



Has the EU's Single Market Program led to Deeper Integration of EU Services Markets?

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Abstract: This paper empirically evaluates whether the EU's Single Market Program has led to deeper integration of EU services markets. It adopts a gravity-type estimation framework to search for an EU effect in data on balance-of-payments trade in services and foreign direct investment. In contrast to previous gravity estimations on bilateral services trade, the current study employs a theory-consistent estimation equation with time-varying country fixed effects and, in selected estimations, also pair fixed effects to account for unobserved country-specific and pair-specific determinants of trade. The results suggest that total services trade flows and FDI stocks within the EU are up to one-third higher compared to the rest of the world, although there are important variations across services sectors.

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1. Introduction

One important feature of the new generation of preferential trade agreements (PTAs) that have been negotiated over the past 15 years has been an inclusion of a services component, aimed at dismantling barriers towards cross-border trade and investment in services. By 2008, 78 such services PTA had been notified to the WTO.¹ Little is known, however, to what degree these PTAs actually lead to deeper integration of service markets among the signatory countries.

This question is not entirely obvious. Fink (2007) describes that many PTA liberalization undertakings in services do not imply new market opening, but reflect existing services trade policies (or less). In addition, in those instances where PTAs lead to new liberalization measures, it is often not clear whether these measures are implemented preferentially. Trade protection in services does not take the simple form of a tax on trade flows, but consists of a myriad of laws and regulations affecting foreign services and service suppliers. Discrimination in the application of these measures may not always be feasible, or at least not practicable. If the opening of service markets proceeds in a non-discriminatory way, one would expect more trade, but not necessarily deeper integration within the PTA block than with the rest of the world.

However, Fink (2007) also points to instances where services PTAs lead to new liberalization measures that are implemented preferentially. In addition, many PTAs aim at deeper domestic regulatory cooperation between the signatory parties, notably through the harmonization of regulatory standards and the conclusion of mutual recognition agreements. Given the regulation intensity of many services sectors, one would expect such cooperation to lead to deeper integration of service markets within the PTA block only. In any case, the overall impact of services PTAs remains an empirical question.

This study offers evidence on the integration effects of one preferential agreement—the European Union’s (EU) Single Market Program. The choice of the EU as the focus of the study was determined by two considerations. First, the EU is the regional integration agreement that has arguably gone the furthest in dismantling barriers to trade in services. Free trade in services

¹ This number was computed using the WTO Regional Trade Agreements Database, available at <http://rtais.wto.org/UI/PublicMaintainRTAHome.aspx>.

was already established in the Treaty of Rome of 1957. Numerous Regulations and Directives have given meaning to the broad principles set out in the Treaty of Rome and have harmonized regulatory systems in numerous services sectors. There is a strong presumption that many of the liberalization measures have been preferential in nature. Indeed, if there is any PTA in the world that promoted deeper services integration, the EU's Single Market Program would seem like the prime candidate.

Second, for most PTAs, there is insufficient data available to assess the integration effects in an econometric setting. The EU represents a notable exception in this respect. The majority of EU member states publishes data on international services transactions that are broken down by trading partner. While these data still pale compared to what is available for international goods commerce, they allow for a meaningful econometric investigation.

In searching for deeper services integration within the EU, the study uses a gravity-type estimation framework. Reflecting the fact that many services can only be supplied internationally by firms establishing a commercial presence in the foreign country, the investigation employs both balance of payments (BOP) trade in services and foreign direct investment (FDI) as dependent variables. In contrast to previous gravity estimations on bilateral services trade, the current study adopts a theory-consistent estimation equation with time-varying country fixed effects and, in selected estimations, also pair fixed effects to account for unobserved country-specific and pair-specific determinants of trade. The results suggest that total services trade flows and FDI stocks within the EU are up to one-third higher compared to the rest of the world, although there are important variations across services sectors.

The paper is structured as follows. The next section sets the scene by providing an overview of the EU's Single Market Program in services. Sections 3 and 4 present the estimation setup, the data, and the econometric results for the investigations on BOP services trade and FDI, respectively. Finally, Section 5 offers concluding remarks.

