

Incumbents and Protectionism: The Political Economy of Foreign Entry Liberalization

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Abstract

This paper investigates the influence of incumbent firms on the decision to allow foreign direct investment into an industry. Based on data from India's economic reforms, the results suggest that firms in concentrated industries are more successful at preventing foreign entry, that state-owned firms are more successful at stopping foreign entry than similarly placed private firms, and that profitable state-owned firms are more successful at stopping foreign entry than unprofitable state-owned firms. These findings continue to hold after controlling for industry characteristics such as the presence of natural monopolies and the size of the workforce. The pattern of foreign entry liberalization supports the private interest view of policy implementation.

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1. Introduction

Liberalizing international capital flows can increase economic growth (Bekaert, Harvey, and Lundblad, 2005). Yet, many countries restrict the inflow of foreign investment that can benefit their economies. Recent evidence suggests that incumbent firms that receive preferential treatment may oppose financial market reforms that threaten their favored status.¹ In particular, Rajan and Zingales (2003a, b) and Stulz (2005) argue that entrenched incumbent firms have an incentive to oppose the liberalization of international capital flows if liberalization limits their ability to extract monopoly rents. This paper investigates incumbent firm influence on the decision to liberalize foreign direct investment.

Specifically, we examine the Indian government's decision to selectively reduce barriers to foreign direct investment in a subset of industries after a balance-of-payments crisis in 1991. The Indian corporate sector is characterized by the concentrated control of assets by state- and family-owned firms, much like the rest of the world (La Porta, Lopez de Silanes, Shleifer, and Vishny, 1999). We adopt a political economy approach to ask the following questions: Did incumbent firms influence the state's decision to liberalize foreign direct investment in some industries and not others? If so, which incumbent firms had the most to lose from foreign entry and the ability to oppose it?

To investigate these issues, we use a rich firm-level data set that provides detailed balance sheet and ownership information for more than 2,100 firms that account for over 70% of India's industrial output. The data are classified into state-owned, group-owned, and privately owned firms. We investigate whether pre-liberalization characteristics such as industry structure and the ownership of incumbent firms can explain the government's decision to selectively open up some industries to foreign entry.

The private interest and public interest views of policymaking suggest possible explanations for the government's decision to liberalize some industries and not others. The private interest view characterizes the policy process as one where special interest groups lobby the government to influence

¹ The evidence suggests that (1) banking deregulation is delayed in U.S. states where incumbent banks have the most to lose from entry (Kroszner and Strahan, 1999); (2) entrenched firms lobby to restrict access to credit after a crisis, forcing poorer entrepreneurs to exit (Feijen and Perotti, 2005); and (3) post-1500, Western European countries with monarchies opposed free entry in profitable industries (Acemoglu, Johnson, and Robinson, 2005).

policy decisions in their favor, which may result in non-welfare-maximizing outcomes.² The public interest view assumes that governments enact welfare-maximizing policy changes to achieve socially efficient outcomes and correct market failures, without regard for private interests (Joskow and Noll, 1981).

Using data on industry structure and firm characteristics, we investigate whether the government randomly liberalized industries, or whether the private or the public interest views better explain the pattern of liberalization. For instance, the private interest view holds that the probability of foreign entry liberalization will be inversely related to industry concentration. According to Olson (1965), Stigler (1971), and Peltzman (1976), incumbent firms in these industries have a greater ability to lobby the government and prevent policy changes, such as foreign entry, that could adversely affect them. Further, Stigler (1971) argues that incumbent firms in profitable, concentrated industries have a greater incentive to prevent entry in order to protect their monopoly profits. In contrast, from a public interest perspective the government would liberalize entry to reduce deadweight losses in concentrated industries that earn monopoly profits (Pigou, 1938).

The government also may be more receptive to the interests of particular incumbents, such as state-owned firms that occupy a prominent position in many economies around the world (Megginson, 2005).³ Politicians obtain private benefits from state-owned firms, such as the ability to hire surplus workers (Shleifer and Vishny, 1994). Moreover, the earnings of state-owned firms directly accrue to the government. Therefore, policy makers may have an incentive to protect industries with large or profitable state-owned firms from competition.

Our main results are as follows. First, consistent with the private interest view, the likelihood of foreign entry liberalization in an industry is inversely related to its concentration. On average, the probability of liberalization decreases by 27% for a one standard deviation increase in the Herfindahl

² Olson (1965), Peltzman (1976) and Becker (1983) describe the regulatory process as one of interest group competition in which compact, well-organized groups are able to use the coercive power of the state to capture rents at the expense of more dispersed groups.

³ According to Gupta (2005), Indian state-owned firms account for over 40% of the total capital stock in the economy.

index from its sample mean of 0.45.⁴ Second, consistent with the hypothesis that firms in concentrated industries have an incentive to protect their monopoly profits, the likelihood of foreign entry liberalization is significantly lower for profitable, concentrated industries. Third, regional variation in firm location reveals a negative and significant relationship between geographic concentration and the likelihood of foreign entry liberalization.

Fourth, the results show that industries with a sizable state-owned firm presence are significantly less likely to be liberalized. Whereas industries with state-owned monopolies face a 14% chance of being liberalized, industries with no state-owned firms face a 52% probability, making them nearly four times as likely to be liberalized. Also consistent with the private interest hypothesis, the evidence suggests that the government is more likely to protect profitable state-owned firms. The results are robust to industry size, concentration, and workforce.

Four methodological issues may be raised in the context of our empirical analysis. First, the pattern of liberalization may reflect underlying technologies that determine scale rather than barriers to entry created by incumbent firm influence. We examine the difference between Indian and U.S. concentration in the same industries where U.S. concentration captures the ‘natural’ level of concentration in an industry and find that the likelihood of liberalization is negatively correlated with our measure of “excess concentration.” Consistent with Rajan and Zingales (2003a, b), this result suggests that past industrial policies in India created powerful incumbent firms that used their market power to oppose financial market reforms. Second, while industry concentration may proxy for natural monopolies or industries of strategic importance, we find that concentration continues to be significantly and negatively correlated with the probability of liberalization after controlling for industries in these two categories.

Third, industry concentration may proxy for the political connections of certain incumbents like family-owned firms. We find that industry concentration continues to be significantly and negatively related to the probability of liberalization with the inclusion of controls for the stake of privately-owned

⁴ The Herfindahl index is an indicator of the degree of competition among firms in an industry. It is defined as the sum of the squares of the market shares of each firm in an industry. The value of the Herfindahl index can range from zero in perfectly competitive industries to one in single-producer monopolies.

and state-owned firms in an industry, which are proxies for the political influence of these firms. A limitation of this approach is that there may be heterogeneity in the influence of private firms arising out of family connections that are not captured by ownership categories.

Fourth, our methodology is related to the literature on the political economy of trade, where politically organized groups use campaign contributions to influence politicians as in Grossman and Helpman (1994).⁵ For instance, Goldberg and Maggi (1999) and Bandhyopadhyay and Gawande (2000) find that tariffs are higher in industries that are represented by organized lobbies. However, as Gawande and Krishna (2004) point out, one concern in this literature is that industry characteristics are an endogenous outcome of differences in tariff barriers across industries. Our data have the advantage that before 1991, draconian restrictions on foreign entry were uniformly applied across all industries so that foreign investment inflows were negligible.⁶ We also estimate an instrumental variable specification using industry concentration in the United States as an instrumental variable for the Herfindahl index in India to capture influence arising out of market power rather than past protection. Industry concentration remains inversely correlated with the probability of liberalization.

Our findings contribute to the literature that documents the relation between financial constraints and product market competition (Cetorelli and Strahan, 2006) as well as the relation between financial market development and economic growth (Rajan and Zingales, 1998; Bekaert, Harvey, and Lundblad, 2005). Given the widely documented inefficiencies of state-owned enterprises (Megginson, 2005) and the deadweight loss associated with industry concentration, selective entry liberalization to protect these incumbent firms may inhibit economic growth. Because entrenched state-owned firms are likely to hinder financial market reforms, a policy implication of our results is that it may be necessary to reduce the influence of these firms, for example, through privatization, to optimally implement reforms.

⁵ We do not observe more direct measures of influence such as parliamentary voting records or lobbying contributions because the former are not available for the liberalization measure studied here, and the latter are illegal in India. A potential concern with using data on lobbying contributions, if available, is that the contributions and the policy positions of politicians may be simultaneously determined. It is difficult to make a similar claim for the *ex-ante* stake of incumbent firms, which lies at the core of the identification strategy in this paper.

⁶ In the four years preceding liberalization foreign investment inflows accounted for less than 0.3% of gross capital formation on average in India (World Bank, 1991).

Section 2 discusses the economic reforms and industrial structure in India. Section 3 provides summary statistics and describes our methodology. Section 4 describes the data. Section 5 discusses the relation between industry and firm characteristics, and the likelihood of foreign direct investment liberalization. Section 6 provides additional robustness checks, and Section 7 concludes.

2. Reforms and Industrial Structure

2.1. Liberalizing Foreign Entry in India

In response to a balance-of-payments crisis in 1991, India undertook sweeping economic reforms. A key reform involved reducing restrictions on foreign direct investment in a subset of industries. Specifically, according to the Industrial Policy Resolution of 1991, automatic approval was granted for foreign direct investment of up to 51% in 46 of 96 three-digit industrial categories (Office of the Economic Advisor, 2001). In the remaining 50 industries, the state continued to require that foreign investors obtain approval for entry. Table A1 in the Appendix provides a list of liberalized industries.

Before 1991, ownership and industry concentration patterns in India were an outcome of state-led industrialization policies rather than of market forces. A chronology of industrial policies since India's independence shows that these policies restricted the participation of private and foreign firms in the economy (Appendix, Table A2). For example, the Industrial Policy Resolution of 1956 reserved certain industries for state-owned firms, prohibiting the entry of all private firms. Until 1991, government approval was required for foreign direct investment in all industries, severely curtailing FDI flows.

