Promotion or Liberalization: The Effect of Targeted Investment Policies on FDI Inflows*

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Abstract

This study empirically examines two Foreign Direct Investment (FDI) policies (targeted promotion and selective liberalization) and quantifies which of the two targeted measure is more effective to attract FDI inflows and to stimulate the activities of Multinational Enterprises (MNEs). We further ask whether policies for promoting FDI inflows should encourage entrants to set up new operations, or whether policies should encourage incumbents to stretch out existing operations. We implement a difference-in-differences estimation that measures the effects of FDI policies by comparing affected and non-affected industries before and after the change of FDI policies in compliance with the Chinese WTO accession. Using aggregated data on foreign equity and sales by MNEs' foreign affiliates in China over the 1999-2007, the results show that selective liberalization has a positive impact on FDI inflows especially from incumbents, while targeted promotion does not. The results suggest that selective liberalization is preferable to targeted promotion.

Keywords: Investment policies, FDI flows, Targeted Promotion, Selective liberalization, China

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1   Introduction

Investment policies have been an important tool for attracting foreign direct investment (FDI). For example, FDI contributes to productivity growth in the recipient countries by generating export(Aitken, Hanson, and Harrison, 1997) or R&D spillovers (Branstetter, 2006), and by stimulating contact between local firms and multinational enterprises (MNEs) (Javorcik, 2004). Policymakers have thus been open to the foreign affiliates of MNEs; they have recently taken a step further, trying to combine investment policies with development strategies. These policies have begun to receive attention in the economics literature (Harding and Javorcik, 2011, 2012; Lu, Tao, and Zhu, 2017). However, previous studies show that investment policies positively affect FDI inflows in developing countries but have no such effect in developed countries. There is no consensus yet in the literature regarding how investment policies affect FDI inflows.

To broaden our understanding of investment policies, we examine and compare the impact of two different types of recent policies: targeted promotion and selective liberalization. Investment promotion provides investors with a set of favorable conditions, such as tax incentives and investment facilitation services. Tax incentives are designed to maintain profits, and facilitation services simplify administrative procedures or provide information on the investment climate through Investment Promotion Agencies (IPAs).[1] Investment liberalization consists of opening domestic markets to foreign affiliates and limiting policy space for government intervention, and it has been used to attract foreign advanced technology and innovation activities. These promotions aim to compensate for FDI's additional fixed costs that arise from market failures, such as insufficient public goods provision, a lack of information on the investment climate, and the existence of positive externalities from FDI to local firms.

Policymakers in recipient economies have recently taken a step further, trying to combine these investment policies—common promotion and liberalization—with their industrial policy. A common feature of industrial policy is the intention to maximize positive spillovers from the activities of MNEs by stimulating the diffusion of knowledge and technology and by promoting linkages with domestic suppliers (UNCTAD, 2018). To this end, targeted investment policies—targeted promotion and selective liberalization—are consistent with the industrial policy. These targeted policies do not provide general investors with preferential treatment via tax incentives or via opening domestic markets to foreign affiliates. Rather, they provide these benefits to specific investors that bring advanced technology and engage in innovation activities like R&D; they further target investment in export-oriented sectors and adoption of key technology in man-

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[1] Special Economic Zones (SEZs) offer not only tax incentives and facilitation services but also infrastructure and customs procedures aid.

ufacturing supply chains. Although these targeted efforts are important not only for achieving industrial growth but also for contributing to sustainable growth, to the best of our knowledge, these two measures have not been compared in the literature. Hence, this study examines which targeted measure is more effective in attracting FDI inflows and in stimulating MNE activities.

Table 1 presents the extent to which targeted investment tools are used by the countries in each grouping. The table shows that targeted tools are used more commonly in developing countries. Looking at each grouping, selective liberalization are chiefly used, while targeted promotion are secondarily used. However, comparing the groupings, both entry and investment promotions are commonly applied in developing economies, but not in developed economies. Thus, when examining how investment policies affect FDI inflows, these two tools need to be compared.

In this study, we further shed light on the implicit assumption underlying investment policies, namely, that the aim of the policy is to attract new entrants. By contrast, the standard heterogeneous firm model (Helpman, Melitz, and Yeaple, 2004) assumes that the entrants investing in foreign countries are firms with productivity levels above the cutoff at which firms have positive operating profits from sales in foreign markets. Thus, in practice, incumbents are larger firms with productivity levels above the cutoff but new entrants may be smaller firms with productivity levels below the cutoff. Then, we further investigate whether policies for promoting FDI inflows, and thereby, achieving sustainable development, should encourage entrants to set up new operations, or whether they should encourage incumbents to expand existing operations.

We control for simultaneity between FDI inflows and industrial growth by focusing on FDI policy that assigns treatment and control groups to affected industries. Bias arises when we cannot distinguish whether growing industries are selected to attract FDI inflows or whether the industries selected for promotion of FDI generate industrial growth. To avoid this potential bias, we specifically implement a difference-in-differences (DD) estimator that measures the effects of FDI policies by comparing the affected and non-affected industries before and after the change of FDI policies in 2002. This was the year of the initial regime shift on FDI in China in compliance with its World Trade Organization (WTO) accession protocol, and, therefore, foreign investors had no reason to expect the magnitude of the ultimate regulation change. Further, they did not have full information on which industries would have their restrictions lifted until half a month or less before the regulation change took effect. We thus regard this regime shift with respect to FDI as varying significantly among different industries.[2]

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[2] To the best of our knowledge, the entire list was first published in International Trade News on March 15, 2002.

There is an increasing number of studies exploiting the relaxation of FDI regulations following China's WTO accession (Inada, 2013, Lu, Tao, and Zhu, 2017, Lu, Sugita, and Zhu, 2017, Hsu et al., 2018, Liang, Lovely, and Zhang, 2019). They mainly shed light on the impact of the regulation change on the productivity of domestic firms in the same industry.[3] Relative to these studies, our contribution is that we examine FDI inflows in more detail. Lu, Tao, and Zhu's (2017) analysis is solely based on the relaxation of FDI regulations. In contrast, we classify this relaxation into two types of investment policies. Then, first and most importantly, we quantify the effect of the different types of investment policies. Second, we assess the effect of these different types on FDI inflows in addition to the extensive and the intensive margin.

