

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

Alessandro Barattieri Ingo Borchert Aaditya Mattoo

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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. A stylized model of M&A motivates a two-stage empirical analysis. In the first stage, a Probit model is used to evaluate the impact of geography and cultural factors on the probability of observing bilateral cross-border M&A. 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 probability of receiving investment through cross-border M&A.

Our main findings are the following: (1) Geographical and cultural barriers affect M&A in services more than in manufacturing. Across services sectors, we find similarities but also some plausible differences: a shared border matters only for M&A in retail and transport; a common language is more important for M&A in banking and insurance than for other sectors; and M&A in accounting services are the most affected by a shared legal system. (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. These findings suggest that policy impact is state dependent, and may help to explain why policy restrictions have inhibited services investment in the industrializing economies of South-East Asia less than in other parts of the world.

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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 the presence of two big “spikes” of M&A (in the late nineties and mid two thousands) and the fact that a large share of M&A pertains to the service sector. Figure 2 reports the composition of M&A within service sectors. 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 two thousands. 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 been influenced by 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).

We propose a highly stylized model of M&A as a basis for a two-stage empirical analysis. In the first stage, we estimate a Probit model inspired by our 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 .

The latter exercise is conducted drawing upon a new database that provides information on restrictions on services trade and foreign investment, including through M&A. The new

database covers the following five major services sectors: financial services (banking and insurance), telecommunications, retail distribution, transportation and professional services, with each of these broad sectors further disaggregated into subsectors. The country coverage encompasses information from a total of 103 economies, of which 79 are developing countries and 24 OECD countries, in total representing all the world's regions and income groups.

Our main findings are the following: (1) Geographical and cultural barriers affect M&A in services more than in manufacturing. Across services sectors, we find similarities but also some plausible differences: a shared border matters only for M&A in retail and transport; a common language is more important for M&A in banking and insurance than for other sectors; and M&A in accounting services are the most affected by a shared legal system. (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. These findings suggest that policy impact is state dependent, and may help to explain why policy restrictions have inhibited services investment in the industrializing economies of South-East Asia less than in other parts of the world.

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.

This paper is also connected to the literature on the importance of intra and inter-sectoral linkages for 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.

The paper is structured as follows. Section 2 outlines an empirical strategy based on a highly stylized model of cross-border M&A. Section 3 describes the data and in particular discusses the new policy information drawn from the Services Trade Restrictions Database. Section 4 contains empirical results and Section 5 concludes.

2 Empirical Strategy

In order to justify the empirical strategy we follow in this paper, we outline a stylized conceptual framework to think about cross-border M&As. Suppose the world is composed by N countries. In a generic country i , there is a continuum of firms that differ in terms of their productivity, a_i . In the spirit of the recent literature on heterogeneous firms in trade, a_i is a random variable and is drawn from a distribution $G(a_i)$ that has country-specific support $[a_i^L, a_i^H]$. Each firm has the opportunity of serving a foreign market j by acquiring or merging with a firm in country j . The benefits, Π_{ij} , of the operation are represented by the discounted flow of future additional profits. We assume that these benefits are a

function of the productivity of the firm, and a series of destination and source country-level characteristics (Y_j and X_i , respectively) such as the market size, the political stability of the target country¹, the effectiveness of its government, or the financial development of the source country:

$$\Pi_{ij} = \Pi(a_i, X_i, Y_j) \quad (1)$$

The costs associated with the operation (C_{ij}) are reflected in a bilateral cost term capturing the difficulty for firms from country i of operating in country j (τ_{ij} , say due to physical or cultural distance among the two countries), the policy environment of the recipient country j (Φ_j), which we will capture using indices of policy restrictiveness², and to a series of destination country characteristics (X_j) which can partly overlap with the set included in (Y_j). So we can express:

$$C_{ij} = C(\tau_{ij}, X_j, \Phi_j) \quad (2)$$

A firm from country i will merge or acquire a firm in country j if and only if

$$\Pi_{ij} - C_{ij} > 0 \quad (3)$$

For simplicity, profits and costs of takeovers are assumed to take loglinear form. So we can express $\Pi_{ij} = \Pi_i(a_i, X_i)\Pi_j(Y_j)$ and $C_{ij} = \tau_{ij}C(\Phi_j, X_j)$. However, we do not need to take a stand on the exact functional forms of the functions Π_i , Π_j and C . Following the spirit of Helpman, Melitz and Rubenstein (2008), we can conveniently define a latent variable Z_{ij}^* as the ratio between the flow of discounted profit that the most productive firm from country i would enjoy if it acquired (or merged with) a firm in country j , and the costs associated with the operation:

¹That reduces, for example, the risk of expropriation.

