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**Determinants of Knowledge Transfer from Multinational Corporations to
Local Firms: The Case of Turkish Automotive Industry**

Problem Statement and Theoretical Background:

Transfer of advanced technological knowledge from foreign direct investments (FDIs) is considered as an important mode of “learning” and “technological upgrading” for developing countries which are generally associated with limited capital accumulation, low level of industrialization and technological capability and insufficient human capital to upgrade their national technological capabilities (Blomstrom and Kokko, 1998, Gorg and Greenaway, 2004). It is generally assumed that multinational corporations, as the major drivers of foreign capital flow, hold the advantage of massive capital accumulation, operating in diversity of international markets, exploiting various local sources of knowledge, and able to make large in-house investments into knowledge generation. Hence, they are considered as the source of advanced technological knowledge, and it is believed that their “existence” in the host economies and “business linkages” with the local actors would enable the flow of advanced knowledge into local actors in an autonomous way (Kokko, 1992). Thus, the foreign direct investment policies generally tend to concentrate on attracting “quantitatively” more foreign investments, and governments of developing countries are encouraged by international policy institutions to eliminate the domestic market protection barriers through liberalization policies (Narula and Portelli, 2004).

However, the existence of FDI in the host country does not automatically generate any positive impact to the host economy (Kokko, 1996; Blomstrom and Kokko, 1998). Respectively, quantitative increase in the FDI inflow does not guarantee the transfer of technology, knowledge, and innovative capabilities from FDI to local firms. Not all multinational firms and their foreign affiliates are equally able and enthusiastic to share knowledge. Besides, not all FDI activities are equally

knowledge-intensive, and create equal potentials for interaction with local actors for the exchange of technological knowledge. It should taken into consideration that there is a heterogeneity among the corporate characteristics (organizational structure, corporate culture and strategy, level of autonomy etc.) of MNC's (Blomström and Sjöholm 1999, Rodriguez-Clare 1996, Gupta and Govindarajan 2000), as well as among the subsidiaries of MNC's that creates heterogeneous results in their interactions, strategies, activities and spillover effects in the host-economies (Bell and Marin 2004, Birkinshaw and Hood 1998). On the other side of the knowledge transfer, the "knowledge absorption capacities" of local firms are not homogenous either. The capability of local firms to evaluate the value of their partner's knowledge, to establish knowledge transfer channels, to absorb external knowledge, and finally to assimilate the technology and knowledge in the internal structure of the organization also show significant diversity due to the heterogeneity among the characteristics and capabilities of local firms (Cohen and Levinthal 1990, Portelli and Narula 2004). The type of relationship, the level of trust between collaborating partners, and duration of relationship also have strong influences on the level of knowledge transfer (Aitken Harrison 1991, Gorg and Ruane 1998, Ghoshal and Bartlett, 1988). Table 1 below presents a literature review about the determinants of knowledge transfer from MNCs to local firms.

Table 1: Determinants of Knowledge Transfer from MNCs to Local Firms

Macro-Level determinants (national characteristics)	<ul style="list-style-type: none"> Host country conditions such as - Locational factors (Mytelka 1996, Mudambi 1998), - Relative backwardness and technological distance (Glass and Saggi 1998, Borensztein et al. 1998), - Level of education and human capital (Perez and Soete 1988), - Financial markets (Carkovic and Levine 2002, Alfaro et al. 2003)
Meso Level Determinants (Industrial Characteristics)	<ul style="list-style-type: none"> - Industrial characteristics (Dunning and Cantwell 1986, Kokko 1994, Lall 1980, Narula and Dunning 2000),
Features of Source Unit (Multinational Corporations)	<ul style="list-style-type: none"> - Knowledge stock of source unit (Gupta and Govindarajan 2000); - Corporate strategy and structure of multinational corporations (Altenburg 2000, Blomström and Sjöholm 1999) - Diversity among subsidiaries, their strategies, autonomy and capabilities (Bell and Marin 2004, Birkinshaw and Hood 1998, Todo and Miyamoto 2002),
Features of Recipient Unit (Local Firms)	<ul style="list-style-type: none"> - Absorptive capacity (Cohen & Levinthal, 1990)
Nature of Relationship	<ul style="list-style-type: none"> - Existence and richness of transfer mechanisms between the units (Subramaniam and Venkatraman, 2001) - Trust (Ghoshal and Bartlett, 1988; Ghoshal et al., 1994), - Time effect (Aitken Harrison 1991, Gorg and Ruane 1998, Driffield and Noor 1999) - Culture (Schein, 1984)