This study complements the international trade literature on targeted policies. Most studies examine the impact of targeted investment promotion on FDI inflows and the activities of MNEs. For example, targeted tax incentives for FDI are associated with linkages from FDI to local firms (Du, Harrison, and Jefferson, 2014), and, in developing countries, targeted facilitation leads to higher FDI flows (Harding and Javorcik, 2011) and exporting higher-quality goods, but, in China, it only leads to additional investment by foreign affiliates (Ni, Todo, and Inui, 2017).[4] Azémar and Desbordes (2010), the study most similar to ours examines and compares the impact of entry-cost subsidies and labor market deregulation. However, few studies examine the effect of targeted policies; the number of previous studies examining the impact of selective liberalization on FDI inflows is still limited, and selective liberalization has not been evaluated in comparison with targeted promotion.

The remainder of this paper is divided into four sections. Section 2 develops a brief conceptual framework for analyzing investment policies. Section 3 describes the dataset and provides a preliminary graphical analysis. Section 4 provides empirical evidence showing that targeted policies affect the intensive margin of FDI and that targeted promotion and selective liberalization affect the activities of MNEs differently. Section 5 concludes the paper.

2 Conceptual framework

Investment policies have been incorporated as subsidies into the standard heterogeneous firm model of trade. Specifically, Chor (2009) argue that, although a subsidy to either MNEs' fixed or variable costs

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[3] Unlike these studies, Inada and Guo (2016) examine the effect of the regulation change on the productivity of domestic firms in the home economy.

[4] There is an increasing number of studies investigating the effect of spatially targeted program (creation of SEZs) on FDI inflows and export-oriented investment (Wang, 2013, Schminke and Van Biesebroeck, 2013, Alder, Shao, and Zilibotti, 2016, Chen, Poncet, and Xiong, 2017, and Lu, Wang, and Zhu, 2018).

of operation generates a welfare improvement through the selection effect, a variable-cost subsidy creates a larger welfare improvement than a fixed-cost subsidy. Using the model in Chor (2009), we present the conceptual framework to guide our empirical study.[5]

Consider a cutoff productivity level above which exporters have positive operating profits from FDI (see Helpman, Melitz, and Yeaple, 2004; Chor, 2009). In the model of the last two subsidies, there are two countries, Home and Foreign, labeled H and F, respectively. First, consider the use of a fixed-cost subsidy $(0 < s_f < 1)$ by the Foreign government, which lowers the FDI cutoff:

$$a_{I,j}^{1-\varepsilon} = \left(\frac{s_{f,j}(f_{I,j} - f_{X,j})w_{H,j}}{B_{F,j}\left[w_F^{1-\varepsilon} - (\tau_j w_H)^{1-\varepsilon}\right]} \right),\tag{1}$$

where j denotes the industry, $a_{I,j}$ is the FDI cutoff, $f_{I,j}$ is the fixed cost of FDI, $f_{X,j}$ is the fixed cost of exporting, w_j is the effective unit wage costs, ε is the elasticity of substitution in demand between any two goods, τ_j is the trade cost, and $B_{F,j}$ is the demand parameter. The cutoff shows that the fixed cost of FDI decreases from $(f_{I,j} - f_{X,j})w_H$ to $s_{f,j}(f_{I,j} - f_{X,j})w_H$. Thus, the subsidy enables only the most productive firms that were initially servicing the foreign market via exports to switch to FDI, thereby creating a welfare gain from the selection effect.

In practice, the amount of $s_{f,j}$ is related to industry characteristics. For example, this subsidy could open domestic markets to foreign affiliates in export-oriented sectors, or allow the adoption of key technology in manufacturing supply chains. Therefore, we claim that a fixed-cost subsidy can be used selectively by the Foreign government to attract Home firms that contribute to Foreign's industrial growth. This is selective liberalization.

Second, consider the use of a variable-cost subsidy $(0 < s_v < 1)$ by the Foreign government, which reduces MNEs' effective unit wage costs:

$$a_{I,j}^{1-\varepsilon} = \left(\frac{(f_{I,j} - f_{X,j})w_{H,j}}{B_{F,j}\left[\{(1 - s_{v,j})w_F\}^{1-\varepsilon} - (\tau_j w_H)^{1-\varepsilon}\right]} \right),\tag{2}$$

This cutoff shows that the variable-cost for MNEs decreases from $w_{F,j}$ to $(1 - s_{v,j})w_{F,j}$. The subsidy generates the above-mentioned selection effect by lowering the cutoff (as $1 - \varepsilon < 0$). Moreover, there is an additional production effect that reduces the effective price markup of MNEs. In the standard-type

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[5] There is another stream of literature on the optimal policies for attracting FDI through the real options approach. See Pennings (2000, 2005), Yu, Chang, and Fan (2007), and Tian (2018). A similar argument to Chor (2009) was made by Tian (2018), who argues that a tax rate reduction (or a variable-cost subsidy) is preferable, in terms of option values, to an investment-cost subsidy (or a fixed-cost subsidy) regardless of the FDI timing.

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model of heterogeneous firms by Melitz (2003), this effect raises the output levels of all overseas affiliates and increases consumption gains. Thus, a variable-cost subsidy could create a larger welfare improvement than a fixed-cost subsidy.

Further, in practice, the amount of $s_{v,j}$ is related to industry characteristics. For example, a set of favorable conditions such as tax incentives are provided to maximize positive spillovers from the activities of MNEs by promoting linkages with domestic suppliers (Du, Harrison, and Jefferson, 2014). Therefore, we claim a the variable-cost subsidy that substantially lowers unit wage costs can be used selectively. This is targeted promotion.

3 Data and graphical analysis

3.1 Data

3.1.1 Industry-city level unbalanced panel data

The main data are based on aggregate data from the Annual Survey of Industrial Firms (ASIF), administered by the National Bureau of Statistics of China, for the period from 1999 to 2007. We focus on foreign-owned enterprises and enterprises from Hong Kong, Taiwan, and Macao, namely, their joint ventures and wholly-owned enterprises. We aggregate our sample firms by dividing them into incumbents or entrants, based on the ownership code reported in the ASIF data. For our study, we aggregate the firm-level financial information to an ASIF industry-city level. Thus, we use unbalanced panel data consisting of 424 four-digit industries and 416 prefecture-level cities.

