The Determinants of Cross-Border M&A in Services: Geography, Policy, and Industrial Structure*

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Abstract

We present evidence on the determinants of cross-border mergers and acquisitions (M&A) in services sectors. We develop a stylized model of M&A which predicts that the incidence of M&A deals depends, inter alia, on the target economy's size, industrial structure and investment policies, as well as on bilateral transactions costs. We examine these predictions using bilateral M&A flow data and detailed information on policy barriers drawing upon a new database of restrictions on services investment. We find that: (1) Geographical factors affect M&A in services and manufacturing similarly but cultural factors affect M&A in services more than in manufacturing. (2) Controlling for these bilateral factors, restrictive investment policies dampen the probability of M&A inflows but this negative effect is mitigated in countries with relatively large shares of manufacturing and (to a lesser extent) services in GDP. The same results hold for the number of M&A deals received. These findings suggest that the *impact of policy is state-dependent* and related to the composition of GDP in the target economy.

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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 two decades. 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. This is surprising, given that these sectors accounted for 65% of global cross-border M&As deals in the period 1990-2012 (UNCTAD, 2013). This paper presents evidence on the determinants of the M&A in services seen through the lens of a model featuring a role for both policy and inter-sectoral linkages. The empirical analysis is based on a large sample of developed and developing economies, and a new database on services policy measures.

We proceed in three steps. First, we present some broad patterns emerging from our data. Aggregating our transaction-level M&A data into a country-level and bilateral database, we show that the fraction of country-pairs with non-zero M&A flows is small.[1] 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 on 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 broadly declining in the GDP per capita, i.e. developing countries tend to have 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 a homogenous good using labor and intermediate services. This assumption reflects evidence from the OECD STAN Input-Output tables that services are important intermediate inputs in the production of manufacturing across a wide range of countries. In our model, services

[1] The M&A data are taken from the ThompsonReuters Platinum Database and span the period 2003-2009.

are characterized by product differentiation and 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 that the model can rationalize the existence of zero bilateral M&As flows. Moreover, the impact of policy liberalization that reduces the costs of M&As on the probability of observing M&A flows (and on the number of M&A deals) depends on the overall size of the market, the composition of the GDP, and the extent of inter-sectoral linkages. We label as *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 applied.

Third, inspired by the model, we undertake 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 proxies for the cultural distance between countries. In the second stage, we investigate the determinants of host country fixed effects, in particular the role of 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 (2006), we use in this case a pseudo-maximum likelihood (PPML) estimator for the first stage. Our findings are the following: (1) Geographical barriers affect M&A in services and manufacturing similarly, but cultural barriers affect M&A in services more than in manufacturing. Both types of barriers have heterogeneous effects across services sectors: a shared border matters more in transportation, as expected, but also in retail; and a common language is more important for M&A in telecommunications, as well as in banking and insurance. (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 shares of manufacturing and (to a lesser extent) services in GDP. The same results hold for the total number of M&A deals received. These findings suggest that the *impact of policy is state-*

dependent and related to the composition of the GDP of the target country. 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. (3) We try to identify the individual policy measures that account for results obtained using the aggregate index. Restrictions on the nationality of employees and lack of transparency in the licensing process are amongst the measures deterring investment.

This paper is connected to the literature on the determinants of cross-border M&A. Early studies of aggregate cross-border mergers and acquisitions include Rossi and Volpin (2004) and Di Giovanni (2005). Head and Ries (2008) present a model of bilateral flows of M&A based on a theory of optimal corporate control, 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. Ahern et al. (2012) analyze the effects of cultural values on M&As. Boudier and Lochard (2013) explore the impact of deregulation in services on cross-border M&A focusing on the OECD economies. Ahern and Harford (2014) analyze the importance of inter-sectoral linkages on waves of M&As within the U.S. We extend this literature by offering a perspective, through the lenses of an economic model, 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.[2]

Our findings also speak to the literature on inter-sectoral linkages in FDI patterns. De-

[2]Van der Marel and Shepherd (2013) use the data to explore the implication of policy restrictiveness for cross-border trade in services.

vereux 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-licensing 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 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.[3] The dataset consists of individual cross-

[3]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

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.[4] 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 observations 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, one country receives a total of 588 inflows (the U.S.). Figure 1 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 relationship holds between the number of deals received and a country's GDP per capita, though it is not as tight as with market size, see Figure 2. Highlighted in a lighter color are seven East Asian economies that appear to be particularly sought-after locations for services M&A inflows, at least beyond levels their per capita income would suggest in this unconditional scatter plot.[5] The extensive margin displays similar features when sliced along the home country dimension, indicating that a few economies account for the majority of outbound M&A activity.

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.

[4]The category "Other services" includes Construction Services, Gas and Electricity, Business Services and Personal Services such as Health Services and Education Services.

[5]Interestingly, firms from India, China and Malaysia are also initiating more outward services M&A deals than their country's income per capita would suggest.

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 could be expected to reflect the impact of policy barriers.

The new database covers the following five major services sectors: financial services (banking and insurance), telecommunications, retail distribution, transportation[6] 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 information for OECD countries was obtained from publicly available sources.[7] 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.[8] Regulatory measures affecting foreign investment are organized along the following broad categories:

- Requirements on the legal form of entry and restrictions on foreign equity;

[6]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.

[7]To ensure data accuracy, all policy information has been reviewed by government officials, though not all countries eventually responded to the vetting request.

[8]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.

- 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 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).[9]

[9]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

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 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). We acknowledge the subjectivity of this approach, but 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 conducted with the private sector and regulators on how scores are best assigned. We would argue that on balance 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 3 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 3 reveals a great deal of variation in the overall restrictiveness of services trade policies. On the one hand, most OECD countries

endogeneity of policy choices.

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 have relatively significant 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 least open countries in the sample (top-left corner). However, other African nations, such as Ghana, Mozambique and Senegal appear to be relatively open.[10] Thus, the restrictiveness of applied policies varies widely amongst developing countries.

Figure 4 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 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 4 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.[11]

Thus, we find that countries in South and East Asia are characterized both by large M&A inflows as well as by relatively restrictive investment policies. This is one puzzle we rationalize by suggesting that the impact of investment policies is likely to be state dependent. In the next Section, we present a stylized model to formalize this idea.

[10]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.

[11]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.

