

From local to national systems of innovation: empirical evidences from the Brazilian case

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A b s t r a c t

The paper's focus is findings in productive arrangements localised in South / Southeast of Brazil. These arrangements are characterised both by their spatial concentration and the co-operation schemes which take place amongst their main agents (enterprises, research centres, supporting institutions etc.).

The empirical work from which evidence has been brought, aimed to answer two questions.. The first one, regarding possible typologies with respect to the major activities which take place in each arrangement investigated; sectors on which there is entrepreneurial concentration; markets; institutional design; dynamic elements and their strategies; learning processes; external economies and economic infra-structure.

The second group of questions looks at the arrangement' trajectories throughout the 1990s and takes into consideration the impact of the globalisation process in a context of opening up of the Brazilian economy. The major issues investigated the dynamics of: (i) the learning processes; (ii) the enterprises strategies; (iii) the inflow of foreign capital; (iv) the role and possibilities of policies regarding the promotion of innovation systems, as well as those which are aimed at the financing of competitive upgrading of each productive arrangement.

Some of the studies' findings reflect major issues regarding the Brazilian economy in general, and its system of innovation in particular. Amongst these, two need to be stressed. The first one regards the low work force level of formal education. In the majority of studied arrangements 60% of the workers have attended school for a maximum of eight years.

The tacit knowledge in the processes of building up innovation capabilities has a key constituent when these findings are put into perspective. Such element is education and this is what is missing in the Brazilian system of innovation.

The funding both for production and innovation capabilities is the second item focused on this paper... More than half of the investigated arrangements should be financed with the firm's won resources That is, macroeconomic policies regarding inflation targets and foreign capital inflows pays bad service to the NSI with high interest rates and poor funding of innovation and production activities. Even more important, this happens when experiments concerning new ways of financing production and innovation occur out of the established financial system.

An overview of the arrangements which were studied show deficient articulation of the elements in each and in all of them. This stems from the way policies regarding

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production and technological capabilities have been built disconnected from each other in Brazil. And, in many cases, contrary to each other.

The policies that emerge from the analysis of these production arrangements can be seen as going beyond them and the localised co-operation schemes which foster learning processes which may favour innovation and increasing social capabilities. They are pointed out as a way of strengthening the Brazilian national system of innovation at times of increasing competition in the knowledge economy.

The major policies towards these goals are: programmes of human resources development at different levels of education; equal credit facilities conditions to local firms as well as financing and fiscal incentives; supportive co-operation processes amongst dynamic elements of the arrangements; technological policy based on long term stable financing of research institutions.