For the purpose of controlling regional factors affecting the fixed and variable costs of FDI, we include city characteristics such as wages; per capita industrial output; per capita number of secondary school students; highway density; per capita post and telecommunications; and per capita loans by, and deposits in, financial institutions.[6]

3.1.2 Data on Chinese FDI policies

To obtain information about Chinese FDI policies, following Lu, Tao, and Zhu (2017), we compare the 1997 and 2002 version of the Catalogue for the Guidance of Foreign Investment Industries. This comparison allows us to examine three types of investment policies:

- FDI was promoted (hereinafter, the products benefiting under this policy are referred to as (FDI) promoted products). For example, high-tech chemical fibers, such as "carbon fibers," were listed

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[6] The data source is the *Urban Statistical Yearbook of China* (various issues) and the *China Statistical Yearbook for Regional Economy* (various issues).

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in the permitted category in the 1997 Catalogue, but listed in the supported category in the 2002 Catalogue. In the supported category, foreign investors receive preferential tax rates that substantially lower the variable costs of MNEs.[7]   Thus, we call this categorical shift targeted promotion.

- FDI was liberalized (hereinafter, the products benefiting under this policy are referred to as (FDI) liberalized products). For example, home appliances, such as "washing machines," were listed in the restricted category in the 1997 Catalogue, but listed in the permitted category in the 2002 Catalogue. In the restricted category, foreign investors are subject to the foreign ownership cap, but in the permitted category, the cap is removed; consequently, foreign investors receive benefits from the reduction in the documentation cost of an application for approval to establish subsidiaries from the regulatory authority. Table 3 displays, for each product category, the regulatory authority granting the approval to establish foreign subsidiaries. It is clear that for products in the supported or permitted category, approval can be applied for through a lower regulatory authority than for products in the restricted category. Thus, we treat this categorical shift as selective liberalization.

- FDI was both promoted and liberalized. For example, "assembled vehicles and motorcycles" was listed in the restricted category in the 1997 Catalogue, but listed in the supported category in the 2002 Catalogue. We designate such products as combined (policy) products.

We follow the process outlined in Lu, Tao, and Zhu (2017) to aggregate the changes in FDI policies from the Catalogue product level to the ASIF industry level. Table 2 shows the shift in the product categories from the 1998 to the 2002 version of the Catalogue. The process results in five possible scenarios:

1. (FDI) Promoted Industries: For the Catalogue products in four-digit industries, there was either a promotion in FDI policy or no change in FDI policy. For example, in Table 2, 63 products were listed in the permitted category in the 1997 Catalogue, but listed in the supported category in the 2002 Catalogue. Thus, we refer to such industries as promoted industries.

2. (FDI) Liberalized Industries: For the Catalogue products in four-digit industries, there was either a liberalization in FDI policy or no change in FDI policy. For example, in Table 2, 38 products were listed in the restricted category in the 1997 Catalogue, but listed in the permitted category in the 2002 Catalogue. Thus, we refer to such industries as liberalized industries.

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[7] According to Article 73 of the Rules for the Implementation of the Income Tax Law of the People's Republic of China for Enterprises with Foreign Investment and Foreign Enterprises, foreign firms in the supported category receive a 15% corporate tax rate.

3. (FDI) Combined Industries: For the Catalogue products in four-digit industries, there was an improvement (i.e., both a promotion and a liberalization) in FDI policy or no change in FDI policy. For example, in Table 2, 17 products were listed in the restricted category in the 1997 Catalogue, but listed in the supported category in the 2002 Catalogue. Thus, we refer to such industries as combined industries.

4. (FDI) Discouraged Industries: For the Catalogue products in four-digit industries, there was either a deterioration in FDI policy or no change in FDI policy. For example, in Table 2, 4 products in the 1997 Catalogue was listed in the permitted category, but listed in the restricted category in the 2002 Catalogue. In addition, 28 products in the 1997 Catalogue was listed in the supported category, but listed in the permitted category in the 2002 Catalogue. Thus, we refer to such industries as discouraged industries.

5. No-change Industries: For the Catalogue products in a four digit industry, there was no change in FDI policies between 1997 and 2002. Thus, no-change industries are the principal diagonal elements in Table 2.

Unlike in Lu, Tao, and Zhu (2017), (FDI) encouraged industries in this study consist of promoted and liberalized industries. In our regression analysis, the treatment group is promoted or liberalized industries and the control group is no-change industries. Following Lu, Tao, and Zhu (2017), FDI-discouraged industries are excluded from the analysis. Moreover, to distinguish between the effect of FDI promotion and liberalization, we control for the combined industries. The results (available upon request) remain robust when we include the combined industries in the promoted or liberalized industries.

Finally, investment policies are applied to both entrants and incumbents. Incumbents in the supported category can benefit from corporate tax exemption if they make an additional investment satisfying one of the following: (i) the capital amount exceeds USD 60 million, or (ii) the capital amount increases by 50%, and exceeds USD 15 million. Likewise, entrants can benefit from a reduction in the documentation cost of establishment when they expand their existing operations.

3.2 Estimation specification

Based on the empirical implications from (1) and (2), consider the following DD specification that tests for the influence of investment policies affecting FDI inflows:

$$Log\ y_{jct} = \alpha_j + \beta_c + \gamma_t + \sum_{t=2000}^{2007} \delta_t Liberalized_j \times Year_t + \sum_{t=2000}^{2007} \zeta_t Promoted_j \times Year_t \tag{3}$$

$$+ \sum_{t=2000}^{2007} \eta_t Combined_j \times Year_t + \boldsymbol{X'}_{ct}\boldsymbol{\lambda} + u_{jct},$$

where j, c, and t denote the four-digit industry, prefecture-level city, and year, respectively. y_{jct} represents the ownership, number of foreign affiliates, and performance of foreign affiliates (e.g., sales) of industry j in year t. λ_j, λ_c, and λ_t are the industry, city, and year fixed effects, respectively. $Liberalized_j$ indicates whether industry j includes liberalized products; $Promoted_j$ indicates whether industry j includes promoted products, and $Combined_j$ indicates whether industry j includes combined products. $Year_t$ is a year dummy, $\mathbf{X}_{ct}$ is a vector of time-varying city characteristics to isolate the effect of investment policies, and u_{jct} is the error term. The standard errors are clustered by four-digit industry to adjust for possible serial correlation and heteroskedasticity, following the suggestion in Bertrand, Duflo, and Mullainathan (2004). The summary statistics of key variables are shown in Table 4.