3 A Simple Model with Inter-Sectoral Linkages

In this section we outline a simple model featuring heterogeneous firms and inter-sectoral linkages in order to illustrate the notion of *state-dependency in policy effectiveness*. The main innovation in the model is the structure of production.

3.1 Set-up

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):

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

The utility maximization problem implies the following demand functions:

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

$$C_m = \alpha\frac{PC}{P_m} \tag{3}$$

$$C_s = \beta\frac{PC}{P_s} \tag{4}$$

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

$$P = P_a^{1-\alpha-\beta} P_m^{\alpha} P_s^{\beta} \tag{5}$$

Labor is the only primary 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: $Y_a = L_a$, where L_a is the labor employed in the agricultural sector. 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 as well. A homogenous manufacturing output is produced using labor and intermediate services (Y_s^m):

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

Equation (6) is the only non-standard assumption in the model. In order to motivate this assumption empirically, we present in Figure (5) the importance of the services covered by the STRI index as inputs for manufacturing production in several countries. We use data from the OECD STAN Input-Output tables for the mid-2000 for the OECD countries and some developing countries.[12] We report in Figure (6) the importance of manufacturing as intermediate input in the production of the services covered in the STRI index. Looking at Figures (5) and (6) two main features emerge. First, the average input share of STRI services into manufacturing production (32%) is more than two times higher than the importance of manufacturing in the production of services (14%).[13] Second, there is a lot of heterogeneity in the Input-Output structure of different countries.[14]

From equation (6) it also follows that $P_m = w^{\gamma}P_s^{1-\gamma}$.

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 $\sigma = \frac{1}{1-\rho} > 1$:

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

[12]Unfortunately, only about a third of the countries for which the STRI index is built are represented in the OECD-STAN database.

[13]Obviously, manufacturing itself is a more important input into the production of manufacturing than services, as well as services are a more important input into the production of services than manufacturing. We are not incorporating these features into the model. While they could be added, it would not affect the particular channel that we want to highlight here, namely the potential importance of industrial structure in international investment decisions.

[14]This also calls for some caution about the practice, common in the literature, of extending to the entire world the Input-Output structure of the U.S.

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

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

Firms in the service sector are heterogeneous in the sense of Melitz (2003). The production function for each service variety is $y_s = aL_s$, where a is a measure of labor productivity, drawn from a distribution with a cumulative distribution function $G(a)$ over a support $[a_L, a_H]$. Naturally, the most productive firm in a given country i is a_{iH}.

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

$$L_m = \gamma P_m Y_m \tag{9}$$

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

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

$$p_s(a) = \frac{1}{a\rho} \tag{11}$$

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

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

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

$$Y_a = C_a \tag{13}$$

$$Y_m = C_m \tag{14}$$

$$Y_s = C_s + Y_s^m \tag{15}$$

While the labor market clearing condition is :

$$\bar{L} = L_a + L_m + L_s \tag{16}$$

3.2 M&As in Services

We introduce the possibility of M&As in services from a given country i to a country j.[15] Under the assumption that the target firm inherit the productivity level of the parent firm, the additional profits obtainable from this operations can be written, using equations (4) (10) and (11) as :

$$\begin{aligned} \Pi_{ij} &= p_{sj}(a_i)y_{sj}(a_i) - \frac{1}{a_i}y_{sj}(a_i) && (17) \\ &= (1-\rho)\frac{1}{\rho^{1-\sigma}P_{sj}^{-\sigma}}a_i^{\sigma-1}\left(\beta\frac{P_jC_j}{P_{sj}} + (1-\gamma)\frac{P_{mj}Y_{mj}}{P_{sj}}\right) && (18) \end{aligned}$$

Importantly, from equation (18) we can see how these extra-profits are a linear function of $a_i^{\sigma-1}$, which can be taken as a positive proxy for productivity (since $\sigma > 1$). Further manipulating equation (18) by using equations (3) and (14), we can express equation (18) as

$$\Pi_{ij} = \Upsilon_j \cdot P_jC_j\left(\beta + (1-\gamma)\,\alpha\right) \cdot a_i^{\sigma-1} \tag{19}$$

where $\Upsilon_j = (1-\rho)\frac{1}{\rho^{1-\sigma}P_{sj}^{1-\sigma}} > 0$. From equation (19) it is clear how the slope of the profit function depends essentially on three things: i) the size of the target economy (P_jC_j), ii) the structural composition of the target economy (parameters β and α), and iii) the extent of the inter-sectoral linkages present (the parameter γ).

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

[15] 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 Φ_j:

$$C_{ij} = C_{ij}\left(\tau_{ij}, \Phi_j, X_i, X_j\right) \tag{20}$$

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

$$\Pi_{ij} > C_{ij} \qquad or \qquad \Pi_{ij} - C_{ij} > 0 \qquad or \qquad \frac{\Pi_{ij}}{C_{ij}} > 1 \tag{21}$$

The three conditions expressed in equation (21) are identical. It is possible to draw the middle one using equations (19) and (20) as a function of $a_i^{\sigma-1}$. Figure (7) 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. A formal way of seeing this, is to realize that from equation (21) it is possible to derive for each pair of countries, for example for i and j, the cut-off productivity level a_{ij}^* above which a firm from country i will find profitable to acquire a firm in country j. This will be the productivity level of a firm whose extra-profit are just enough to recover the fixed cost of the investment. Using equations (19) and (20) this is equal to:

$$\Upsilon_j \cdot P_j C_j \left(\beta + (1-\gamma)\,\alpha\right) \cdot \left(a_{ij}^*\right)^{\sigma-1} = C_{ij} \tag{22}$$

So we get

$$a_{ij}^* = \left(\frac{C_{ij}}{\Upsilon_j \cdot P_j C_j \left(\beta + (1-\gamma)\,\alpha\right)}\right)^{\frac{1}{\sigma-1}} \tag{23}$$

A further alternative way of stating the conditions expressed in equation (21) is to say that in order to observe an M&A from a country i to a country j, the productivity of the most productive firm in country i must exceed a_{ij}^*. In Figure (7) we have $a_{iH} > a_{ij}^*$ but $a_{iH} < a_{ik}^*$.

Finally, 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} represents the fraction of firms in the country i who are productive enough to be able to acquire a firm in country j. V_{ij} is defined by

$$V_{ij} = \begin{cases} 1 - G(a_{ij}^*) & \text{if } a_{iH} > a_{ij}^* \\ 0 & \text{otherwise} \end{cases}$$

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 this section allows considering what we call state-dependency in policy effectiveness. In Figure (8) 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, as underlined in equation (19), depend on the size of the target economy, the structural composition of the GDP, and the extent of the inter-sectoral linkages present in the economy.

