

# The Determinants of Cross-Border M&A in Services: Geography, Policy, and Inter-Sectoral Linkages

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October 16 2013

PRELIMINARY VERSION

## Abstract

We present evidence on the determinants of cross-border mergers and acquisitions (M&A) in services for a large sample of developed and developing countries. We present a stylized model of M&A featuring heterogeneous firms and a role for inter-sectoral linkages. The model motivates a two-stage empirical analysis. In the first stage, we evaluate the impact of geography and cultural factors on bilateral cross-border M&A, considering both the intensive and the extensive margin. In the second stage, drawing on a new database, we explore the role of policy barriers and inter-sectoral linkages in explaining cross-country differences in the capacity to attract international investments through M&A.

Our main findings are the following: (1) Geographical barriers affect similarly M&A in services and manufacturing. Cultural barriers affect M&A in services more than in manufacturing; these barriers have heterogeneous effects in different service sectors. (2) Across countries, the probability of receiving investment through cross-border M&A is strongly positively correlated with market size. Restrictive policy dampens M&A inflows but the negative effect of policy is mitigated in countries with a relatively large share of manufacturing in GDP. The same results hold for the number of M&A deals received. This finding suggests that policy impact is state-dependent and that inter-sectoral linkages play an important role in international investment decisions.

**JEL classification:** F13, F21, L80

**Keywords:** Cross Border M&A, Services Trade Policy, State-dependency in Policy Effectiveness

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# 1 Introduction

Cross-border Mergers and Acquisitions (M&A) have been among the most striking international economic phenomena of the last decade. Figure 1 reports the dynamics of the global cross-border M&A in the last three decades and their composition by main sectors. The two most striking features are, first, the presence of two big “spikes” of M&A (in the late 1990s and mid-2000s) and, second, the fact that a large share of M&A pertains to the service sector. Figure 2 reports the composition of M&A within services. Three sectors are at the core of the dynamics of global M&A: the communication sector during the “first wave” of the late nineties and the finance and utilities sectors in the second wave during the mid-2000s. Moreover, the share of services M&A flowing to developing countries has been gradually increasing over the last decade (Figure 3). Since the 1990s and the 2000s have seen significant liberalization of policies affecting foreign entry through M&A, particularly in the services sectors and particularly in the developing countries, there is an *a priori* case that the extent of these flows has at least partly been driven by variation in policy.

While the determinants of M&A have been studied at the aggregate level, there is little analysis of the determinants of M&A in services sectors. Moreover, the few studies that have analyzed the determinants of M&A in services focused mostly on developed economies. This paper’s contribution consists in presenting evidence on the determinants of the M&A in the service sector based on a large sample of developed and developing economies and using a new database on policy measures described in Borchert, Gootiiz and Mattoo (2012a). Moreover, we explore the determinants of M&As through the lenses of a model featuring a role for inter-sectoral linkages.

We proceed in three steps. First, we illustrate our data. The M&A data are taken from the ThompsonReuters Platinum Database. Aggregating our transaction-level data into a country-level and bilateral M&A database, we show how the fraction of country-pairs with non-zero M&A flows is small. Moreover, we document a non-linear positive relation between the number of M&A deals and the GDP per capita. We also present cross-country evidence on policy restrictiveness in trade in services drawing from a new policy

database. Detailed information on restrictions on the forms of entry, licensing, operations and regulation are aggregated into a Service Trade Restrictiveness Index (STRI), computed for five service sectors in each of 103 countries. The country-level STRI is declining in the GDP per capita. Developing countries tend to display more restrictive policies than developed countries. However, restrictiveness in sectors such as transport and legal services seems to be much higher than for other services in all countries, irrespective of their level of development.

Second, we propose a stylized model of M&A featuring heterogeneous firms and a role for inter-sectoral linkages. The manufacturing sector is perfectly competitive, and it produces an homogenous good using labor and intermediate services. We present evidence from the U.S. of how services are important intermediate inputs in the production of manufacturing to support this assumption. Services are characterized by product differentiation; they are produced by heterogeneous firms under monopolistic competition. M&As in services are presented as a way of serving foreign markets, and they are subject to fixed costs depending on country-pair specific costs (cultural or physical distance) and the policy environment of the host country. We show how the model can rationalize the existence of bilateral zero-M&As flows. Moreover, we show how liberalization policies that reduce the costs of M&As have a different impact on the probability of observing M&A flows (and on the number of M&A deals) depending on the size of the market for services. We label *state-dependency in policy effectiveness* the possibility that the effect of a given policy on a certain outcome variable might depend on the state of the world in which the policy is enforced.

Third, inspired by the model, we propose a two-stage empirical analysis. In the first stage, we estimate a Probit model using bilateral M&A data. The Probit includes host country and home country fixed effects, physical distance and some proxies for cultural distance between countries. In the second stage, we investigate the determinants of host country fixed effects, in particular the role of market size and policy barriers towards M&A. We repeat the analysis also using the total number of M&A deals flowing to different service sectors in individual countries, thus exploring the intensive margin. Following Santos-Silva and Tenreyro, we use

in this case a pseudo-maximum likelihood (PPML) estimator for the first stage. Our main findings are the following: (1) Geographical barriers affect similarly M&A in services and manufacturing. Cultural barriers affect M&A in services more than in manufacturing; these barriers have heterogeneous effects in different service sectors. A shared border matters more in Retail and Transportation. A common language is more important for M&A in Insurance, Telecommunication and Banking than for other sectors. (2) Across countries, the probability of receiving investment through cross-border M&A is strongly positively correlated with market size. Restrictive policy dampens M&A inflows but the negative effect of policy is mitigated in countries with a relatively large share of manufacturing in GDP. The same results hold for the total number of M&A deals received. This finding suggests that policy impact is indeed state dependent and that inter-sectoral linkages play an important role in international investment decisions. The results may help explain why policy restrictions have inhibited services investment in the industrializing economies of South-East Asia less than in other parts of the world.

Finally, we try to identify which are the policy measures that more specifically account for the results obtained using the aggregate index. We find that restrictions on the nationality of the employees and the lack of transparency in the licensing process to be amongst the measures deterring investment.

This paper is connected to the literature on the determinants of cross-border M&A. Di Giovanni (2005) was the first to analyze the determinants of aggregate cross-border M&A in a gravity framework. In particular, he pointed to the importance of financial development in the *source* countries of M&A. Head and Ries (2008) present a model of bilateral flows of M&A and test it on the same data used by Di Giovanni. Hijzen et al (2008) analyze cross-border M&A among OECD countries and focus on the number of deals and the distinction between horizontal and vertical M&A. Coeurdiacer et al (2009) analyze the impact of European integration on bilateral cross-border M&A and the impact of product market deregulation in services within the EU. Hyun and Kim (2010) extend the analysis of determinants of M&A to a large sample of countries using aggregate data. Finally, Boudier and

Lochard (2010) explore the impact of deregulation in services on cross-border M&A in the OECD economies. We extend this literature by offering a perspective on the importance of policy barriers on cross-border M&A in a variety of service sectors and for a large sample of developed and developing countries.

This paper is also connected to the literature on the measurement of policy restrictiveness in services. We use a novel policy database described in Borchert, Gootiiz and Mattoo (2012a). Borchert et al (2012) use this data to explore the implication of policy restrictiveness for landlocked economies in the telecommunication and air transport sectors.<sup>1</sup>

Our findings also speak to the literature on inter-sectoral linkages in FDI patterns. Devereux and Griffith (1998) show that previous FDI in manufacturing attracts additional manufacturing FDI for the U.S. case. Head et al. (1995, 1999) analyze the case of Japan, with similar results. Gross et al. (2005) analyze the case for a sample of Japanese outward investment projects to Europe. They demonstrate how Japanese FDI in manufacturing attracted other Japanese FDI in services, amongst others, but they also show that the pattern of inter-sectoral linkages in FDI changed substantially over time.

Finally, the paper is also conceptually connected to a series of papers containing findings of what we would label state-dependency in policy effectiveness. Aghion et al (2008) find that the effect of de-licencing in India depends on the institutional framework of different States. , Cervellati et al (2011) show how trade liberalization has different impact on technological progress depending on whether it is accompanied by a process of democratization or not. Auerbach and Gorodnichenko (2012) claim that the fiscal policy multiplier (the impact of fiscal policy on output) is highly dependent on whether the economy is experiencing a period of expansion or a recession. Aghion et al (2013) find that the effects of product market reform on innovation depends on the importance of the level of protection of intellectual property rights.

The paper is structured as follows. Section 2 describes the data and in particular discusses the new policy information drawn from the Services Trade Restrictions Database. Section

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<sup>1</sup>Van der Marel and Shepherd (2013) use the data to explore the implication of policy restrictiveness for cross-border trade in services.

3 outlines a stylized model of cross-border M&A. Section 4 describes the empirical strategy, while Section 5 contains the empirical results. Finally, Section 6 concludes.

## 2 Data description

### 2.1 Cross-border Mergers and Acquisitions Data

We use a comprehensive dataset on global mergers and acquisitions from ThomsonReuters Platinum database, spanning the period 2003-2009.<sup>2</sup> The dataset consists of individual cross-border equity deals between the home country of the acquirer and the host country where the target firm is domiciled. A deal’s sector affiliation is determined based on the target firm’s SIC classification.

Table 1 provides basic summary statistics on our investment data. Aggregating information on individual deals across years, we have a total of roughly 19,000 M&As. The total value of investment covered amounts to 5. trillion USD, of which 2.8 trillion are in services sectors. Half of these investments (1.4 trillion) is concentrated in the services sub-sectors for which we have policy information.<sup>3</sup> Banking is quantitatively the most important sector in our sample, followed by Telecommunications. The distribution of M&A flows between countries, although aggregated across years and sectors, still exhibits a large mass point at zero. This is made clear by the third column, where we report the percentage share of non-zero observation over the 21,525 possible country-pair observations. Even considering the totality of the sectors, we observe positive M&A flows only in 14% of the possible cases. This probability is naturally lower in the case of each single sector.

We characterize the M&A data further by looking at the profile of M&A inflows into host countries. The distribution of inbound investment is highly skewed. At the top end,

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<sup>2</sup>We focus on the M&A part of investment flows for two reasons. First, modeling the choice between M&A and Greenfield as a mode of investment goes beyond the scope of this paper, though we plan to investigate this important aspect in future work. Second, the best Greenfield data with global coverage that is currently available are not of a quality comparable to the M&A data used here. In addition, its sectoral breakdown is less detailed and often is defined differently than in the M&A data.

<sup>3</sup>The category “Other services” includes Construction Services, Gas and Electricity, Business Services and Personal Services such as Health Services and Education Services.

one country receives a total of 588 inflows (the U.S.). Figure 4 shows that the attractiveness for M&A, which underpins the data's skewness at the extensive margin, is closely linked to the host economy's GDP. A similar convex relationship holds between the number of deals received and a country's GDP per capita, albeit not as tight as with market size, see Figure 5. Highlighted in red are seven East Asian economies that appear to be particularly sought-after locations for services M&A inflows, at least beyond what their per capita income would suggest in this unconditional scatter plot.<sup>4</sup> The extensive margin displays very similar features when sliced along the home country dimension, meaning that a few economies account for the majority of outbound M&A activity.