²See Section 3.2

$$Z_{ij}^* = \frac{\Pi_i(a_i^H, X_i)\Pi_j(Y_j)}{\tau_{ij}C(\Phi_j, X_j)} \quad (4)$$

Notice that an M&A activity will be observed between country i and country j if and only if $Z_{ij}^* > 1$. Hence,

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

Let z_{ij} denote the empirical analog of Z_{ij}^* . 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.

Taking logs of (4), we can specify an estimable Probit model for the presence of M&A as follows:

$$z_{ij} = \delta_i + \delta_j - \beta t_{ij} + \epsilon_{ij} \quad (5)$$

In what follows we propose a two-stage empirical analysis. In the first stage we run a Probit model for the presence of M&A by estimating equation (5), including a full set of home and host country fixed effects. Notice that equation (4) suggests the home country fixed effect equals $\delta_i = \pi_i(a_i^H, X_i)$ and thus depends on unobservable productivity of the most productive firm in country i and the set of variables in X_i . Of particular interest is the host country fixed effect given by $\delta_j = \pi_j(Y_j) - c(\Phi_j, X_j)$, indicating that it is driven by market size, the policy environment and other variables in X_j .

In the second stage, we use these estimated host country fixed effects from the Probit 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

$$\delta_j = \beta_0 + \beta_1 y_j + \beta_2 \phi_j + \beta_3 (\phi_j X_j) + \beta_4 X_j + \epsilon_j \quad (6)$$

In equation (6) 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. We provide an example of what we mean by state dependency in policy effectiveness in figure (4).³ Suppose that the profits obtainable in countries j and k for a firm investing from country i as a function of the country i 's firms productivity are given by the solid lines.⁴ The profit function for investing in country j can be steeper than the one obtainable in country k because of a variety of reasons, for example because j has a larger internal market⁵. The point a_i^H represent the productivity of the most productive firm in country i . Obviously, we would not observe any M&A from country i to either country j or k .⁶ 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 the country in which it is implemented is what we label state-dependent policy effectiveness, which we try to capture by introducing interaction terms in our regressions.

We will also use information on M&A flows more fully and extend this two-stage approach to a Tobit estimator so as to explore the determinants of the extent of M&A activity. An appropriate conceptual framework that justifies the two stage approach for levels of M&A can be found in Head and Ries (2008). In addition, notice that the framework sketched above suggests that the number of M&A deals is also related to home and host country characteristics. If equation (3) above is solved for the cutoff productivity level of home country firms, a_i^* , to profitably initiate an M&A activity, it is easily seen that the latent

³We use a graph popularized by Helpman, Melitz and Yeaple (2004).

⁴The choice of straight lines is only to simplify the exposition.

⁵In a C.E.S. world, profit would be linear in productivity, with the slope depending directly on market size.

⁶Because even the most productive firms in country i would experience a loss.

variable for the mass of firms undertaking M&A is larger in countries with more productive firms, in addition to depending on bilateral frictions and other variables as before:

$$N_{ij}^* = f(a_i^H, a_i^*, \tau_{ij}, Y_j, X_j) \quad (7)$$

This motivates a Tobit model for an observable measure of the extent of M&A activity. The fixed effects thus obtained in the first stage will then be subjected to the same decomposition analysis as specified in equation (6).

3 Data description

3.1 Cross-border Mergers and Acquisitions Data

We use a comprehensive dataset on global mergers and acquisitions from ThomsonReuters Platinum database, spanning the period 2003-2009.⁷ The dataset consists of individual cross-border equity deals between the home country of the acquiror 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. With a view to the empirical analysis of the second stage, as outlined in Section 2, we are able to match data on M&A flows with information on services policy restrictiveness for 100 destination countries.

Table 1 provides basic summary statistics on our investment data. Aggregating information on individual deals across years, we have a total of roughly 22,000 M&As. The total value of investment covered amounts to 5.4 trillion USD, of which 3 trillion are in services sectors. Half of these investments (1.6 trillion) is concentrated in the services sub-sectors for which we have policy information.⁸ Banking is quantitatively the most important sector

⁷We 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.

⁸The category “Other services” includes Construction Services, Gas and Electricity, Business Services and Personal Services such as Health Services and Education Services.

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 21,402 possible country-pair observations. Even considering the totality of the sectors, we observe positive M&A flows only in 10% 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; in particular, of the 175 host economies, 34 are not partner to any deal at all while two-thirds only receive a single-digit number of inflows across all services sectors over a seven year period. At the top end, though, one country receives a total of 588 inflows (the U.S.). Figure 5 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 (the two observations at the top right corner are the United States and the UK, respectively). 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 6. 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.⁹ 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.