In Turkey, the inward flow of FDI to the local economy has been limited until recent years in comparison to other countries with similar economies, mainly due to the weaknesses such as political and economic instabilities in the former years, high input costs etc. The dramatic increase observed in recent years in the inward flow of foreign capital mainly occurred as a result of improvements in the investment climate, as well as privatization of large public entities and portfolio investments (Yilmaz, 2006). In general, the debates about improving the conditions for attracting more FDI suggest reducing the input (energy, labour, raw material etc.) prices and taxes, eliminating the entry barriers to domestic market, and creating financial and locational incentives to foreign investors. On the other hand, the necessity for building national innovative capability is usually neglected and does not occupy the Turkish FDI policy agenda. In this research, it is argued that a broader perspective is needed to benefit most from FDI inflow and its “knowledge spillover impacts”. Thus, it is essential to explore the factors that influence the knowledge transfer process from foreign direct investments to local firms in Turkey, with a particular focus on the technological capabilities of local actors and national systems of innovation as a whole.

Objective of Research:

In the light of the discussions above, the main objective of this research is to explore the determinants of the knowledge transfer from the foreign affiliates of multinational corporations to local firms and to national economy. Particular focus is given on the impact of technological capabilities of local supplier firms on their abilities to transfer knowledge and technology from foreign direct investments.

One of the main purposes of this paper is to develop a distinction between different types of technological capabilities; namely “production capability”; the capability to use “technology” effectively to manufacture products at certain level of quality, performance and cost, “innovative capability”; the capability to create new technologies or improve the existing ones, and “absorptive capacity”; the capacity to transfer external knowledge and to assimilate it within the organization. The distinction is important since to what extent a firm is able to benefit from the knowledge transfer in the collaborative interactions with other firms is heavily influenced by the “types” and “levels” of technological capabilities. Firms (especially SMEs in developing countries) may hold advanced level of “technology-using

capabilities” as a result of knowledge and skill accumulation via learning by doing, but may not be able to hold a “strategic position” in the collaborations with their partners because of their weak “technology-creating capabilities”, or may not be able to exploit the value of knowledge transfer from their partners due to the lack of their “absorptive capacities”.

Methodology of Research:

The empirical part of this research puts Turkish automotive industry, the leading and fastest growing industry in the share of national economy, in export markets and in terms of its interactions with the inward foreign direct investment (FDI), and the backward linkages between subsidiaries of multinational car manufacturer firms and their local component/system supplier firms at the centre of the analysis. The data collection methodology is based on a combination of qualitative and quantitative approaches derived from survey data collected through face-to-face questionnaires with 56 local component and system supplier firms from Turkish automotive industry.

Expected Contributions of Research:

Knowledge transfer at inter-organizational level is studied in various disciplines such as “innovation studies”, “supply-chain management studies” and “foreign direct investment studies”. On the other hand, convergence of these disciplines is rarely reflected upon the researches in the literature. However, it is argued in this research that a more multi-disciplinary approach is needed to develop a comprehensive understanding about the relation of different disciplines with each other and to “bridge” different literatures concerning “knowledge transfer”. Thus, the theoretical framework of this contributes to such an objective.

At empirical level, this study aims to go one step further than previous studies that are mainly relying their analysis on “patent” data as the outcomes of innovative activities or the share of R&D expenditures as the income of innovativeness, by defining new operational indicators about the “routines”, “processes”, “knowledge stocks”, “investments”, and “activities” that contribute to the creation of knowledge and capabilities in the firm, in addition to patent and R&D data. Such an approach is crucial especially in less developed countries such as Turkey where “patenting” of incremental innovations is not yet a common attitude for industrial firms. Similarly,

the data about R&D expenditures does not indicate by itself the real investments to upgrade the technological capabilities since there is no common perception of R&D concept among firms, especially among Small and Medium Sized Enterprises (SMEs).