## 2.2 A New Policy Database

### 2.2.1 Information on Policy Barriers to Trade in Services

Borchert, Gootiiz and Mattoo (2012a) describe a project to collect primary data on policies affecting international trade in services. The resulting Services Trade Restrictions Database contains information on legal provisions affecting services trade and investment, including by establishing a commercial presence abroad. It is thus ideally suited to be matched with data on actual cross-border investment flows, variation in which should reflect the impact of policy barriers as one important determinant of cross-border investment in services sectors.

The new database covers the following five major services sectors: financial services (banking and insurance), telecommunications, retail distribution, transportation<sup>5</sup> and professional services, with each of these broad sectors further disaggregated into subsectors. It covers a total of 103 economies, of which 79 are developing countries and 24 OECD countries, representing all the world's regions and income groups. First-hand information from developing countries was collected by administering a survey instrument whereas informa-

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<sup>4</sup>Interestingly, firms from India, China and Malaysia are also initiating more services M&A deals than their country's income per capita would suggest.

<sup>5</sup>Regarding policies governing cross-border trade in international air passenger transportation services, the Database draws on the WTO's QUASAR database since it represents the most comprehensive source currently available on bilateral air services agreements, covering over 2000 agreements.

tion for OECD countries was obtained from publicly available sources.<sup>6</sup> To the best of our knowledge, no other data source provides comparable information on barriers to services trade in a consistent manner for such a wide range of services sectors and countries.

The primary focus of the database is to gather information on policies and regulations that potentially constitute a discriminatory barrier for foreign services providers, as well as certain key aspects of the regulatory environment.<sup>7</sup> Regulatory measures affecting foreign investment are organized along the following broad categories:

- Requirements on the legal form of entry and restrictions on foreign equity;
- Limits on licenses and discrimination in the allocation of licenses;
- Transparency and accountability of licensing;
- Restrictions on ongoing operations;
- Relevant aspects of the regulatory environment.

This core set of variables, which is available for every subsector, is supplemented with sector-specific variables, for instance whether in telecommunications foreign providers are allowed to operate their own international gateways or to offer voice-over-IP services.

### **2.2.2 Quantification of Policy Information**

It is notoriously difficult to gauge the restrictiveness of policies affecting services trade and investment because of their variety and complexity (see the survey by Deardoff and Stern 2008). In this paper we use the Services Trade Restrictiveness Index (STRI) developed by Borchert, Gootiiz and Mattoo (2012a). The STRI is a scalar measure of overall openness for a given subsector-mode combination, e.g. for accepting bank deposits (subsector) by

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<sup>6</sup>To ensure data accuracy, all policy information has been reviewed by government officials, though not all countries eventually responded to the vetting request.

<sup>7</sup>For every service sector included, the database covers the most important mode(s) of supplying that particular service, i.e. cross-border delivery or the movement of a natural person, in addition to establishing commercial presence. In this paper we focus predominantly on measures affecting foreign investment and include other measures only to the extent that they can be expected to have a bearing on M&A capital flows.



establishing commercial presence abroad (mode). All applicable measures within each such combination are evaluated and the overall policy regime is judged to be one of five possible "types": completely open, i.e. no restrictions at all; completely closed, i.e. no foreign entry allowed at all; virtually open but with minor restrictions; virtually closed but with very limited opportunities to enter and operate; and a final residual "middle" category of regimes which allow entry and operations but impose restrictions that are neither trivial nor virtually prohibitive. Each of these five regimes is assigned a value on an openness scale from 0 to 1 with intervals of 0.25. Once a score has been attached to each category, STRI values can be aggregated across sectors using weights that reflect the relative importance of constituent services sectors in domestic value added for an average industrialized country. More detailed information about the data and the construction of the STRI can be found in Borchert, Gootiiz and Mattoo (2012b).<sup>8</sup>

The index number approach adopted here contrasts with methods of econometrically estimating the restrictiveness of policies based on their impact on some outcome variable of interest, controlling for other determinants. A measure of restrictiveness thus derived can obviously not be employed in an analysis of policy barrier impact, for the variation in the outcome variable has already been used to pin down the relative effect of policy measures. Since in this paper we are interested in the relative effect of policy barriers on investment flows in services sectors, our measure of policy restrictiveness needs to be based on exogenous judgment that is not by construction linked to the dependent variable of interest.

The STRI measure is relatively simple and transparent, and the method builds on a long tradition of restrictiveness indices, ranging from the pioneering work in this area of the Australian Productivity Commission to more complex weighted averages (see OECD 2009, 2011). For all that, we readily acknowledge the subjectivity of this approach, yet given data constraints as well as the wide range of sectors covered, there is no obviously superior method of quantification. The subjectivity is somewhat mitigated by the extensive consultations

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<sup>8</sup>For the present analysis, we assume policy restrictiveness to be exogenous data. In their study of telecommunications and transport sector policies, Borchert et al. (2012) go further and account for the endogeneity of policy choices.

conducted with the private sector and regulators on how scores are best assigned. We would argue that the STRI approach is better equipped than any fixed algorithm to turn the rich and difficult-to-quantify aspects of policy information into a broadly plausible restrictiveness score.

### 2.2.3 Patterns of Services Trade Policy

Based on the approach laid out in the previous section, we begin by mapping out patterns of services trade protection for the sample of countries and sectors for which we are able to match services M&A data.

Figure 6 presents each country's overall index of services trade restrictions as it relates to the establishment of commercial presence (mode 3), plotted against that country's per capita income, plus a simple linear fit of the relationship. Figure 6 reveals a great deal of variation in the overall restrictiveness of services trade policies. On the one hand, most OECD countries are clustered together at the bottom-right corner, reflecting their general overall openness (notwithstanding some rather restricted subsectors, an aspect we will return to below). On the other hand, some fast-growing dynamic economies in East Asia such as Thailand, Malaysia, Indonesia, the Philippines and China appear to be relatively restrictive in terms of applied services trade barriers. The same is true for India and some countries in the Middle East, including Iran, Egypt and Gulf Cooperation Council (GCC) countries. Some of Africa's poorest nations also have rather restrictive services policies. In particular, Ethiopia and Zimbabwe turn out to be amongst the most restrictive countries in the sample (top-left corner). However, other African nations, such as Ghana, Mozambique and Senegal appear to be relatively open.<sup>9</sup> Thus, the restrictiveness of applied policies varies widely amongst developing countries.

Figure 7 provides a more detailed breakdown of STRI scores by world region and by service sector. It is evident again that countries in the Middle East as well as in South and

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<sup>9</sup>We interpret the apparent openness of some poor developing countries with caution, though, as low STRI scores may in part reflect the absence of any sectoral regulation, in which case the resulting openness is qualitatively different from the predictable market access in countries that formally institute open policies.

East Asia impose on average the highest barriers to investment. But the relative restrictiveness across sectors is surprisingly similar in developing and industrial countries. Figure 7 shows that even those OECD and ECA (Eastern Europe and Central Asia) countries that are widely known for their open policies regarding the establishment of commercial presence still maintain substantial barriers to investment in transportation and professional services.<sup>10</sup>

Summing up the results of Section 2.1 and 2.2.3, we find that countries of South and East Asia are outliers both in terms of the investment inflows through M&A, and in terms of the restrictiveness of their policies affecting foreign investment.

### 3 A Simple Model with Inter-Sectoral Linkages

In this section we outline a simple model featuring heterogeneous firms and inter-sectoral linkages, which will form the base for our empirical strategy. The model heavily draws from previous literature. The only notable departure is the structure of production.

#### 3.1 Closed Economy

Suppose there are  $N$  countries in the world. In a generic country  $i$  a representative consumer enjoys utility from consuming Agricultural goods, Manufacturing goods and Services. The utility function is assumed to be Cobb-Douglas (the subscripts  $i$  are omitted for simplicity):

$$U = C_a^{1-\alpha-\beta} C_m^\alpha C_s^\beta \tag{1}$$

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<sup>10</sup>By focussing on mode 3 STRI scores, the Figure is likely to even understate the true degree of restrictiveness as barriers to the international movement of professionals (mode 4) are critical in these sectors and mode 4 is often thought to be complementary to commercial presence.

The utility maximization problem implies the following demand functions:

$$C_a = (1 - \alpha - \beta) \frac{PC}{P_a} \quad (2)$$

$$C_m = \alpha \frac{PC}{P_m} \quad (3)$$

$$C_s = \beta \frac{PC}{P_s} \quad (4)$$

Where  $P$  is the aggregate price index, a Cobb-Douglas aggregator of the price indexes in the three sectors:

$$P = P_a^{1-\alpha-\beta} P_m^\alpha P_s^\beta \quad (5)$$

Labor is the only factor of production, and the total endowment of labor is  $\bar{L}$ . Agriculture is a perfectly competitive sector. An homogeneous agricultural good is produced using only labor under constant return to scale:  $Y_a = L_a$ . Agriculture is also the *numeraire*, hence  $P_a = 1$ , from which it follows that the nominal wage is also one in every sector (we assume free labor mobility across sectors).

Manufacturing is a perfectly competitive sector. An homogenous manufacturing output is produced using labor and intermediate services ( $Y_s^m$ ):

$$Y_m = (L_m)^\gamma (Y_s^m)^{1-\gamma} \quad (6)$$

Equation (6) is the only non-standard assumption in the model. In order to motivate this assumption empirically, we present in Figure (8) the importance of total services and manufacturing as inputs for several industries, using the Input-Output tables of the B.E.A. for the U.S. (in 2009). As the figure shows, services are important inputs into manufacturing production: the average importance of service inputs in manufacturing output is around 20% (more than the double of the average importance of manufacturing as input of service production).<sup>11</sup> From equation (6) it also follows that  $P_m = w^\gamma P_s^{1-\gamma}$ .

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<sup>11</sup>Obviously, manufacturing itself is a more important input into the production of manufacturing than services, and we are not incorporating this feature into the model. While this could be added, it would not affect the particular channel that we want to highlight here, namely the potential importance of inter-sectoral

Services, finally, is a sector characterized by product differentiation and monopolistically competitive firms. The output of services is a C.E.S. aggregator of individual service varieties with elasticity of substitution  $\sigma = \frac{1}{1-\rho} > 1$  :

$$Y_s = \left[ \int_0^1 y_s(\omega)^\rho d\omega \right]^{\frac{1}{\rho}} \quad (7)$$

The price index is the standard C.E.S. ideal price index:

$$P_s = \left[ \int_0^1 (p_s(\omega))^{1-\sigma} \right]^{\frac{1}{1-\sigma}} \quad (8)$$

Firms in the service sector are heterogeneous in the sense of Melitz (2003). The production function for each service variety is  $y_s(\omega) = \frac{1}{a} L_s(\omega)$ , where  $a$  is a cost variable drawn from a distribution  $G(a)$  with a support  $[a_L, a_H]$ . Naturally, the most productive firm in a given country  $i$  is  $a_{iL}$ .