3.2 A New Policy Database

3.2.1 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

⁹Interestingly, firms from India, China and Malaysia are also initiating more services M&A deals than their country's income per capita would suggest.

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, transportation¹⁰ 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.¹¹ 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.¹² 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.

¹⁰Regarding 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.

¹¹To ensure data accuracy, all policy information has been reviewed by government officials, though not all countries eventually responded to the vetting request.

¹²For 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.

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.

3.2.2 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).¹³

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

¹³For 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.

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 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.

3.2.3 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 7 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 7 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.¹⁴ Thus, the restrictiveness of applied policies varies widely amongst developing countries..

Figure 8 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 8 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.

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Summing up the results of Section 3.1 and 3.2.3, 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.

4 Results

4.1 First Stage: Gravity-type Determinants

Table 1 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 2003-2009). We report separately the results for manufacturing (column two) and total services (column three).

¹⁴We 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.

¹⁵By 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 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. Although the difference is not large and not highly significant, this effect appears to be stronger for services. The coefficient on the border dummy is roughly twice as large for services as for manufacturing. In this case the difference is highly statistically significant. As we see below, these differences are driven by the transport and retail sectors where a commercial presence in neighboring countries has a plausible economic basis. Also sharing a common language increases the probability of observing M&A in services much more than it does in manufacturing. Given the critical role of communication in the delivery of intangible services, this finding is hardly surprising. Finally, a common legal origin increases the probability of observing M&A in the service sector roughly to the same extent in manufacturing.

Given the heterogeneity of different services sectors, we explore in Table 2 whether our results differ significantly across different service sectors. Hence, we run our first-stage Probit model using six different service sectors: Accounting, Banking, Insurance, Retail, Telecommunications, and Transport.¹⁶

The coefficient on distance is negative and statistically significant for every sector. We observe a similar pattern for the effect of sharing a common language. 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 all the sub-sectors analyzed. This effect seems stronger for the accounting services sector, where common laws favor cross-border presence. 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.

We then turn to the results obtained using a Tobit model. Table 4 reports the aggregate results. Similarly to table 1, we find a negative and strongly significant distance coefficient

¹⁶Accounting 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 1, only 4 M&A concerned the legal service sector we decided to exclude it from the analysis.

both in services and manufacturing, but the service coefficient is now much larger than the manufacturing one. Also in terms of sharing a border and a common language, the impact is found to be stronger for services than for manufacturing. Sharing a common legal origin seems to have similar effects. Table 5 report the results obtained at a more disaggregated level. The qualitative results obtained for the probit analysis are all confirmed. 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.

4.2 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 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, against the log of the country GDP in 2002, which we take as a first proxy of the market size.¹⁷ 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.

We tried to find common factors that might explain the coexistence of relative restrictiveness with a high level of M&A. GDP growth does not seem to be the key determinant

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

of this result, as we will confirm in the regression framework. We followed the evidence in the literature on the importance inter-sectoral linkages and tried to correlate the probit host fixed effect with the share of manufacturing sector in total 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.

In order to validate our visual intuition within a regression framework, we present some econometric results in Table 6. 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 a negative coefficient for the STRI. The STRI coefficient, however, is small and statistically significant. In the second column we add the shares of manufacturing and services in GDP. As shown in Figure 11, the manufacturing share coefficient is positive and highly statistically significant. In the third column, we add interaction terms between the STRI and the shares of manufacturing and services. We see now how the policy coefficient becomes much larger, and highly statistically significant, while the interaction term between the STRI and the manufacturing share is positive and statistically significant. In the subsequent specifications we control also for the growth rate of GDP, and indicators of political stability and government effectiveness. Surprisingly, besides the log of GDP, only the policy variable and the interaction term with manufacturing share in value added display coefficients which are statistically significant across all specifications.

In Table 6 we report the results obtained from the analogous exercise using the host fixed effects coming for the Tobit model for levels. The results are qualitatively identical to those obtained using the probit host fixed effects.

While we are aware of the limitations of a cross-section approach, dictated by the cross-sectional nature of our policy variable, the results presented in Tables 6 and 7 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, a relatively

high share of manufacturing in value added seems to allow countries to maintain a relatively restrictive regime without deterring M&A in the service sectors.