To establish that barriers to entry rather than technological factors which determine scale explain the pattern of industrial concentration in India before 1991, we compare the pre-reform industrial structure in India with that of the United States. As an economy with more developed financial markets and fewer regulations than most countries, U.S. data offer a benchmark of industry characteristics that represent underlying technologies rather than regulatory constraints, as in Rajan and Zingales (1998). Panel A of Table 1 shows that in 1990, a year before the reforms, the average Herfindahl index in India was significantly higher (40%) than in the United States (24%) for the same three-digit SIC industries.

From Panel B we note that industry concentration in Indian industries that remained protected was significantly higher than their U.S. counterparts (54% versus 22%), suggesting that entrenched incumbent firms in India may have successfully opposed foreign entry in these industries.

Firms in profitable, concentrated industries may have a particular incentive to oppose foreign entry liberalization. First, around the world, foreign investment and industry concentration are positively correlated (Caves, 1996) and multinational enterprises (MNEs) tend to compete in industries with high seller concentration (Caves, 1971). Second, Aitken and Harrison (1999) and Caves (1996) argue that MNEs have deeper pockets and access to superior technology which allow them to overcome entry barriers in concentrated industries. Third, Caves (1996) shows that entry by MNEs can reduce the market share of domestic incumbents, which Aitken and Harrison (1999) refer to as the “market stealing” effect. Moreover, Caves (1996) argues that foreign entry can lead to the exit of domestic firms because of increased competition in product and labor markets. Lastly, Geroski (1991) argues that the negative impact of FDI on incumbent firm profits and market share explains why incumbents spend more profits to forestall entry by foreign rather than domestic firms.

Describing the politics of FDI liberalization in the Indian print media industry, a newspaper article states, “The monopoly interests of the bigger Indian publishing houses now stand threatened...trying their best to thwart the entry of bigger foreign players, were the biggies of the Indian publishing world, each with its carefully-nurtured turf to protect” (Asia Times Online, 2004).⁷ Thus, foreign multinationals posed a greater threat to Indian incumbents in profitable, concentrated industries than potential entrants from the over-regulated and capital-starved domestic private sector.⁸

Since foreign firms were granted automatic approval of up to 51%, the primary mode of foreign entry post-liberalization was in the form of joint ventures with domestic partners. As a result there was also considerable heterogeneity in support for liberalization among incumbent firms. For instance, state-

⁷ “Media Giants See Dollar Signs in India,” Asia Times Online, 2004.

⁸ Foreign entry is typically opposed more vigorously than domestic entry for nationalistic reasons. For example, Malaysia’s Prime Minister Mahathir, opposing foreign entry liberalization measures proposed by the IMF declared, “If we are not careful, we will be re-colonized” (Televised speech, October 1998).

owned firms may have opposed foreign entry since foreign entrants were unlikely to seek out these firms as the local partner in joint venture deals.⁹ In contrast, a subset of private firms supported liberalization because of the opportunity to form joint ventures—80% of the joint venture deals with foreign firms had a domestic private partner.

However, other private firms opposed liberalization if they viewed multinational companies as direct competitors. A newspaper article describes opposition from an incumbent: “Kishore Biyani [chief executive of the largest retailer in India] argues that the retail sector...should not be given away to foreign players while it is too young to compete on a level playing field...He lacks the capital to build even average-sized Wal-Mart stores of 200,000 square feet - four times larger than his flagship Big Bazaar” (India Daily, July 24, 2005).¹⁰

Kochanek (1996a, b) explains that the heterogeneity in support for reforms extended to family-owned business groups. Tripathi (2004) provides evidence that an organization of business groups known as the “Bombay Club” vigorously lobbied for greater protection against MNEs. In contrast, the Tatas and Birlas were the domestic partner in 45 of 652 joint venture deals with foreign firms.

The 1991 reforms included the removal of barriers to domestic entry such as de-licensing and the de-reservation of sectors exclusively reserved for state-owned firms. Most domestic incumbents did not oppose these reforms (Tripathi, 2004). For example, the “Bombay Club,” which opposed foreign-entry liberalization, welcomed the end of the licensing and reservation policies because it allowed them access to sectors previously kept off-limits to private firms. Prior to the economic reforms the Birla group invested in Southeast Asia to protest restrictions on private business (Tripathi, 2004). Moreover as Ahluwalia (2005) argues, by the 1980s it was widely recognized that the licensing system had failed and de-licensing ended the red-tape and corruption associated with the lengthy bureaucratic approval process.

⁹ Access to government subsidies and the political influence of state-owned firms would allow them to prevail over domestic entrants but would not be a match for the superior capital and technological resources of MNEs. Evidence suggests that the Chinese government also protects state-owned firms from foreign competition as in Branstetter and Feenstra (2002).

¹⁰ “Wal-Mart Assault,” India Daily, July 24, 2005.

Finally, it was not politically feasible for state-owned firms to oppose de-reservation because of public disillusionment with the dismal performance of these firms (Tripathi, 2004).

2.2 The Lobbying Process in India

A prominent example of an industry that lobbied successfully to keep out foreign competition is the print media, which is highly concentrated with a sample concentration ratio of 0.89. A fierce campaign was waged against foreign investment by major national newspapers and news agency employees' organizations who urged the government to ban foreign entry in this sector. Their efforts included campaigning ministers and formal testimony in parliament. A memorandum to the Prime Minister from industry representatives stated, "The poison of FDI must never be allowed to pollute the Indian press" (The Hindu, November 27, 2004).¹¹ Ramachandra (1999) also documents lobbying against foreign entry liberalization in other industries that remained protected, including the petrochemicals and steel industries, which are highly concentrated and dominated by state-owned firms.

State-owned firms are controlled by the government and therefore have a direct influence on the policymaking process. Given that corporate lobbying contributions are illegal, legal channels for lobbying by private industry include statements in the media, testimony and memoranda to parliament, and the use of industry associations as lobbying vehicles. The three main industry associations that lobby the government on behalf of their members are the Federation of Indian Chambers of Industry and Commerce (FICCI), the Confederation of Indian Industry (CII), and the National Association of Software and Service Companies (NASSCOM). FICCI represents the traditional business groups,¹² whereas CII and NASSCOM represent the newer technology and service sectors that favor foreign entry liberalization and were influential in the introduction of the 1991 economic reforms (Pedersen, 2000). CII is a prominent participant in the debate on the economic reforms (Pedersen, 2000), and the Indian government has been

¹¹ "Major media employees' forums oppose FDI," The Hindu, November 27, 2004.

¹² Khanna and Palepu (2004) argue that Indian business groups are also politically connected conglomerates that lobby the government to influence policy like other business groups around the world, as in Fisman (1998) and Morck, Wolfenzon, and Yeung (2004).

receptive to the organization's advice due to its close connections to the Ministry of Finance (Kochanek, 1996a, b).

3. Hypotheses and Evidence

3.1. Descriptive Statistics

Table 2 presents results from tests comparing liberalized industries with those in which foreign entry barriers are retained, revealing some distinct patterns in the data. On several counts, the liberalization of foreign entry appears to be anything but random. First, liberalized industries are significantly less concentrated with an average Herfindahl Index of 29% compared to protected industries, which have an average Herfindahl index of 59% (Table 2, Panel A). Second, Table 2 also shows that firm profits are also significantly lower on average in liberalized industries (8.4%) compared to protected industries (27.1%). Third, concentration and profitability are positively and significantly correlated in protected industries (Table 1, Panel C).¹³ Taken together, these facts suggest that protected industries have fewer and more profitable firms than liberalized industries.

Looking across ownership categories in Table 2 reveals that state-owned firms in protected industries have significantly higher market share and are also more profitable than state-owned firms in liberalized industries. If the removal of barriers to foreign entry was not random, what factors drove the government to selectively liberalize some industries and not others? The private and public interest views of policymaking offer possible explanations.

The private interest view described by Olson (1965), Stigler (1971), Peltzman (1976, 1989), and Becker (1983) characterizes the policy process as one of interest group competition where compact, well-organized special interest groups lobby the government to influence policy decisions in their favor. The

¹³ The results in Table 1, Panel C suggest that concentration and profitability are negatively correlated in liberalized industries. This is because more profitable liberalized industries are less concentrated than the less profitable liberalized industries. Specifically, the Herfindahl index for liberalized industries with above the sample median profitability is equal to 0.22 and the Herfindahl index for liberalized industries with below the median profitability is equal to 0.33, with the difference being significant at the 10% level.

public interest view assumes that governments enact policy changes to achieve socially efficient outcomes and correct market failures without consideration for private interests.

In the subsections that follow we develop testable hypotheses based on the public and private interest views about industry and firm characteristics that may explain the pattern of selective liberalization. The null hypothesis is that the industry selection was random—industries that were liberalized do not differ in any systematic way from those that were not. We begin with the role of industry concentration.

3.2. *The Role of Industry Concentration*

Collective action theory predicts that the ability of specific industries to resist foreign entry liberalization should be positively related to industry concentration. Incumbent firms in concentrated industries have a greater ability to organize and oppose policy changes that could adversely affect them as in Olson (1965), Stigler (1971) and Peltzman (1976). Under this view, the likelihood of effective coordination in an industry increases with a decrease in the number of firms. If the private interest view has any empirical bite, foreign entry barriers are more likely to be retained in concentrated industries.

On the other hand, concentrated industries are associated with greater deadweight loss (higher prices and lower output) compared with more competitive industries. Therefore, a welfare-maximizing government would enact policies to promote competition by removing entry barriers in concentrated industries. Therefore, if, the data are consistent with the public interest view, foreign entry barriers are less likely to be retained in concentrated industries.

While industry concentration measures the *ability* of incumbent Indian firms to organize, what *incentive* did these firms have to oppose foreign entry? We explore the role of industry profitability next.

3.3. *The Role of Industry Profitability*

Neoclassical theory predicts that firms in imperfectly competitive industries are more likely to earn supernormal or monopoly profits (Tirole, 1988). Applied to the Indian context, under the private

interest view, firms in profitable, concentrated industries have an *incentive* to lobby against foreign entry to protect monopoly profits (Stigler, 1971).¹⁴ If the private interest view holds, profitable, concentrated industries are less likely to be liberalized. The public interest view predicts the opposite—a welfare-maximizing government would liberalize imperfectly competitive industries that earn supernormal or monopoly profits.