2. An overview of the EU's Single Market Program in services

The EU's Single Market Program in services has its origin in the 1957 Treaty of Rome. Visionary at the time it was concluded, the Treaty established the principles of free regional trade in services and free establishment of companies in the territory of the (then) European Community (EC). In particular, Article 49 of the Treaty provides that "restrictions on freedom to provide services within the Community shall be prohibited" and Article 43 states that "restrictions on the freedom of establishment of nationals of a Member State in the territory of another Member State shall be prohibited".²

The Treaty of Rome went beyond setting a common vision. For the most part, the above principles had direct effect under EC law, enabling individual service providers to legally challenge government measures that they deemed inconsistent with one or more treaty obligations.³ In a series of court cases, the European Court of Justice (ECJ) had to give meaning to the general liberalization principle set out in the Treaty of Rome. In the landmark 1991 *Stichting Collectieve Antennevoorziening Gouda* ruling, the ECJ provided that Member states can limit the free provision of services only in order to guarantee the achievement of an essential public interest and without going beyond what is strictly necessary to achieve that objective (Messerlin, 2008). Related court decisions have similarly sought to filter the legitimate from the protectionist policy measures, creating a body of case law that circumscribes the degree of openness of EC services markets.

A second pillar of the EU's Single Market Program in services consists of numerous Regulations and Directives which were put forward by the European Commission. These executive and legislative initiatives, which make up the *acquis communautaire* in services, had several objectives. First, they sought to give meaning to the broad principles set out in the Treaty of Rome, especially in areas where the Treaty did not have any direct effect (for example,

² The Article numbers and quotes refer to the Consolidated Version of the Treaty Establishing the European Community (EC, 2002). Services are defined on a negative basis, to include all transactions that do not relate to the movement of goods, capital, or persons. Transport services are excluded from Article 49, but are dealt with in a separate treaty chapter.

³ The direct applicability of the freedom provide services (Article 49) was confirmed in the 1974 *van Binsbergen* ruling by the European Court of Justice (ECJ). In the case of establishment (Article 43), the 1974 *Reyners* ruling by the ECJ similarly confirmed direct applicability. See Messerlin (2008).

professional services). Second, they aimed at opening up service markets that were previously provided by state monopolies—notably postal, telecommunications and energy services. Finally, they provided for the harmonization of certain regulatory measures, facilitating the application of the mutual recognition principle between EC member states.

Table 1 provides a breakdown of the *acquis communautaire* by broad services sectors, as of early 2006. It consisted of almost 600 texts—168 Regulations and 241 Directives, the rest being accompanying texts. Commission Regulations are immediately applicable in member states, whereas Directives require implementing legislation at the national level. Most of the texts were issued in the 1985-2005 period. This timing reflects the greater emphasis placed on the single market for services by the influential European Round Table of Industrialists in the mid-1980s, with an initial focus mainly on infrastructure services that were thought to hold back the single market in goods (Messerlin, 2008).

In 2004, the European Commission put forward an ambitious proposal for a horizontal Services Directive that aimed at deepening the single market in services. This proposal was rooted in the recognition that significant barriers to regional services trade remain and, while the ECJ rulings circumscribed the degree of openness in services, the voluminous and not necessarily well-known body of case law created legal uncertainty. One of the cornerstones of the Commission's proposal was the country of origin principle, according to which service providers could provide services in any member state, but operate under the rules of their home country. This principle would have allowed for services trade even if regulatory systems were not harmonized, creating a powerful integration force.

However, the initial Commission proposal generated severe criticism as being “ultra-free” market and undermining national social welfare systems. The Services Directive that was eventually passed by the European Parliament substantially watered down the country of origin principle. The most important elements of the Directive are a consolidation of several court

rulings and an evaluation mechanism, whereby member states' regulations are scrutinized as to their discriminatory impact, their necessity, and their proportionality.⁴

In summary, there is little doubt that the EU's Single Market Program has led to the dismantling of services trade barriers. There is also a strong presumption that many of the liberalization measures and regulatory harmonization initiatives have been preferential in character. Above all, only EU service providers directly benefit from the liberalization principles enshrined in EC law. That said, non-EU service providers have often benefited from regional liberalization measures as well. The opening of national telecommunications and energy markets, for example, has largely proceeded in a non-discriminatory way. In addition, some regulatory harmonization initiatives may have actually reduced the scope for regional services trade, as differences in regulatory standards can be a source of comparative advantage and in itself give rise to trade. Ultimately, whether services markets are more deeply integrated within the EU than with the rest of the world is an empirical question, to which we turn next.