5 Conclusions

We present evidence on the determinants of cross-border M&A in services for a large sample of developed and developing countries. Using a two-stage empirical analysis of global bilateral mergers and acquisitions (M&A) flows, we first evaluate the impact of geography and cultural factors on the probability of observing cross-border M&A in services sectors and on the level of M&A activity. While distance and shared legal systems have an effect in services similar to that in manufacturing M&A, we find that a shared border and language have a stronger effect on M&A in services than manufacturing. After taking account of these conventional gravity variables, we focus on the policy barriers to investment in service sectors. We exploit a new database that provides comparable information on regulatory and policy barriers for services sector across an unprecedented range of countries. Relating measures of these barriers to the fixed effects of bilateral cross-border services M&A, we find that host country fixed effects are strongly positively correlated with market size and negatively correlated to our index of overall policy restrictiveness. However, we also find a strong positive coefficient on the interaction term between the policy variables and the manufacturing share in value added. Thus, we find some evidence of what we label the “state dependency” of policy impact, in that a relatively high share of manufacturing in value added seems to allow countries to maintain a relatively restrictive regime without deterring M&A in the service sectors.

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Table 1: **M&A Investment: Descriptive Statistics**

	Total Num	Total Value	Non-zero Obs (%)
All Sectors	22017	5409937	10
STRI Services	4489	1589547	5
–Banking	1198	625547	2
–Insurance	399	165352	1
–Retail	660	149281	1
–Telecom	916	460234	2
–Transport	512	142150	1
–Professional	804	46983	1
Other Services	8100	1533390	5
Manufacturing	6880	1713430	6
Other	2548	573570	3

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

Sector	Total	Manufacturing	Services
Distance	-0.815*** (0.031)	-0.730*** (0.040)	-0.785*** (0.038)
Border	0.425*** (0.108)	0.237* (0.139)	0.491*** (0.119)
Language	0.484*** (0.065)	0.360*** (0.095)	0.593*** (0.083)
Legal	0.280*** (0.048)	0.329*** (0.067)	0.292*** (0.061)
Host FE	Yes	Yes	Yes
Home FE	Yes	Yes	Yes
N	20174	9645	12793

Table 3: **First Stage: Disaggregate Probit Estimates**

Sector	Services	Acc.	Bank	Ins	Ret	Tel	Transp
Distance	-0.785*** (0.038)	-0.682*** (0.087)	-0.804*** (0.052)	-0.738*** (0.079)	-0.715*** (0.071)	-0.656*** (0.051)	-0.555*** (0.066)
Border	0.491*** (0.119)	-0.037 (0.235)	0.108 (0.141)	0.008 (0.213)	0.516*** (0.188)	0.178 (0.156)	0.464** (0.200)
Language	0.593*** (0.083)	0.489** (0.202)	0.626*** (0.109)	0.820*** (0.171)	0.541*** (0.162)	0.510*** (0.112)	0.318** (0.151)
Legal	0.292*** (0.061)	0.421*** (0.143)	0.255*** (0.079)	0.385*** (0.124)	0.339*** (0.116)	0.235*** (0.084)	0.279** (0.111)
Host FE	Yes						
Home FE	Yes						
N	12793	2485	8038	3209	3492	6609	3530

Table 4: **First Stage: Tobit Estimates**

Sector	Total	Manufacturing	Services
distance	-5.588*** (0.183)	-5.095*** (0.012)	-7.291*** (0.302)
Border	1.720** (0.726)	0.177 (0.111)	2.966*** (1.033)
Language	3.407*** (0.463)	2.197*** (0.126)	5.733*** (0.759)
Legal	1.942*** (0.322)	2.257*** (0.107)	2.735*** (0.526)
Host FE	Yes	Yes	Yes
Home FE	Yes	Yes	Yes
N	21273	21273	21273

Table 5: **First Stage: Disaggregate Tobit Estimates**

Sector	Services	Acc.	Bank	Ins	Ret	Tel	Transp
Distance	-7.291*** (0.302)	-4.828*** (0.024)	-9.030*** (0.489)	-8.540*** (0.770)	-6.879*** (0.030)	-8.057*** (0.556)	-6.289*** (0.033)
Border	2.966*** (1.033)	-0.442** (0.220)	1.017 (1.503)	-0.261 (2.348)	4.267*** (0.257)	1.377 (1.806)	4.496*** (0.287)
Language	5.733*** (0.759)	2.926*** (0.234)	7.205*** (1.150)	8.950*** (1.838)	4.704*** (0.302)	6.447*** (1.320)	3.766*** (0.295)
Legal	2.735*** (0.526)	3.057*** (0.199)	3.042*** (0.841)	4.456*** (1.247)	3.431*** (0.249)	2.871*** (0.971)	2.899*** (0.265)
Host FE	Yes						
Home FE	Yes						
N	21273	21273	21273	21273	21273	21273	21273