3.3 Identifying assumption and graphical analysis

3.3.1 Identifying assumption

The key identifying assumption here is that the trend of FDI in China would be the same in both industries in the absence of FDI policies. The common trend assumption can be applied to the conditional expectation:

$$E[y_{0jct}|j, c, t, X_{ct}] = \alpha_j + \beta_c + \gamma_t + \boldsymbol{X'}_{ct}\boldsymbol{\lambda}. \tag{4}$$

y_{0jct} denotes an outcome in the pre-treatment period (i.e., $t < 2002$). This equation indicates that encouraged industries can differ from no-change industries only in the fixed effects and in all the other controls. In the graphical analysis below, we check whether FDI policies induce a deviation from this common trend.

3.3.2 Graphical analysis

Figure 1 shows the growth trend in foreign equity (left panel) and foreign affiliate sales (right panel) over 2000–2007. Both exhibit a similar trend, although it is driven by the growth in encouraged industries, especially incumbents in encouraged industries. Their growth accounts for 66% of the total foreign equity growth and 80% of the total sales growth.

Panel A in Figure 2 presents the trend in foreign affiliates' average foreign equity (left panel) and average sales (right panel) for the encouraged and no-change industries over 1999–2007. Prior to the treatment year, the trajectories of the two types of industries are very similar. However, after the treatment year ,

the trajectories of the encouraged industries deviate from those of the no-change industries. Panel B in Figure 2 shows the trend in foreign affiliates' average foreign equity (left panel) and average sales (right panel) for the promoted, liberalized, and no-change industries over 1999–2007. The trajectories are similar to those for the encouraged and no-change industries even when the encouraged industries are divided into promoted and liberalized industries. These results indicate that the trends in the treatment and control groups are parallel in the pre-treatment period but divergent in the post-treatment period.

Figure 3 displays the trend in foreign affiliates' (left panel) and domestically-owned firms' (right panel) effective corporate tax rates for the encouraged and no-change industries over 1999–2007. Following the suggestion by Du, Harrison, and Jefferson (2014), we calculated these effective tax rates using reported the income taxes paid as a share of total profits. The trajectories in the left panel are considerably parallel in the pre-treatment period and divergent in the post-treatment period. In the post-treatment periods, tax subsidies for FDI are indeed effective, but the magnitude of the effect is substantially small. The effective tax rate for FDI decreased from 18.9% in 2002 to 17.3% in 2004. This is because the tax subsidy had been prevalent in the pre-treatment period, irrespective of whether the industries were affected by investment policies. Foreign affiliates received a 15% tax subsidy whereas domestically-owned firms faced a statutory tax rate of 33%. Comparing the left and right panels, throughout the period, the tax rates of foreign affiliates are approximately 10% lower than those of domestically-owned firms.

4   Empirical results

Table 5 reports the DD estimation results using foreign equity by foreign affiliates (column 1) and their incumbents (column 2), and number of foreign affiliates (column 3) as dependent variables. The first column in Table 5 shows that the $Liberalized_j \times Year_t$ interactions are positive and statistically significant in the post-WTO period, whereas the $Promoted_j \times Year_t$ interactions are negative and statistically insignificant. In Figure 4, we plot the set of estimated coefficients from the DD estimation of the first column of Table 5 for $Liberalized_j \times Year_t$ (column (a) in panel A) and $Promoted_j \times Year_t$ (column (b) in panel A), showing the differences in foreign equity between the encouraged and no-change industries over time. Although these results are consistent with the findings in the literature (e.g., Lu, Tao, and Zhu, 2017) that FDI policy induces inflows of FDI after China's WTO accession, selective liberalization has a positive impact on FDI inflows while targeted promotion does not.

The second column in Table 5 shows that interactions $Liberalized_j \times Year_t$ are consistently positive and statistically significant in the post-WTO period, whereas the interactions $Promoted_j \times Year_t$ are negative

and statistically insignificant, suggesting that selective liberalization has a positive impact on FDI inflows, especially for incumbents.

The third column in Table 5 shows that both $Liberalized_j \times Year_t$ and $Promoted_j \times Year_t$ are statistically insignificant. To summarize, these results suggest that FDI policies have indeed had a positive impact on the intensive margin of FDI, but less so on the extensive margin.

To evaluate the magnitude of the effect, we focus on the estimates of the post-WTO period from the first column in Table 5. The estimate of 0.697 on the fourth line implies that selective liberalization raises FDI inflows in an industry by 69.7%. This magnitude is comparable to the DD estimates in the literature (e.g., 0.4118 in Charlton and Davis, 2007; 0.770 by Harding and Javorcik, 2011). The estimated effects are incremental if we compare 2004 to 2007, at 67.2% and 72.4%, respectively. This gradual increase is also comparable to the findings of Harding and Javorcik, 2011. These results suggest selective liberalization has a persistent and incremental effect on the FDI inflows in the post-WTO period, possibly because time is needed for the effects of liberalization to appear.

The DD estimates, reported in Table 6, measure the effect of FDI policies on foreign affiliate sales. The first column in Table 5 shows that both $Liberalized_j \times Year_t$ and $Promoted_j \times Year_t$ are positive and statistically significant in the post-WTO period, although targeted promotion becomes significant starting from 2004. In Figure 4, we again plot the set of estimated coefficients from the DD estimation in the first column in Table 6 for $Liberalized_j \times Year_t$ (column (a) in panel B) and $Promoted_j \times Year_t$ (column (b) of panel B). Unlike the results in Table 5, these results suggest that both selective liberalization and targeted promotion have a positive impact on foreign affiliate sales.

The second column in Table 5 shows that the $Liberalized_j \times Year_t$ interactions are positive and statistically significant in the post-WTO period, whereas the $Promoted_j \times Year_t$ interactions are positive but statistically insignificant, suggesting that attracted FDI in the liberalized industries encourage incumbents to expand their existing operations.

We further investigate whether investment policies work as a catalyst to attract specific investors to export-oriented sectors or to innovation activities. Presumably, the presence and activities of MNEs could generate positive spillovers by diffusing information about the international market (Aitken, Hanson, and Harrison, 1997), or by diffusing technological information via innovation activities (Jaffe, 1986 and Cheung and Lin, 2004).

We look at the number of exporters and export sales as measures of the export performance of the attracted MNEs. The first column of Table 7 shows that both $Liberalized_j \times Year_t$ and $Promoted_j \times Year_t$

are statistically insignificant, suggesting again that FDI policies do not have any effect on the extensive margin of FDI.