To investigate whether the government was more receptive to the interests of certain groups of incumbent firms we turn to the subject of state ownership.

3.4. *The Role of Firm Ownership: State-Owned Firms*

Like many countries around the world, India has a large state-owned sector. Backed by government support, state-owned firms expanded into many industries, relegating the private sector to a secondary role in the economy. In the case of state-owned firms, the special interests include politicians and bureaucrats who have a stake in these firms.

Since politicians directly control state-owned firms, they are in a position to extract many private benefits such as securing employment for their supporters or expropriating funds from these firms as suggested by Boycko, Shleifer, and Vishny (1996) and Shleifer and Vishny (1998). Liberalization would reduce these benefits if foreign entry has an adverse impact on the performance of state-owned firms. For example, government revenues would fall if foreign entry reduces state-owned firm revenues. Indian state-owned firms also tend to be overstaffed, and their employees belong to powerful labor unions. Foreign entry could result in layoffs or lower wages for these workers. From a private interest perspective, both politicians and state-owned firm employees have an incentive to oppose liberalization.¹⁵

¹⁴ Kroszner and Strahan (1999) argue that cash-rich firms in high-growth and profitable industries also have a greater ability to successfully lobby the government relative to cash-poor firms in declining industries.

¹⁵ State-owned firms were also far less likely to benefit from foreign entry compared to private firms because foreign firms rarely formed joint-venture partnerships with state-owned firms.

The public interest perspective does not offer a straightforward prediction about why a welfare-maximizing government would take into account the ownership of incumbent firms.¹⁶

3.5 *The Role of Industry Location*

While the liberalization policy was enacted by the federal government, these politicians are likely to respond to the interests of the electorate in their home states because of the potential electoral impact of these policies. Anecdotal evidence suggests that electoral support at the local level mattered to the policymakers at the federal level. “The PM [Prime Minister] was highly sensitive to the impact of reform on India’s voters. [Prime Minister] Rao felt that an electoral setback even in one state could be interpreted as a verdict against the economic reforms nationwide” (Tharoor, 1997, p. 173).

Politicians seeking reelection also may have a greater incentive to preserve private benefits from state-owned firms in their home states, such as securing employment for supporters. For example, Dinc and Gupta (2006) find that Indian state-owned firms are less likely to be privatized if they are located in a state where the governing party faces more electoral competition from the opposition, and no state-owned firm located in the home state of the Cabinet Minister in charge is ever privatized.

Industries that are geographically concentrated may have a greater ability to lobby politicians from their home state and successfully oppose policy changes such as foreign entry that could adversely affect them. To test this hypothesis, we investigate whether the relative size, concentration, and employment share of an industry in a state, and the employment, sales, and asset shares of state-owned firms in that state have an effect on the probability of liberalization of that industry.

4. The Data

We use firm-level data from the Prowess database collected by the Centre for Monitoring the Indian Economy from company balance sheets and income statements. Prowess covers both publicly

¹⁶ While state-owned firms may fulfill welfare objectives by hiring surplus workers and providing benefits, these objectives may be more effectively pursued through social programs rather than by protecting inefficient firms.

listed and unlisted firms from a wide cross-section of manufacturing, services, utilities, and financial industries. About one-third of the firms in Prowess are publicly listed firms. The companies covered account for more than 70% of industrial output, 75% of corporate taxes, and more than 95% of excise taxes collected by the Government of India (Centre for Monitoring the Indian Economy). Prowess covers firms in the organized sector, which refers to registered companies that submit financial statements.¹⁷

The data provide information on a range of variables such as sales, profitability, employment, and assets for 2,187 firms.¹⁸ For all the variables used in the estimations we construct averages for the three fiscal years, 1988-1990, which precede the liberalization of foreign entry in 1991. Therefore, these data do not reflect the consequences of any of the economic reforms undertaken in 1991. The variables used in this analysis are described in Appendix Table A3.

The main advantage of firm-level data is that detailed balance sheet and ownership information permit an investigation of whether the presence of certain types of incumbent firms in an industry affects the probability of liberalization. In contrast, industry-level databases usually do not provide information about sales, assets, profits, and employment by different ownership categories. The firms in the data belong to two main ownership categories: state-owned firms and private firms. Private firms include family-owned business groups and unaffiliated private firms.

Another advantage of using India as the empirical context is the considerable regional variation in industrial, demographic, and political characteristics across the different Indian states. Using data on firm location, we look at the effect of geographic industrial concentration and state-ownership stake on the probability of liberalization. Prowess has financial data on 536 industry-state observations. Industry location and geographic concentration depends on proximity to natural resources, product markets, and

¹⁷ According to the government, “The organised sector comprises enterprises for which the statistics are available from the budget documents or reports etc. On the other hand the unorganised sector refers to those enterprises whose activities or collection of data is not regulated under any legal provision or do not maintain any regular accounts” (Informal Sector in India: Approaches for Social Security, Government of India, page 2).

¹⁸ Since firms are not required to report employment in their annual reports, we observe employment data for only 241 firms. To avoid attrition bias, the estimations do not require that the data be balanced.

infrastructure. For example, firms in the basic chemicals industry are located in 19 different states, whereas the mining of lignite is concentrated in the state of Gujarat, close to the ore deposits.

The *Industrial Policy Resolution of 1991* (Office of the Economic Advisor, 2001) provides information about the list of industries in which the state liberalized foreign entry. The firms in the sample belong to 96 three-digit industrial categories, of which foreign entry restrictions were reduced in 46 industries. The Indian National Industrial Classification (NIC) (1998) system is used to classify firms in the Prowess dataset into industries. The data include firms from a wide range of industries including mining, basic manufacturing, financial and real estate services, and energy distribution.

The Prowess database provides four- and five-digit industry classifications for most firms. However, because the liberalization policy was enacted at the three-digit level, the explanatory variables such as industry concentration are computed at the three-digit level. As a robustness check we also estimate regressions using concentration at the four-digit industry level.

Table 3 reports average values of the concentration measures and the stakes of the two ownership groups (state-owned firms and private firms) across industrial categories. For expositional purposes, the table collapses the three-digit industrial categories used in the empirical analysis into two-digit industrial categories. The regression analysis employs the three-digit classification. From Table 3 note that the Herfindahl index and the proportion of output produced by state-owned firms varies across the different industrial categories. The cross-sectional variation in industry concentration and the market share of different ownership categories allow us to identify the relative effects of concentration and ownership.

Lastly, we use the SDC Thomson's Joint Ventures database to calculate the number of joint ventures involving domestic incumbents with foreign firms in the five years following liberalization. The names of the Indian partners in the SDC database are used to determine the number of state- and privately owned Indian partner firms in foreign joint ventures.

4.1. Coverage in Prowess

Our measures of industrial structure, such as the Herfindahl index and concentration ratios, rely on firm-level data. It is therefore important to investigate the proportion of industrial activity in the economy covered by Prowess.

To do this we compare the Prowess data with the Annual Survey of Industries (ASI) conducted by the Government of India. The ASI is an annual census collected on a sampling basis of factories employing 100 or more workers. Although the overlap in the list of industries covered by the two datasets is not perfect, the ASI data nevertheless provide a useful cross-industry benchmark for the coverage in Prowess. For instance, the ASI data focus primarily on the manufacturing sector, whereas Prowess covers several additional service sectors including defense, restaurants, hotels, and computer services. We find that in 41 of the 51 three-digit industries covered by both databases, total industry sales in Prowess is on average 77% of the value of total sales for the same industry in the ASI.

Examining the implication of the coverage in Prowess relative to the ASI, we find that eight of the ten industries with low coverage in Prowess liberalized foreign entry (low coverage refers to industries in which the Prowess data cover less than 10% of ASI output). In these industries actual industrial output is larger than that recorded in Prowess. Since the concentration measures calculated using Prowess data are likely to be higher than actual industrial concentration in these industries (Veermani, 2001), this would bias us against finding a negative correlation between concentration and the probability of liberalization.

We compare industry concentration in India with that in the United States using Compustat data on U.S. firms. Compustat is restricted to publicly listed firms in the United States. However, the advantage is that disclosure requirements require that the publicly available financial data for listed firms are comprehensive. Similarly, Prowess reports data on firms in the organized sector in India, which are also governed by regulations and tax laws that require comprehensive financial information. Whereas Compustat excludes private firms in the United States, Prowess excludes firms in the unorganized sector.

The main difference in the types of firms covered in Compustat and Prowess is that there are few state-owned firms in the United States.

5. Results

5.1. *Do Concentrated Industries Influence the Pattern of Foreign Entry Liberalization?*

This section addresses the following question: Does the strength of incumbents measured by industry concentration affect the probability that barriers to foreign direct investment will be removed in an industry? We begin with the following probit specification to investigate whether the pattern of industry concentration across liberalized and protected sectors is more consistent with the private or public interest views:

$$\Pr(\text{Entry Liberalization}_j = 1) = \Phi(\alpha_0 + \alpha_1 \text{Concentration}_j + \alpha_2 X_j + \varepsilon_j), \quad (1)$$

where Φ represents the standard normal cumulative distribution, j indicates the industry, and X_j represents a matrix of firm- and industry-level characteristics that includes industry sales, wages, and measures of openness to trade.

The Herfindahl index, calculated as the sum of the squares of the market shares of the firms in an industry, provides a proxy for industry concentration (*Concentration*).¹⁹ All the specifications correct for heteroskedasticity using the Huber-White estimator of variance, and standard errors are corrected for clustering at the three-digit industry level. Note that we report the marginal probit coefficients and standard errors of the coefficients from the probit regression throughout.

Consistent with the private interest hypothesis, the results reported in Table 4 suggest that the state is significantly less likely to remove foreign entry barriers in concentrated industries. This result is robust to a wide range of industry characteristics including size, profitability, productivity, and employment measures. From the specification reported in Column (1) we estimate that the probability of entry liberalization decreases by 27% (from 49% to 22%) for a one standard deviation increase in the

¹⁹ We provide results using alternative measures of industry concentration in Section 6.2.