Table 6: **Second Stage: Host Country Probit Fixed Effects and STRI**

Model	(1)	(2)	(3)	(4)	(5)	(6)
ln_gdp_2002	0.3341*** (0.0278)	0.3026*** (0.0349)	0.3274*** (0.0370)	0.3306*** (0.0371)	0.3260*** (0.0400)	0.3176*** (0.0435)
STRI	-0.0058* (0.0035)	-0.0041 (0.0038)	-0.0695*** (0.0250)	-0.0697*** (0.0250)	-0.0710*** (0.0255)	-0.0684** (0.0261)
manuf_share_2002		0.0224** (0.0093)	-0.0380* (0.0193)	-0.0376* (0.0193)	-0.0383* (0.0195)	-0.0356* (0.0204)
serv_share_2002		0.0004 (0.0058)	-0.0149 (0.0134)	-0.0141 (0.0134)	-0.0157 (0.0144)	-0.0149 (0.0146)
manuf_stri_2002			0.0019*** (0.0005)	0.0019*** (0.0005)	0.0019*** (0.0005)	0.0018*** (0.0006)
serv_stri_2002			0.0006 (0.0004)	0.0007 (0.0004)	0.0007 (0.0004)	0.0006 (0.0004)
growth_2002				0.0151 (0.0146)	0.0143 (0.0149)	0.0145 (0.0150)
GOVT_EFF_2002					0.0273 (0.0845)	0.0757 (0.1285)
POL_STAB_2002						-0.0525 (0.1047)
R-squared	0.611	0.622	0.670	0.671	0.667	0.664
N	92	87	87	87	87	87

Table 7: Second Stage: Host Country Tobit Fixed Effects and STRI

Model	(1)	(2)	(3)	(4)	(5)	(6)
ln_gdp_2002	3.2168*** (0.2680)	2.8953*** (0.3357)	3.1608*** (0.3559)	3.1932*** (0.3567)	3.1694*** (0.3850)	3.0913*** (0.4187)
STRI	-0.0595* (0.0333)	-0.0417 (0.0369)	-0.7018*** (0.2408)	-0.7032*** (0.2406)	-0.7100*** (0.2453)	-0.6858*** (0.2514)
manuf_share_2002		0.2149** (0.0899)	-0.3587* (0.1858)	-0.3548* (0.1856)	-0.3584* (0.1879)	-0.3325* (0.1962)
serv_share_2002		0.0088 (0.0562)	-0.1569 (0.1290)	-0.1488 (0.1291)	-0.1572 (0.1388)	-0.1492 (0.1404)
manuf_stri_2002			0.0179*** (0.0052)	0.0176*** (0.0052)	0.0177*** (0.0052)	0.0171*** (0.0054)
serv_stri_2002			0.0067* (0.0039)	0.0069* (0.0039)	0.0070* (0.0040)	0.0067* (0.0040)
growth_2002				0.1527 (0.1402)	0.1487 (0.1430)	0.1501 (0.1438)
GOVT_EFF_2002					0.1392 (0.8125)	0.5915 (1.2359)
POL_STAB_2002						-0.4909 (1.0070)
R-squared	0.611	0.621	0.670	0.671	0.667	0.664
N	92	87	87	87	87	87