The second column in Table 7 shows that the $Promoted_j \times Year_t$ interactions are positive and statistically significant in the post-WTO period, whereas the $Liberalized_j \times Year_t$ interactions are statistically insignificant, suggesting that targeted promotion induces larger exporting sales.

We also look at the number of firms introducing a new product, and new product revenues as proxies for firms' innovation activities, following the suggestion by Zhang (2015) and Lu, Tao, and Zhu (2017) that a new product can reflect the output of R&D investment. The regression results are shown in columns 3-4 in Table 7. The third column in Table 7 shows that both $Liberalized_j \times Year_t$ and $Promoted_j \times Year_t$ are statistically insignificant, although $Liberalized_j \times Year_{2003}$ is significant but only at the 10% level. Overall, we find a consistent result; that is, FDI policies do not affect the extensive margin of FDI.

The fourth column in Table 7 shows the $Promoted_j \times Year_t$ interactions are positive and statistically significant in the post-WTO period, whereas the $Liberalized_j \times Year_t$ interactions are statistically insignificant, suggesting that the attracted FDI in the liberalized industries increases their innovative activities.

5 Policy implication

We identified the positive impact of selective liberalization on FDI inflows and innovation activities. This finding have straightforward implications for policymakers. For policymakers, this implies that targeted efforts are important for absorbing advanced technology. The policymakers could promote inward FDI by opening domestic markets to specific investors that bring advanced technology and engage in innovation activities. For example, Japanese authorities have recently promoted innovation activities by implementing the Act on Special Measures for Productivity Improvement. The aim of the act is to relax regulations on innovation activities. This special measures could allow the adoption of key technology in manufacturing supply chains. The results of this study provide support for the policy.

Second, my finding suggests that selective liberalization have a positive impact on the intensive margin of FDI. The Chinese government stimulated incumbents to expand existing operations by relaxing FDI regulations. Again we look at the estimates of the post-WTO period from the second column in Table 5. The estimate of 0.692 on the fourth line implies that selective liberalization raises FDI inflows in an industry by 69.2%. This magnitude is comparable to the DD estimates in the first column in Table 5. The estimated effects are also incremental if we compare 2004 to 2007, at 69.2% and 82.9%, respectively. Thus, our results indicates that policies for promoting FDI inflows, and thereby, achieving sustainable

development should encourage incumbents to expand existing operations.

Third, policymakers should continue to make effort to simplify administrative procedures or provide information on the investment climate through targeted promotion. The estimation results in Table 7 show that targeted promotion have positive effects on export activities. Policymakers could attract investment in export-oriented sectors by promoting specific investors with preferential treatment via tax incentives, facilitation services, or providing information on the investment climate through Investment Promotion Agencies (IPAs).

6   Conclusion

This study investigated the different investment policies most commonly used both in developed and developing countries. Our difference-in-differences estimates demonstrate that selective liberalization is more effective in attracting FDI inflows than targeted promotion and that the attracted FDI in the liberalized industries encourages incumbents to expand their existing operations. To summarize, these FDI policies have a positive impact on the intensive margin of FDI, but less so on the extensive margin.

One major caveat of these results is that they are not consistent with the theoretical prediction that a variable-cost subsidy could generate a larger welfare improvement than a fixed-cost subsidy. However, it is plausible that variable-cost subsidies, that is, tax subsidies for FDI, are indeed effective, but the magnitude of their effect is substantially small. Moreover, despite this caveat, it is likely that targeted promotion induces an additional production effect on MNEs' activities.

In addition, we find that targeted promotion has a positive impact on export activities, whereas selective liberalization has a positive impact on the innovation activities of MNEs. These results suggest that targeted investment policies can indeed work in tandem with industrial policy that intends to maximize positive spillovers from the activities of MNEs by stimulating the diffusion of knowledge and technology. However, different policies have different effect.

Finally, it is worth indicating that our findings broaden our understanding of investment policies in developing countries and also probably in developed countries. This study suggests that selective liberalization may be an effective policy option for stimulating industrial growth.

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Table 1: Targeted investment policy tools by economic grouping between 2010 and 2018 (number of tools)

	All tools	Selective liberalization	Targeted promotion	Special treatment
World	481	339	84	58
Developed economies	116	102	10	4
Developing economies	365	237	74	54

Source: Calculated by the author from United Nations Conference on Trade and Development (UNCTAD) investment policy hub.

Table 2: Product category transitions from 1998 to 2002

		2002				
		Supported	Permitted	Restricted	Prohibited	Total
	Supported	131	28	0	0	159
	Permitted	63	—	4	0	—
1998	Restricted	17	38	31	0	86
	Prohibited	0	0	0	5	5
	Total	211	—	35	5	

Source: Calculated by the author from data published by the Gazette of the State Council of the People's Republic of China, No. 40, January 1998, and No. 3, January 2003.

Table 3: Regulatory authorities for approval of establishment of foreign subsidiaries (Unit: million USD)

Investment amount	Supported and Permitted products	Restricted products
More than 500	the State Council, National DRC	the State Council National DRC
From 300 to 500	National DRC	
From 100 to 300	Local DRC	
From 50 to 100		National DRC
Less than 50		Provincial DRC

Source: Summarized by the author based on information published in the Gazette of the State Council of the People's Republic of China, No. 20, July 2005.
Note: DRC is an abbreviation for the Development and Reform Commission, which is in charge of China's macroeconomic planning.

Table 4: Summary statistics

Variables	Obs.	Mean	Std. dev.
Log of foreign equity	85,939	9.10	2.80
Log of incumbents' foreign equity	85,939	8.71	3.29
Log of number of firms	85,939	0.53	0.80
Log of sales	85,939	11.12	1.71
Log of incumbents' sales	85,939	10.64	2.80
Log of number of exporters	85,939	0.64	0.70
Log of export sales	85,939	6.32	5.30
Log of number of firms with new product	73,333	0.27	0.51
Log of new product sales	73,333	1.47	3.66

Note: The sample period covers 1999–2007. New product sales in the data set are missing in 2004, a census year. Summary statistics are provided separately for foreign affiliates and their incumbents. This table reports the number of observations, and the means and standard deviations for the following variables: foreign equity, sales, export sales, and domestic sales.

