

# **Globalization, Innovation and Social Capital: Changing Nature of Indo-French S&T Cooperation**

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## **Introduction**

The present paper is an attempt to explore whether the globalization process has enhanced the significance of social capital as an explanatory variable of innovation. It tries to analyze the complex interrelationship between the contested concepts of globalization, social capital and innovation. In addition to traditional variables such as technological and economic determinants, social capital is increasingly gaining theoretical acceptance in innovation literature. However, social capital is not a homogenous asset and many attempts to define and distinguish its structural forms are proving to be inadequate to explain its role. Many scholars have broadly identified these indicators as business assets, cognitive assets, information network assets, research network assets and relational assets. Recently, a good number of new technology or research alliances worldwide were reported in six major sectors: information technology (IT), biotechnology, advanced materials, aerospace and defense, automotive, and non-biotechnology chemicals revealing greater interdependence in these sectors. Thus, the emerging technologies have also helped unfolding the globalization process but it is interesting to analyze whether the globalization process has enhanced the role of these five assets in radicalness of innovations. Moreover, extreme views prevail as far as the impact of this process is concerned. To provide a focus on contentious issues of globalization of innovation process, an attempt has been made here to analyze the changing nature of Indo-French S&T cooperation. India and France provide an interesting background for the study of the same as India is emerging as one of the major global destination amongst developing countries for locating foreign R&D efforts and the transnational corporations (TNCs) of France are increasingly investing in R&D abroad. An effort is made here to analyze whether the 'globalization process' is likely to change the collaboration pattern or introduce any discontinuity in the international cooperation policy.

Recently, there has been an upsurge in the international R&D alliances world over. This phenomenon was confined to the triad countries (US, Europe, Japan) so far and Asian Tigers were added later. Hence, it is not surprising that the academic interest so far was confined only to this region rather than to the developing countries that are emerging destinations of R&D collaboration. However, these studies have focused mainly on corporate R&D and due attention has not been paid to other types of collaborations like bilateral and multilateral collaboration. In a developing country like India with wide socioeconomic disparities, this process is expected to introduce new challenges and opportunities for innovations and policy making.

In recent years, the unfolding of globalization has tended to change the routes, nature and magnitude of this process in significant ways. To understand these changes and explore further why social capital could not be exploited in earlier stages, the complexities of the interrelationship between different stages in globalization in its historical context is analyzed.

It is contended here that this phenomenon is not only being shaped by the structure of the international S&T innovation system (ISI) which is hierarchical in nature and tilted in favor of the countries where S&T resources are concentrated but it is also shaping the same.

The paper is structured around seven sections that explore the concept of social capital and the salient features of the international system of innovation to explain the process beyond NIS. The fourth section is an overview of changing structure of NIS in India's and France. The fifth section has analyzed Indo-French S&T collaboration revealing the shifting focus of India's international cooperation policy in the wake of globalization process. This section is not restricted to R&D collaboration in the corporate sector but includes bilateral cooperation between different countries and inward and outward FDI that is expected to enhance technological learning. The sixth section focuses on French TNCs or recent phenomenon of FDI inflows in R&D, the sectors of investment and its impact is analyzed.

### **Methods**

The methods used in this paper are mainly qualitative supported by quantitative information. The paper argues that to visualize dynamics of innovation it is not adequate to confine to perspectives like national, regional and sectoral innovation system but it is essential to add a new perspective of international system of innovation.

The paper has identified five structural forms of social capital along with the concept of autonomy, synergy and power structure (ISI) to analyze the impact of globalization on the same .

Categorization of globalization process into three stages *viz.* international exploitation, global generation and global collaboration are not treated as adequate and the causal drivers and interrelationship between these stages are discussed.

Research network created by corporate R&D as well bilateral cooperation are included. The paper has analyzed the nature and trend of bilateral S&T cooperation between India and France for the last 50 years.

### **Preliminary Results**

1. In order to adapt to globalization, the French innovation system has undergone transformation that has also led to changes in international cooperation mechanism.
2. There has been a constant increase in the volume of bilateral or government-to-government cooperation shared equally by both the countries. This was accompanied by gradual changes in the priorities in areas of cooperation introducing a divergence between the FDI and bilateral areas of cooperation. Moreover, a convergence has been recorded in terms of the type of cooperation described as follows.
3. The bilateral cooperation activities have been extended to basic as well as applied research, patenting and its industrial application. A widened interactions activity has been observed involving diverse types of research organizations including the university system. Though relatively restricted, a similar pattern of wider interactions also observed in the research collaborations of the French TNCs in India with an added dimension of offshoring of R&D services,
4. Several French companies have started investing in R&D or R&D collaboration in India with increasing volumes. This is also accompanied by the capacity building activity and exports of R&D services.
5. Some significant knowledge spillovers are expected from this activity and the new form of social capital added with autonomy and synergy is expected to facilitate exchange of tacit knowledge. To take advantage of these benefits, a developing country like India will have to gear S&T policies towards facilitating such knowledge flows.

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