Figure 1: Global M&A, by Main Sectors

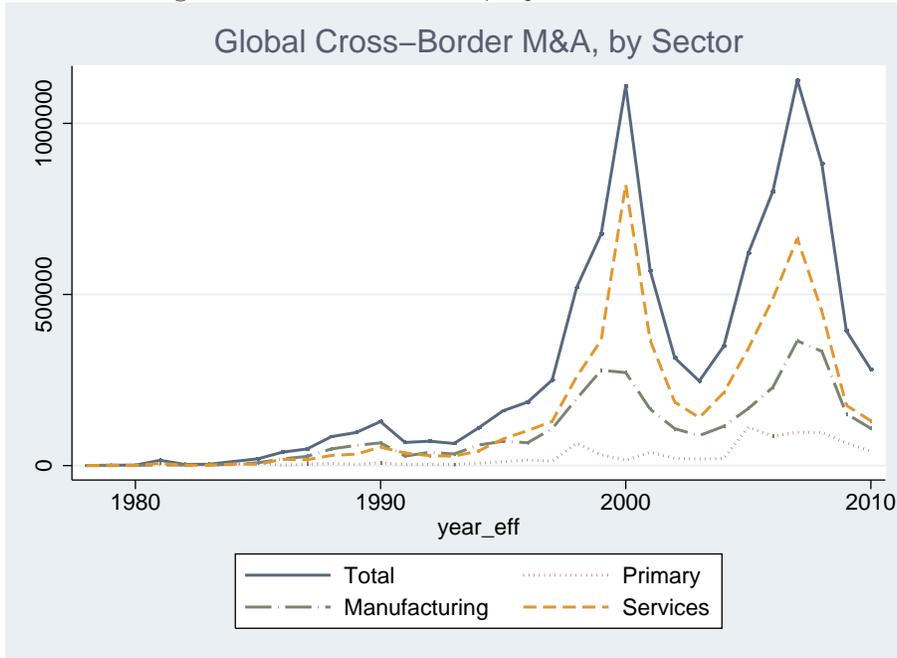


Figure 2: Global M&A, Main Service Sectors

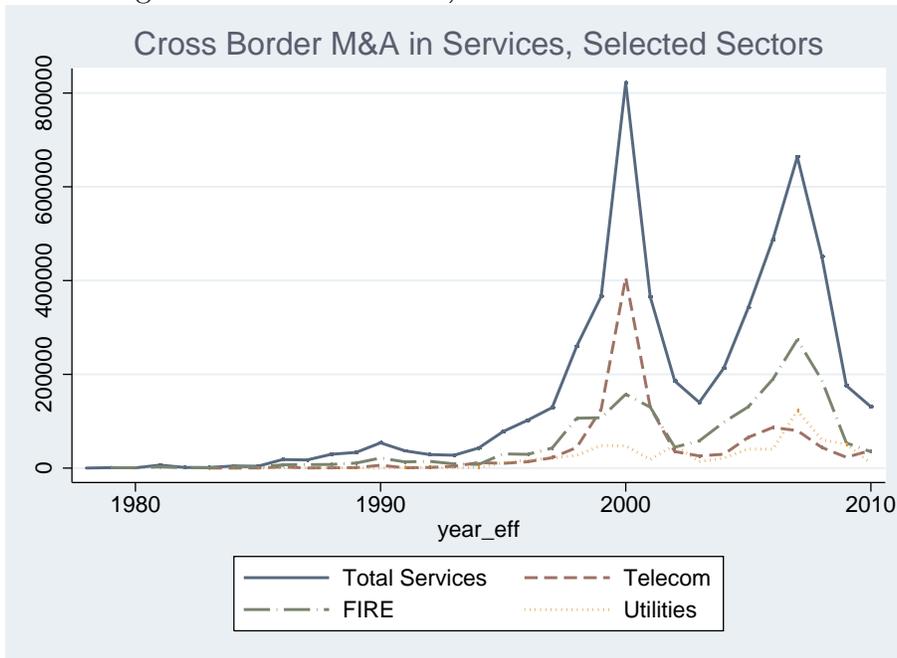


Figure 3: Cross-Border M&A in Services, by Country

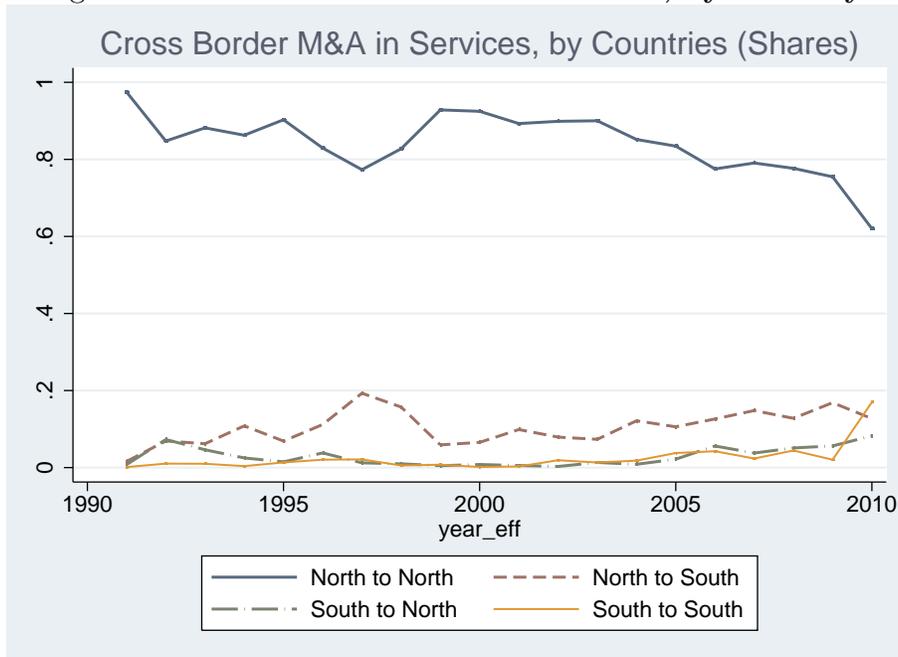