References:

- Aitken, Brian J. and Ann E. Harrison (1999): "Do Domestic Firms Benefit from Direct Foreign Investment? Evidence from Venezuela". *American Economic Review*, Vol. 89, pp. 605-618.
- Alfaro, L.; Chanda, A.; Kalemli-Ozcan, S. and Sayek, S., (2004), "FDI and economic growth: the role of local financial markets". *Journal of International Economics*, 64, 2004, pp. 89-112.
- Altenburg, Tilman (2000): Linkages and Spill-overs between Transnational Corporations and Small and Medium-Sized Enterprises in Developing Countries - Opportunities and Policies, Reports and Working Papers No. 5/2000, 52 pp., German Development Institute (GDI), Berlin 2000, E: ISBN 3-88985-217-3 [9,63 Euro incl. VAT]
- Bell, M. and Marin, A., (2004), Where do foreign direct investment-related technology spillovers come from in emerging economies? An exploration in Argentina in the 1990s. *The European Journal of Development Research*, 16, 645-677.
- Birkinshaw, J. and Hood, N., (1998), Multinational subsidiary evolution: Capability and charter change in foreign-owned subsidiary companies. *Academy of Management Review*, 23, 773-795.
- Blomstrom, M. and Kokko, A. (1998). "Multinational Corporations and Spillovers", *Journal of Economic Surveys*, 12 (3), 247-277.
- Magnus Blomstrom & Fredrik Sjöholm, (1998). "Technology Transfer and Spillovers? Does Local Participation with Multinationals Matter?," NBER Working Papers 6816, National Bureau of Economic Research, Inc.
- Borensztein, E et al (1998) How does Foreign Direct Investment Affect Economic Growth?, *Journal of International Economics*, vol. 45.
- Cohen, W., Levinthal D., (1990), Absorptive Capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35: 128-152.
- Dunning, J. and Cantwell, J. (1986), The changing role of multinational enterprise in the international creation, transfer and diffusion of technology. *Proceedings of the Conference on Innovation Diffusion*, March, Venice.
- Ghoshal, S., Bartlett, C., (1988), Creation, Adoption, and Diffusion of Innovations by Subsidiaries of Multinational Corporations, *Journal of International Business Studies*, Vol. 19, No. 3 (Autumn, 1988), pp. 365-388
- Glass, A.J., Saggi K., (1998) "International technology transfer and the technology gap". *Journal of Development Economics* Vol. 55,369–398
- Görg & Greenaway, (2004), "Much Ado about Nothing? Do Domestic Firms Really Benefit from Foreign Direct Investment?," *World Bank Research Observer*, Oxford University Press, vol. 19(2), pages 171-197.

- Görg, H & Ruane, F, (1999). "Globalisation and Fragmentation: Evidence from the Electronics Industry in Ireland," Trinity Economics Papers 9911, Trinity College Dublin, Department of Economics
- Gupta, A.K. and Govindarajan, V., (2000), "Knowledge flows within multinational corporations", *Strategic Management Journal*, Vol. 21: pp. 473-496
- Kokko, A., (1994), Technology, market characteristics, and spillovers. *Journal of Development Economics*, 43, 279-293.
- Kokko, A. (1996). "Productivity Spillovers from Competition between Local Firms and Foreign Affiliates." *Journal of International Development* 8: 517-530.
- Lall, S., (1980), *The multinational corporation: nine essays*. London: Macmillan.
- Ram Mudambi, (1998), "The Role of Duration in Multinational Investment Strategies," *Journal of International Business Studies*, Palgrave Macmillan Journals, vol. 29(2), pages 239-261, June.
- Narula, R. and Dunning, J., (2000), *Industrial Development, Globalisation and Multinational Enterprises: New Realities for Developing Countries*. *Oxford Development Studies*, 28, 141-167.
- Narula, R. & Portelli, B., (2004). "Foreign direct investment and economic development: Opportunities and limitations from a developing country perspective," Research Memoranda 009, Maastricht : MERIT, Maastricht Economic Research Institute on Innovation and Technology
- Perez, C. and L. Soete (1988), 'Catching up in technology: entry barriers and windows of opportunity', in Dosi, G., C. Freeman, R. Nelson, G.
- Rodriguez-Clare, Andres, (1996), "Multinationals, Linkages, and Economic Development," *American Economic Review*, American Economic Association, vol. 86(4), pages 852-73, September.
- Schein, (1984), Coming to a new awareness of organizational culture, *Sloan Management Review*, 25, 3 - 16.
- Subramaniam, M. and Venkatraman, N., (2001), "Determinants of transnational new product development capability: Testing the influence of transferring and deploying tacit overseas knowledge". *Strategic Management Journal*. 22 (4): 359-378