3. Searching an EU effect in BOP data on trade in services

Our first empirical investigation focuses on BOP trade in services, which describes services transactions between residents and non-residents—mostly taking the form of cross-border exchanges of services. While in the past these exchanges were dominated by travel and transportation services, advances in information and communication technologies have enabled trade in many other service activities. Indeed, trade in computer and information services as well as various types of business services has been one of the most dynamic components of international trade (WTO, 2006).

Ideally, we would like to empirically evaluate how the different regional liberalization measures have affected intra-EU trade in services. Unfortunately, the difficulty of documenting and quantifying the liberalization of mostly regulatory barriers to trade—let alone the preference margin associated with EU membership—precludes such an investigation. Several recent studies

⁴ See Article 15 of EC Directive 2006/123/EC. It is worth pointing out that important services sectors are excluded from the scope of the Directive, including health, education, retail distribution and tourism. See Breuss et al. (2008) for a more detailed treatment of the Services Directive.

have attempted to quantify the trade-inhibiting effect of remaining barriers to trade in services within the EU (Copenhagen Economics, 2005; Kox, Lejour, and Montizaan, 2005; and de Bruijn, Kox, and Lejour. 2006).⁵ These studies were conducted to provide an estimate of the potential trade and welfare effects of the EU Services Directive. However, they neither attempt to quantify the trade preferences from which EU service suppliers benefit, nor do they assess the extent of market integration before the adoption of this Directive.⁶

We therefore adopt an alternative approach, asking whether we can discern any deeper integration of EU service markets relative to the rest of the world. Admittedly, this approach can only give a partial indication of the effect of the Single Market Program. A finding of positive integration could be due to other policy influences, notably the adoption of a common currency, or may be a by-product of deeper integration of EU goods markets. Nonetheless, the question of whether there has been *any* integration of service markets within the EU has not been rigorously examined to date. In addition, analysis of disaggregated services trade flows may allow for insights into where the EU effect may be especially weak or strong. In the goods context, the question of deeper integration within the EU has been subject to a large number of studies, with one recent estimate suggesting that bilateral intra-EU trade is 24 percent larger than bilateral rest-of-the-world trade (Baldwin & Taglioni, 2006).

Econometric model

In testing for an EU effect in services, we employ a gravity model of bilateral trade. Trade economists have long employed the gravity model to evaluate the fundamental determinants of goods trade, going back to Tinbergen (1962). In recent years, several studies have employed the gravity framework to bilateral services trade, including Francois (1993), Freund and Weinhold (2002), Grünfeld and Moxnes (2003), Kimura and Lee (2006). Three studies—Lejour and Verheijden (2004), Walsh (2004) and Kox and Nordas (2007)—have included a dummy variable for EU membership and obtained mixed results.

⁵ See Copenhagen Economics (2005), Kox, Lejour, and Montizaan (2005), and de Bruijn, Kox, and Lejour (2006)

⁶ In addition, they rely on fairly aggregate indices of services regulation, precluding an assessment of which regulatory measures drive the trade-inhibiting effects found in these studies. The gravity estimations performed in Kox, Lejour, and Montizaan (2005) also suffer from the theory-inconsistent use of GDP terms explained in the text.

A problem of the prior gravity literature on services trade is that researchers have mostly employed the ‘standard’ gravity specification with exporter and importer GDPs, distance, and dummy variables for adjacency and common language. This approach raises two concerns. First, as pointed out by Baldwin and Taglioni (2006), theoretical derivations of the gravity equation suggest that unobserved country heterogeneity is correlated with the gravity equation’s explanatory variables, causing biased coefficient estimates. Second, theoretical derivations of the ‘standard’ gravity equation with GDPs are based on single-sector models of world trade.⁷ Hummels (2001) demonstrates that in a multi-sector model, the estimation model cannot be reduced to an expression with importer and exporter GDPs.⁸ To be theory-consistent, a gravity specification with GDPs can therefore only be used when the dependent variable captures total trade between two countries. Since trade in services typically accounts for a minority share of total trade, the employment of GDP terms is unwarranted.

Fortunately, given the research question at hand, there is an easy solution to both problems. Since we are mainly interested in the effect of EU membership—a variable with bilateral variation—we can sweep out all country-specific determinants of trade by employing time-varying country fixed effects. Specifically, following Hummels (2001), we estimate the following equation:⁹

⁷ See, for example, Anderson and van Wincoop (2003).

