IDS RESEARCH SUMMARY

Research findings at a glance from the Institute of Development Studies

IDS RESEARCH REPORT 73
FEBRUARY 2012

Shifts in Innovation Power to Brazil and India

Insights from the Auto and Software Industries

Until fairly recently, innovation activities were concentrated in the US, Europe and Japan. Now, the rising powers of China, India and Brazil are encroaching on this 'bastion' of the old powers. This report explores how and why the global innovation map is changing, and how deep this change goes.

Analysts tend to explain the shift in innovation power by concentrating on factors within the rising powers, such as their investment in high-level education, their low labour cost, their big and expanding internal markets and others. In contrast, this report concentrates on explanatory factors that emanate from the old powers, notably the organisational decomposition of the innovation process (ODIP). To this end the report focuses on global value chains that link Brazilian auto and Indian software suppliers with lead firms in the US and Europe. It shows that ODIP undertaken by US and European lead firms contributes direct and indirectly to the accumulation of innovation activities in Brazil and India. It also suggests that the build-up of innovation capabilities in countries like India and Brazil is accelerating ODIP in the US and Europe.

Innovation activities were the bedrock of Western prosperity. Until the turn of the century, innovation jobs were largely concentrated in Western Europe, the United States and Japan. Not anymore. Innovation activities outside the borders of the old powers are increasing, in particular in the rising powers of China, India and Brazil.

This report examines how organisational changes in the old powers affect the global distribution of innovation activities. It unravels the dynamics which have been unleashed by ODIP emanating from the old powers and the implications for the build-up of innovation capabilities in the rising powers. In order to do this, it provides a conceptual framework for analysing these changes and detailed evidence from the auto and software sectors, in particular the value chains which connect the USA and Germany with India and Brazil.

The report shows that subsidiaries and independent suppliers in Brazil and India were involved in advanced innovation capabilities: they engaged not only in 'applied' development, but also in 'systemic' development of products and services. In other words, the build-up of innovation capabilities goes further than is generally recognised.

The research also distinguishes between different types of ODIP. While often overlooked, the biggest organisational and geographical changes occur when innovation and production activities are tightly integrated. The resulting build-up of innovation capability is only partially visible in conventional R&D indicators.

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Shifts in Innovation Power to Brazil and India

> A two-way dynamic is underway of decomposing and recomposing innovation processes, causing major geographical shifts in innovation capabilities.

Key research findings

- **Advanced innovation capabilities:** In the Brazilian auto industry, subsidiaries of multinationals and local suppliers have attained capabilities based on R&D. In the Indian software industry, foreign and local suppliers have proven capabilities in high-level design. Yet much of this Indian innovation remains hidden and is overlooked in R&D-centric studies.
- **The importance of ODIP**: Explanation of the Indian and Brazilian advances in innovation capabilities needs to include the organisational decomposition of the innovation process (ODIP) and its knock on effects. Lead firms headquartered in the USA and Germany have reorganised their value chains and delegated major innovation functions to their subsidiaries and to independent suppliers in Brazil and India. Suppliers then made the required investments to take advantage of these opportunities.
- **Innovation tied to production**: Organisational decomposition and geo-graphical relocation occurred in innovation activities that were tightly connected to production activities. The Brazilian part of the global auto value chain is engaged in product and process design, not only for local or regional markets but increasingly also for global markets. In the software industry, lead firms offshore not only programming tasks, but also important elements of product and services development, including high-level systems development.
- **Boundaries?** The dispersal of innovation capabilities to firms in Brazil and India occurs mainly in problem-solving functions. Problem-framing capability is less mobile and tends to remain in the old powers. In other words, the new opportunities for foreign and national suppliers in Brazil and India remain bounded by the strategic concerns of corporate headquarters. However, the lead firms unintentionally set forces in motion beyond their control. In the course of dealing with complicated problem solving, some Indian suppliers acquire capabilities for technical problem framing.

The causal connection between ODIP in the old powers and increase of innovation capabilities in the new powers is not one way. The increasing accumulation of innovation capabilities in the new powers increases the possibilities for further rounds of ODIP in the old powers.

Implications of research

The report identifies two possible scenarios for the future:

- The first scenario is co-evolution of the old innovating regions in Europe and the USA and the new innovating regions in Brazil and India. Changes in one bring about changes in the other and vice versa. The process is painful but the result is win-win.
- The second scenario also stresses intense interaction but the result is that one side loses and the other one wins. The loser is the old region which sees a decline in innovation jobs and economic prosperity. The winner is the new region which sees a rise in innovation jobs and prosperity.

Only time can tell which of these scenarios captures real developments. It could be that neither prevails and that the outcome is highly differentiated, varying a great deal between sectors. This does not mean that everything is uncertain. It is clear from this study that ODIP benefits the rising powers. What is not clear is whether and where the old powers suffer as a result. Perhaps the biggest winners are the globalised firms which originate in the old powers but locate their innovation activities increasingly in the new powers.

Credits

Rasmus Lema, Ruy Quadros and Hubert Schmitz (2012) *Shifts in Innovation Power to Brazil and India: Insights from the Auto and Software Industries*, IDS Research Report 73, Brighton: IDS

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