Figure 4: Example of State-Dependency of Policy Effectiveness

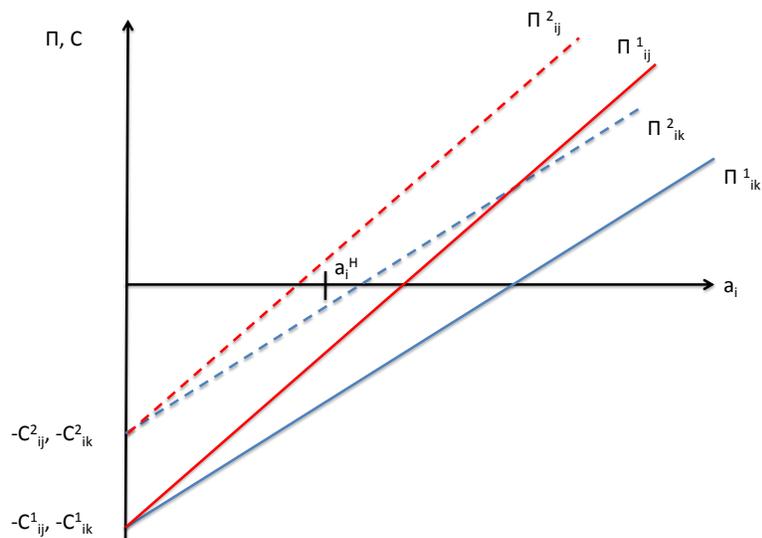


Figure 5: Total number of M&A deals in services sectors, by GDP of host economy

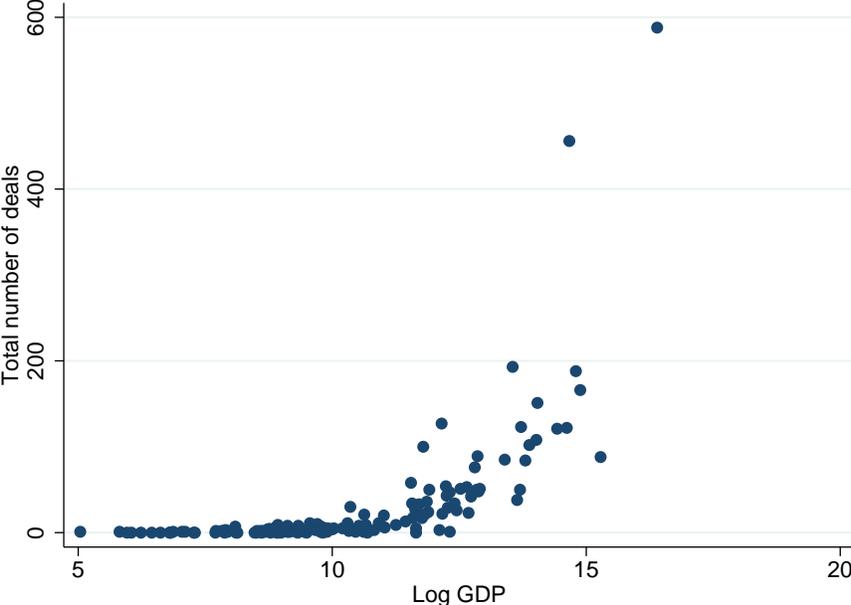


Figure 6: Total number of M&A deals in services sectors, by per capita GDP of host economy