⁸ Intuitively, in single sector models, expenditure falls on only one good and every country (produces varieties of) the same good, leading to a proportional impact of exporter and importer GDPs on bilateral trade. In multi-sector models, expenditure shares on different goods vary with tastes and levels of development and the production structure will not be the same across countries—depending, for example, on patterns of comparative advantage. Grünfeld and Moxnes (2003) and Mirza and Nicoletti (2004) recognize this problem and employ services value added instead of total GDP as explanatory variables. This solution is imperfect, however. Unless trade in all sectors is perfectly balanced, services value added differs from services consumption in the importing nation.

⁹ Schwellnus (2007) estimates a panel gravity model with the two GDP terms and time-invariant country fixed effects. The coefficient estimates on the GDP terms thus only rely on the time-series variation in the data. This approach improves on previous studies in the literature by addressing the problem of unobserved time-invariant country heterogeneity. However, it does not account for time-varying country heterogeneity. In addition, the problem of theory-inconsistent use of the GDP terms remains. The same is true for Kox and Lejour (2005) and Mirza and Nicoletti (2004), which also use exporter and importer fixed effects, though not simultaneously but in two separate regressions. Admittedly, most studies in the prior literature investigate the effects of country-specific variables—notably, national regulatory barriers—on bilateral trade and therefore cannot resort to the time-varying country fixed effects approach adopted here. The use of GDP terms remedies this dilemma, but it implies a departure from theory that reduces the credibility of the empirical findings.

$$(1) \quad \ln T_{ijt} = \gamma_{it} + \delta_{jt} + \beta_1 \ln Dist_{ij} + \beta_2 Cont_{ij} + \beta_3 Lang_{ij} + \beta_4 EU_{ij} + \varepsilon_{ijt},$$

where T_{ijt} denotes bilateral trade between country i and country j in year t ; γ_{it} and δ_{jt} are fixed effects for countries i and j , respectively, in year t ; $Dist_{ij}$ is the geographical distance between the two countries; $Cont_{ij}$ and $Lang_{ij}$ are dummy variables capturing the presence of a common border and a common language, respectively; EU is a dummy variable that is one if both countries i and j are members of the European Union and zero otherwise; and ε_{ijt} is a normally distributed error term.¹⁰

In addition to allowing for theory-consistent estimation at the sectoral level, the country fixed-effects specification is especially suited for the present analysis. It embeds alternative supply determinants of trade—whether based on product differentiation by country of origin (Anderson and van Wincoop, 2003), within-country product differentiation and monopolistic competition (Krugman, 1980) or homogeneous products and heterogeneity in firm productivity (Eaton and Kortum, 2002). The country fixed-effects also control for important unobserved influences on services trade flows. Chiefly, they account for non-discriminatory barriers to trade, which are hard to quantify in the services field, and control for differences in the statistical measurement of services trade flows (see below). Essentially, the inclusion of country fixed effects reduces the research question to how a country's trade flows are distributed across its partner countries, given a certain propensity to trade.

The use of the geographical variables—distance and contiguity—may not, at first, seem suitable for an analysis of services trade. In the classical goods gravity equation, the geographical variables are thought to capture trade costs, especially transportation.¹¹ Services, by contrast, are intangible and while their trade surely is costly, it may, at first, not be obvious why trade costs should depend on geography. Two explanations are possible. First, the cross-border provision of services may require the travel of people and information, the costs of which are influenced by

¹⁰ Since the two sets of country fixed effects are time-varying, they account for unobserved influences specific to each estimation year but invariant across country pairs. Indeed, the inclusion of separate time fixed effects would produce collinearity with the country fixed effects.

¹¹ However, as noted by Grossman (1998), the value of the distance coefficient in goods gravity estimations is typically much larger than what can be accounted for by pure transportation costs.

geography. Second, trade in certain services—for example, international transportation services—may be directly linked to goods trade. To the extent that geography influences the latter, it may also leave its imprint on the former. In any case, whether geography matters for services trade is an empirical question and it shall be interesting to assess how the estimated gravity coefficients on distance and contiguity differ from the goods case.

