between 1980 and 2006, below the national average.

built not on the basis of aprioristic joints but through a combination of several indicators, with the support of statistical techniques of multivariate analysis.
In this sense, the Chinese territory has been reviewed through the cluster analysis methodology, which allows to identify areas with homogeneous characteristics, by considering the multiplicity of possible determinants of development as variables.
The reclassification established six homogeneous classes of socio-economic provinces.
The first two classes (A and B) are formed by the provinces/municipalities that are more developed and also characterized by high rates of GDP per capita, exports and infrastructure equipment; these are the coastal areas and the municipalities of Beijing, Shanghai and Tianijn. The class, consisting of the inside provinces (D), presents signs of development; and further, three classes (C, E and F), consisting of the North, South and West provinces, which have a total territorial expansion of nearly 75% of China - whose development is based predominantly on the primary industry, with low rates of export, inadequate infrastructures and low levels of foreign direct investment - seem to show that the opening of markets did not affect these areas.
Summing, it is possible to understand the main differences between:
- more developed areas (coastal areas and municipalities), in which the great economic growth coincided with the beginning of *open door policy*, which established a tax incentive system that encouraged the inflow of foreign capital into these areas;
- developing countries (located in the central areas);
- other provinces, in which the policy of openness was subsequently implemented, giving the result that the foreign investment came only from 2000 and to a lesser extent than the one coming from the other areas.
In conclusion, it has found that, among the aspects that certainly affected the gap, the lack of adequate transport infrastructure in the West played a key role; in fact, in all its provinces, and for all types of transport infrastructure (excluding highways), the inland areas recorded today an equipment that is still largely below the national average despite the fact that those areas are full of resources.

3. The function of production

The knowledge of the production functions, for different homogeneous classes, gives the first indication of the investment policies' effectiveness in various transport infrastructure and explains the determinants of development in different areas.
Therefore, through a multiple regression model, we identified the determinants of development affecting the value of GDP per capita for all the homogeneous classes, by verifying that the provinces with higher levels of growth rate of GDP (coastal areas and municipalities) react to changes in infrastructure and foreign investment more than the others.
The emerged results, in the first place, demonstrated the effectiveness of the studies that are disaggregated in the economic policies analysis comparing to those that consider China as a single aggregation.
In fact, through an analysis of the data of a single production function, which is valid for the whole China, the existence of considerable significance in the relationship between product per capita and transport indicator, which describes the motorway network (elasticity equal to 0.64), suggests that the infrastructure is a powerful predictor of the level of GDP per capita regional; the coefficient for the railways, instead, has significantly lower values (elasticity equal to 0.05) and no values at all with reference to ports/waterways.
At a disaggregated level, however, the levels of the elasticity of GDP per capita about the transport infrastructure are variously differentiated between classes of provinces; in fact, the homogeneous areas A and B show high levels of elasticity for both highways and ports, while these are almost zero in relation to the railways. Coherently with the morphological structure of the country, the explanatory variable, which describes the development of ports, assumes significance only in classes that include coastal areas.

The significance of the "railways" as a predictor of economic development is, however, present only in the inland areas (D) and to the north of the coastal (E), while the indicator that mostly influences all the classes is " highways "(at the exception of the classes C and E) with peak values in coastal areas (in the class A the elasticity is equal to 0.42) and lowest values in the border areas (0.05).

4. The transport policy.

When in 1999 the Chinese government launched a strategy, the so-called *Go West Policy*, in order to support the development of inland areas (12 provinces, autonomous regions and many municipalities), we would expect a rebalancing policies put in place, in collaboration with the World Bank, in order to promote diversification in the construction of infrastructures, with reference to the transport sector, in favour of inland areas and in line with the results obtained from the function of multiple regression. Even this policy, or at least in its purposes, aimed to promote the development in most vulnerable areas through an intensification of investment policy in transport infrastructure.

In this sense, a review on the effectiveness of the recent policy for the transport infrastructure was attempted; the analysis, carried out by analyzing 26 projects financed within the World Bank between 2000 and 2007, which suppose to be realized no later than 2012[4], showed that only the 30% of the committed resources was intended to *go west* provinces, but that the interventions were differentiated in respect of those types that, according to our analysis, would cause greater development in terms of growth of GDP Regional.

In contrast, the majority of the projects interested the cluster D that was formed by the central provinces and in which only three *go west policy* provinces were covered.

The 18% of resources are still allocated in the coastal areas; if we add to this values the ones related to the municipalities, we reach the conclusion that in the most developed areas it is assigned about the 20% of the resources allocated in order to redress the regional imbalance.

5. Conclusions

The *open door policy* has led to a diversified structure of "openness" on several levels, which should integrate coastal areas, border areas and inland areas. This did not happen.

The provinces who had the double role as "doors" for the development of an economy direct to the exchange with foreign countries, through the export of products and import of advanced technologies, were few, as "engines" for the acceleration of economic development of the country[5].

The choice of the Chinese Government to remedy this unstable equilibrium situation was implemented in 1999 through the *go west policy* that, among other objectives pursued, emphasized the one concerning the infrastructures in the western areas.

The check of the policy enunciated was carried out by comparing the actions put in place, implemented with the technical and financial assistance from the World Bank, together with the determinants of development affecting the value of regional GDP per capita, which were identified on the basis of reclassifying provinces accomplished through the use of a cluster analysis.

Well, the analyses conducted showed, however, that the impetus appears more relevant in the provinces of the central areas (group C), where most of the infrastructures were designed; for those, through a cluster analysis, we had already verified a process of development instead of those identified by go west policy.

In conclusion, the commitment of the Chinese Government is not yet adequate to solve the problems of imbalance between the coast and the west; among these provinces, it looks like a new-dualistic model of growth is taking place; in this model, the strong disparity in incomes are coupled with (and determined by) differentials, which are also stronger in the indicators of infrastructure.

[4] The analysis was carried out considering the projects relating to roads, highways and ports / waterways.
[5] Ji Chongwei,(1984)

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