The simplest way to express this argument more formally, is assuming that the support of productivity draws is itself stochastic, and in particular that the productivity of the most

productive firm in a given country i, a_{iH} is uniformly distributed on an interval $[\underline{a}_{iH}, \overline{a}_{iH}]$. Then, we can express the probability of observing an M&A from country i to country j as

$$Prob(M\&A_{ij} = 1) = Prob(a_{iH} > a^*_{ij}) = 1 - F(a^*_{ij}) \tag{24}$$

where $F(a_{iH}) = \frac{a_{iH} - \underline{a}_{iH}}{\overline{a}_{iH} - \underline{a}_{iH}}$ is the distribution of a_{iH}.[16] Taking the derivative of (24) with respect to the host country policy environment, and using equation (23), gives:

$$\frac{\partial Pr(M\&A_{ij} = 1)}{\partial \Phi_j} = -\frac{1}{\sigma - 1} \frac{1}{\overline{a}_{iH} - \underline{a}_{iH}} \left(\frac{C_{ij}}{\Upsilon_j \cdot P_j C_j \left(\beta + (1-\gamma)\,\alpha\right)} \right)^{\frac{1}{\sigma-1}} \frac{C'_{ij}}{C_{ij}} < 0 \tag{25}$$

where $C'_{ij} = \frac{\partial C_{ij}}{\partial \Phi_j} > 0$. We see from (25) that restrictive policies have a negative impact on the probability of observing M&As. However, from (25) we also see that the *cross derivatives* w.r.t Φ_j and α, γ and $P_j C_j$ are positive. For instance:

$$\frac{\partial^2 Pr(M\&A_{ij} = 1)}{\partial \Phi_j \partial \alpha} = \Delta \left(\frac{C_{ij}}{\Upsilon_j \cdot P_j C_j \left(\beta + (1-\gamma)\,\alpha\right)} \right)^{\frac{1}{\sigma-1}-1} \frac{\Upsilon_j \cdot P_j C_j \left(1-\gamma\right)}{\left[\Upsilon_j \cdot P_j C_j \left(\beta + (1-\gamma)\,\alpha\right)\right]^2} > 0 \tag{26}$$

where $\Delta = \frac{1}{(\sigma-1)^2} \frac{1}{\overline{a}_{iH} - \underline{a}_{iH}} \frac{C'_{ij}}{C_{ij}} > 0$. From (26) we see that a larger market and a composition of the GDP more skewed towards the sectors who demand services, dampens the negative effect of restrictive policies on the probability of observing M&As.[17]

4 Empirical Strategy

In this section we outline our empirical strategy, which is inspired by the model presented in the previous section.[18] Since our policy variable is country-specific, but not country-pair specific, we adopt a two-stage empirical strategy.

[16] We naturally operate under the assumption that $\underline{a}_{iH} > a_{iL}$.

[17] An analogous analysis can be performed for the numbers of M&As between the two countries.

[18] Strictly speaking, we do not structurally derive our empirical strategy from the model.

In the first stage, we analyze the impact of geographical and cultural factors on the intensive and extensive margin of the M&As in services.

As for the intensive margin, we evaluate the probability of observing bilateral M&As between a country i and j. We assume that τ_{ij} is proportional to a vector of trade frictions T_{ij} which is stochastic due to unmeasured bilateral frictions (ϵ_{ij}), so that $\tau_{ij} = T_{ij}^{\beta} e^{-\epsilon_{ij}}$. Unobserved frictions ϵ_{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 these assumptions, equations (19) and (20) and (21) suggest a Probit model with a full set of home and host country fixed effects.[19] In our first stage, we also analyze 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 the 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:

$$\delta_j = \beta_0 + \beta_1 y_j + \beta_2 \phi_j + \beta_3 (\phi_j X_j) + \beta_4 X_j + \epsilon_j \tag{27}$$

In equation (27) 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, in particular by equation (19), we will explore the size and the composition of the GDP in the host economy as possible relevant

[19] 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.

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 the M&A data are cumulated from deal level data 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[20]. 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 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

[20]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.

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.[21]

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. 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.

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 simi-

[21] 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.

larities 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. [22]

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 9 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 other the period 1998-2002, which we take as a first proxy of the market size.[23] As the picture shows, there is a strong positive association between these two variables.

Figure 10 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 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-

[22] In the first stage, probit host country fixed effects cannot be estimated for eight economies (Bolivia, Cameroon, Algeria, Ethiopia, Lesotho, Madagascar, Mozambique and Nepal. On average these countries are similar to the rest of the sample in terms of log income and log per capita income, and exhibit only slightly more restrictive policies. Thus we believe that there is no bias introduced to second stage results by losing these countries.

[23] 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.

added (VA). The results are shown in Figure 11, 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.[24]

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 10 and 11, 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 fourth column we add the interaction terms of the STRI with the log of GDP, the value-added share of manufacturing in GDP, and the value-added share of services in gdp. 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 finding points towards state-dependency in policy effectiveness: the effect of restrictive policies is dampened in countries were the share of manufacturing and service sectors are larger. In the fifth column we simultaneously use the interactions with manufacturing and services shares. We find that the interaction term with the share of manufacturing is positive and statistically significant, and quantitatively larger than the interaction with the service share. In the subsequent specification we control also for a host additional country characteristics such as a measure of financial development (total Credit to Private sector as a fraction of GDP), the log of per capita GDP, the cost of start a business, and indicators of political stability and government effectiveness. The results are qualitatively unchanged.[25]Lastly, we check whether our results

[24]The results are available upon request.

[25]The puzzling negative and statistically significant coefficient on the log of per capita GDP is reflecting more the impact of some outliers (India, Saudi Arabia and Venezuela) rather than a genuinely strong negative correlation between the level of development and the attractiveness for M&As in Services. The same observation applies to the following tables as well.

are driven by particular countries. In column (7) we exclude China and India as well as the U.S. and the UK and we obtain virtually identical results.[26] In Table 7, we report the results for the PPML-N model, which are qualitatively very similar.