Profit maximization in the manufacturing sector implies the following demand function for labor in manufacturing and intermediate services:

$$L_m = \gamma P_m Y_m \quad (9)$$

$$Y_m^s = (1 - \gamma) \frac{P_m}{P_s} Y_m \quad (10)$$

Profit maximization in the service sector implies a standard optimal pricing rule as a markup over marginal costs:

$$p_s(\omega) = \frac{a}{\rho} \quad (11)$$

Profit maximization in the manufacturing sector and utility maximization implies the following demand for each service variety:

$$y_s(\omega) = \left( \frac{p_s(\omega)}{P_s} \right)^{-\sigma} (C_s + Y_s^m) \quad (12)$$

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linkages in international investment decisions.

To close the model, we need to impose market clearing. The three goods market clearing conditions read :

$$Y_a = C_a \quad (13)$$

$$Y_m = C_m \quad (14)$$

$$Y_s = C_s + Y_s^m \quad (15)$$

While the labor market clearing condition is :

$$\bar{L} = L_a + L_m + L_s \quad (16)$$

With  $L_s = \int_0^1 L_s(\omega) d\omega$ .

### 3.2 M&As in Services

We introduce the possibility of M&As in services from a given country  $i$  to a country  $j$ .<sup>12</sup> The additional profits obtainable from this operations can be written, using equations (4) (10) and (11) as :

$$\Pi_{ij} = p_{sj}(\omega)y_{sj}(\omega) - a_i y_{sj}(\omega) \quad (17)$$

$$= (1 - \rho) \frac{1}{\rho^{1-\sigma} P_{sj}^{-\sigma}} a_i^{1-\sigma} \left( \beta \frac{P_j C_j}{P_{sj}} + (1 - \gamma) \frac{P_{mj} Y_{mj}}{P_{sj}} \right) \quad (18)$$

$$= \Pi_{ij}(a_i, X_j) \quad (19)$$

Importantly, from equation (18) we can see how these extra-profits are a linear function of  $a_i^{1-\sigma}$ , which can be taken as a positive proxy for productivity (since  $\sigma > 1$ ).

We assume that the M&A implies fixed costs, which we model in a very flexible way as depending both on bilateral factors, such as the distance (physical and cultural) between

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<sup>12</sup>We are purposely ignoring trade in any of the three sector as well as M&As in Agriculture and Manufacturing. While all these features could be added to the model, at the cost of adding complexity, they would not modify the key insights we want to focus on.

countries, and on source and host country specific factors, including the policy environment  $\Phi_j$ :

$$C_{ij} = C_{ij}(\tau_{ij}, \Phi_j, X_i, X_j) \quad (20)$$

Naturally, we observe an M&A from a given country  $i$  to a given country  $j$  i.i.f.:

$$\Pi_{ij} > C_{ij} \quad or \quad \Pi_{ij} - C_{ij} > 0 \quad or \quad \frac{\Pi_{ij}}{C_{ij}} > 1 \quad (21)$$

The three conditions expressed in equation (21) are identical. It is possible to draw the middle one using equations (18) and (20) as a function of  $a_i^{1-\sigma}$ . Figure (9) reports the extra-profits and the cost for an M&A from a country  $i$  to a country  $k$  and to a country  $j$ . The two cases are different. In the case of country  $j$ , the most productive firm in country  $i$  has a productivity high enough to insure a profitable investment. This is not the case of country  $k$ , where no M&As from country  $i$  is profitable.

Moreover, we can formally derive the number of M&A deals as  $M\&A_{ij}^{Num} = N_i V_{ij}$ , where  $N_i$  are the number of firms in country  $i$  and  $V_{ij}$  is defined by:

$$V_{ij} = \begin{cases} \int_{a_{iL}}^{a_{ij}^*} a^{1-\sigma} dG(a) & \text{if } a_{iL} < a_{ij}^* \\ 0 & \text{otherwise} \end{cases}$$

$a_{ij}^*$  is the cutoff productivity level at which a firm would receive zero additional profits (net of costs) from an M&A operation. This level of productivity is implicitly defined by :

$$\Pi_{ij}(a_{ij}^*, X_j) = C_{ij}(\tau_{ij}, \Phi_j, X_i, X_j) \quad (22)$$

Assuming a particular functional form for  $G(a)$  allows to get an explicit expression for  $M\&A_{ij}^{Num}$ .

### 3.3 State Dependency in Policy Effectiveness

The framework presented in the previous section allows considering what we call state - dependency in policy effectiveness. In Figure (10) the solid lines report the additional profits and the cost for an M&A operation from a country  $i$  to country  $j$  and  $k$  when the cost of the operations are  $C_{ij}^1$  and  $C_{ik}^1$ . Obviously, we would not observe any M&A from country  $i$  to either country  $j$  or  $k$  because even the most productive firm in country  $i$  would make losses. Now suppose that the same liberalization policy is implemented in country  $k$  and  $j$ , with the result of reducing the cost of investing for firms from country  $i$  from  $C_{ik}^1$  to  $C_{ik}^2$  and from  $C_{ij}^1$  to  $C_{ij}^2$ . The new situation is described by the dashed lines. Crucially, the profit function for investing in country  $j$  is now making it profitable for some firms located in country  $i$  to invest in country  $j$ . However, in country  $k$ , even with a more favorable policy environment, we still do not observe investment flows from country  $i$ . The fact that the same policy change can generate two different outcomes depending on other conditions prevailing in the host country is what we call state-dependent policy effectiveness. Importantly, in the picture the different slopes were key in delivering the results. The slopes of the curves, in turn, depend on the importance of the demand for services, which depends on the size of the service sector as well as the demand for services expressed by the manufacturing sector.

## 4 Empirical Strategy

The model presented in the previous section motivates a two stage empirical strategy.

In the first stage, we analyze the impact of geographical and cultural factors on the probability of observing bilateral M&As in services and on the number of M&A deals. We start, in the spirit of Helpman, Melitz and Rubenstein (2008), by defining a latent variable as the ratio of the additional profits from an M&A from country  $i$  to country  $j$  for the *most productive firm* in country  $i$  and the cost of the operation:

$$Z_{ij} = \frac{\Pi_{ij}(a_{iL}, X_j)}{C_{ij}(\tau_{ij}, \Phi_j, X_i, X_j)} \quad (23)$$



Notice that an M&A activity will be observed between country  $i$  and country  $j$  if and only if  $Z_{ij} > 1$ . Let  $z_{ij}$  denote the log of  $Z_{ij}$ . We assume that  $\tau_{ij}$  is proportional to a vector of trade frictions  $T_{ij}$  which is stochastic due to unmeasured bilateral frictions ( $\epsilon_{ij}$ ), so that  $\tau_{ij} = T_{ij}^\beta e^{-\epsilon_{ij}}$ . Unobserved frictions  $\epsilon_{ij}$  are i.i.d. unit normal distributed. As proxy for  $T_{ij}$  we use the physical distance between two countries and dummy variables for the presence of a border, the fact of sharing a common language and sharing the same legal origin. Under appropriate functional forms assumptions, taking logs of (23), we can specify an estimable Probit model for the presence of M&A as follows:

$$z_{ij} = \delta_i + \delta_j - \beta t_{ij} + \epsilon_{ij} \quad (24)$$

$$M\&A_{ij} = \begin{cases} 1 & \text{if } z_{ij} > 0 \\ 0 & \text{otherwise} \end{cases}$$

The Probit model includes a full set of home and host country fixed effects.<sup>13</sup>

In our first stage, we analyze also the intensive margin of M&A activity by using the number of M&A deals. In this case, we use a Poisson Pseudo Maximum Likelihood estimator (discussed in Santos-Silva and Tenreyro, 2006), including both home country and host country fixed effects (we will call this model PPML-N).

In the second stage, we use these estimated host country fixed effects from the Probit model and the PPML-N model and relate them to variation in policy restrictiveness, conditional on appropriate covariates  $X_j$ . Thus the second stage's estimable equation takes the form:

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<sup>13</sup>In general the Probit model with fixed effects suffers from the so-called incidental parameters problem. We are not particularly concerned about this issue for two reasons. First, Heckman (1981) provides Monte Carlo based evidence that in a panel context, the probit model with fixed effect performs relatively well when the number of periods analyzed exceeds eight. In a cross-sectional context with bilateral dependent variables, as ours, the correspondent concept to the number of periods in a panel context is the number of trading partner, which in our case is above 100. Second, we check the robustness of the Probit estimations using a linear probability model, which is not affected by the incidental parameters problem, and obtain qualitatively similar results.

$$\delta_j = \beta_0 + \beta_1 y_j + \beta_2 \phi_j + \beta_3 (\phi_j X_j) + \beta_4 X_j + \epsilon_j \quad (25)$$

In equation (25) we introduce interaction effects between the measure of policy restrictiveness and some country characteristics in  $X_j$  so as to explore dimensions of state dependency in policy effectiveness, by that meaning the possibility that the effect of a given policy might in fact depend on other factors. Inspired by our model, we will explore inter-sectoral linkages as one of the possible relevant factors.

## 5 Results

### 5.1 First Stage: Gravity-type Determinants

Table 2 reports the results of the first-stage Probit model for aggregate data (recall from Section 2 that M&A data are cumulated over the period 2003-09). We report separately the results for total manufacturing (column two) and total services (column three). The effect of distance on the probability of observing cross-border M&A is negative and statistically significant for both the manufacturing sector and the service sector. The coefficient on the border dummy is roughly the same for services as for manufacturing. Sharing a common language increases the probability of observing M&A in services more than it does in manufacturing. Given the critical role of communication in the delivery of intangible services, this finding is hardly surprising. A common legal origin increases the probability of observing M&A in the service sector by less than in in manufacturing. Sharing a regional trade agreement seems to affect the M&A in services, but not in manufacturing. As proxy for cultural proximity we also use a common religion<sup>14</sup>. As table 2 shows, the coefficient attached to common religion is positive and highly statistically significant, and the coefficient for services is much larger than the one for manufacturing. A common colonial origin has a positive impact on the probability of observing M&A in services, but not in manufacturing. Trade in goods has a

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<sup>14</sup>Common religion is the probability that randomly extracting two people from the two countries, they belong to the same religion. Formally, it is the sum of the products of the shares of population belonging to the same religions in the two countries.

positive and statistically significant impact on both manufacturing and services M&A, and so does the existence of a Bilateral Investment Treaty (BIT) between the two countries.

We move to the analysis of the determinants of the numbers of deals in Table 3. Let PPML-N denote the results for the numbers of deals using the PPML estimator. Observing Table 3 we see how sharing a common language, a common religion and a common legal origin have a much stronger impact on service M&A than on manufacturing M&As. The coefficients for distance and the border dummy are very similar for manufacturing and services. We conclude that geographical barriers have similar effects on M&A in manufacturing and services, while cultural barriers are overall more important for services than for manufacturing when considering the aggregate data.