Herfindahl index from the sample mean of 0.45 to 0.75. In the case of monopolies, the probability of liberalization decreases even further to 8.2%, where the remaining covariates in Column (1) are evaluated at their mean value.²⁰

The finding that entry barriers are more likely to be retained in concentrated industries leads to the question of why incumbent firms in these industries oppose the liberalization of foreign direct investment. In particular, is the government more likely to protect profitable or declining industries? The next subsection addresses this question.

5.2. Why Do Firms in Concentrated Industries Oppose Foreign Entry Liberalization?

Foreign entry may reduce the monopoly profits of incumbent firms in concentrated industries, which according to the private interest hypothesis gives them an incentive to oppose liberalization. Therefore, if the private interest view holds, foreign entry barriers are more likely to be retained in profitable, concentrated industries, while the public interest view predicts the opposite.

From the results reported in Columns (2) and (3) of Table 4 it appears that the state is more likely to retain foreign entry barriers in more profitable and productive industries. Profitability is measured as the ratio of *EBITDA* to sales for the four firms with the highest sales in an industry (*Profit of 4 Largest Firms*), and productivity is measured as output per worker (*Average Product*) defined as the ratio of aggregate sales to aggregate employment in each industry. The estimation in Column (4) shows that entry barriers are significantly less likely to be removed in industries that have higher contemporaneous growth rates (*Sales Growth*), suggesting that declining industries face a higher probability of being liberalized.

Table 4 also shows that the estimated coefficient of the Herfindahl index retains its magnitude and significance when the profitability variables are included in the regression. This suggests that profitability and industry concentration capture two different factors that are correlated with the probability of foreign entry liberalization. While the Herfindahl index captures the effective coordination

²⁰ The industry concentration result is consistent with Baldwin (1985) who finds that protection from trade is lower for industries with a greater number of firms (an inverse measure of concentration).

ability of incumbent firms to organize and influence government policy, profitability measures the incentive of incumbent firms to oppose foreign entry, which may reduce profits.

To investigate the interaction between industry concentration and profitability, the following regressions examine the effect of industry concentration on the probability of liberalization for two sub-samples:

$$\Pr(\text{Entry Liberalization}_j = 1) = \Phi(\alpha_0 + \alpha_1 \text{Concentration}_j + \alpha_2 X_j + \varepsilon_j) \text{ if } \pi_j > \pi_{\text{median}}, \quad (2)$$

$$\Pr(\text{Entry Liberalization}_j = 1) = \Phi(\alpha_0 + \alpha_1 \text{Concentration}_j + \alpha_2 X_j + \varepsilon_j) \text{ if } \pi_j < \pi_{\text{median}}, \quad (3)$$

where π_j is average profitability of firms in industry j and π_{median} is the median profitability across all industries, $\pi_j > \pi_{\text{median}}$ represents industries with above-sample-median profitability, and $\pi_j < \pi_{\text{median}}$ represents industries with below-sample-median profitability. Profitability is measured as the ratio of *EBITDA* to sales averaged across all firms in an industry.

Column (5) of Table 4 shows that for industries with profitability below the sample median, the coefficient of the Herfindahl index is equal to -0.660 and is statistically significant at the 10% level. In contrast, the results in Column (6) show that for industries with profitability above the sample median, the coefficient of the Herfindahl index is more negative at -1.505 and significant at the 1% level. A likelihood ratio test suggests that the estimated coefficients are significantly different across these two sub-samples and the chi-squared test statistic reported in Column (6) is significant at the 5% level.

We also report results from a specification using the full sample where we interact the right hand side variables with a dummy variable that is equal to one if the industry belongs to the above median profitability sample (Table 4, Column (7)). The coefficient of the interaction between the Herfindahl index and the dummy variable is negative and statistically significant, which confirms that more profitable firms in concentrated industries have a greater incentive to oppose foreign entry.

In sum, the results in Columns (5)-(7) suggest that as the profitability of concentrated industries increases, the probability of liberalization falls. These results support the private interest view: Barriers to

foreign entry are more likely to be retained in industries with a few profitable firms that seek to protect their monopoly profits.

5.3. *Does Labor Influence Foreign Entry Liberalization?*

To investigate whether the Herfindahl index is a proxy for other sources of interest group influence, such as organized labor, we include total employment, capital intensity, and wages per worker in the regressions. From the results reported in Columns (8)–(10) of Table 4, it appears that neither total employment nor average wages per worker have a significant impact, and that capital-intensive rather than labor-intensive industries are more likely to be protected. This need not imply that organized labor has no influence. For example, part of the influence of the largest firms may be that they are also the largest employers in an industry.

Note that we observe employment in a smaller subset of firms. Also, most manufacturing sector workers are employed in the “small-scale industry” sector (firms with 50 or fewer workers), which is protected from both domestic and foreign entry. Since we do not observe firms of this size in our data, we may be underestimating the impact of employment on the liberalization decision.

5.4. *Does the Influence of Incumbent Firms Vary by Ownership Category?*

Next, we investigate whether the government is more likely to protect state-owned firms. We estimate the following probit specification to investigate the relative influence of state-owned firms compared to private firms on the liberalization decision:

$$\Pr(\text{Entry Liberalization}_j = 1) = \Phi(\alpha_0 + \alpha_1 \text{SOE Stake}_j + \alpha_2 X_j + \varepsilon_j), \quad (4)$$

where Φ represents the standard normal cumulative distribution, j represents the industry with a total of $i=1\dots I$ firms, a subset of which are state-owned firms. The estimations are corrected for heteroskedasticity using the Huber-White estimator for variance, and the standard errors are clustered at the three-digit industry level.

The *SOE Stake* variables measure the stake of state-owned firms relative to private firms in an industry, which includes business groups and unaffiliated private firms. These include the ratio of total sales, assets, employment, and wages produced by state-owned firms in an industry to aggregate sales, assets, employment, and wages in that industry, respectively. The relative shares of state-owned firms in an industry, which are likely to be correlated, provide proxies for the influence of these firms on the probability of liberalization. Under the private interest view, we expect the coefficient of *SOE Stake*, α_1 , to be negative—industries with a large state-owned firm presence are less likely to be liberalized. We also include the profitability of state-owned firms in an industry. The X_j vector of control variables includes the Herfindahl index, industry sales, assets, wages, employment, and measures of trade openness.

The results are presented in Table 5. Column (1) shows that the greater the proportion of an industry's output produced by state-owned firms relative to privately owned firms, the lower the probability of foreign entry liberalization. The same result holds for the share of assets controlled by state-owned firms relative to privately owned firms (Column (2)). These results are robust to industry concentration, sales, wages, and industry trade openness.

The effect of state-owned firms on the probability of foreign entry liberalization is also economically significant. From the specification reported in Column (1), we estimate that industries with state-owned monopolies face a 14% chance of being liberalized, whereas industries with no state-owned firms face a probability nearly four times as high at 52%, where the remaining covariates are evaluated at their mean values.²¹

Does the government protect state-owned firms from foreign competition because they earn monopoly profits or because they are inefficient? The results in Column (3) of Table 5 suggest the former: *SOE Firm Profits* is significantly negatively related to the probability of liberalization. However, *SOE Average Product* does not appear to have a significant effect on the probability of liberalization (Table 5, Column (4)).

²¹ Consistent with these results, Branstetter and Feenstra (2002) find that in the case of trade liberalization in China, the government places twice the weight on the welfare of state-owned firms than it does on consumer welfare.

The results also suggest that state-owned firm workers may be more influential than employees of private firms (Table 5, Columns (5)-(7)). The probability of foreign entry liberalization is significantly lower the greater the proportion of an industry's workers employed in state-owned firms (*SOE Labor Share*), the higher the share of total industry wages paid by state-owned firms (*SOE Wage Share*), and higher the wages per worker in these firms (*SOE Wages per Worker*). However, we note that labor and wage shares may be a proxy for state-owned firm presence in an industry.

We also investigate the effect of group-owned firms on the probability of liberalization. Due to the heterogeneity of support for the reforms among business groups, there is no straightforward prediction about the influence of these firms on liberalization. We find that relative to unaffiliated private firms, the group-owned firm stake variables have a negative and significant effect on the probability of liberalization. Relative to state-owned firms, however, group-owned firms do not significantly reduce the probability of liberalization. To save space, we do not report these results.

To investigate the interaction between state-owned firm stake and profitability and its effect on probability of liberalization, we estimate the specification in Column (1) of Table 5 for two sub-samples: industries with above-median firm profitability and industries with below-median firm profitability. We do not include industry concentration in these regressions because the multicollinearity between the Herfindahl index and *SOE Sales Share* in the smaller sub-samples makes inference difficult. The results reported in Column (8) show that for industries with below-median state-owned firm profitability, the coefficient of *SOE Sales Share* is not significant. In contrast, the results in Column (9) show that for industries with above-median firm profitability, the effect of state-ownership stake on the probability of liberalization is negative and significant at the 1% level. Comparing the coefficient estimates across the two sub-samples, the reported likelihood ratio test statistic has a p-value of 0.013, which shows that the estimated coefficients in columns (8) and (9) differ significantly across the two sub-samples. These results are consistent with the private interest hypothesis that the government has an incentive to protect large state-owned firms that earn monopoly profits.