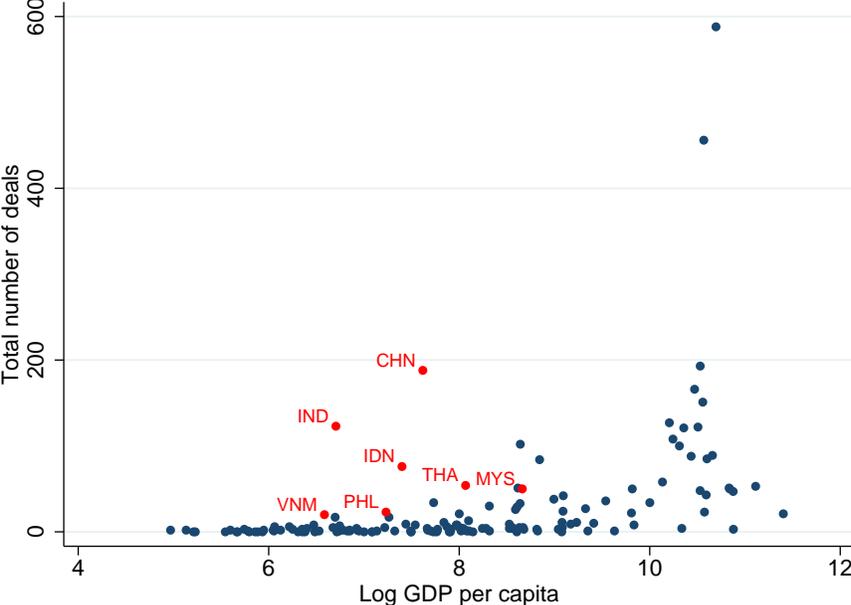


Figure 7: Global Services Trade Restrictiveness

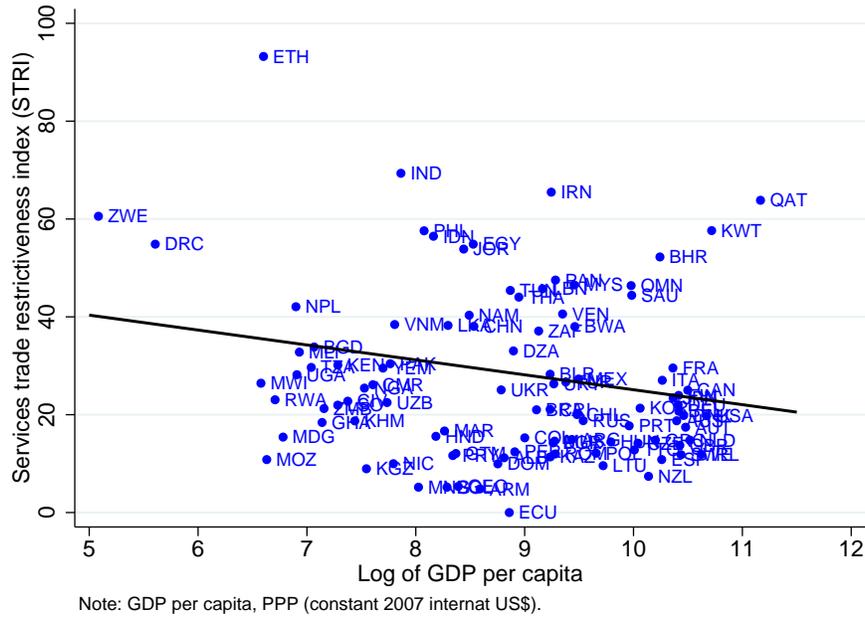


Figure 8: Services Investment Restrictiveness, by Region and Sector

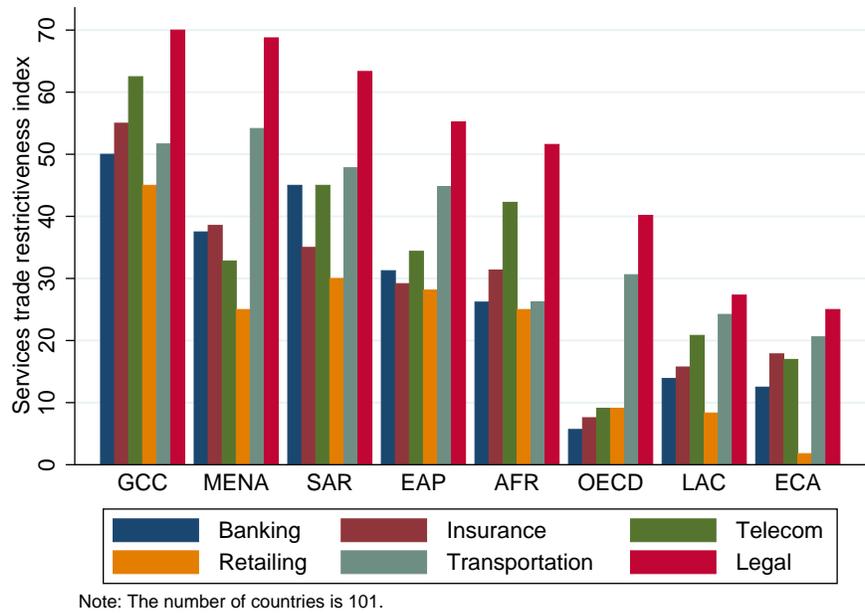


Figure 11: Probit Host Country Fixed Effects and Manufacturing Share