Data

Measuring cross-border trade in services is a challenging task, because unlike in the case of goods, traded services do not physically cross national boundaries where they can be easily observed. In order to compile a country's international balance-of-payments (BOP), central banks or national statistical agencies employ a variety of methods to capture services transactions with foreign residents, including use of the international transactions reporting system, surveys of enterprises, surveys of households, administrative data and other sources (United Nations, 2002). Collection methods differ from country to country, often implying a lack of comparability across reporting entities and substantial asymmetries in mirror trade flows, especially at the disaggregate level.¹² Fortunately, our country fixed effects approach controls for differences in statistical recording methods, as long as each statistical entity records trade flows consistently across its trading partners.

While most countries have long published data on total services trade as well as trade in selected service categories, only few countries had until relatively recently offered a breakdown of these data by trading partner. The situation improved markedly in the late 1990s with more and more countries offering such a breakdown.

At the international level, there are three main sources for BOP services trade data: Eurostat, the OECD, and the UN. The country and time coverage offered by these sources are not identical, however. In a nutshell, the Eurostat data offers the longest time series, but has fewer reporting countries than what is available through the OECD and the UN. The UN database, in turn, includes several countries not available through the OECD, and vice versa. To have the widest

¹² See World Trade Organization, 2006 and the presentation by Bill Cave at the OECD-Expert Meeting on Trade in Services Statistics, available at <http://www.oecd.org/dataoecd/20/5/39572163.ppt>.

possible coverage available for our gravity analysis, we merged the three dataset in the following way: we first extracted all available data from the Eurostat database, added the observations from the OECD database for which no information existed in the Eurostat database, and then added the observations from the UN database for which no information existed in either the Eurostat or OECD sources.

In principle, the merged dataset covers 47 reporting countries, 66 partner countries and the 1992-2006 period. However, data availability varies substantially among reporting countries and years. As it turns out, there are too few observations before 1999 to permit meaningful estimations. For the 1999-2006 period, there are sufficient observations to perform estimations for total services, transportation and travel. Unfortunately, for the other service categories, intra-EU trade data are only available for the 1999-2002 period. We therefore start with gravity estimations confined to this time period. Table 2 lists the number of observations by reporting country for which at least data on total services, travel, and transportation during the 1999-2002 period are available.¹³ For those three categories, our estimations can draw on a total of 2,853 (credit) and 2,966 (debit) observations, covering 33 reporting countries. For other service categories, the number of observations is considerably smaller, but still allows for meaningful estimations.¹⁴ As will be further explained below, we will also draw on the larger 1999-2006 sample to estimate the effects of EU membership for the 10 countries that acceded in 2004.

From a statistical perspective, one would expect credit data to be more reliable than debit data, because surveys of domestic exporters in a particular service sector should be more representative than surveys of importing entities throughout the whole economy.¹⁵ However, to test the robustness of our findings, we also perform estimations using debit data and evaluate the difference in results.

¹³ Around 10 percent of observations had to be dropped because they were zero or negative, precluding the application of a log-linear model.

¹⁴ Available observations only represent around a third of the cells in the bilateral trade matrix associated with our dataset and an even smaller share in the world's bilateral trade matrix. However, one cannot assume that all missing observations are zero and apply the techniques in the trade literature to correct for a sample selection bias due to zero observations. Unlike in the case of goods trade, there is no way to know whether a missing observation for BOP services trade is zero or positive but not statistically recorded.

¹⁵ I am grateful to Andreas Maurer from the WTO's statistics division for pointing this out to me.

Data on distance, contiguity, and common language were taken from the CEPII geographical database.¹⁶ The distance variable is calculated as the weighted average of the bilateral distance between the biggest cities of the two countries, with the weights being proportional to the share of the cities in countries' overall populations.

Estimation results

Table 3 presents our estimation results, using the reported data on credits for the 1999-2002 estimation sample. Reflecting the sample's time coverage, the EU dummy variable is based on the EU-15 block comprising the 12 EU members as of 1992 (Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, United Kingdom) plus Austria, Finland, and Sweden, which acceded in 1995.

The gravity model performs well, with most R-squares lying in the 80th percentile. The distance variable is always negative and statistically significant. Interestingly, the value of the estimated coefficient is always around -1, which mirrors the coefficient value usually obtained in goods trade gravity regressions.¹⁷ Similarly, the variable capturing contiguity between trading partners is always positive and statistically significant. Despite services being intangible, geography appears to leave a similar mark on international services trade as it does on international goods trade.