Since the Services Trade Restrictions Database also describes in detail how policy restrictiveness varies across sectors within any given country, we go one step further and exploit the cross sectoral variation in the STRI (Tables 8 and 9). Importantly, this approach employs sectoral fixed effects obtained from the first stage which are then pooled across services sectors. For our policy measure, we use a pooled vector of disaggregated country-by-sector STRI scores, which affords a considerable increase in the number of observations. We follow the structure of tables 6 and 7 but in addition include sector fixed effects in every specification. Table 8 reports the result for the Probit model. The results are broadly consistent with those reported in Tables 6 and 7. In this case, however, also the interaction term between the STRI and GDP appears to be positive and highly statistically significant when it is inserted alone in the regression (column 2). The results are also qualitatively unchanged when additional control variables are included (column 6) or when China, India, the U.S. and the UK are excluded (column 7).

In Table 9 we report the corresponding results with respect to the incoming number of M&A deals. Results are analogous to the ones presented in table 8. However, unlike in the case of the Probit model, now the coefficient on the interaction term between the STRI and the manufacturing share is appreciably larger than the coefficient on the interaction term between the STRI and the service share. Thus manufacturing and services shares exert a roughly similar effect in terms of attenuating policy restrictiveness as far as the overall probability to attract foreign investment is concerned. However, when the number of deals as a metric of the "intensive margin" is considered, the manufacturing part of industrial structure is relatively more important in enhancing attractiveness.

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

[26]The same happens if we exclude China and Korea, the countries with the lowest input shares of STRI services into manufacturing production.

lend empirical support to the presumption that policy restrictiveness is a significant factor in determining bilateral M&A flows in services sectors. As we would expect, we find a baseline negative effect of policy restrictions on foreign investment. At the same time, though, we find intriguing evidence of policy effectiveness to be state-dependent. Specifically, 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 effect might be sizeable. Take for example the cases of Vietnam and Botswana, two countries which share a roughly similar STRI score. The industrial structure of the two countries, however, is rather different. Vietnam displays a manufacturing share of 20% of GDP and a services share of about 38%. In Botswana, the service share is 43%, while the manufacturing share is only 3.8%. Suppose both countries would engage in policy reforms that lowered their STRI scores in an identical manner. Using as reference point the results displayed in column (7) of Tables 6 and 7, that same liberalization policy would in Botswana have an impact about five times as large as in Vietnam in terms of both the probability of observing an M&A flows and of number of M&A deals.[27]

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.[28] 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

[27] Alternatively, the same policy *restriction* would have much larger *negative* effects if imposed in Botswana than in Vietnam.

[28] Those measures that underpin the STRI score plus additional variables and contextual information.

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 indicates also that firms engage more in M&A when they cannot enter a foreign market simply by setting up a branch.[29]

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 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 for licences 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,

[29]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.

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

In this paper, we presented evidence on the determinants of cross-border mergers and acquisitions (M&A) in services sectors. We developed a stylized model of M&A featuring firms' heterogeneity and inter-sectoral linkages. The model predicts that the incidence of M&A deals depends, inter alia, on the target economy's size, industrial structure and investment policies, as well as on bilateral transactions costs. We examined these predictions using bilateral M&A flow data and detailed information on policy barriers drawing upon a new database of restrictions on services investment. We found that geographical factors affect M&A in services and manufacturing similarly but cultural factors affect M&A in services more than in manufacturing. Second, controlling for these bilateral factors, restrictive investment policies dampen the probability of M&A inflows but this negative effect is mitigated in countries with relatively large shares of manufacturing and (to a lesser extent) services in GDP. The same results hold for the number of M&A deals received. These findings suggest that the *impact of policy is state-dependent* and related to the composition of GDP in the target economy. We now suggest few potential avenues for future research. First, 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.

Second, it would be interesting to study the dynamics of M&A in Services and how it relates to the dynamics of M&As in Manufacturing. We plan to pursue these venues in our future research.

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Table 1: **M&A Investment: Descriptive Statistics (2003-09, cumulated)**

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

Robust standard errors in parenthesis. ***,**,* statistically significant at 1%, 5% and 10% respectively.

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

Sector	Total	Manufacturing	Services
Distance	-0.606***	-0.589***	-0.566***
	(0.058)	(0.068)	(0.072)
Contiguity	-0.184	-0.133	-0.146
	(0.128)	(0.136)	(0.119)
RTA	0.231*	-0.009	0.352**
	(0.129)	(0.163)	(0.148)
Comm legal system	0.051	-0.026	0.216**
	(0.088)	(0.102)	(0.089)
Colony	0.569***	0.451***	0.573***
	(0.092)	(0.110)	(0.106)
Comm language	0.390***	0.376***	0.507***
	(0.113)	(0.121)	(0.111)
Comm religion	1.528***	1.209***	1.857***
	(0.169)	(0.217)	(0.213)
Goods trade (2002)	0.212***	0.256***	0.284***
	(0.031)	(0.041)	(0.041)
BIT (2002)	-0.116	0.038	-0.083
	(0.085)	(0.097)	(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

Robust standard errors in parenthesis. ***,**,* statistically significant at 1%, 5% and 10% respectively.

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

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

Robust standard errors in parenthesis. ***,**,* statistically significant at 1%, 5% and 10% respectively.

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

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

Robust standard errors in parenthesis. ***,**,* statistically significant at 1%, 5% and 10% respectively.

Table 6: **Second Stage: Host Probit Fixed Effects and STRI, Serv aggregate**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log GDP (Avg 98-02)	0.2132***	-0.0657	0.1884***	0.2510***	0.2161***	0.2841***	0.2484***
	(0.0301)	(0.2090)	(0.0348)	(0.0377)	(0.0424)	(0.0572)	(0.0618)
Log STRI	-0.0742	-2.2514	-1.1164***	-1.3096***	-2.1320***	-1.9791***	-2.1032***
	(0.1465)	(1.6137)	(0.3062)	(0.4532)	(0.4465)	(0.6054)	(0.6041)
(Log STRI)x(Avg GDP)		0.0914					
		(0.0677)					
Share Manuf VA (2002)			-0.2091***		-0.2083***	-0.1502**	-0.1603***
			(0.0494)		(0.0484)	(0.0575)	(0.0562)
(Log STRI)x(Manuf VA)			0.0691***		0.0681***	0.0498***	0.0545***
			(0.0139)		(0.0138)	(0.0172)	(0.0168)
Share Serv VA (2002)				-0.0762***	-0.0616**	-0.0603**	-0.0660**
				(0.0263)	(0.0234)	(0.0294)	(0.0306)
(Log STRI)x(Serv VA)				0.0219***	0.0184***	0.0205**	0.0217**
				(0.0078)	(0.0069)	(0.0088)	(0.0091)
Credit PrivSec (Avg 98-02)						-0.0006	-0.0014
						(0.0020)	(0.0021)
Cost Start Busi (2005)						-0.0007	-0.0006
						(0.0017)	(0.0016)
Govt Effect (2002)						0.2785*	0.2461
						(0.1426)	(0.1498)
Political Stab (2002)						0.0847	0.1100
						(0.1034)	(0.1079)
Log GDP PC						-0.3255***	-0.2729***
						(0.0919)	(0.0996)
Obs	91	91	91	91	91	88	84
R-squared	0.284	0.291	0.394	0.297	0.400	0.452	0.367

Robust standard errors in parenthesis. ***,**,* statistically significant at 1%, 5% and 10% respectively.