However, given the heterogeneity of different services sectors, we explore in Table 4 and 5 whether our results differ significantly across different service sectors. Hence, we run our first-stage models (Probit and PPML-N) using six different service sectors: Accounting, Banking, Insurance, Retail, Telecommunications, and Transport.<sup>15</sup>

Considering first the Probit results (Table 4), the coefficient on distance is negative and statistically significant for every sector. The effect of sharing a common language seems to affect more M&As in Banking, Insurance and Telecom sectors. A common origin for the legal system appears to have a positive and highly significant effect on the probability of observing cross-border M&A in Banking, Insurance and Retail. A shared border, instead, seems to be a relevant determinant of cross-border M&A only in the case of Transport and Retail services. In both these sectors the need to establish cross-border networks for delivery and distribution are likely to drive firms to establish a commercial presence in neighboring countries.<sup>16</sup> Common religion appear to be an important determinant of bilateral M&A flows in all sector, except Transportation services. The presence of a BIT, on the other hand, display a statistically significant coefficient only in the case of Banking.

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<sup>15</sup>Accounting includes also engineering and research services. The Professional Services sector in our sample includes the Accounting Engineering and Research sector and Legal Services. Since out of the 804 deals classified under Professional Services in Table 2, only 4 transactions arise from the legal sector we decided to exclude it from the analysis.

<sup>16</sup>In the on-line appendix we present the results obtained for the linear probability model, which are broadly in line with Tables 2 and 4.

The results obtained using the Probit model are substantially confirmed moving to the number of deals (PPML-N). As Table 5 shows, border is now found to be a significant determinant only in Retail. The coefficient on common language is larger for Banking, Telecom and Accounting services than for other sectors. Common religion displays positive and statistically significant coefficients in all sectors, except Transportation.

Overall, we conclude that the results from the first stage of our analysis indicate similarities between the service and manufacturing sectors in terms of the familiar gravity-type determinants of investment. At the same time there are also some plausible differences between the two.

## 5.2 Second Stage: Aggregate Policy Restrictiveness

Following our empirical strategy, in the second stage of the analysis we take the host country fixed effects and we relate them to a set of explanatory variables, including a measure of market size and our policy restrictions measure.

Before reporting the results based on a regression framework, it is instructive to visualize some relationships of first-stage fixed effects with variables of interest. Figure 11 reports the scatter plot of the host country fixed effects, obtained from the probit regressions of the existence of positive bilateral flows of services M&A in all sectors, against the log of the country GDP, averaged over the period 1998-2002, which we take as a first proxy of the market size.<sup>17</sup> As the picture shows, there is a strong positive association between these two variables.

Figure 12 reports the scatter plot of the same host country fixed effects against our index of restrictiveness in services. The fact that there is only a weak negative relation between the two measures appears to be essentially due to a set of countries that are characterized by both a relatively closed policy regime and high values for the fixed effect. This group of countries is not random. It includes China, India, Indonesia, Thailand, Malaysia, Vietnam and Philippines. In these cases a relatively high level of policy restrictiveness co-exists with

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<sup>17</sup>In order to avoid presenting contemporaneous correlations, we chose to report all the results using covariates from 2002 and before, naturally except for the STRI variable.

a high level of M&A inflows.

Following the insight of the model we presented on the importance inter-sectoral linkages, we correlate the Probit host fixed effect with the share of manufacturing sector in total value-added (VA).<sup>18</sup> The results are shown in Figure 13, in which a strong positive correlation is found between the share of the manufacturing sector in value added in 2002 and the services sector fixed effects from the first-stage Probit.

We repeat the same exercise using the fixed effects obtained with the PPML-N model, and we obtain virtually identical results (see Figures 14 15 16). In order to validate the visual intuition within a regression framework, we present corresponding econometric results in Tables 6 and 7.

In table 6 we report the results from the Probit model. In the first specification, we only include the log of GDP and the Service Trade Restrictiveness Index (STRI). Consistent with Figures 12 and 13, we find a positive and highly significant effect of GDP (which turns out to be stable across all specifications), and an almost zero coefficient for the STRI. In the second to the fifth column we add the interaction terms of the STRI with the log of gdp, the manufacturing share of gdp, the service share of gdp and the average growth rate in 1998-2002. Only when considering the interaction terms between the STRI and the shares of manufacturing and services in value added, the coefficient on the STRI becomes negative and statistically significant, while the interaction terms are positive and statistically significant. This points toward evidence of what we call the state-dependency in policy effectiveness: the effect of restrictive policies is dampened in countries where the share of manufacturing and service sectors are larger. In the sixth column we contemporaneously use the interactions with manufacturing share in GDP and service share. We find that only the interaction terms with the share of manufacturing is positive and statistically significant, while the interaction with the service share is not. In the subsequent specification we control also for a measure of

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<sup>18</sup>Formally, our model predicts that the profitability of an M&A in Services depends among other things on the extent of the demand for intermediate services from the manufacturing sector. This can be proxied by the share of manufacturing in Value Added only under the assumption that in all countries the Input-Output tables are the same, and so a larger share of manufacturing in value added corresponds also to a larger demand of intermediate services.

financial development (total Credit to Private sector as a fraction of GDP), the cost of start a business, and indicators of political stability and government effectiveness. The results are qualitatively unchanged, although now the interaction term between the STRI and the service share of gdp becomes statistically significant. Table 7 reports the results for the PPML-N model, which are qualitatively very similar.

We exploit the cross sectoral variation in the STRI in the subsequent tables 8 and 9. Importantly, here we use sectoral fixed effects obtained from the first stage and pool across services sectors. For our policy measure, we use the pooled *sectoral* STRI scores, which allows us to increase the number of available observations. We follow the structure of tables 6 and 7, and we include in every specification includes sector fixed effects. Table 8 reports the result for the Probit model. The results are broadly consistent with those reported in table 6 and 7. In this case, however, also the interaction term between the STRI and the gdp appears to be positive and highly statistically significant when it is inserted alone in the regression (column 2). On the other hand, when we insert in the regression all the interaction terms (column 5), only the service share of manufacturing and services turn out to be statistically significant. As for the case of the tables 6 and 7, the results are unchanged when we add the other control variables (column 6).

In Table 9 we report the results for the number of projects. Results are analogous to the one presented in table 8. However, unlike in the case of the Probit model, now the the coefficient on the interaction term between the STRI and the manufacturing share is much larger than the coefficient on the interaction term between the STRI and the service share.

While we are aware of the limitations of a cross-section approach, dictated by the cross-sectional nature of the policy information available, the results presented in Tables 6 to 9 seem to point to the fact that policy restrictiveness indeed affects M&A in services. However, we find intriguing evidence of policy effectiveness being state-dependent. In particular, relatively high shares of manufacturing and services in value added seem to allow countries to maintain a more restrictive regime without deterring M&A in service sectors. This result is consistent with the theoretical model that we presented in Section 3: service sector firms are likely to

find larger markets in economies with larger manufacturing and service shares in gdp than in economies where the primary sector is predominant.

### 5.3 Second Stage: Single Policy Measures

While the STRI is an aggregate index, the Service Trade Restriction Database also makes available all individual policy measures.<sup>19</sup> While there are econometric problems related to multicollinearity and degrees of freedom, one would ideally want to identify those individual policy measures that most affect M&A decisions. We divide the policy measures into different categories, namely restrictions affecting market entry, licensing, operations or the regulatory environment. We present results by pooling the different sectors, conditioning on GDP and including sector fixed effects.

Table 10 reports the results obtained using the Probit host fixed effects. In the first column, we only include a dummy indicating the presence of a restriction in setting up a branch and the maximum amount of capital that a foreign investor can hold in a Greenfield subsidiary. Both coefficients are positive and statistically significant. We interpret the coefficient on the maximum ownership share as a sign of complementarity, rather than substitutability, between different forms of entry. However, the positive coefficient on the restriction to open a branch might indicate also that firms engage more in M&A when they cannot enter a foreign market simply by setting up a branch.<sup>20</sup>

In the second column, we include several restrictions concerning licensing: the presence of limit to the number of licenses, the presence of difference criteria for domestic versus international firms for applying for a license, the transparency of criteria to obtain a license, the automatic nature of the license renewal, the transparency in obtaining reasons why a license is denied. We find a negative and strongly statistically significant on the coefficient on the transparency about the reason for a license denial. Surprisingly, we do not find a significant effect pertaining to limits on the number of licenses. Finally, we find a positive

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<sup>19</sup>Those measures that underpin the STRI score plus additional variables and contextual information.

<sup>20</sup>The difference between a branch and a subsidiary is that the former is legally still part of the parent firm, while the second is a separated legal entity.

and significant coefficient on the dummy for differential criteria for licensing for domestic and foreign firms. A way to interpret this result is that in presence of discriminatory licensing, firms might prefer to acquire a local firm (as opposed to establish a branch or a subsidiary), and thus be able to apply as a "domestic" firm.

Among the restrictions affecting operations, we explored the role of nationality limits imposed to the general employees and to the board of directors, and on repatriation of earnings. We find a negative and significant coefficient on the nationality restrictions for the general employees. We also find a positive coefficient on the restriction for repatriation of earnings.

In the fourth column, we insert the regulatory restrictions (no right to appeal regulatory decisions, lack of an independent regulator, and lack of prior notice regarding regulatory changes). None of the variable considered display significant coefficients.

Column (5) proposes a model where we included some of the restrictions from the different types. Here restriction in setting up a branch, the equity restriction on greenfield subsidiaries, the lack of transparency on the reason for a license denial, limits to the repatriation of earnings and limits to the nationality of the employees seems to be the determinants of the Probit host fixed effects.

Table 11 reports the results obtained for the PPML-N model, which are virtually unchanged. We conclude that those policies that seem to matter the most in restricting the inflows of M&As in services are the rules concerning the nationality of the employees, the equity restrictions on greenfield investments and the lack of transparency on the denial of licenses. Naturally, the last indicator might be a proxy of the perceived general lack of transparency of governments in dealing with foreign investors.

## 6 Conclusions

While we summarized our main results in the introduction, we now suggest few potential avenues for future research.

First, it will be interesting to explore in greater depth the role played by inter-sectoral



linkages in international investment decisions. In particular, it would be interesting to develop more refined indicators of demand from different service sectors, as compared to the shares of services and manufacturing in GDP. This could be done by using information on Input-Output tables for different countries.

Second, it would be interesting to explore more the concept of state-dependency in policy effectiveness. Given the general applicability of this concept, we believe that it is important to consider it carefully, also because recognizing this phenomenon has important implication for empirical analysis. Potentially, in fact, any analysis aimed at verifying the effectiveness of a certain policy could (and maybe should!) check whether such policy impact is state-independent or whether some third factors can dampen or magnify the effects of such policy on the outcome of interest. As we illustrated in the present work, this can be done by introducing in the empirical model interaction terms between the policy variable and factors that are conjectured to determine the state-dependency of the impact of those policies.