The dummy variable for a shared language is positive and statistically significant in 9 out of 13 regressions. Only in one category—merchandise and other trade-related services—is the coefficient value negative and statistically significant (though only at the 10 percent level), a result which does not seem to have a straightforward explanation. The lack of a positive language effect may be due to the special nature of merchandise services, whereby the exporting

¹⁶ See <http://www.cepii.fr/anglaisgraph/bdd/distances.htm>.

¹⁷ See, for example, Baldwin and Taglioni (2006).

service provider acts as an intermediary in a commercial transaction between two foreign residents.¹⁸

Given the time period under consideration, EU membership refers to the EU-15 block. This variable shows a positive and statistically significant effect for total services trade. The size of the coefficient estimate suggests that bilateral trade between two EU member states is around one-third higher than bilateral trade with or between non-members. The EU effect on total services trade is about the same as two countries ‘adopting’ a common language and around half of the effect of ‘moving’ two countries into contiguity.

Turning to the results for the different BOP categories, it turns out that EU membership does not play a role for transportation services, insurance services, financial services, personal, cultural, and recreational services, and operational leasing services.¹⁹ For transportation services, this finding may seem surprising, as one might have expected deeper integration of EU goods markets to stimulate intra-EU trade in transportation services. The transport sector has also been subject to a large number of Regulations and Directives (see Table 1), though it is conceivable that the *acquis communautaire* has done more to harmonize regulatory standards (with a possible trade-inhibiting effect) than to open services markets.²⁰

For all other BOP categories, the EU dummy takes on a positive value and is statistically significant. The strongest EU effects are found for construction services, merchanting and other trade-related services, and miscellaneous business, professional, and technical services. In the case of the former, deeper integration is likely due to the preferential opening of government procurement within the EU. In the case of the latter, deeper integration may be due to fewer regulatory barriers faced by EU service suppliers—possibly a direct result of the Single Market

¹⁸ The 5th edition of the balance-of-payments manual defines merchanting as “as the purchase of a good by a resident (of the compiling economy) from a nonresident and the subsequent resale of the good to another nonresident; during the process, the good does not enter or leave the compiling economy.”

¹⁹ Only the results for total services, travel and transportation are strictly comparable, as they are based on the same sample. However, estimating gravity models for these three categories for the smaller samples associated with the other categories yielded qualitatively the same results.

²⁰ It is also worth pointing out that transport services were excluded from the principle of free services trade (Article 49) in the Treaty of Rome.

Program. Relatively strong EU effects are also found for travel services and computer and information services. In the case of travel services, one hypothesis is that EU citizens do not face visa requirements or other travel restrictions when traveling to another EU country, although many non-EU countries equally benefit from visa-free travel into the European Union. Computer and information services are usually not regulation-intensive and few countries impose trade barriers in this sector, so it is not entirely clear whether deeper integration in this sector is the result of preferential policy treatment.

In order to check the robustness of these results, we also estimate equation (1) using debit data, i.e. imports by country i from country j . Even though debit data is believed to be relatively less reliable and the switching of importing and exporting nations leads to a much different sample, the findings are remarkably similar. The estimation results are presented in Table 4. As above, the distance coefficient is always around -1 and statistically significant and the contiguity variable is always positive and statistically significant. The language variable is positive and statistically significant in a comparatively smaller number of regressions. Interestingly, the same counterintuitive negative and statistically significant coefficient on language is found for merchanting and other trade-related services. The estimated coefficients for the EU dummy variable are somewhat smaller in value, but the pattern of sectors with a statistically significant effect is almost the same. The only exceptions are travel services, for which the EU dummy is not any more statistically significant, and personal, cultural, and recreational services, which now shows a statistically significant EU effect.

One potential criticism of the above estimations is that they do not control for unobserved time-invariant influences at the country-pair level. While the presence of omitted variables is not a problem *per se*, there is the possibility that omitted variables are correlated with EU membership, leading to biased estimates. The only way to correct for unobserved time-invariant country-pair influences would be to include country-pair fixed effects. This is not possible for the 1999-2002 sample, as our variable of interest—EU membership—does not vary over time. However, we can use the larger 1999-2006 sample to test whether EU membership has deepened services trade with respect to the 10 countries that acceded in 2004—at least for total services, transportation and travel services.