In Column (10) we report results from a specification using the full sample where the right hand side variables are interacted with a dummy variable that is equal to one if the industry belongs to the above median profitability sample. The coefficient of *SOE Sales Share* interacted with the dummy variable is negative and statistically significant at the 5% level, suggesting that the state has a greater incentive to protect profitable state-owned firms.²²

5.5. Does Industry Location Explain the Pattern of Liberalization?

An advantage of Indian data is the considerable regional variation in industrial, demographic, and political characteristics across the different Indian states. We can use this variation to investigate whether the decision to liberalize is influenced by the location of the incumbent firms likely to be affected by this policy. Using data on 26 states and 96 industries, we estimate the following specification:

$$\Pr(\text{Entry Liberalization}_j = 1) = \Phi(\alpha_0 + \alpha_1 \text{Industry Share}_{j,k} + \alpha_2 \text{Concentration}_{j,k} + \alpha_3 \text{SOE Share}_{j,k} + \alpha_4 X_{j,k} + \varepsilon_{j,k}) \quad (5)$$

where Φ represents the standard normal cumulative distribution, j indicates the industry, and k indicates the state. The *Industry Share* variables measure the proportion of output (workers, assets, and wages) produced by each three-digit industrial category in each state as a share of total output (workers, assets, and wages) across all industries in that state. This captures the relative importance of a particular industry in each state. The *Concentration* and *SOE Share* variables capture the geographic concentration and stake of state-owned firms in each state by industry. Finally, X_{jk} represents a matrix of industry- and state-level characteristics, including state-wise industry profitability and size, state per capita income, and industry trade openness. Prowess has financial data on 536 industry-state observations, but including the additional industry and state control variables in the regressions reduces the number to 469 industry-state observations, and adding industry employment further reduces the number to 141 observations.

²² We also find that *SOE Sales Share* continues to be negatively correlated with the probability of liberalization when we control for industry assets and industry employment. We do not report these results to save space.

From the results reported in Table 6 we note that the probability of entry liberalization is negatively correlated with the share of total state industrial output produced by an industry. The same result is obtained for the asset, wage, and employment shares, Herfindahl index, and the profitability of an industry in a state. We also find that the stake of state-owned enterprises in each state by industry has a negative and highly significant impact on the probability of liberalization. These results suggest that the influence of incumbent firms may depend on their location: If an industry is a significant employer and producer in a state, it is less likely to be liberalized.

6. Additional Tests and Robustness Checks

6.1. *The Impact of Contemporaneous Reforms*

Foreign entry liberalization was implemented as part of a broader reform package in 1991. It is therefore important to control for the effects of other aspects of the 1991 reforms. Trade liberalization in particular can affect the competitive dynamics in industries and the viability of state-owned firms.

We include two measures to control for trade liberalization. The first variable (*Industry Trade Openness*) is the ratio of exports plus imports to total sales in an industry, which captures the degree of trade openness at the three-digit industry level. The second variable (*Industry Change in Tariffs*) measures the percentage decrease in tariffs at the three-digit industry level between 1986-1990 and 1991-1995.²³ Tariff levels were reduced in 38 three-digit NIC categories, and foreign direct investment was liberalized in 28 of these categories.

Controlling for trade liberalization at the industry level, the probability of liberalization remains significantly negatively related to industry concentration (Table 4), to state-owned firm presence in an industry (Table 5), and to geographic concentration (Table 6). The coefficient of *Industry Change in Tariffs* is positive and significant (Tables 4 and 5, Column (11)), suggesting that industries in which tariff

²³ Tariff barriers measure changes in tariffs between 1986–1990 and 1991–1995. Data on tariff changes are from Das (2003) and are based on: (1) Customs Tariff Working Schedule, Central Excise and Customs, Government of India and (2) Input-Output Transaction Table: 1983–1984 and 1989–1990, Central Statistical Organization, Government of India.

barriers are reduced are also more likely to be liberalized to foreign entry. Furthermore, industry concentration and state ownership have a more pronounced impact on the probability of liberalization in profitable industries after controlling for trade openness in Tables 4 and 5.

Two other reforms implemented in 1991 were the removal of licensing requirements allowing domestic entry (de-licensing) and allowing private-sector firms to enter industries previously reserved for state-owned firms (de-reservation). Licensing and reservation requirements were relaxed in nearly all industries so the limited cross-sectional variation does not allow us to test whether particular industries opposed these policy changes.

6.2. *Alternative Measures of Industry Concentration*

One issue that may arise is that the pre-reform industrial structure is a function of the past political influence of industries. In this case our results may be capturing protection given by the state to industries that were protected in the past, rather than the ability of these firms to keep out foreign competition based on their current market power and ownership. To capture influence arising out of industry concentration rather than past political ties, we use industry concentration in the United States as an instrumental variable for industry concentration in India. Column (1) of Table 7 shows that the coefficient of the Herfindahl index remains negative and significant when we treat it as endogenous in an instrumental variable specification.

An alternative approach is to use “excess concentration,” the difference between Indian concentration and U.S. concentration in the same industries, which measures market power above the natural level of concentration in a well-developed financial market, such as the United States. Column (2) of Table 7 examines whether excess concentration has explanatory power in determining the pattern of liberalization in India. We find that the greater the excess concentration in India, the less likely it is that an industry will be liberalized. Consistent with Rajan and Zingales (2003a, b), the results in Columns (1)

and (2) suggest that the state-led industrial policies of the past have created powerful incumbent firms that use their current market power to oppose liberalization of foreign entry.²⁴

Table 7 also uses the four-firm sales concentration ratio and the four-firm asset concentration ratio as alternative measures of industry concentration (Columns (3) and (4)). The results are similar to those described previously: The estimated coefficients of the four-firm sales and the four-firm asset concentration ratios are negative and statistically significant.

Although the liberalization policy was implemented at the 3-digit level of industry classification, our data provide industry classification at the 4-digit level for many firms. As a robustness check, we compute industry concentration disaggregated at the 4-digit level. The results are reported in column (5) of Table 7 where the variable 4-digit Herfindahl Index remains negative and statistically significant. By adjusting the standard errors for clustering at the 3-digit level, we are able to estimate unbiased coefficients for the relationship between industry concentration at the 4-digit level and the probability of liberalization at the 3-digit level.

As a final robustness check of our industry concentration measure, we construct the Herfindahl index based on the four largest firms in a particular industry. Column (6) of Table 7 presents the results. Industry concentration continues to be negatively correlated with the probability that an industry is liberalized. The coefficient is significant at the 1% level.

6.3. *Natural Monopolies and Strategic Industries*

Finally, it also may be that the state does not reduce entry restrictions in some concentrated industries because they are natural monopolies or of strategic national interest. As an additional robustness check, we investigate the effect of concentration on the likelihood of entry liberalization by excluding industries that belong to these categories from the estimations. Specifically, the estimations

²⁴ In both the excess concentration measure and the instrumental variable specification, the U.S. measure is used to capture lobbying ability arising out of industry concentration, or the ability to overcome the free-rider problem in industries with fewer firms as in Olson (1969). Peltzman (1977) and Curry and George (1983) show that industry concentration is highly correlated with market power in U.S. industries.

exclude firms belonging to the electric, gas, and water utility companies; financial services industries; and industries on the government's strategic list. The results reported in Column (1) of Panels A and B of Table 8 show that industry concentration continues to have a significant and negative effect on the probability of entry liberalization when natural monopolies and strategic industries are excluded. Note that in both panels of Table 8 the effect of industry concentration on the probability of liberalization is more negative in more profitable industries (Columns (2) and (3)).

The result that state ownership reduces the likelihood of liberalization is robust to excluding natural monopolies and strategic industries (Column (1)). Controlling for the presence of natural monopolies and strategic industries, the results in Table 8 also confirm that the probability of liberalization is significantly lower in industries with profitable state-owned firms (Columns (4) and (5)).

The inverse relation between entry liberalization and industry concentration continues to hold when we include a dummy for strategic industries in the full sample. These results are not reported to save space. A dummy for natural monopolies cannot be included in the regressions because no natural monopolies were liberalized, and the dummy variable would perfectly predict the probability of liberalization.

7. Concluding Remarks

A large theoretical and empirical literature characterizes foreign direct investment as the "good cholesterol" in international capital flows (Hausmann and Fernandez-Arias, 2000; Albuquerque, 2003). Yet many governments delay or fail to liberalize foreign direct investment. Political economy explanations suggest that governments make socially suboptimal choices when policymakers face pressures other than that of welfare maximization (Olson, 1965; Stigler, 1971; Peltzman, 1976). In democracies, for instance, private interests may hijack the policy process to maintain their status or to secure concessions in the face of big changes (Dahl, 1961; Tocqueville, 1835).

In 1991, the Government of India granted automatic approval for foreign direct investment of up to 51% in 46 of 96 three-digit industrial categories. The liberalization of foreign direct investment is

likely to invoke considerable opposition from domestic firms and presents an ideal opportunity to examine the effect of domestic incumbents on the policy process.

Our results suggest that the concentrated control of industrial assets and output by a few firms, as well as the identity of incumbent firms, has a statistically significant influence on the pattern of entry liberalization. Specifically, the state is more likely to retain foreign entry barriers in concentrated industries and in industries with substantial state-owned presence. The results also suggest that incumbent firms seek to protect monopoly profits because the likelihood of foreign entry liberalization is significantly lower in concentrated industries that are profitable and in industries with profitable state-owned firms.

In the last decade, many economies have implemented economic and financial sector reforms, including stock market liberalization, privatization, and the liberalization of foreign direct investment. There is a large literature that evaluates the effects of these reforms on firm performance and economic growth. Thus, the question arises whether these reforms are random, as assumed by much of the literature, or are an outcome of incumbent firm characteristics as shown in this paper.

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Appendix Table A1: List of Industries Liberalized to Foreign Direct Investment in 1991

The *Industrial Policy Resolution of 1991* (Office of the Economic Advisor, 2001) provides information about the list of industries in which the state liberalized foreign entry. Foreign entry restrictions were reduced in 46 3-digit industries. The Indian National Industrial Classification (1998) system is used to classify firms in the Prowess dataset into industries. Column 1 presents the NIC code. Column 2 presents the industry description. Column 3 presents the number of firms in each 3-digit NIC category.