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Table 1: M&A Investment: Descriptive Statistics

	TotalNum	TotalValue	Share of non-zeroes
All Sectors	19792	5004656	14
STRI Services	3944	1409067	7
Banking	1032	585309	3
Insurance	347	139796	2
Retail	612	144694	2
Telecom	787	372757	3
Transport	433	122758	2
Professional	733	43752	2
Other Services	7201	1443917	7
Manufacturing	6254	1602664	8
Other	2393	549008	4

Table 2: **First Stage: Probit Estimates**

Sector	Total	Manufacturing	Services
Distance	-0.698*** (0.049)	-0.650*** (0.065)	-0.595*** (0.060)
Contiguity	0.297** (0.132)	0.384** (0.166)	0.318** (0.147)
RTA	0.206** (0.091)	0.068 (0.113)	0.247** (0.111)
Comm legal system	0.237*** (0.060)	0.311*** (0.080)	0.189** (0.074)
Colony	0.132 (0.132)	-0.213 (0.159)	0.406*** (0.141)
Comm language	0.325*** (0.087)	0.315*** (0.119)	0.336*** (0.106)
Comm religion	0.773*** (0.120)	0.644*** (0.157)	1.014*** (0.153)
Goods trade (2002)	0.076*** (0.014)	0.082*** (0.024)	0.112*** (0.020)
BIT (2002)	0.226*** (0.062)	0.159** (0.079)	0.180** (0.076)
Host FE	Yes	Yes	Yes
Home FE	Yes	Yes	Yes
Obs	11341	6345	7662
Log-L	-2015.599	-1236.104	-1290.71

Table 3: **First Stage: PPML Estimates - Numbers of Deals**

Sector	Total	Manufacturing	Services
Distance	-0.606*** (0.058)	-0.589*** (0.068)	-0.566*** (0.072)
Contiguity	-0.184 (0.128)	-0.133 (0.136)	-0.146 (0.119)
RTA	0.231* (0.129)	-0.009 (0.163)	0.352** (0.148)
Comm legal system	0.051 (0.088)	-0.026 (0.102)	0.216** (0.089)
Colony	0.569*** (0.092)	0.451*** (0.110)	0.573*** (0.106)
Comm language	0.390*** (0.113)	0.376*** (0.121)	0.507*** (0.111)
Comm religion	1.528*** (0.169)	1.209*** (0.217)	1.857*** (0.213)
Goods trade (2002)	0.212*** (0.031)	0.256*** (0.041)	0.284*** (0.041)
BIT (2002)	-0.116 (0.085)	0.038 (0.097)	-0.083 (0.090)
Host FE	Yes	Yes	Yes
Home FE	Yes	Yes	Yes
Obs	11341	6345	7662
Log-L	-6971.544	-3209.426	-2705.399
R-squared	0.9307	0.9187	0.8953

Table 4: **First Stage: Disaggregate Probit Estimates**

Sector	Services	Acc.	Bank	Ins	Ret	Tel	Transp
Distance	-0.595*** (0.060)	-0.305* (0.159)	-0.668*** (0.081)	-0.521*** (0.129)	-0.516*** (0.114)	-0.488*** (0.080)	-0.415*** (0.104)
Contiguity	0.318** (0.147)	-0.123 (0.268)	-0.059 (0.176)	-0.077 (0.247)	0.526** (0.218)	0.038 (0.183)	0.391* (0.228)
RTA	0.247** (0.111)	0.460 (0.331)	0.288* (0.154)	0.222 (0.235)	0.394* (0.213)	0.235 (0.154)	0.129 (0.217)
Comm legal system	0.189** (0.074)	0.131 (0.180)	0.222** (0.096)	0.259* (0.153)	0.272** (0.137)	0.092 (0.101)	0.169 (0.138)
Colony	0.406*** (0.141)	0.479* (0.273)	0.395** (0.162)	0.459* (0.236)	0.199 (0.209)	0.320* (0.168)	0.262 (0.219)
Comm language	0.336*** (0.106)	0.341 (0.253)	0.353** (0.139)	0.676*** (0.222)	0.313 (0.192)	0.343** (0.140)	0.298 (0.185)
Comm religion	1.014*** (0.153)	1.174*** (0.422)	0.761*** (0.211)	1.235*** (0.361)	1.212*** (0.315)	0.955*** (0.205)	0.413 (0.289)
Goods trade (2002)	0.112*** (0.020)	0.259*** (0.092)	0.111*** (0.030)	0.218*** (0.065)	0.076 (0.052)	0.086*** (0.030)	0.111*** (0.041)
BIT (2002)	0.180** (0.076)	0.046 (0.197)	0.307*** (0.104)	0.074 (0.174)	0.110 (0.146)	-0.046 (0.100)	0.016 (0.134)
Host FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Home FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	7662	1654	4971	2284	2559	4700	2418
Log-L	-1290.71	-287.8649	-726.275	-337.1912	-409.0344	-715.6322	-433.5455

Table 5: **First Stage: Disaggregate PPML Estimates - Number of Deals**

Sector	Services	Acc.	Bank	Ins	Ret	Tel	Transp
Distance	-0.566*** (0.072)	-0.401*** (0.148)	-0.658*** (0.121)	-0.388** (0.152)	-0.561*** (0.124)	-0.553*** (0.112)	-0.610*** (0.151)
Contiguity	-0.146 (0.119)	-0.417** (0.210)	-0.217 (0.205)	-0.312 (0.268)	0.448** (0.214)	-0.310 (0.194)	0.234 (0.233)
RTA	0.352** (0.148)	0.118 (0.349)	0.255 (0.222)	0.538* (0.314)	0.544* (0.281)	0.586** (0.249)	0.167 (0.304)
Comm legal system	0.216** (0.089)	-0.279 (0.206)	0.236* (0.139)	0.498** (0.209)	0.274 (0.204)	0.334** (0.166)	0.051 (0.201)
Colony	0.573*** (0.106)	0.608*** (0.230)	0.759*** (0.188)	0.448* (0.250)	0.199 (0.223)	0.518*** (0.175)	0.265 (0.234)
Comm language	0.507*** (0.111)	0.830*** (0.233)	0.422** (0.178)	0.905*** (0.282)	0.227 (0.227)	0.248 (0.190)	0.501** (0.242)
Comm religion	1.857*** (0.213)	2.609*** (0.534)	1.971*** (0.336)	2.484*** (0.576)	1.641*** (0.419)	1.990*** (0.360)	0.766 (0.475)
Goods trade (2002)	0.284*** (0.041)	0.565*** (0.118)	0.291*** (0.062)	0.402*** (0.080)	0.255*** (0.089)	0.211*** (0.060)	0.293*** (0.094)
BIT (2002)	-0.083 (0.090)	-0.407** (0.204)	0.220 (0.136)	-0.192 (0.228)	0.020 (0.151)	-0.177 (0.144)	0.036 (0.186)
Host FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Home FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	7662	1654	4971	2284	2559	4700	2418
Log-L	-2705.399	-525.6424	-1221.727	-483.879	-640.1007	-1098.198	-621.1776
R-squared	0.8953	0.9329	0.7314	0.6470	0.7832	0.6332	0.6880



Table 6: **Second Stage: Host probit Fixed Effects and STRI, Serv aggregate (nc)**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log GDP (Avg 98-02)	0.2134*** (0.0304)	0.1219* (0.0723)	0.1936*** (0.0331)	0.2578*** (0.0406)	0.2301*** (0.0321)	0.2235*** (0.0450)	0.2373*** (0.0609)
STRI	-0.0058 (0.0052)	-0.1047 (0.0684)	-0.0456*** (0.0099)	-0.0487*** (0.0185)	-0.0050 (0.0122)	-0.0746*** (0.0251)	-0.1199*** (0.0277)
(STRI)x(Avg GDP)		0.0040 (0.0028)					
Share Manuf VA (2002)			-0.0611*** (0.0193)			-0.0604*** (0.0201)	-0.0785*** (0.0202)
(STRI)x(Manuf VA)			0.0026*** (0.0005)			0.0025*** (0.0005)	0.0031*** (0.0005)
Share Serv VA (2002)				-0.0290** (0.0130)		-0.0192 (0.0138)	-0.0375** (0.0151)
(STRI)x(Serv VA)				0.0008** (0.0003)		0.0005 (0.0004)	0.0012*** (0.0004)
GDP growth rate (Avg 98-02)					0.0548 (0.0660)		
(STRI)x(Avg GDP growth)					-0.0003 (0.0028)		
Credit PrivSec (Avg 98-02)							-0.0017 (0.0022)
Cost Start Busi (2005)							-0.0003 (0.0015)
Govt Effect (2002)							0.0926 (0.1472)
Political Stab (2002)							0.0552 (0.1130)
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	91	91	91	91	91	91	88
R-squared	0.294	0.303	0.406	0.305	0.297	0.405	0.406

Table 7: **Second Stage: Host PPML-N Fixed Effects and STRI, Serv aggregate (nc)**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log GDP (Avg 98-02)	0.3166*** (0.0516)	0.1105 (0.1234)	0.2872*** (0.0496)	0.3895*** (0.0713)	0.3461*** (0.0554)	0.3343*** (0.0736)	0.3766*** (0.0982)
STRI	-0.0153* (0.0088)	-0.2380** (0.1154)	-0.0904*** (0.0173)	-0.0857** (0.0335)	-0.0130 (0.0218)	-0.1365*** (0.0454)	-0.2173*** (0.0447)
(STRI)x(Avg GDP)		0.0091* (0.0048)					
Share Manuf VA (2002)			-0.1214*** (0.0337)			-0.1203*** (0.0355)	-0.1587*** (0.0341)
(STRI)x(Manuf VA)			0.0048*** (0.0009)			0.0047*** (0.0010)	0.0060*** (0.0010)
Share Serv VA (2002)				-0.0476* (0.0247)		-0.0304 (0.0266)	-0.0598** (0.0246)
(STRI)x(Serv VA)				0.0012** (0.0006)		0.0009 (0.0007)	0.0020*** (0.0007)
GDP growth rate (Avg 98-02)					0.1030 (0.1249)		
(STRI)x(Avg GDP growth)					-0.0007 (0.0051)		
Credit PrivSec (Avg 98-02)							-0.0036 (0.0038)
Cost Start Busi (2005)							-0.0014 (0.0026)
Govt Effect (2002)							0.0284 (0.2308)
Political Stab (2002)							0.2226 (0.1764)
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	91	91	91	91	91	91	88
R-squared	0.246	0.269	0.384	0.255	0.250	0.381	0.427