Table 5 reports results of gravity estimations with time-varying exporter and importer fixed effects as well as time-invariant country-pair fixed effects. The EU dummy variable now reflects the EU-15 block before 2004 and the EU-25 block for 2004 and beyond.²¹ Note that the distance, adjacency, and language variables drop out because they are collinear with the pair fixed effects. It is worth emphasizing that the question underlying these estimations is a different one. Whereas the above regressions asked whether *across trading partners* EU-15 countries show deeper integration, the pair fixed effects estimations ask whether *over time* the 10 new accession countries experienced deeper integration. The results in Table 6 show positive EU effects for all three BOP categories using both credit and debit data. While intuitive, this finding is not entirely obvious, because accession-related policy reforms and the response of service suppliers may not exactly coincide with the date of accession. From this view, it is remarkable that the sizes of the estimated coefficients for total services are similar to the ones obtained in Tables 3 and 4. The main difference between the results lies in finding a positive and statistically significant EU effect for transportation services.

One useful aspect of the pair fixed effects estimations is that the finding of a positive EU effect cannot be due to the common currency, because none of the 10 accession countries had joined the Eurozone before 2007. In fact, this result accords with Baldwin and Tagioni (2006), who in a similar pair fixed effects specification find a positive effect of EU membership on goods trade, but no effect of Eurzone membership.

In sum, the regression evidence presented here indicates that EU membership has a positive effect on bilateral services trade. Results using the more credible credit data put the EU effect at around one-third for total services trade. However, the EU effect is not uniform across different service sectors, with some sectors showing no integration effect at all when estimations rely on the cross-trading partner variation within the EU-15 block. As pointed out above, it is not possible to directly attribute deeper integration to fewer services trade barriers faced by services suppliers within the EU. Deeper services integration could also be a by-product of deeper goods

²¹ The 10 accession countries are Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia.

integration (though our cross-sectional findings on transport services suggest otherwise). In addition, our finding of a positive EU effect does not suggest that intra-EU services trade has reached its ‘full potential’. Notwithstanding these caveats, the econometric evidence presented here offers credible evidence for deeper services integration within the EU that, ultimately, must be the result of some kind of preferential policy cooperation.

4. Searching an EU effect in FDI data

Our second investigation focuses on bilateral foreign direct investment (FDI) stocks and flows. Many services require the close physical proximity between the supplier and the consumer of the service. For international commerce to be feasible, service providers need to establish a commercial presence in the foreign territory. We focus here on service providers in the form of companies rather than individuals, because consistent data on services-related migration flows are hard to come by and, in any case, the EU has move towards the creation of a single labor market—something beyond the scope of most PTAs.

Econometric model

We employ the same gravity model expressed in (1), except that our dependent variable now refers to bilateral FDI. Again, the choice of a country fixed effects specification allows for theory consistent estimation.²² The recent empirical literature on FDI has shown how a gravity-type equation can be derived from a general equilibrium model of multinational firm activity (Bergstrand and Egger, 2007). More generally, any model that explains bilateral FDI by a set of country-specific variables can be estimated through a country fixed effects specification. As above, this approach controls for non-discriminatory FDI restrictions and differences in the statistical measurement of FDI that are consistent across partner countries. We merely ask how a

²² Some studies in the previous literature on explaining bilateral FDI relationships have relied on ad-hoc econometric specification, using countries’ GDPs (Grünfeld and Moxnes, 2003). Others have based their estimation equation on the knowledge capital model of the multinational enterprise, as originally proposed in Carr, Markus, and Maskus (2001). We could have employed the latter approach for the present purpose. However, since we are only interested in the effect of EU membership, we believe that sweeping out all observed and unobserved country-specific determinants of FDI yields the most credible estimates.

country's FDI stocks and flows are distributed across its partner countries, given a certain propensity to invest.

Data

As in the case of BOP data, availability of bilateral FDI data is incomplete. In principle, two international agencies—the OECD and Eurostat—publish data that can be used for the present purpose. The OECD data offers a longer time coverage (1992-2005), but does not provide a sectoral breakdown of FDI. Such a breakdown is available in the Eurostat dataset, though with a shorter time coverage (1994-2005). Faced with this trade-off, we set out to investigate the presence of an EU effect using both the OECD and Eurostat datasets. As it turned out, the estimation results using the Eurostat dataset yielded few credible insights and we only report here the estimation results using the OECD data.²³ This is unfortunate, because we are mainly interested in services FDI and the finding of a positive EU effect may be driven by non-service activities. However, we feel that an investigation on total FDI is still useful, not least because services typically account for the majority of all foreign investments made.