Column (7): Excluding China, India, UK and the US

Table 7: **Second Stage: Host PPMLN Fixed Effects and STRI, Serv aggregate**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log GDP (Avg 98-02)	0.3202***	-0.2834	0.2818***	0.3831***	0.3266***	0.4491***	0.3849***
	(0.0500)	(0.3648)	(0.0512)	(0.0640)	(0.0646)	(0.0920)	(0.0995)
Log STRI	-0.2729	-4.9850*	-2.2937***	-2.3619***	-4.0157***	-3.9678***	-4.2045***
	(0.2806)	(2.8280)	(0.5753)	(0.7271)	(0.7896)	(1.0147)	(0.9764)
(Log STRI)x(Avg GDP)		0.1978*					
		(0.1178)					
Share Manuf VA (2002)			-0.4117***		-0.4107***	-0.3421***	-0.3573***
			(0.0879)		(0.0864)	(0.0996)	(0.0984)
(Log STRI)x(Manuf VA)			0.1334***		0.1318***	0.1099***	0.1165***
			(0.0250)		(0.0248)	(0.0302)	(0.0298)
Share Serv VA (2002)				-0.1286***	-0.1038**	-0.1069**	-0.1180**
				(0.0451)	(0.0448)	(0.0513)	(0.0511)
(Log STRI)x(Serv VA)				0.0370***	0.0312**	0.0365**	0.0393**
				(0.0133)	(0.0128)	(0.0156)	(0.0156)
Credit PrivSec (Avg 98-02)						-0.0022	-0.0036
						(0.0034)	(0.0038)
Cost Start Busi (2005)						-0.0016	-0.0013
						(0.0027)	(0.0026)
Govt Effect (2002)						0.3390	0.2849
						(0.2344)	(0.2435)
Political Stab (2002)						0.2606	0.2953*
						(0.1640)	(0.1701)
Log GDP PC						-0.4892***	-0.3871**
						(0.1618)	(0.1708)
Obs	91	91	91	91	91	88	84
R-squared	0.230	0.247	0.372	0.243	0.378	0.463	0.391

Robust standard errors in parenthesis. ***,**,* statistically significant at 1%, 5% and 10% respectively.

Column (7): Excluding China, India, UK and the US.

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

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log GDP (Avg 98-02)	0.1276***	0.0754**	0.1275***	0.1724***	0.2243***	0.2440***	0.2073***
	(0.0190)	(0.0298)	(0.0191)	(0.0197)	(0.0407)	(0.0272)	(0.0302)
Log STRI	0.0435**	-0.6165**	-0.1638***	-0.3499***	-0.5944**	-0.7285***	-0.7421***
	(0.0219)	(0.2637)	(0.0612)	(0.1210)	(0.2547)	(0.1554)	(0.1556)
(STRI)x(Avg GDP)		0.0261**			-0.0130		
		(0.0106)			(0.0137)		
Share Manuf VA (2002)			-0.0289***		-0.0531***	-0.0339***	-0.0289***
			(0.0097)		(0.0114)	(0.0106)	(0.0106)
(STRI)x(Manuf VA)			0.0118***		0.0170***	0.0102***	0.0103***
			(0.0031)		(0.0037)	(0.0032)	(0.0032)
Share Serv VA (2002)				-0.0292***	-0.0442***	-0.0243***	-0.0266***
				(0.0063)	(0.0090)	(0.0074)	(0.0074)
(STRI)x(Serv VA)				0.0060***	0.0104***	0.0089***	0.0092***
				(0.0020)	(0.0027)	(0.0021)	(0.0022)
Credit Priv Sec (Avg 98-02)						0.0017*	0.0005
						(0.0011)	(0.0011)
Cost Start Busi (2005)						-0.0006	-0.0005
						(0.0010)	(0.0009)
Govt Effect (2002)						0.0004	-0.0427
						(0.0825)	(0.0842)
Political Stab (2002)						0.0590	0.1045*
						(0.0589)	(0.0574)
Log GDP PC						-0.2641***	-0.2114***
						(0.0506)	(0.0541)
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	339	339	339	339	339	332	308
R-squared	0.207	0.220	0.230	0.246	0.289	0.338	0.235

Robust standard errors in parenthesis. ***,**,* statistically significant at 1%, 5% and 10% respectively.

Column (7): Excluding China, India, UK and the US.

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

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log GDP (Avg 98-02)	0.1294***	0.0355	0.1282***	0.1920***	0.2524***	0.3462***	0.2884***
	(0.0301)	(0.0482)	(0.0286)	(0.0308)	(0.0584)	(0.0414)	(0.0455)
Log STRI	0.0374	-1.1505***	-0.4262***	-0.4357**	-1.1217***	-1.2868***	-1.2750***
	(0.0347)	(0.4182)	(0.0950)	(0.1906)	(0.3870)	(0.2363)	(0.2371)
(STRI)x(Avg GDP)		0.0470***			-0.0121		
		(0.0166)			(0.0193)		
Share Manuf VA (2002)			-0.0629***		-0.0956***	-0.0735***	-0.0653***
			(0.0153)		(0.0163)	(0.0157)	(0.0157)
(STRI)x(Manuf VA)			0.0263***		0.0329***	0.0250***	0.0245***
			(0.0048)		(0.0053)	(0.0047)	(0.0048)
Share Serv VA (2002)				-0.0387***	-0.0608***	-0.0349***	-0.0370***
				(0.0096)	(0.0129)	(0.0109)	(0.0109)
(STRI)x(Serv VA)				0.0071**	0.0137***	0.0132***	0.0133***
				(0.0031)	(0.0038)	(0.0031)	(0.0032)
Credit PrivSec (Avg 98-02)						0.0004	-0.0013
						(0.0015)	(0.0016)
Cost Start Busi (2005)						-0.0010	-0.0008
						(0.0014)	(0.0013)
Govt Effect (2002)						-0.0001	-0.0706
						(0.1196)	(0.1215)
Political Stab (2002)						0.1954**	0.2568***
						(0.0913)	(0.0904)
Log GDP PC						-0.4382***	-0.3567***
						(0.0788)	(0.0839)
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	339	339	339	339	339	332	308
R-squared	0.183	0.201	0.235	0.213	0.284	0.355	0.300

Robust standard errors in parenthesis. ***,**,* statistically significant at 1%, 5% and 10% respectively.

