

# Foreign ownership and novelty of product innovations in China

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## *Extended abstract*

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#### **1. Introduction**

In the last decades China has achieved a remarkable progress in building of innovation capabilities and attracting a high inflow of FDI. Despite increasing capabilities in the domestic enterprise sector its invention performance remains low both relative to its share in R&D as well as in comparison to foreign firms (OECD, 2007). On the other hand, up to recently foreign firms have been primarily established as low cost manufacturing operations in China, but the foreign R&D investments seem to be increasing lately. Against the current evidence on the inventive performance of domestic and foreign firms in terms of R&D and patents, there is a lack of evidence on the novelty of innovation output of foreign and domestic firms in China.

The research on the novelty of innovation output in relationship to the nationality of foreign ownership is limited generally. In the case of developed countries there are a few studies on the impact of foreign ownership on the propensity of new to the market innovations based on Community innovation survey data, but the evidence is mixed. Frenz and Ietto-Gillies (2003) find no impact of foreign ownership on the introduction of new to the market innovations in UK. Sadowsky and Sadowsky-Rasers (2006) report a positive impact on the propensity of new to the market innovations among firms that include both innovators and non-innovators, but a negative impact among innovators only in the Netherlands. Dachs et al. (2007) in a group of five small European countries detect a positive impact on the propensity of new to the market innovations of at least one category of foreign firms (grouped by the home country) in three countries (Denmark, Finland and Sweden), and no impact in two (Austria and Norway). A rare study that considers innovations by novelty level in developing countries finds that foreign firms have higher propensity than domestic firms to introduce product innovation new to the market in Brazil (Kannebley et al., 2005).

The objective of the paper is to examine the relationship between the nationality of ownership of

firms and the innovation novelty. In the analysis of the impact of foreign ownership on innovation it is typically assumed that foreign firms are likely to have higher innovativeness than domestic firms because of ownership advantages needed to overcome the liability of foreignness relative to domestic firms. Building on the literature on the internationalisation of R&D and the knowledge theory of the MNE it will be proposed that foreign firms are not likely to have a positive impact on innovations of all levels of novelty. The relationship between foreign ownership and the levels of innovation novelty will be examined in the context of advanced developing countries as host economies. The analysis will be based on innovation survey data from China.

The paper will contribute to the empirical literature in several ways. First, it will follow a categorisation of innovation novelty levels from the Oslo manual (applied in the Canadian innovation survey too), rather than the categorisation from the Community innovation survey (CIS), common in other studies. Unlike the CIS dichotomous categorisation (of new to the firm and new to the market innovations), it distinguishes between four levels of novelty (new to the world, new to the country, new to the firm and, in case of large countries, new to the region innovations) thus allowing for greater diversity of firm innovation behaviour. It is particularly relevant for the examination of the role of foreign ownership in the innovation in the host countries. In addition, unlike other studies of innovation novelty, that are based on innovation propensity indicator, it will apply also an intensity indicators of novelty. While the propensity indicator measures the ability of firms to introduce innovations, the intensity indicator measures the commercial success of introduced innovations. Lastly, in contrast to majority of other studies on innovation in China that cover only medium and large firms, the sample includes small firms too. The inclusion of small firms is relevant because of their potentially important role in the national system of innovation and because in the context of transition economies the majority of newly created private firms are typically small firms.

## **2. Conceptual framework**

The conceptual framework will build on the Dunning's eclectic theory, the literature on the internationalisation of R&D and on innovation activities in foreign subsidiaries, and on the knowledge-based theory of MNE. The traditional theories have assumed that both development and the first commercial application of new products and processes will take place in the home countries of MNEs, while foreign subsidiaries will primarily engage in production activities. Consistent with the recent trends of increasing internationalisation of generation of innovations by MNEs, foreign producing subsidiaries seem increasingly likely to engage also in development of

improved or new products and processes for the local and world market. The foreign affiliates are assumed to recombine the knowledge from the home markets with the learning in the host countries through the evolutionary process of knowledge accumulation.

Regarding the context of advanced developing countries it is assumed that among domestic firms the imitative capabilities predominate while the innovation capabilities are limited to certain firms and sectors. It is therefore taken that domestic firms will primarily generate innovations of lower levels of novelty, while the innovations of highest level of novelty will be scarce.

Building on the knowledge-based theory of MNE, it will be argued that the impact of foreign ownership is likely to differ between different levels of innovation novelty, rather than being positive across all novelty levels. In contrast to other studies that have focused on direct effects of foreign ownership, this study will examine also the second-order effects. Consistent with the literature on the role of market orientation and evolution and placement of R&D in host countries, it will be argued that the relationship between foreign ownership and innovation novelty is likely to be moderated by the R&D, market orientation and age of foreign affiliates. Consistent with these arguments both direct and contingency hypotheses will be proposed about the impact of foreign ownership on individual levels of innovation novelty in advanced developing countries.

### **3. Data and method**

The empirical analysis will be based on the data from the innovation survey of firms from the Jiangsu province of China conducted in 2002 (by the second and third author). The province is located on the East coast and belongs to the top five most innovative provinces in China, with the second largest inflow of foreign investments, after Guangdong. Firms were randomly sampled from a population of urban manufacturing firms. The innovation survey was subject-based and consistent with the Oslo manual. The respondents included firms with 10 or more employees.

The empirical analysis will be limited to product innovations and innovating firms. It will be distinguished between four novelty levels of innovation (first to the firm, first to Jiangsu, first to China and first to the world innovations). The analysis will be based on multinomial probit model for propensity indicators of innovation novelty and tobit models for intensity indicators (see Table 1 for descriptive statistics). The impact of moderator variables will be examined through the inclusion of interaction terms.

## References

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**Table 1. Descriptive statistics for nationality of ownership and novelty of product innovations**

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***Propensity indicators***

| Novelty level | Nationality of ownership                 |               |
|---------------|--|---------------|
|               | Domestic firms                           | Foreign firms |
|               | ( % of firms that introduced innovation) |               |
| Firm first    | 79,0                                     | 53,3          |
| Jiangsu first | 69,2                                     | 46,7          |
| China first   | 74,1                                     | 70,0          |
| World first   | 21,7                                     | 53,3          |

***Intensity indicators***

| Novelty level | Nationality of ownership               |               |               |               |
|---------------|--|---------------|---------------|---------------|
|               | Domestic firms                         |               | Foreign firms |               |
|               | (innovation sales as % of total sales) |               |               |               |
|               | Mean                                   | Std Deviation | Mean          | Std Deviation |
| Firm first    | 0,223                                  | 0,243         | 0,121         | 0,220         |
| Jiangsu first | 0,103                                  | 0,138         | 0,052         | 0,094         |
| China first   | 0,126                                  | 0,180         | 0,262         | 0,330         |
| World first   | 0,019                                  | 0,051         | 0,204         | 0,316         |

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Source: Jiangsu innovation survey.