NIC Code	Industry Description	Number of Firms
151	Production, processing and preservation of meat, fish, fruits, vegetables, oil	39
152	Manufacture of dairy products	4
153	Manufacture of grain mill, starches & starch products, animals feeds	8
154	Manufacture of other food products	89
155	Manufacture of beverages	23
202	Manufacture of products of wood, cork, straw and plaiting materials	7
210	Manufacture of paper and paper products	52
241	Manufacture of basic chemicals	145
242	Manufacture of other chemical products	107
243	Manufacture of man-made fibers	56
251	Manufacture of rubber products	27
252	Manufacture of plastic products	50
261	Manufacture of glass and glass products	17
269	Manufacture of non-metallic mineral products nec	81
271	Manufacture of basic iron & steel	100
272	Manufacture of basic-precious and non-ferrous metals	35
273	Casting of metals	12
281	Manufacture of structural metal products, tanks, and steam generators	12
289	Manufacture of other fabricated metal products; metal working activities	19
291	Manufacture of general purpose machinery	36
292	Manufacture of special purpose machinery	62
293	Manufacture of domestic appliances, nec	14
300	Manufacture of office, accounting, and computing machinery	8
311	Manufacture of electric motors, generators and transformers	16
312	Manufacture of electricity distribution and control apparatus	5
313	Manufacture of insulated wire and cable	18
314	Manufacture of accumulators, primary cells, and primary batteries	8
315	Manufacture of electric lamps and lighting equipment	3
319	Manufacture of other electrical equipment nec	7
321	Manufacture of electronic valves and tubes and other electronic components	19
322	Mfg of TV, radio transmitters, & apparatus for line telephony & telegraphy	11
323	Mfg of TV & radio receivers, sound or video recording apparatus	12
331	Manufacture of medical appliances and instruments	15
332	Manufacture of optical instruments and photographic equipment	2
333	Manufacture of watches and clocks	2
341	Manufacture of motor vehicles	7
342	Manufacture of bodies (coach work) for motor vehicles; mfg of trailers & semis	1
343	Manufacture of parts and accessories for motor vehicles and their engines	74
351	Building and repair of ships & boats	6
352	Manufacture of railway and tramway locomotives and rolling stock	9
359	Manufacture of transport equipment nec	15
369	Manufacturing nec	8
551	Hotels and restaurants	29
721	Computer and related activities	1
722	Software consultancy and supply	13
729	Other computer-related activities	1

Appendix Table A2: Key Changes in India's Industrial Policy Regime:

Evolution of Industrial Concentration and State Ownership

Industries (Development Regulation) Act of 1951	Specified the Schedule I industries where licenses were required for firms with fixed investment above a certain level of investment or import content of investment above a certain level.
Companies Act, 1951	Restrictions on the operation of managing agencies, which affected the operation of many British companies in India.
Industrial Policy Resolution, 1956	Articulated the role of public investment in planned development and specified: Schedule A: industries reserved exclusively for state enterprises. Schedule B: industries where further expansion would be by state enterprises.
Corporate Tax policies, 1957-1991	Specified rates of corporate tax on companies incorporated outside India. These were usually between 15-20% higher than the rates applied to large Indian companies during this period.
Monopolies and Restrictive Trade Practices Act, 1969	All applications for a license from companies belonging to a list of big business houses and subsidiaries of foreign companies were to be referred to a 'MRTP Commission' which invited objections and held public hearings before granting a license for production.
Industrial Policy Notification, 1973	Made licensing mandatory for all industries above certain investment limits. Specified industry Schedules IV and V, where licensing was mandatory for all firms regardless of size.
Industrial Policy Statement, 1973	Specified the criteria and list of Appendix I of 'core' industries to which large business houses and foreign firms were to be confined. Main criteria for being an Appendix I industry were that of local non-availability or domination of a sector by a single foreign firm. Schedule A industries from IPR, 1956 could not figure in the Appendix I list.
Foreign Exchange Regulation Act, 1973	Foreign companies operating in India were required to reduce their share in equity capital to below 40%. Exceptions were decided on a discretionary basis if: (i) The company was engaged in 'core' activities (as defined in IPS, 1973). (ii) The company was using sophisticated technology or met certain export commitments.
Policy Statements, 1985	Business houses were not restricted to Appendix I industries as long as they moved to industrially backward regions. Minimum asset limit defining business houses was raised from Rs. 200 million to Rs. 1 billion
New Industrial Policy, 1991	Abolished licensing for all except 18 industries. Large companies no longer needed MRTP approval for capacity expansions. Number of industries reserved for the public sector in Schedule A (IPR1951) cut from 17 to 8; Schedule B was abolished altogether. Limits on foreign equity holdings were raised from 40 to 51% in a wide range of industries.

Sources: Adapted from Sivadasan (2004).

Appendix Table A3 - Description of Variables

Variables	Definition
<i>State-Owned (SOE)</i>	Firms majority-owned by the federal and state governments.
<i>Private</i>	Includes firms majority-owned by a business group and private firms not affiliated to a group. Indian business groups or family-owned firms are groups of companies that are controlled by the same shareholders, usually all members of a family.
<i>Sales</i>	Sales generated by a firm from its main business activity measured by charges to customers for goods supplied and services rendered. Excludes income from activities not related to main business, such as dividends, interest, and rents in the case of industrial firms, as well as non-recurring income.
<i>Market Share</i>	Ratio of Sales to Industry Sales for a firm.
<i>Herfindahl Index</i>	Sum of the squares of the <i>Market Share</i> of all firms in an industry in each 3-digit industrial category.
<i>SOE Share</i>	The ratio of total sales, assets, employment, and wages produced by state-owned firms in an industry to <i>Industry Sales</i> , <i>Industry Assets</i> , <i>Industry Employment</i> , and <i>Industry Wages</i> in that industry.
<i>Private Share</i>	The ratio of total sales, assets, employment, and wages produced by private firms in an industry to <i>Industry Sales</i> , <i>Industry Assets</i> , <i>Industry Employment</i> , and <i>Industry Wages</i> in that industry.
<i>Industry Sales</i>	Log of sum of <i>Sales</i> across all firms in that industry.
<i>Assets</i>	Gross fixed assets of a firm, which includes movable and immovable assets as well as assets which are in the process of being installed.
<i>Industry Assets</i>	Log of sum of <i>Assets</i> across all firms in that industry.
<i>Employment</i>	Number of employees in a firm.
<i>Industry Employment</i>	Log of sum of <i>Employment</i> across all firms in that industry.
<i>Wages</i>	Salaries paid to workers.
<i>Industry Wages</i>	Log of sum of <i>Wages</i> across all firms in that industry.
<i>Wages per Worker</i>	Ratio of <i>Wages</i> to <i>Employment</i> in each firm averaged across firms in that industry.
<i>Average Product</i>	Ratio of <i>Sales</i> to <i>Employment</i> .
<i>Industry Average Product</i>	Ratio of <i>Industry Sales</i> to <i>Industry Employment</i> in that industry.
<i>EBITDA</i>	Excess of income over all expenditures except tax, depreciation, interest payments, and rents in a firm.
<i>Firm Profits</i>	Ratio of <i>EBITDA</i> to <i>Sales</i> in a firm, averaged across firms in that industry.
<i>Profit of 4 Largest Firms</i>	Ratio of <i>EBITDA</i> to <i>Sales</i> of the 4 firms with the highest sales in that industry.
<i>Industry Trade Openness</i>	Ratio of exports plus imports to <i>Industry Sales</i> in that industry.
<i>Industry Change in Tariffs</i>	Percentage decrease in tariffs at the three-digit industry level between 1986-1990 and 1991-1995.
<i>Sales Growth</i>	$(\text{Industry Sales} - \text{Lagged Industry Sales}) / \text{Lagged Industry Sales}$ in that industry.
<i>Capital Intensity</i>	Ratio of <i>Industry Assets</i> to <i>Industry Employment</i> in that industry.
<i>Excess Industry Concentration</i>	The difference between <i>Herfindahl Index</i> in India and the U.S. for the same 3-digit industry.
<i>Concentration Ratio</i>	Ratio of the sum of <i>Sales</i> of the 4 firms with the highest sales in an industry to <i>Industry Sales</i> in each 3-digit industrial category.
<i>Asset Concentration</i>	Ratio of the sum of <i>Assets</i> of the 4 firms with the largest assets in an industry to <i>Industry Assets</i> in each 3-digit industrial category.
<i>4-Digit Herfindahl Index</i>	<i>Herfindahl Index</i> in each 4-digit industrial category.
<i>Herfindahl Index of 4 Largest Firms</i>	<i>Herfindahl Index</i> of the 4 highest sales firms in each 3-digit industrial category
<i>NIC Code</i>	Three-digit industry code includes manufacturing, financial, and service sectors.

Table 1

Comparing Concentration Ratios in India and the U.S. Before Foreign Direct Investment Liberalization

Notes: This table compares Herfindahl Indices in India with Herfindahl Indices of the same industries in the United States in 1990. Variable definitions are provided in Appendix 1. The first panel shows within-country summary statistics across the same 3-digit industry categories for India and the United States. The second panel compares mean Herfindahl Indices in industries that liberalized foreign entry in India in 1991 and those that remained protected with the same industries in the United States. Standard deviations are in parentheses. The third panel describes the correlation between *Firm Profits* and the *Concentration Ratio* across industrial categories. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

<i>Panel A: Comparing Industry Concentration in India and US</i>				
	India	US	Equality of Means t-test	
<i>Herfindahl Index</i>	0.399 (.034)	0.236 (.024)	4.338***	
Minimum	0.025	0.010		
Maximum	1	1		
<i>Number of Industries</i>	75	75		
<i>Panel B: Comparing Industry Concentration across Protected and Liberalized Industries</i>				
	Herfindahl Index		Equality of Means t-test	<i>Number of Industries</i>
	India	US		
Protected Industries	0.539 (.047)	0.216 (.035)	6.047***	38
Liberalized Industries	0.255 (.034)	0.257 (.031)	-0.041	37
<i>Panel C: Correlation Between Industry Concentration and Profitability</i>				
	Correlation			
	coefficient	p-value		
Full Sample	0.061	0.553		
Protected Industries	0.589	0.000***		
Liberalized Industries	-0.687	0.000***		

Table 2

Comparing Industry and Firm Characteristics Across Protected and Liberalized Industries