Column (7): Excluding China, India, UK and the US

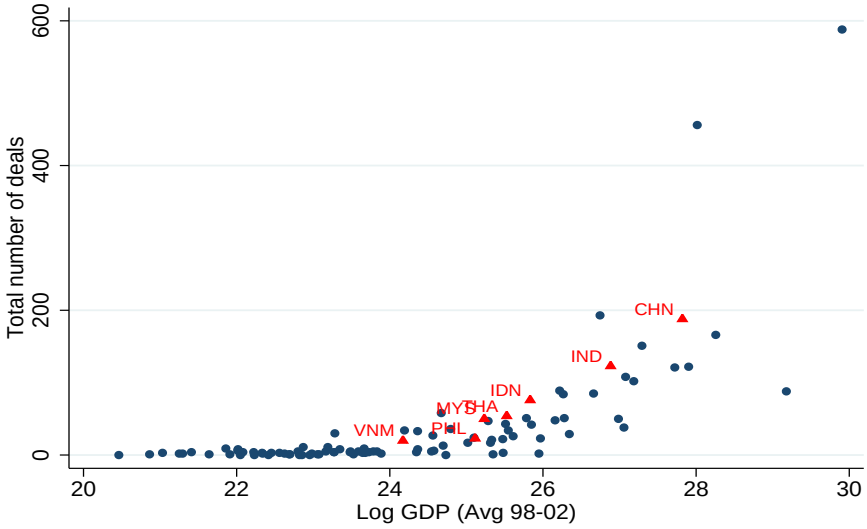
Table 10: **Individual Policy Variables - Probit**

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

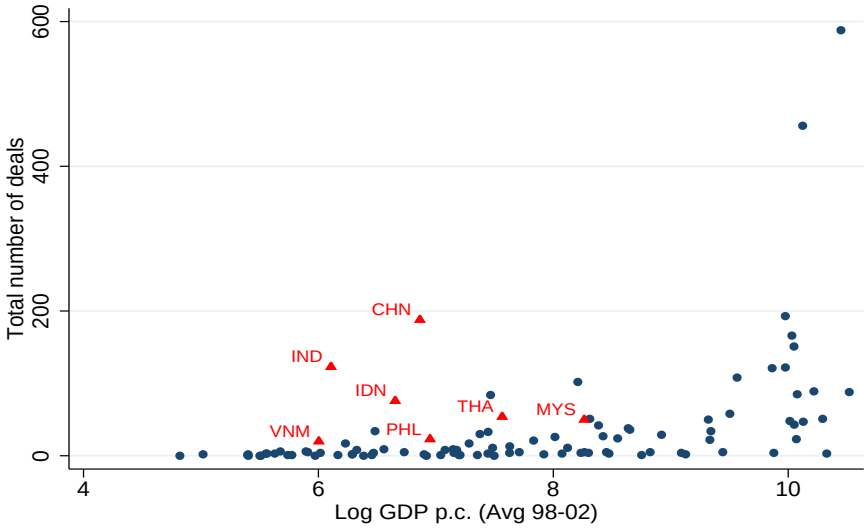
Restriction Affecting:	Form of Entry	Licensing	Operations	Regulation	Overall
No branch entry	0.545***				0.304*
	(0.146)				(0.178)
gf_subsmax	0.007***				0.006**
	(0.002)				(0.003)
lic_limit		0.582***			
		(0.221)			
lic_diff_cri		0.511**			0.203
		(0.253)			(0.276)
Lic Crit non-public		-1.045**			
		(0.483)			
Lic not automatic		-0.136			
		(0.173)			
No reasons lic rejection		-0.482***			-0.596***
		(0.184)			(0.171)
natreqemp			-0.412**		-0.541***
			(0.183)		(0.182)
natreqbod			0.076		
			(0.255)		
repat_earn			0.087		0.166
			(0.202)		(0.217)
No recourse/appeal				0.147	
				(0.233)	
Reg not independent				0.016	0.203
				(0.184)	(0.191)
No prior notice				0.261	
				(0.175)	
Log GDP (Avg 98-02)	0.143***	0.092*	0.122**	0.129***	0.090*
	(0.036)	(0.055)	(0.052)	(0.044)	(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: **Total number of M&A deals in services sectors, by GDP of host economy**



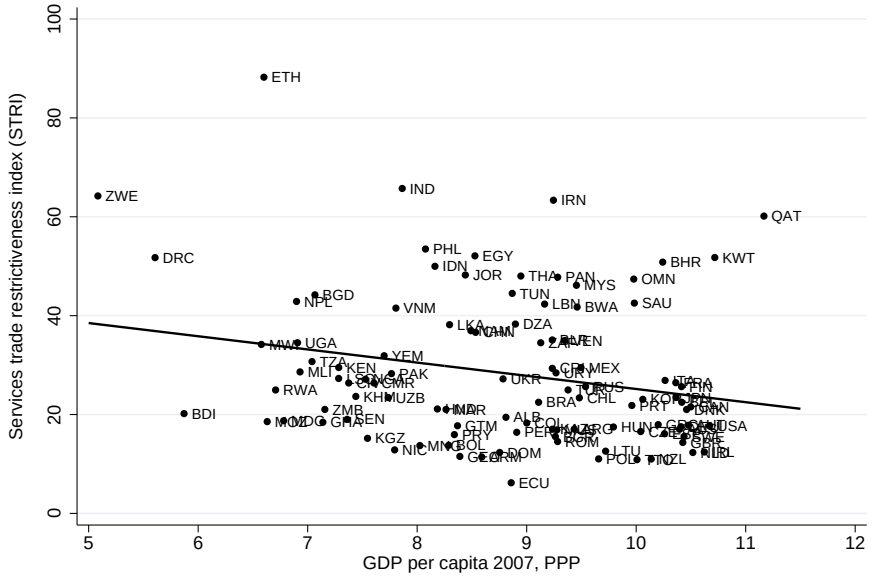
Note: top five recipients: USA (588), GBR (456), AUS (193), CHN (188), DEU (166).