Table 5: Main results

Dependent variable	Foreign affiliates	Incumbents	Foreign affiliates
	Log of foreign equity	Log of foreign equity	Log of number of firms
	(1)	(2)	(3)
Liberalized×Year2000	0.054	0.038	-0.049**
	(0.183)	(0.185)	(0.024)
Liberalized×Year2001	0.024	0.005	-0.006
	(0.154)	(0.160)	(0.024)
Liberalized×Year2002	0.221	0.150	0.004
	(0.189)	(0.221)	(0.039)
Liberalized×Year2003	0.697**	0.692*	0.061
	(0.344)	(0.352)	(0.070)
Liberalized×Year2004	0.672*	0.739**	0.065
	(0.343)	(0.329)	(0.067)
Liberalized×Year2005	0.775**	0.768**	0.078
	(0.332)	(0.342)	(0.070)
Liberalized×Year2006	0.781**	0.829***	0.081
	(0.335)	(0.316)	(0.070)
Liberalized×Year2007	0.724**	0.696**	0.056
	(0.351)	(0.343)	(0.074)
Promoted×Year2000	0.057	0.044	0.020
	(0.112)	(0.114)	(0.016)
Promoted×Year2001	-0.039	-0.047	-0.017
	(0.139)	(0.141)	(0.018)
Promoted×Year2002	-0.194	-0.210	-0.022
	(0.139)	(0.145)	(0.025)
Promoted×Year2003	-0.049	-0.143	0.015
	(0.201)	(0.210)	(0.060)
Promoted×Year2004	-0.029	-0.199	0.017
	(0.199)	(0.204)	(0.061)
Promoted×Year2005	-0.070	-0.181	0.026
	(0.203)	(0.213)	(0.062)
Promoted×Year2006	-0.049	-0.158	0.038
	(0.201)	(0.206)	(0.063)
Promoted×Year2007	-0.050	-0.132	0.022
	(0.202)	(0.213)	(0.063)
Combined×Year Dummies	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
City fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Time-varying city controls	Yes	Yes	Yes
R^2	0.220	0.215	0.366
N	85,939	85,939	85,939

Note: Observations on foreign affiliates and their incumbents are aggregated at the industry-municipality-year level. Difference-in-differences are the differences in changes between the encouraged (promoted or liberalized) and no-change industries. Time-varying city controls include wages; per capita industrial output; per capita number of secondary school students; highway density; per capita post and telecommunications; and per capita loans by, and deposits in, financial institutions. Robust standard errors are reported in parentheses, clustered at the four-digit industry level. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 6: Foreign affiliate sales

Dependent variable: Log sales	Foreign affiliates (1)	Incumbents (2)
Liberalized×Year2000	0.059	0.034
	(0.067)	(0.069)
Liberalized×Year2001	0.003	-0.022
	(0.080)	(0.084)
Liberalized×Year2002	0.142*	0.035
	(0.073)	(0.106)
Liberalized×Year2003	0.546**	0.588**
	(0.229)	(0.248)
Liberalized×Year2004	0.553**	0.651***
	(0.233)	(0.225)
Liberalized×Year2005	0.539**	0.614***
	(0.216)	(0.228)
Liberalized×Year2006	0.590**	0.725***
	(0.234)	(0.220)
Liberalized×Year2007	0.522**	0.596***
	(0.218)	(0.227)
Promoted×Year2000	0.068	0.060
	(0.065)	(0.068)
Promoted×Year2001	0.052	0.054
	(0.076)	(0.079)
Promoted×Year2002	0.041	0.000
	(0.067)	(0.066)
Promoted×Year2003	0.225	0.108
	(0.146)	(0.172)
Promoted×Year2004	0.283*	0.066
	(0.149)	(0.171)
Promoted×Year2005	0.263*	0.084
	(0.144)	(0.179)
Promoted×Year2006	0.346**	0.200
	(0.149)	(0.179)
Promoted×Year2007	0.314**	0.133
	(0.146)	(0.186)
Combined×Year Dummies	Yes	Yes
Industry fixed effects	Yes	Yes
City fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Time-varying city controls	Yes	Yes
R^2	0.282	0.168
N	85,939	85,939

Note: Observations on foreign affiliates and their incumbents are aggregated at the industry-municipality-year level. Difference-in-differences are the differences in changes between the encouraged (promoted or liberalized) and no-change industries. Time-varying city controls include wages; per capita industrial output; per capita number of secondary school students; highway density; per capita post and telecommunications; and per capita loans by, and deposits in, financial institutions. Robust standard errors are reported in parentheses, clustered at the four-digit industry level. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 7: Other measures of foreign affiliate performance

Dependent variable	Foreign Affiliates		Foreign Affiliates	
	Log number of exporters	Log export sales	Log number of firms with new product	Log new product sales
	(1)	(2)	(3)	(4)
Liberalized×Year2000	-0.021	0.010	0.013	0.168
	(0.023)	(0.256)	(0.016)	(0.200)
Liberalized×Year2001	-0.020	-0.238	0.020	0.259
	(0.025)	(0.232)	(0.014)	(0.183)
Liberalized×Year2002	-0.014	-0.131	0.000	-0.019
	(0.028)	(0.246)	(0.012)	(0.155)
Liberalized×Year2003	-0.018	-0.165	0.042*	0.775**
	(0.056)	(0.420)	(0.024)	(0.344)
Liberalized×Year2004	-0.022	-0.283	–	–
	(0.048)	(0.371)	–	–
Liberalized×Year2005	-0.010	-0.265	0.036	0.744**
	(0.045)	(0.347)	(0.024)	(0.372)
Liberalized×Year2006	0.003	-0.170	0.041	0.760**
	(0.047)	(0.371)	(0.027)	(0.378)
Liberalized×Year2007	-0.002	-0.107	0.032	0.660*
	(0.046)	(0.365)	(0.026)	(0.372)
Promoted×Year2000	0.002	-0.019	-0.001	0.007
	(0.014)	(0.150)	(0.011)	(0.135)
Promoted×Year2001	0.002	0.213	-0.013	-0.126
	(0.016)	(0.170)	(0.013)	(0.175)
Promoted×Year2002	0.005	0.108	-0.001	-0.004
	(0.024)	(0.213)	(0.014)	(0.185)
Promoted×Year2003	0.048	0.764**	-0.002	0.057
	(0.042)	(0.371)	(0.016)	(0.225)
Promoted×Year2004	0.039	0.734*	–	–
	(0.044)	(0.380)	–	–
Promoted×Year2005	0.053	0.799**	0.008	0.126
	(0.043)	(0.390)	(0.017)	(0.233)
Promoted×Year2006	0.069	0.992**	0.012	0.193
	(0.044)	(0.403)	(0.018)	(0.236)
Promoted×Year2007	0.056	0.746*	0.004	0.059
	(0.042)	(0.387)	(0.019)	(0.238)
Combined×Year Dummies	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
City fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Time-varying city controls	Yes	Yes	Yes	Yes
R^2	0.397	0.328	0.167	0.161
N	85,939	85,939	73,333	73,333