Table 8: **Second Stage: Host Probit Fixed Effects and STRI, pooled**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log GDP (Avg 98-02)	0.1263*** (0.0189)	0.0796*** (0.0262)	0.1256*** (0.0193)	0.1722*** (0.0203)	0.1318*** (0.0199)	0.1782*** (0.0368)	0.1819*** (0.0277)
STRI	0.0023 (0.0016)	-0.0565*** (0.0207)	-0.0080* (0.0047)	-0.0257*** (0.0081)	-0.0001 (0.0026)	-0.0527** (0.0224)	-0.0424*** (0.0154)
(STRI)x(Avg GDP)		0.0023*** (0.0008)				0.0003 (0.0011)	
Share Manuf VA (2002)			-0.0153* (0.0093)			-0.0295*** (0.0112)	-0.0226** (0.0115)
(STRI)x(Manuf VA)			0.0006** (0.0003)			0.0008*** (0.0003)	0.0007** (0.0003)
Share Serv VA (2002)				-0.0260*** (0.0058)		-0.0301*** (0.0080)	-0.0221*** (0.0080)
(STRI)x(Serv VA)				0.0004*** (0.0001)		0.0005*** (0.0002)	0.0005*** (0.0002)
GDP growth rate (Avg 98-02)					0.0108 (0.0233)		
(STRI)x(Avg GDP growth)					0.0007 (0.0006)		
Credit PrivSec (Avg 98-02)							0.0015 (0.0011)
Cost Start Busi (2005)							-0.0005 (0.0009)
Govt Effect (2002)							-0.1499* (0.0825)
Political Stab (2002)							-0.0200 (0.0647)
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	339	339	339	339	339	339	332
R-squared	0.202	0.218	0.212	0.249	0.206	0.270	0.278

Table 9: **Second Stage: Host PPML-Numbers Fixed Effects and STRI, pooled**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log GDP (Avg 98-02)	0.1283*** (0.0299)	0.0434 (0.0419)	0.1262*** (0.0290)	0.1907*** (0.0322)	0.1426*** (0.0314)	0.1899*** (0.0544)	0.2416*** (0.0437)
STRI	0.0020 (0.0025)	-0.1051*** (0.0315)	-0.0250*** (0.0065)	-0.0298** (0.0133)	0.0009 (0.0040)	-0.0932*** (0.0329)	-0.0761*** (0.0228)
(STRI)x(Avg GDP)		0.0042*** (0.0013)				0.0008 (0.0014)	
Share Manuf VA (2002)			-0.0395*** (0.0141)			-0.0578*** (0.0173)	-0.0533*** (0.0181)
(STRI)x(Manuf VA)			0.0016*** (0.0003)			0.0017*** (0.0004)	0.0018*** (0.0005)
Share Serv VA (2002)				-0.0337*** (0.0092)		-0.0404*** (0.0123)	-0.0313** (0.0123)
(STRI)x(Serv VA)				0.0005** (0.0002)		0.0007*** (0.0002)	0.0007*** (0.0003)
GDP growth rate (Avg 98-02)					0.0422 (0.0386)		
(STRI)x(Avg GDP growth)					0.0003 (0.0010)		
Credit PrivSec (Avg 98-02)							-0.0002 (0.0015)
Cost Start Busi (2005)							-0.0009 (0.0014)
Govt Effect (2002)							-0.2466** (0.1170)
Political Stab (2002)							0.0702 (0.1017)
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	339	339	339	339	339	339	332
R-squared	0.181	0.203	0.218	0.214	0.185	0.263	0.279

Table 10: Individual Policy Variables - Probit

Restriction Affecting:	Form of Entry	Licensing	Operations	Regulation	Overall
No branch entry	0.411*** (0.086)				0.231** (0.093)
gf_subsmx	0.004*** (0.001)				0.004** (0.002)
lic_limit		0.154 (0.125)			
lic_diff_cri		0.377** (0.154)			0.174 (0.163)
Lic Crit non-public		-0.375 (0.372)			
Lic not automatic		0.002 (0.102)			
No reasons lic rejection		-0.252** (0.114)			-0.316*** (0.098)
natreqemp			-0.253** (0.103)		-0.329*** (0.096)
natreqbod			0.072 (0.137)		
repat_earn			0.232* (0.120)		0.321** (0.151)
No recourse/appeal				0.111 (0.136)	
Reg not independent				-0.024 (0.117)	0.070 (0.107)
No prior notice				0.186* (0.104)	
Constant	-3.649*** (0.564)	-2.067** (0.799)	-2.527*** (0.738)	-2.553*** (0.622)	-2.333*** (0.710)
Log GDP (Avg 98-02)	0.134*** (0.022)	0.092*** (0.033)	0.117*** (0.031)	0.108*** (0.026)	0.096*** (0.029)
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes
R-squared	0.268	0.280	0.274	0.198	0.392
N	253	148	147	164	131

Table 11: Individual Policy Variables - PPML-Numbers

Restriction Affecting:	Form of Entry	Licensing	Operations	Regulation	Overall
No branch entry	0.545*** (0.146)				0.304* (0.178)
gf_subsmx	0.007*** (0.002)				0.006** (0.003)
lic_limit		0.582*** (0.221)			
lic_diff_cri		0.511** (0.253)			0.203 (0.276)
Lic Crit non-public		-1.045** (0.483)			
Lic not automatic		-0.136 (0.173)			
No reasons lic rejection		-0.482*** (0.184)			-0.596*** (0.171)
natreqemp			-0.412** (0.183)		-0.541*** (0.182)
natreqbod			0.076 (0.255)		
repat_earn			0.087 (0.202)		0.166 (0.217)
No recourse/appeal				0.147 (0.233)	
Reg not independent				0.016 (0.184)	0.203 (0.191)
No prior notice				0.261 (0.175)	
Log GDP (Avg 98-02)	0.143*** (0.036)	0.092* (0.055)	0.122** (0.052)	0.129*** (0.044)	0.090* (0.053)
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes
R-squared	0.199	0.212	0.165	0.109	0.243
N	253	148	147	164	131