Figure 2: **Total number of M&A deals in services sectors, by per capita GDP of host economy**



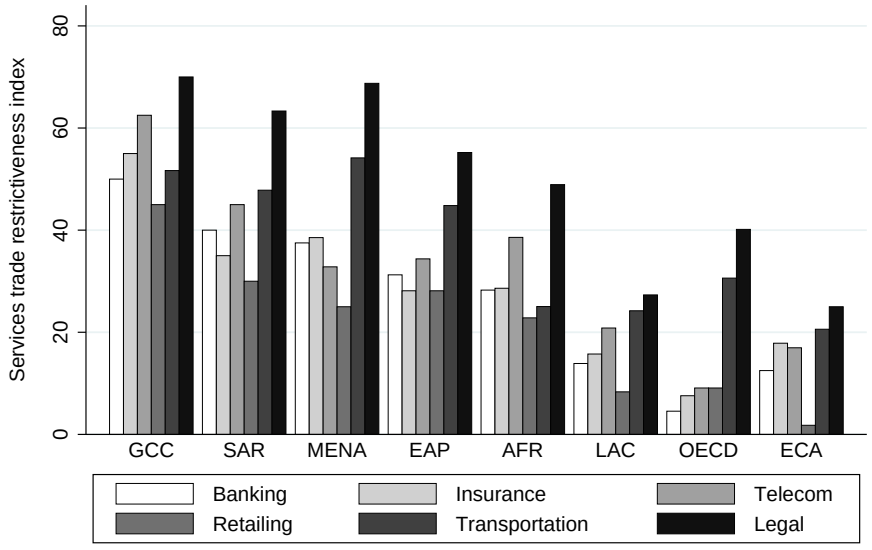
Note: top five recipients: USA (588), GBR (456), AUS (193), CHN (188), DEU (166).