Note: All observations are at the industry-municipality-year level. New product sales in the data set are missing in 2004, which was a census year. Difference-in-differences are the differences in changes between the encouraged (promoted or liberalized) and no-change industries. Time varying city controls include wages; per capita industrial output; per capita number of secondary school students; highway density; per capita post and telecommunications; and per capita loans by, and deposits in, financial institutions. Robust standard errors are reported in parentheses, clustered at the four-digit industry level. ***, ** , and * indicate significance at the 1%, 5%, and 10% levels, respectively.
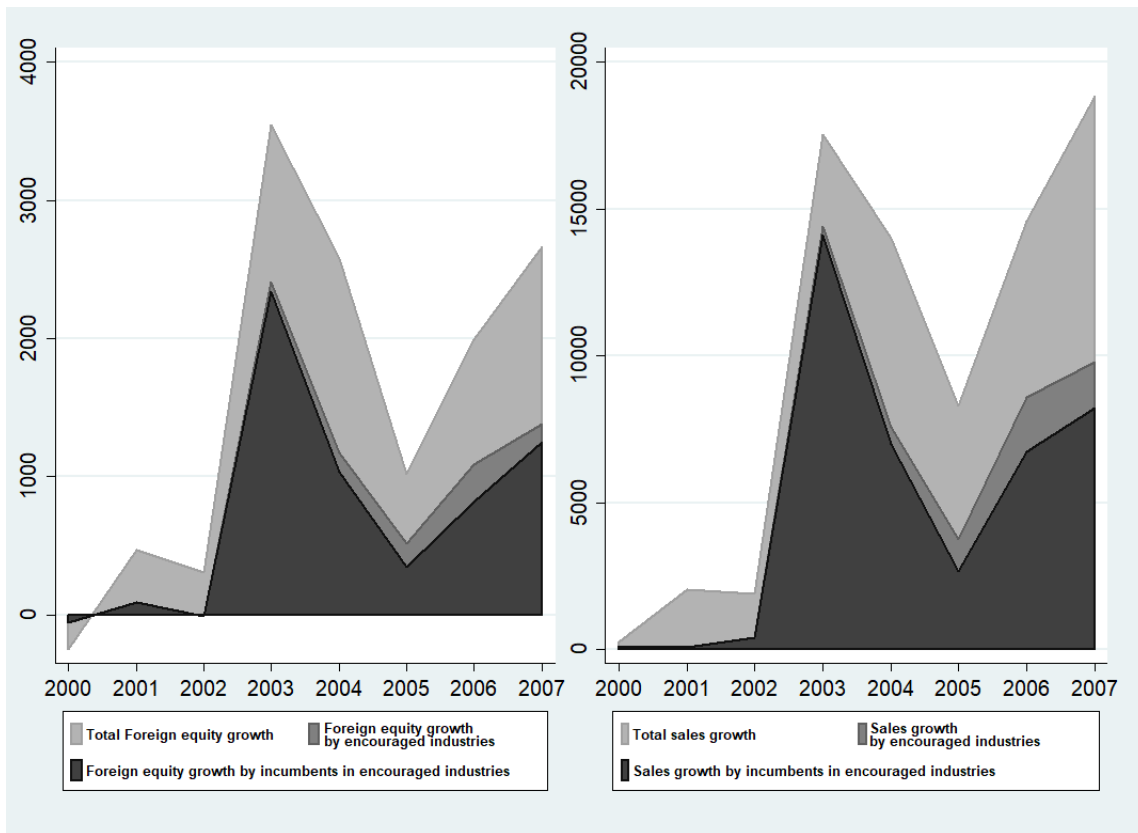
Figure 1: Trends in foreign affiliate sales and foreign equity over 2000–2007 (Unit: billion yuan)
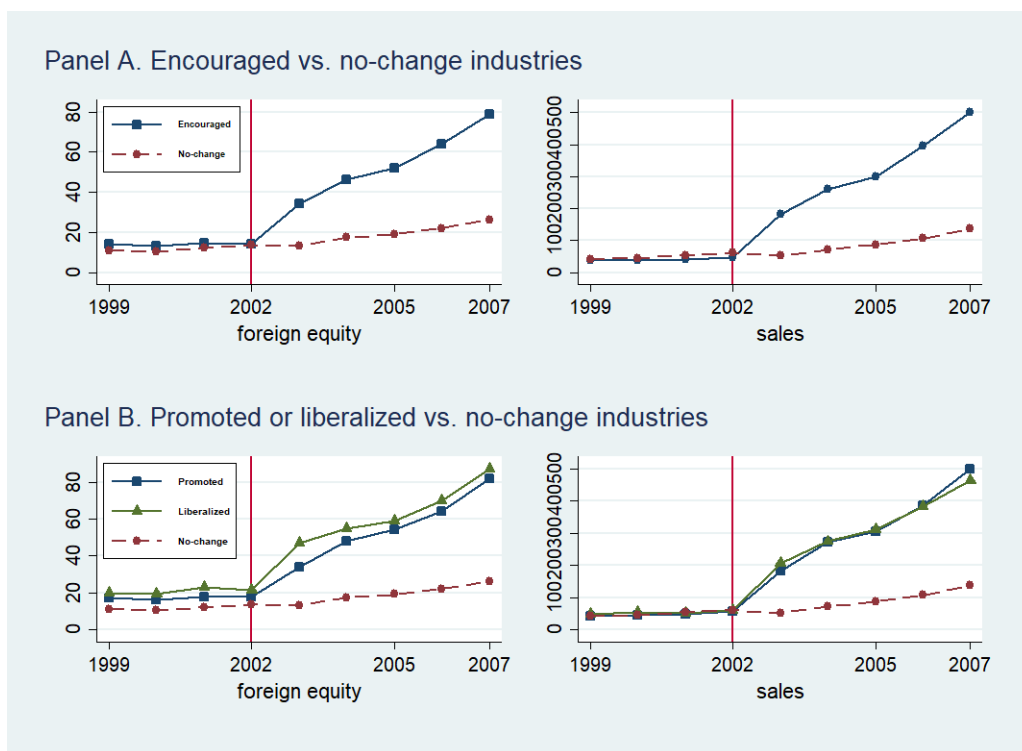
Source: Calculated by ASIF.