Figure 1: Global M&A, by Main Sectors

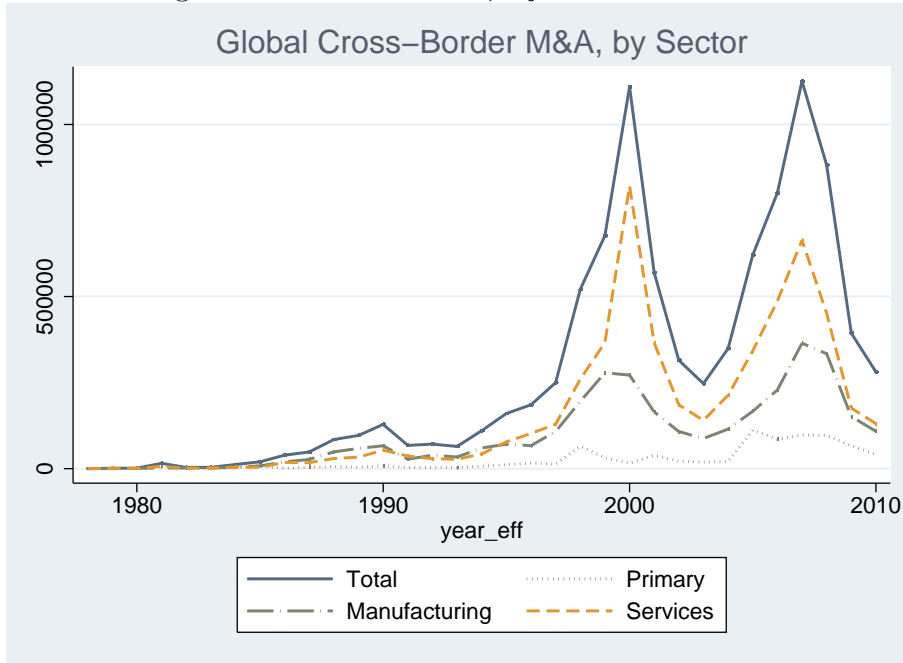


Figure 2: Global M&A, Main Service Sectors

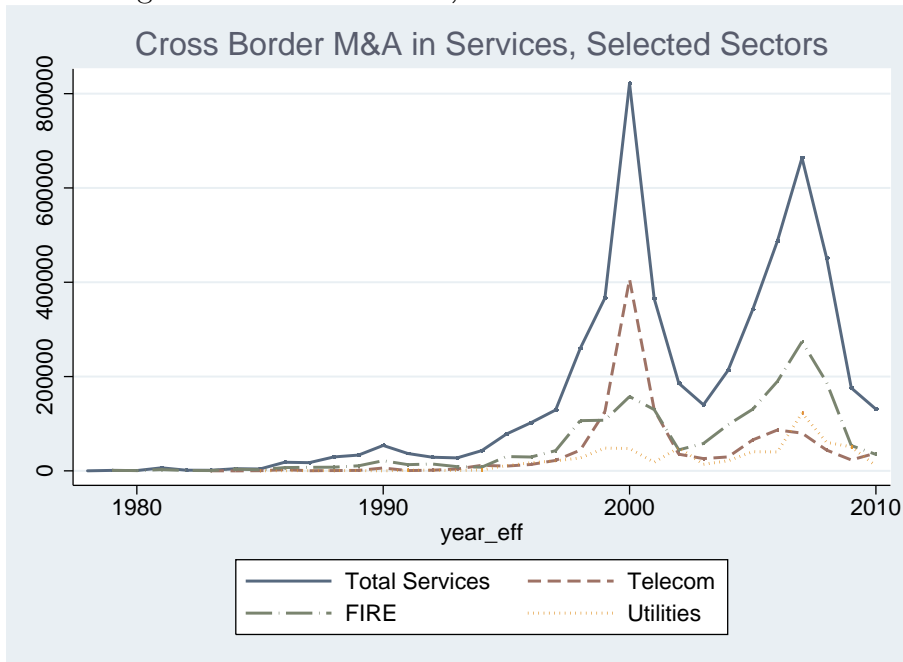


Figure 3: Cross-Border M&A, by Country

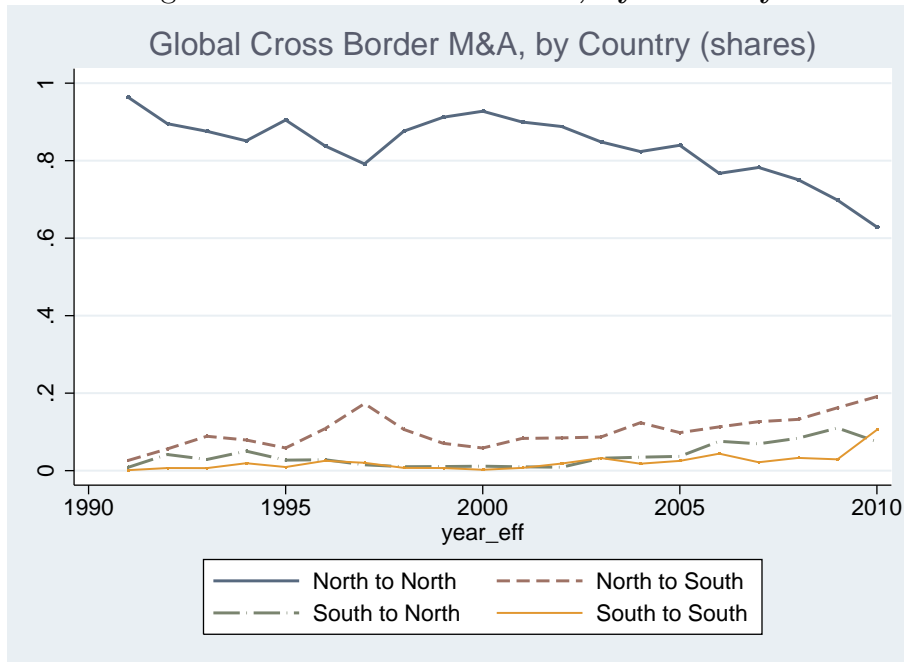


Figure 4: Total number of M&A deals in services sectors, by GDP of host economy

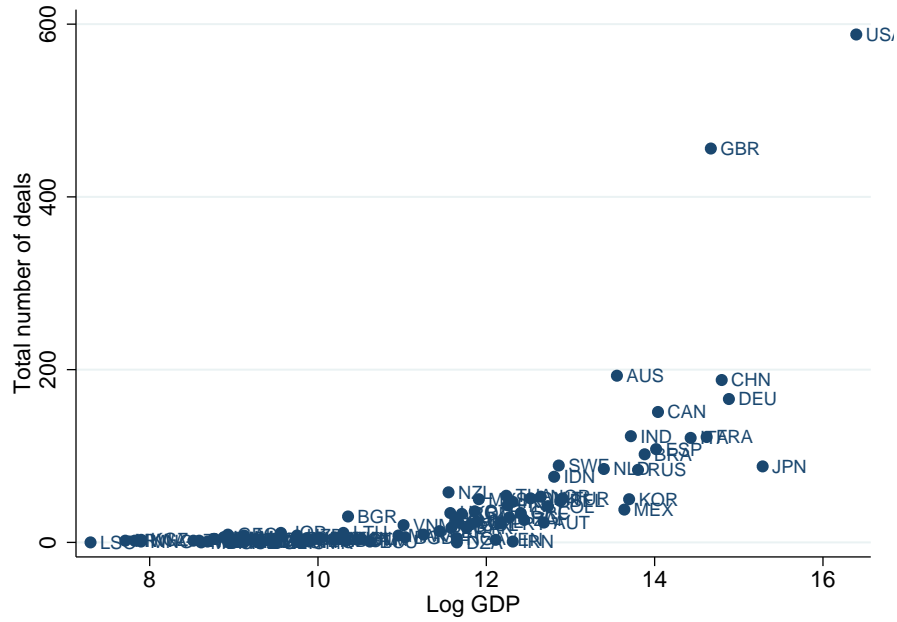




Figure 5: Total number of M&A deals in services sectors, by per capita GDP of host economy

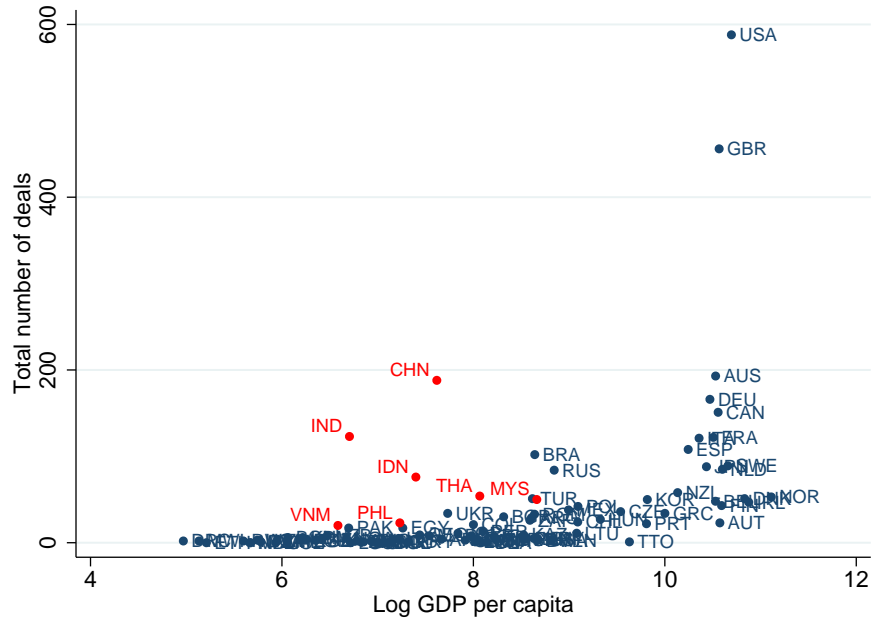


Figure 6: Global Services Trade Restrictiveness

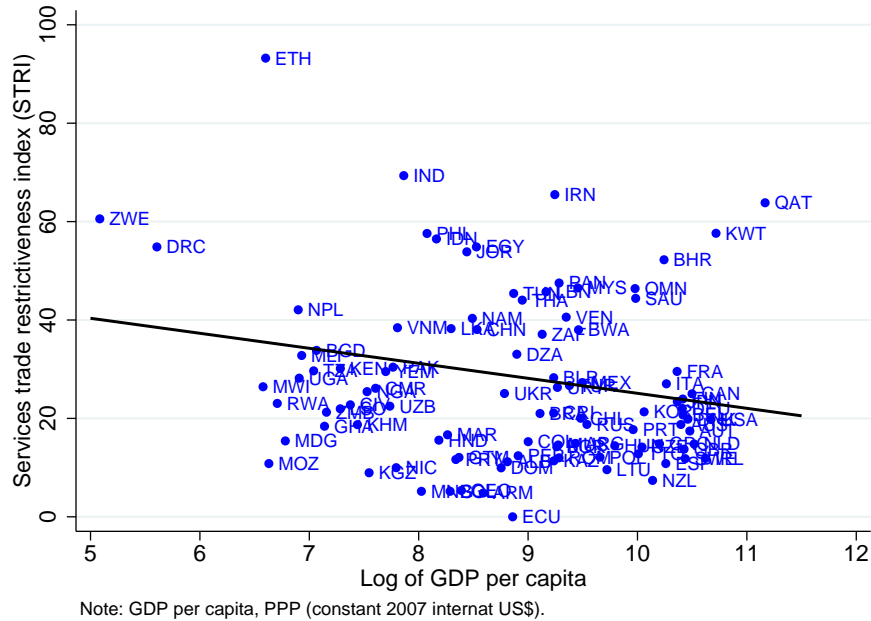
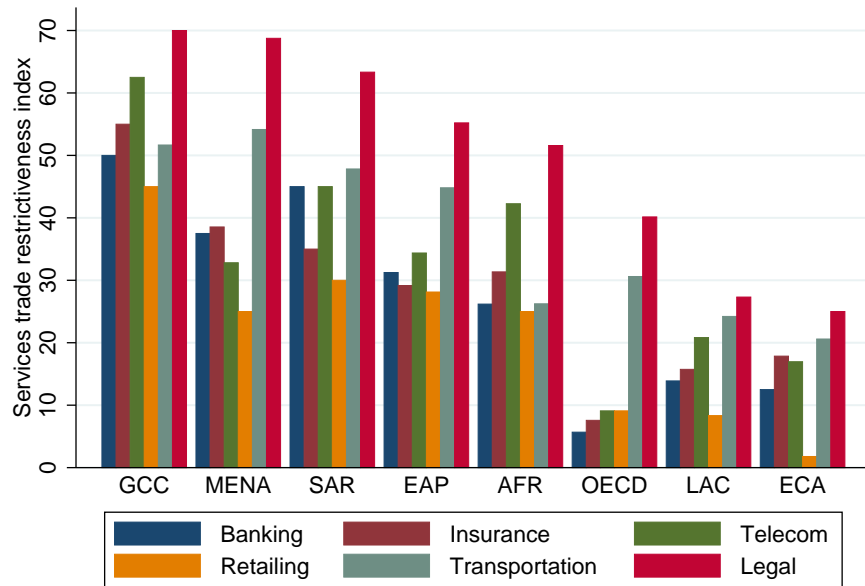


Figure 7: Services Investment Restrictiveness, by Region and Sector



Note: The number of countries is 101.