Notes: This table reports mean values of industry and firm characteristics in protected and liberalized industries from 1988-1990. Variable definitions are provided in Appendix Table A3. Standard deviations of means are in parentheses. T-statistics are for one-sided t-test of equality of means. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

<i>Panel A: Full Sample</i>				
	(1)	(2)	(3)	(2) - (3)
Variable	All Industries	Protected Industries	Liberalized Industries	Equality of means t-test (p-value)
<i>Herfindahl Index</i>	0.450 (.319)	0.596 (.309)	0.290 (.248)	5.326 ***
<i>Herfindahl Index of 4 Largest Sales Firms</i>	0.444 (.324)	0.594 (.311)	0.282 (.253)	5.360 ***
<i>Concentration Ratio</i>	0.845 (.208)	0.931 (.144)	0.751 (.228)	4.670 ***
<i>Asset Concentration</i>	0.856 (.193)	0.944 (.106)	0.760 (.220)	5.276 ***
<i>Firm Profits</i>	0.182 (.488)	0.271 (.653)	0.084 (.141)	1.901 **
<i>Profit of 4 Largest Sales Firms</i>	0.209 (.606)	0.292 (.833)	0.118 (.064)	1.397 *
<i>Panel B: State-Owned Firms</i>				
	(1)	(2)	(3)	(2) - (3)
Variable	All Industries	Protected Industries	Liberalized Industries	Equality of means t-test (p-value)
<i>SOE Sales Share</i>	0.349 (.397)	0.481 (.424)	0.205 (.310)	3.610 ***
<i>SOE Asset Share</i>	0.384 (.407)	0.521 (.424)	0.234 (.333)	3.672 ***
<i>SOE Firm Profits</i>	0.284 (2.131)	0.575 (2.753)	-0.087 (.740)	1.257 *
<i>SOE Average Product</i>	0.156 (.638)	0.249 (.838)	0.032 (.026)	1.185
<i>SOE Wage Share</i>	0.005 (.003)	0.514 (.417)	0.236 (.322)	3.634 ***
<i>SOE Labor Share</i>	0.751 (.386)	0.876 (.314)	0.613 (.416)	2.759 ***
<i>SOE Wages per Worker</i>	0.005 (.003)	0.006 (.003)	0.004 (.001)	1.907 **

Table 2 continued

	(1)	(2)	(3)	(2) - (3)
Variable	All Industries	Protected Industries	Liberalized Industries	Equality of means t-test (p-value)
<i>Private Sales Share</i>	0.651 (.397)	0.519 (.424)	0.795 (.310)	-3.610 ***
<i>Private Asset Share</i>	0.616 (.407)	0.479 (.424)	0.766 (.333)	-3.672 ***
<i>Private Firm Profits</i>	0.165 (.198)	0.222 (.263)	0.112 (.082)	2.642 ***
<i>Private Average Product</i>	0.241 (.900)	0.096 (.068)	0.299 (1.067)	-0.531
<i>Private Wage Share</i>	0.619 (.398)	0.486 (.417)	0.764 (.322)	-3.634 ****
<i>Private Labor Share</i>	0.249 (.386)	0.124 (.314)	0.387 (.416)	-2.759 ***
<i>Private Wages per Worker</i>	0.009 (.019)	0.005 (.002)	0.010 (.023)	-0.637

Table 3

Industry Concentration and Ownership Composition Varies Across Industries

Notes: This table reports mean values of variables measuring industry concentration and the composition of ownership categories across industries from 1988 to 1990. For exposition we report the average values for two-digit industrial categories, whereas in the regression analysis we use three-digit categories. The four-firm *Concentration Ratio* is the ratio of the sum of sale revenues of the four firms with highest sale revenues in each industry to aggregate sales in each three-digit industrial category. *Herfindahl Index* is the sum of the squares of the market share of all firms in an industry. *Asset Concentration* is the sum of the assets of the four firms with largest asset size in each industry divided by the sum of assets of all firms in that industry. *SOE* refers to state-owned firms and *Private* refers to firms owned by Indian business groups and unaffiliated private firms. *Sales Share* is the sum of *Sales* across firms in each ownership category in an industry divided by aggregate sales in that industry. *Firm Profits* is the average ratio of *EBITDA* to *Sales* averaged across firms in each ownership category in each industry. Standard deviations are reported in parentheses.

Industry Code	Concentration Ratio	Herfindahl Index	Asset Concentration	SOE Sales Share	Private Sales Share	SOE Firm Profits	Private Firm Profits	Number of 3-digit Industries	Number of SOEs	Number of Private Firms
100-199	0.878 (.237)	0.489 (.296)	0.878 (.223)	0.316 (.409)	0.684 (.409)	1.162 (4.332)	0.127 (.210)	22	46	357
200-299	0.668 (.237)	0.264 (.273)	0.696 (.221)	0.250 (.326)	0.750 (.326)	0.071 (.138)	0.130 (.042)	21	85	774
300-399	0.874 (.152)	0.385 (.266)	0.876 (.152)	0.275 (.397)	0.725 (.397)	-0.260 (1.095)	0.095 (.100)	21	35	212
400-499	0.766 (.162)	0.236 (.062)	0.847 (.159)	0.446 (.186)	0.554 (.186)	0.126 (.314)	0.095 (.148)	3	21	44
500-599	0.865 (.154)	0.462 (.357)	0.888 (.125)	0.261 (.343)	0.739 (.343)	0.052 (.087)	0.154 (.118)	9	30	94
600-699	0.934 (.103)	0.541 (.282)	0.938 (.089)	0.600 (.400)	0.400 (.400)	0.365 (.282)	0.502 (.335)	9	51	83
700-799	0.988 (.027)	0.785 (.295)	0.980 (.043)	0.578 (.494)	0.422 (.494)	-0.021 (.183)	0.191 (.251)	8	10	25
800-999	1.000 (.000)	0.919 (.140)	1.000 (.000)	0.598 (.528)	0.402 (.528)	0.234 (.133)	0.289 (.056)	3	2	2

Table 4
Does Industry Concentration Affect the Probability of Foreign Entry Liberalization?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
					Profits <Median Profit	Profits >Median Profit					
<i>Herfindahl Index</i>	-1.026*** (0.304)	-1.294*** (0.344)	-1.607*** (0.490)	-1.175*** (0.339)	-0.660* (0.365)	-1.505*** (0.372)	-0.651* (0.358)	-1.500*** (0.494)	-1.625*** (0.492)	-1.394*** (0.479)	-1.184*** (0.344)
<i>Profit of 4 Largest Firms</i>		-0.589* (0.344)	-0.857** (0.375)	-0.893* (0.483)				-0.838** (0.373)	-0.648* (0.394)	-0.753** (0.369)	-0.540* (0.337)
<i>Industry Average Product</i>			-0.132** (0.064)								
<i>Sales Growth</i>				-0.187* (0.108)							
<i>Industry Employment</i>								0.038 (0.058)			
<i>Capital Intensity</i>									-0.164* (0.086)		
<i>Wages per Worker</i>										0.346 (8.035)	
<i>Industry Sales</i>	-0.059 (0.080)	-0.058 (0.081)	-0.048 (0.107)	-0.056 (0.091)	-0.073 (0.111)	-0.044 (0.080)	-0.072 (0.109)	-0.080 (0.105)	-0.043 (0.112)	-0.080 (0.104)	-0.052 (0.081)
<i>Industry Wages</i>	0.039 (0.079)	0.016 (0.083)	0.016 (0.118)	0.017 (0.088)	0.078 (0.108)	-0.011 (0.093)	0.076 (0.107)	0.021 (0.131)	0.009 (0.123)	0.071 (0.114)	0.003 (0.083)
<i>Industry Trade Openness</i>	0.451 (0.337)	0.476 (0.363)	0.647 (0.466)	0.618 (0.440)	0.103 (0.304)	1.143 (0.820)	0.101 (0.297)	0.65 (0.412)	0.615 (0.438)	0.693 (0.465)	
<i>Above Median Profitability</i>							0.475 (0.592)				
<i>Herfindahl Index*Above Median Profitability</i>							-1.619** (0.783)				
<i>Industry Sales*Above Median Profitability</i>							0.006 (0.167)				
<i>Industry Wages*Above Median Profitability</i>							-0.093 (0.176)				
<i>Industry Trade Openness*Above Median Profitability</i>							1.622 (1.136)				
<i>Industry Change in Tariffs</i>											0.005** (0.004)
<i>LR test χ^2 (5)</i> <i>(Prob>χ^2)</i>						12.040** (0.034)					
Number of Industries	95	93	59	91	48	47	95	59	59	59	94
Pseudo R-squared	0.200	0.270	0.320	0.300	0.110	0.420	0.290	0.290	0.320	0.280	0.286

Notes: This table reports the marginal probit coefficients where the dependent variable is equal to 1 if the industry liberalized foreign entry in 1991, and equal to 0 otherwise. The sample period is 1988-1990. *Herfindahl Index* is the sum of the squares of the market shares of all firms in each 3-digit industrial category. *Profit of 4 Largest Firms* is the ratio of *EBITDA* to *Sales* for the 4 firms with the highest sales in an industry. *Industry Average Product* is the ratio of *Industry Sales* to *Industry Employment* in each industry. *Sales Growth* is equal to $(\text{Industry Sales} - \text{Lagged Industry Sales}) / \text{Lagged Industry Sales}$. *Industry Employment* is the log of the sum of the number of workers across all firms in that industry. *Capital Intensity* is the ratio of *Industry Assets* to *Industry Employment* in an industry. *Wages per Worker* is the ratio of wages to the number of workers in each firm averaged across firms in an industry. *Industry Sales* is the log of the sum of sales across all firms in an industry. *Industry Wages* is the log of the sum of wages across all firms in an industry. *Industry Trade Openness* is the ratio of exports plus imports to *Industry Sales*. *Above Median Profit* is a dummy variable that is equal to one if the average profitability of an industry is greater than the median profitability for the whole sample. *Industry Change in Tariffs* measures the percentage decrease in tariffs at the three-digit industry level between 1986-1990 and 1991-1995. Probit standard errors in parentheses are corrected for heteroskedasticity and for clustering at the industry level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