Figure 2: Comparison of average trends in foreign affiliate sales and foreign equity between FDI-encouraged and no-change industries over 1999–2007 (Unit: billion yuan)
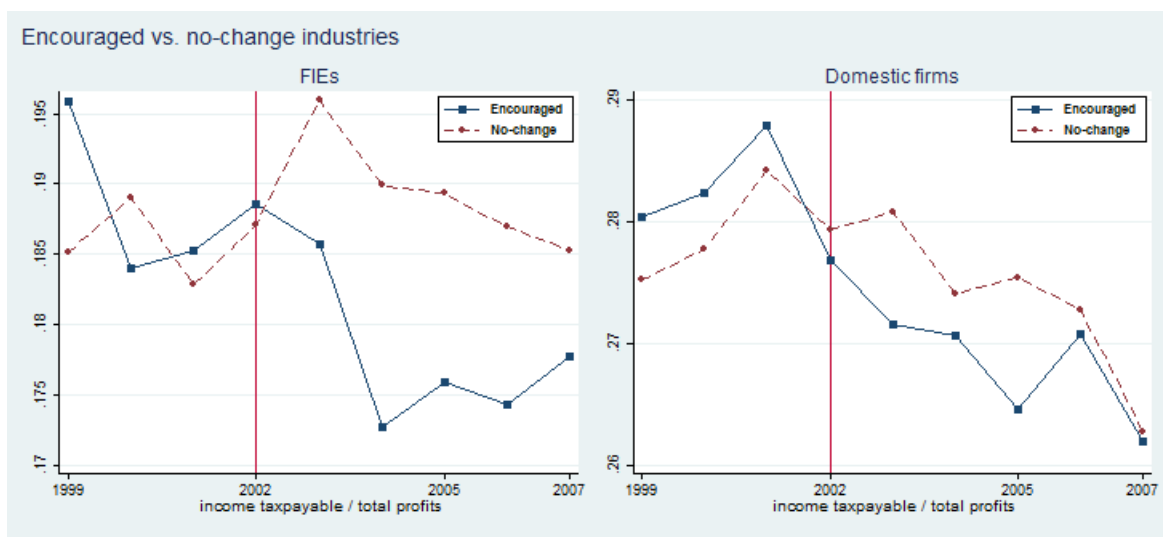
Source: Calculated by ASIF.

Figure 3: Comparison of effective tax for foreign affiliates and domestic firms between FDI-encouraged and no-change industries over 1999–2007 (Unit: percent)

Note: In this figure, domestic firms are defined as currently operating firms registered as non-foreign affiliates.
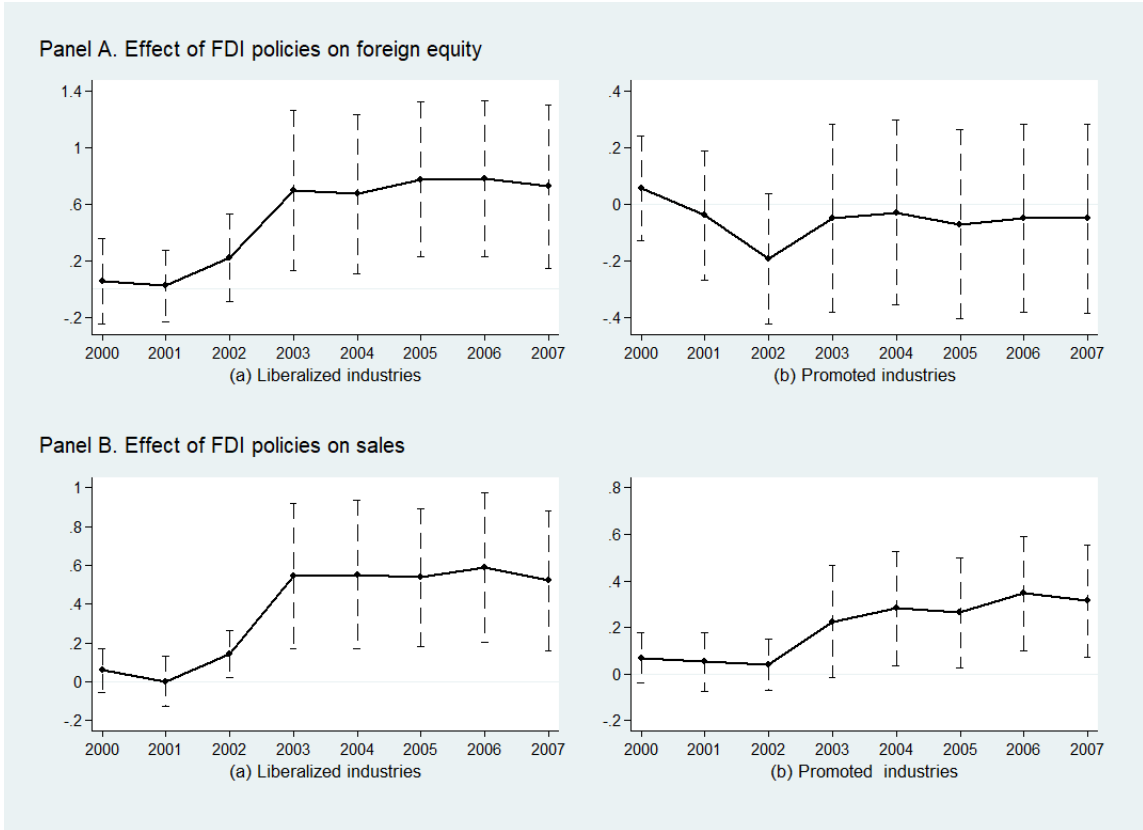Source: Calculated by ASIF.

Figure 4: Estimated coefficients of the interactions between encouraged industries and year dummies

Note: The solid line is the trend of the foreign affiliate sales difference between liberalized/promoted industries (treatment group) and no-change industries (control group) for the specification (1) in Table 5 (panel A) and (2) in Table 5 (panel B). The dashed lines represent the 90% confidence interval of the estimated effect.