Figure 8: Services as Important Input for Manufacturing

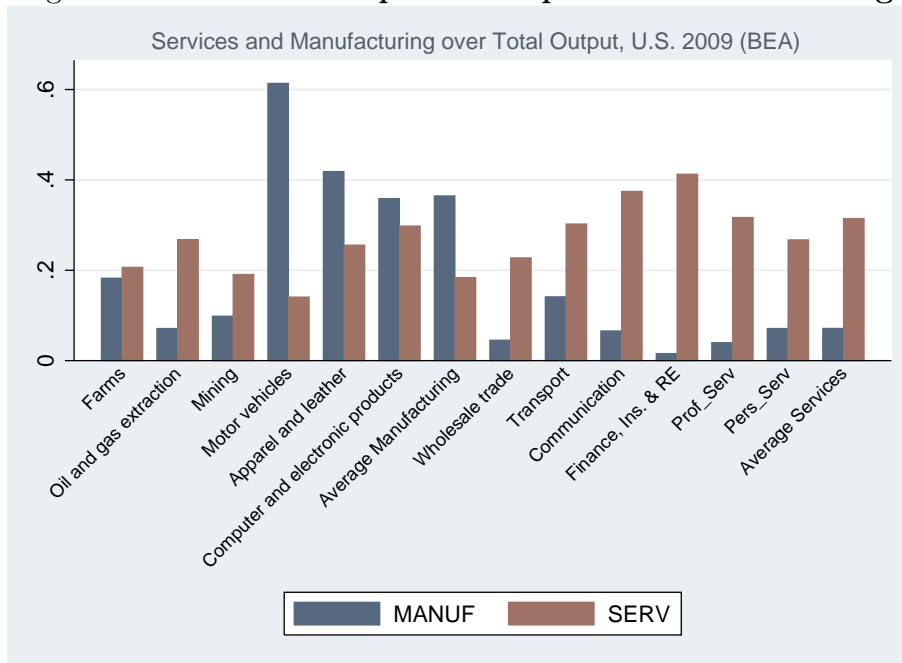


Figure 9: Extra-Profits and Costs of M&As: Two Possibilities

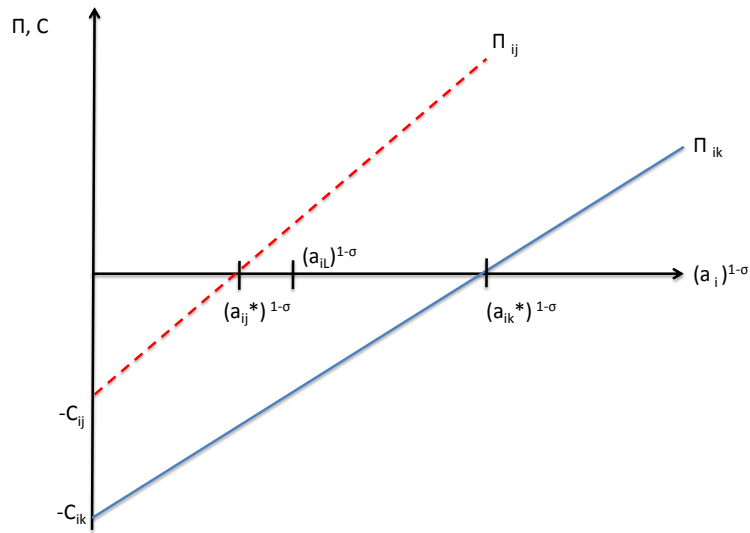


Figure 10: Example of State-Dependency of Policy Effectiveness

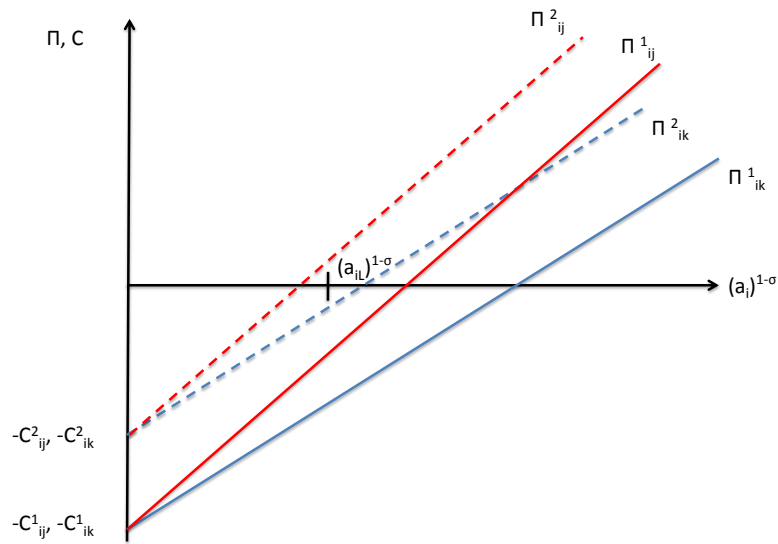


Figure 11: Probit Host Country Fixed Effects and SIZE

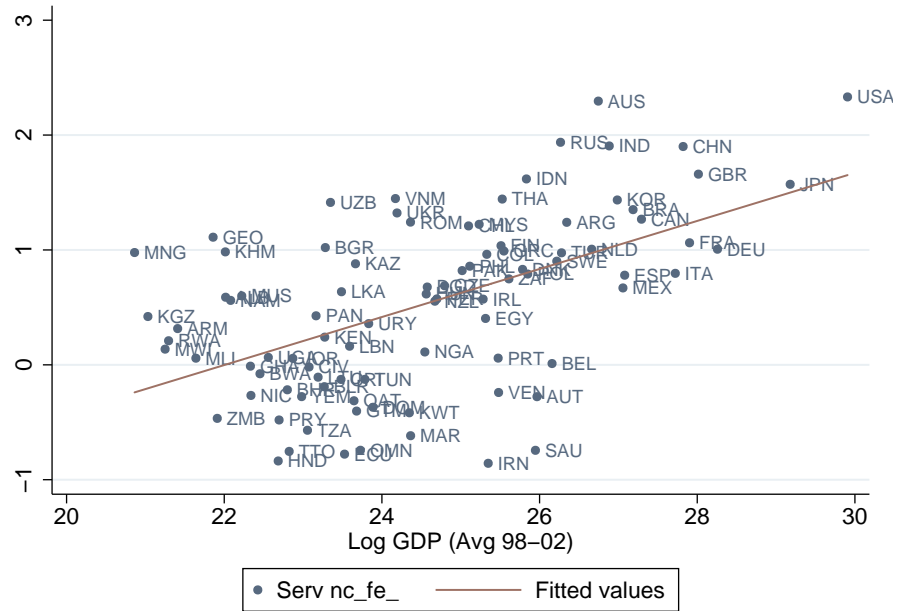


Figure 12: Probit Host Country Fixed Effects and STRI

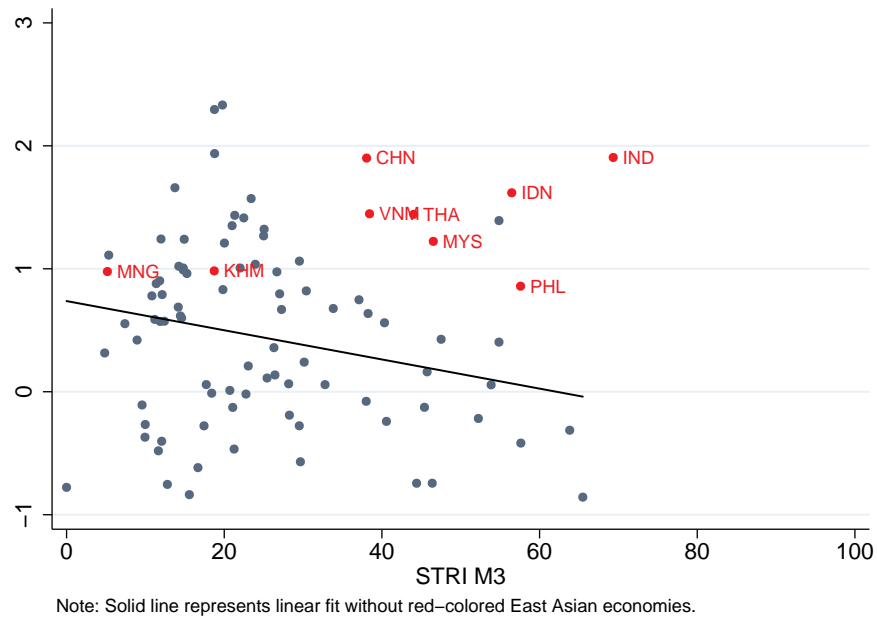


Figure 13: Probit Host Country Fixed Effects and Manufacturing Share

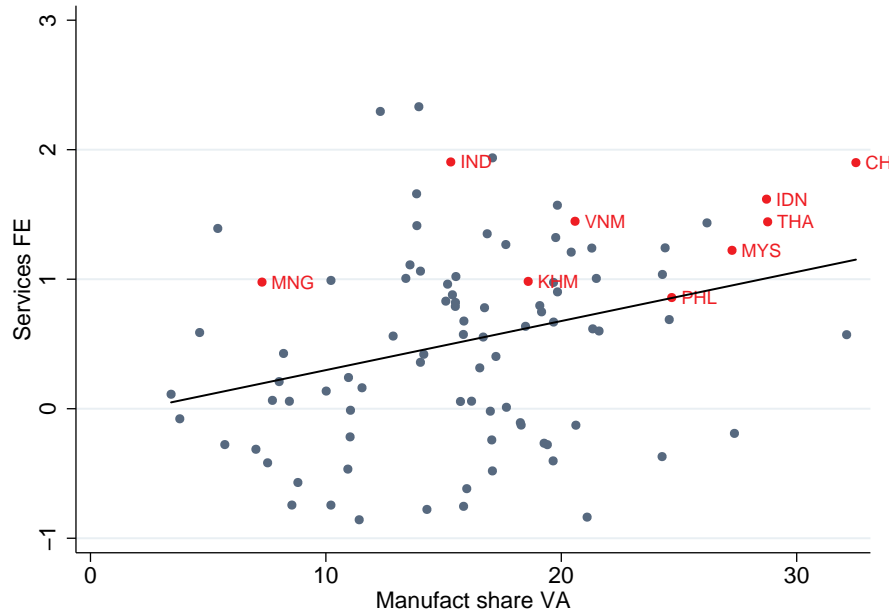


Figure 14: PPML-Numbers Host Country Fixed Effects and SIZE

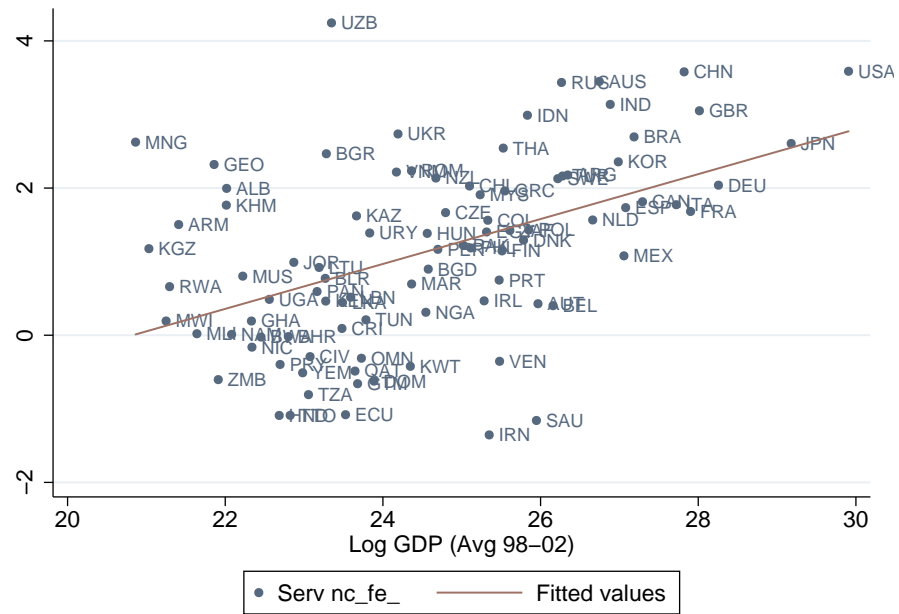


Figure 15: PPML-Numbers Host Country Fixed Effects and STRI

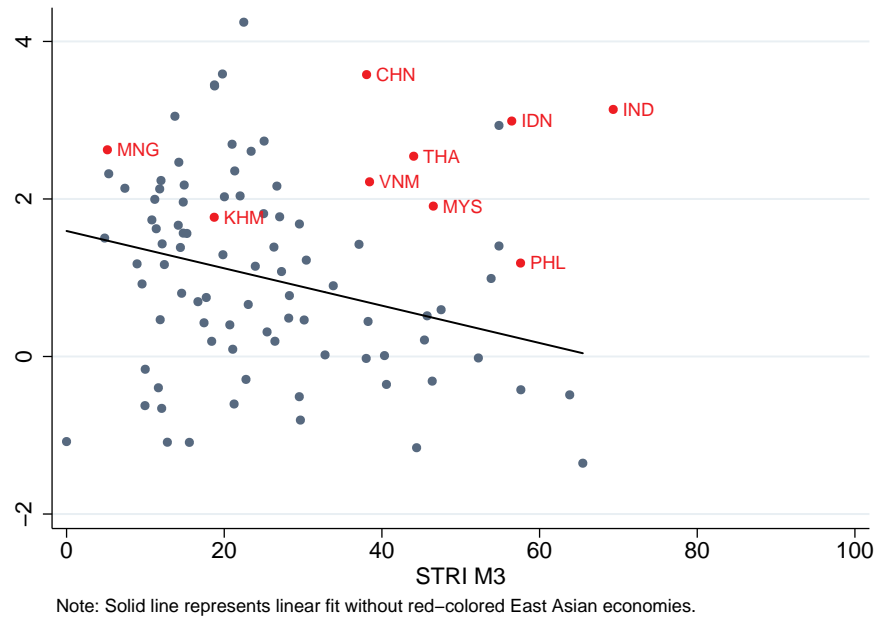


Figure 16: PPML-Numbers Host Country Fixed Effects and Manufacturing Share