Figure 3: **Global Services Trade Restrictiveness**



Source: Services Trade Restrictions Database

Figure 4: **Services Investment Restrictiveness, by Region and Sector**



Note: 103 countries included
Source: Services Trade Restrictions Database

Figure 5: **Input shares of STRI Services in Manufacturing, Simple Averages**

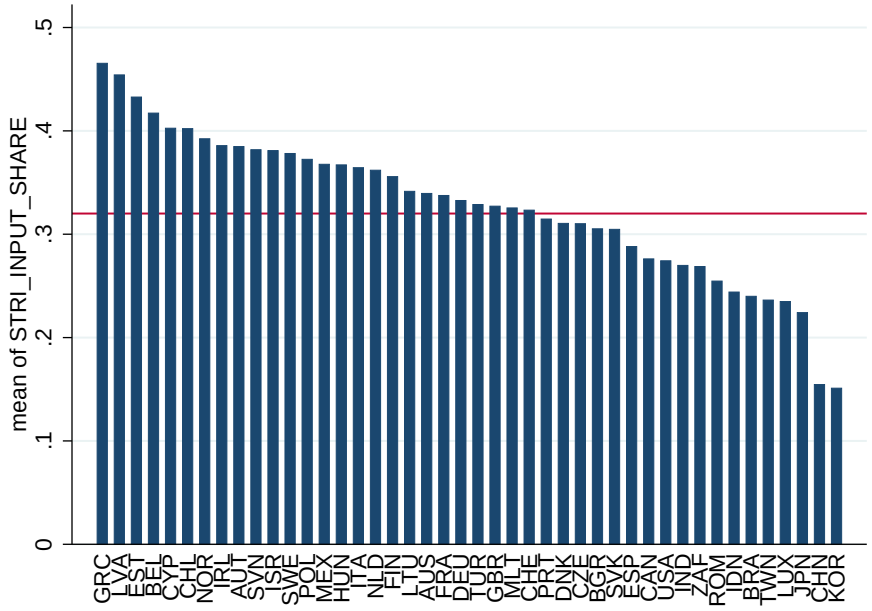


Figure 6: **Input Shares of Manufacturing in STRI Services, Simple Averages**

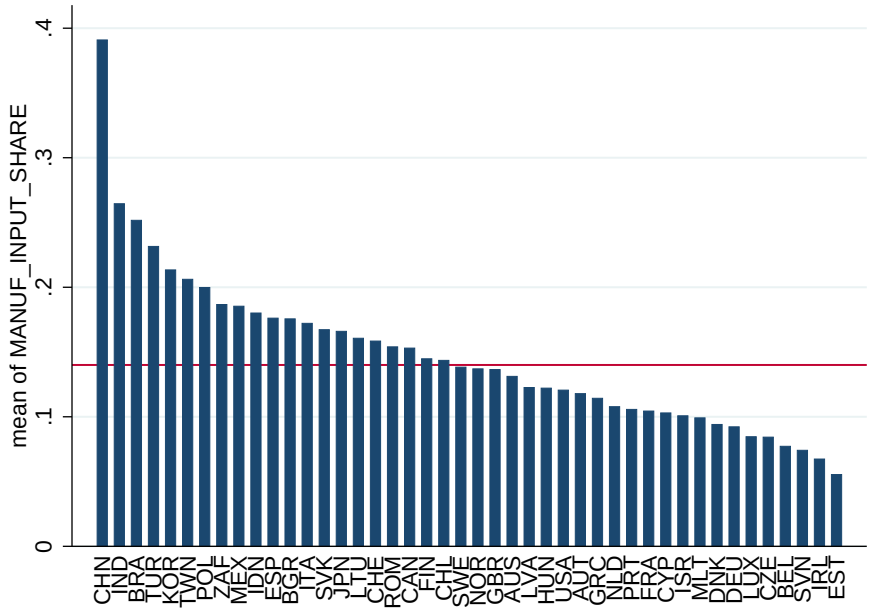


Figure 7: **Extra-Profits and Costs of M&As: Two Possibilites**

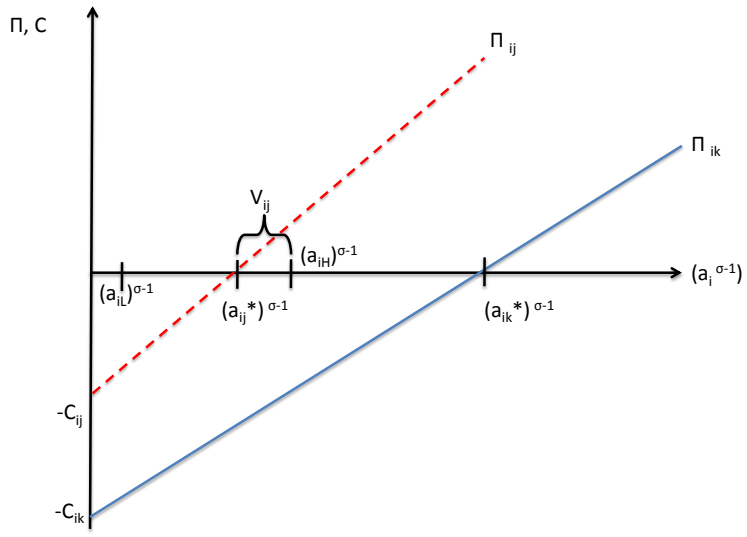


Figure 8: **Example of State-Dependency of Policy Effectiveness**

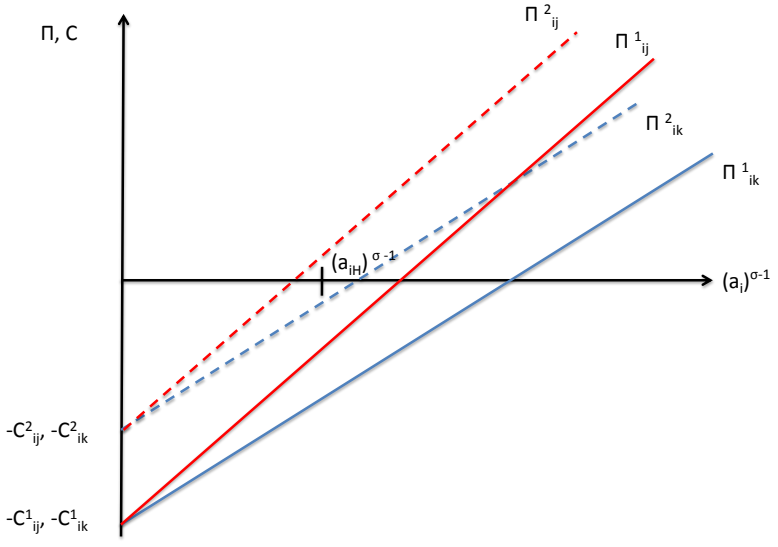


Figure 9: **Probit Host Country Fixed Effects and SIZE**

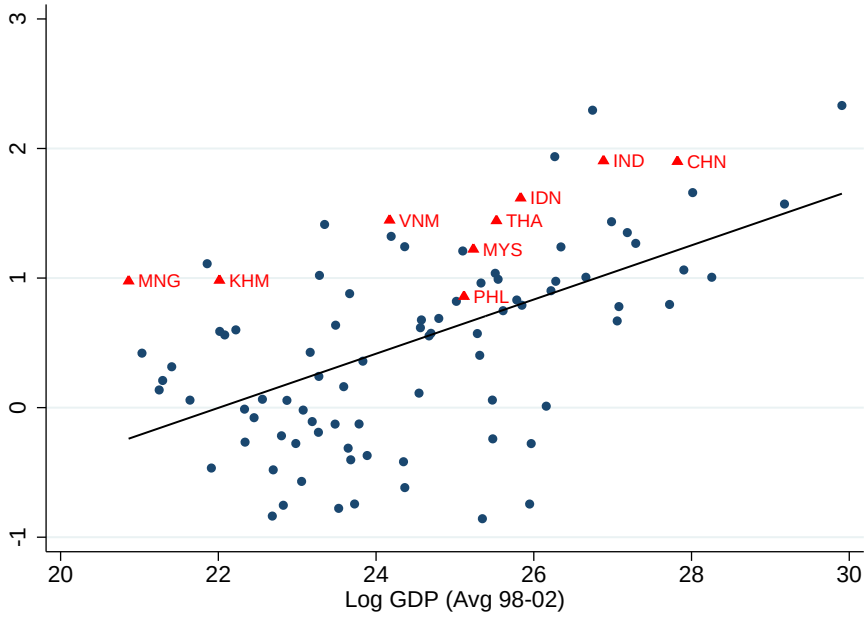
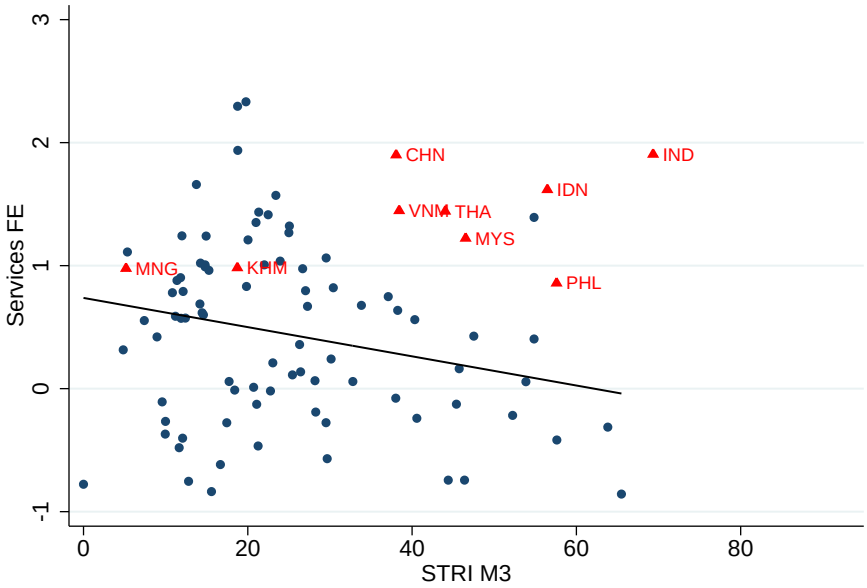


Figure 10: **Probit Host Country Fixed Effects and STRI**



Note: Solid line represents linear fit without East Asian economies (highlighted).

Figure 11: **Probit Host Country Fixed Effects and Manufacturing Share**