Table 5
Which Firms Are More Likely to Oppose Foreign Direct Investment Liberalization?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
								Profits <Median Profit	Profits >Median Profit		
<i>SOE Sales Share</i>	-0.508**							-0.269	-0.869***	-0.124	-0.434**
	(0.209)							(0.244)	(0.280)	(0.212)	(0.200)
<i>SOE Asset Share</i>		-0.566***									
		(0.193)									
<i>SOE Firm Profits</i>			-0.450*								
			(0.230)								
<i>SOE Average Product</i>				-0.795							
				(0.757)							
<i>SOE Wage Share</i>					-0.577***						
					(0.207)						
<i>SOE Labor Share</i>						-0.499**					
						(0.213)					
<i>SOE Wages per Worker</i>							-0.591**				
							(0.271)				
<i>Herfindahl Index</i>	-0.695**	-0.712**	-0.991***	-0.249	-0.710**	-1.486***	-1.745***			-0.515*	-0.674**
	(0.313)	(0.307)	(0.343)	(0.286)	(0.307)	(0.496)	(0.539)			(0.327)	(0.318)
<i>Industry Sales</i>	-0.081	-0.09	-0.053	0.037	-0.114	-0.143	-0.126	0.003	-0.021	-0.068	-0.07
	(0.074)	(0.073)	(0.077)	(0.046)	(0.074)	(0.098)	(0.105)	(0.102)	(0.062)	(0.094)	(0.075)
<i>Industry Wages</i>	0.118	0.136*	0.066	-0.037	0.157*	0.154	0.112	0.072	0.165*	0.082	0.089
	(0.083)	(0.080)	(0.087)	(0.046)	(0.085)	(0.108)	(0.114)	(0.114)	(0.085)	(0.099)	(0.083)
<i>Industry Trade Openness</i>	0.457	0.474	-0.074	0.055	0.475	0.816*	0.468*	0.094	1.104***	0.086	
	(0.320)	(0.332)	(0.290)	(0.079)	(0.328)	(0.430)	(0.278)	(0.302)	(0.364)	(0.255)	
<i>Above Median Profitability</i>										(0.058)	
										(0.645)	
<i>SOE Sales Share*Above Median Profitability</i>										-1.100**	
										(0.432)	
<i>Herfindahl Index*Above Median Profitability</i>										-0.907	
										(0.584)	
<i>Industry Sales*Above Median Profitability</i>										-0.095	
										(0.165)	
<i>Industry Wages*Above Median Profitability</i>										0.215	
										(0.180)	
<i>Industry Trade Openness*Above Median Profitability</i>										2.603***	
										(0.817)	
<i>Industry Change in Tariffs</i>											0.006**
											(0.003)
<i>LR test χ^2 (6)</i>									16.170**		
<i>(Prob>χ^2)</i>									(0.013)		
Number of Industries	95	95	66	49	95	59	49	48		95	96
Pseudo R-squared	0.260	0.280	0.290	0.440	0.270	0.320	0.350	0.070	0.520	0.380	0.280

Notes: This table reports the marginal probit coefficients where the dependent variable is equal to 1 if the industry liberalized foreign entry in 1991, and equal to 0 otherwise. The sample period is 1988-1990. *SOE Sales Share* is the total sales for all state-owned firms in an industry divided by *Industry Sales*. *SOE Asset Share* is the total assets for all state-owned firms in an industry divided by *Industry Assets*. *SOE Firm Profits* is the ratio of *EBITDA* to *Sales* averaged across state-owned firms by industry. *SOE Average Product* is the ratio of *Sales* to *Employment* averaged across state-owned firms in each industry. *SOE Wage Share* is the sum of wages across state-owned firms in an industry divided by *Industry Wages*. *SOE Labor Share* is the sum of the number of workers across state-owned firms in an industry divided by *Industry Employment*. *SOE Wages per Worker* is the ratio of wages to number of workers averaged across state-owned firms in an industry. *Herfindahl Index* is the sum of the squares of the market shares of all firms in each 3-digit industrial category. *Industry Sales* is the log of the sum of sales across all firms in an industry. *Industry Wages* is the log of the sum of wages across all firms in an industry. *Capital Intensity* is the ratio of *Industry Assets* to *Industry Employment*. *Industry Employment* is the log of the sum of the number of workers across all firms in that industry. *Industry Trade Openness* is the ratio of exports plus imports to *Industry Sales*. *Industry Change in Tariffs* measures the percentage decrease in tariffs at the three-digit industry level between 1986-1990 and 1991-1995. Probit standard errors in parentheses are corrected for heteroskedasticity and for clustering at the industry level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

Table 6
The Role of Industry Location

Notes: This table reports the marginal probit coefficients where the dependent variable is equal to 1 if an industry in this state liberalized foreign entry in 1991, and equal to 0 otherwise. The sample period is 1988-1990. Variables are calculated for each industry-state observation. Industry Share variables measure the proportion of sales (workers, assets, and wages) produced by each three-digit industrial category in each state as a share of total sales (workers, assets, and wages) across all industries in that state. The *SOE Share* variables are the ratio of total sales, assets, employment, and wages produced by state-owned firms in an industry to aggregate sales, assets, employment, and wages in that industry, by state. *State Industry Assets* and *State Industry Sales* are the log values of aggregate assets and sales in each industry by state. The *Herfindahl Index* is the sum of squares of the market shares of all firms in each industry by state. *Profit of 4 Largest Firms* is the average ratio of *EBITDA* to *Sales* of the four highest sales firms in each industry by state. *State Per Capita Income* is the log of per capita GDP of each state. *State Industry Wages* is the log of aggregate wages in each industry by state. *Industry Trade Openness* is the ratio of exports plus imports to *Industry Sales*. Probit standard errors in parentheses are corrected for heteroskedasticity and for clustering at the industry level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

	(1)	(2)	(3)	(4)
<i>Industry Share in State Sales</i>	-0.416* (0.236)			
<i>SOE Sales Share</i>	-0.307*** (0.063)			
<i>Industry Share in State Assets</i>		-0.394 (0.247)		
<i>SOE Asset Share</i>		-0.300*** (0.063)		
<i>Industry Share in State Employment</i>			-0.613* (0.342)	
<i>SOE Labor Share</i>			-0.460*** (0.12)	
<i>Industry Share in State Wages</i>				-0.526** (0.251)
<i>SOE Wage Share</i>				-0.322*** (0.062)
<i>State Industry Assets</i>	-0.078*** (0.02)			
<i>State Industry Sales</i>		-0.087*** (0.023)	-0.203*** (0.076)	-0.095*** (0.023)
<i>Herfindahl Index</i>	-0.260** (0.109)	-0.273** (0.110)	-0.036 (0.182)	-0.277** (0.109)
<i>Profit of 4 Largest Firms</i>	-0.443*** (0.140)	-0.416*** (0.146)	-1.092*** (0.281)	-0.459*** (0.148)
<i>State Per Capita Income</i>	-0.018 (0.073)	-0.01 (0.074)	0.125 (0.180)	-0.003 (0.075)
<i>State Industry Wages</i>	0.026 (0.016)	0.028* (0.016)	0.079** (0.038)	0.034** (0.017)
<i>Industry Trade Openness</i>	0.209 (0.167)	0.208 (0.165)	0.057 (0.337)	0.207 (0.166)
Number of Industry-States	469	469	141	469
Pseudo R-squared	0.14	0.14	0.25	0.15

Table 8
Natural Monopolies and Strategic Industries

Notes: This table reports the marginal probit coefficients where the dependent variable is equal to 1 if the industry liberalized foreign entry in 1991, and equal to 0 otherwise. The sample period is 1988-1990. In the natural monopoly category we exclude the following industries: air, water, and land transportation; electric, gas, and water production and distribution; and financial intermediation and insurance. In the strategic industries category we exclude the following industries: arms and ammunition, atomic energy, mineral oils, mining of coal and lignite, mining of various minerals, and railways. The *Herfindahl Index* is the sum of the squares of the market shares of all firms in each 3-digit industrial category. *Industry Sales* is the log of the sum of sales across all firms in an industry. *Industry Wages* is the log of the sum of wages across all firms in an industry. Probit standard errors in parentheses are corrected for heteroskedasticity and for clustering at the industry level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

<i>Panel A: Excluding Natural Monopolies and Financial Services</i>					
	(1)	(2)	(3)	(4)	(5)
		Profits <Median	Profits >Median	Profits <Median	Profits >Median
<i>Herfindahl Index</i>	-0.636** (0.302)	-0.593* (0.350)	-1.484*** (0.501)		
<i>SOE Sales Share</i>	-0.398** (0.202)			-0.192 (0.229)	-0.993*** (0.255)
<i>Industry Sales</i>	-0.055 (0.076)	-0.106 (0.110)	0.146 (0.184)	-0.03 (0.103)	0.057 (0.087)
<i>Industry Wages</i>	0.102 (0.087)	0.116 (0.111)	-0.083 (0.142)	0.099 (0.114)	0.14 (0.105)
Number of Industries	87	44	43	44	43
Pseudo R-squared	0.24	0.11	0.42	0.06	0.47
<i>Panel B: Excluding Strategic Industries</i>					
	(1)	(2)	(3)	(4)	(5)
		Profits <Median	Profits >Median	Profits <Median	Profits >Median
<i>Herfindahl Index</i>	-0.731** (0.308)	-0.585 (0.390)	-1.629*** (0.597)		
<i>SOE Sales Share</i>	-0.397* (0.208)			-0.159 (0.255)	-1.134*** (0.293)
<i>Industry Sales</i>	-0.115 (0.088)	-0.037 (0.118)	-0.15 (0.188)	0.036 (0.110)	-0.119 (0.166)
<i>Industry Wages</i>	0.141 (0.094)	0.049 (0.112)	0.09 (0.176)	0.036 (0.120)	0.273 (0.170)
Number of Industries	86	43	43	43	43
Pseudo R-squared	0.21	0.1	0.34	0.06	0.38