Table 6 lists the reporting economies and the number of available observations in the OECD dataset.²⁴ In principle, we have data on stocks and flows as well as on inward and outward FDI. We only focus on stock data here, for two reasons. First, from a methodological point of view, stock data should offer a more accurate picture of lasting business interests by foreign enterprises in the host economy compared to flow data, which merely describes new investments undertaken in a given year. Second, flow data is more volatile, with many more observations being reported

²³ Specifically, for total FDI, our estimation results were comparable in terms of signs and coefficient values to the ones obtained using the OECD data. For individual sectors, results varied, depending on the FDI aggregate used and the definition of the EU block. Interestingly, we obtained large positive EU effects when focusing on the EU-15 block, but no or negative EU effects when focusing on all EU-members in the respective estimation years. While these findings are suggestive of deepened FDI relations in the EU-15 block but not in the wider EU-25 block, the sample sizes for these sectoral estimations were substantially smaller than the ones for the estimations on total FDI. The finding of hard-to-explain negative EU effects also suggests the presence of unobserved country pair heterogeneity. Indeed, estimations with pair fixed effects overwhelmingly yielded coefficients that were statistically not significant. These estimation results are available from the authors upon request.

²⁴ To be precise, the numbers shown refer to the number of positive observations, for which data on all dependent variables were available.

as zero or negative.²⁵ Since we employ a log-linear model specification, we need to drop these observations from the estimation sample.²⁶

Finally, we estimate our gravity models using data on both inward and outward FDI. Unlike in the case of BOP trade in services, there is no statistical prior that one aggregate might be more accurate than the other. The collection of both types of data relies on surveys of enterprises located in the jurisdiction of the reporting entity and it is not obvious that mismeasurement is necessarily worse for either inward or outward FDI.

Estimation results

Table 7 presents our gravity estimation results. Reflecting the estimation sample's time coverage, we capture EU membership by the EU-12 block from 1992 to 1994, the EU-15 block from 1995 to 2003, and the EU-25 block from 2004 to 2005. The first four columns employ the time-varying country fixed-effects specification described above, which produces R-squares in the 80th percentile. In column (1), we use bilateral outward FDI stock as the dependent variable. The main gravity variables have the expected signs and are statistically significant. As if there were a natural law, the distance coefficient again takes on a value close to unity. Interestingly, the language variable appears relatively more important for FDI than for BOP trade in services. The EU dummy variable is positive and statistically significant, with the coefficient estimate suggesting that bilateral FDI within the EU is around one-third higher than bilateral trade with or between non-members.

In column (2), we use data on bilateral inward FDI stock as the dependent variable. The coefficients on the three main gravity variables again have the expected signs and are statistically significant, though the distance and contiguity coefficients are somewhat smaller in value. The coefficient on the EU dummy variable turns out to be statistically not significant.

²⁵ Data on distance, contiguity, and common language are the same as described above.

²⁶ Specifically, in the case of flow data, 54 percent of observations are reported as zero or negative, whereas this share stands at only 38 percent in the case of stock data. Tentative regressions using the flow data yielded results similar to the ones reported here, though, unsurprisingly, with smaller t-statistics.

One possible explanation of the difference in results lies in the different samples underlying the two estimations. We therefore re-estimate the two models, using only the observations, for which we have data on both inward and outward FDI (in the same direction). If the host and home economies measured FDI correctly, we would obtain the same estimation results. However, the results in columns (3) and (4) suggest that the difference persists. In particular, even though the gap between the two coefficient estimates is smaller, EU membership continues to have a statistically significant effect only on outward FDI and not on inward FDI.²⁷

If sample composition does not account for the different performance of EU membership, the difference in results must be due to statistical mismeasurement. More specifically, since differences in statistical collection methodologies and practices that apply to all partner countries are controlled for by the country fixed effects, statistical mismeasurement must relate to the allocation of FDI stocks across partner countries. It is difficult to speculate what the exact source of statistical mismeasurement may be. Even though the statistical community has long recognized large discrepancies in bilateral ‘mirror’ FDI data, it does not have a good understanding of their causes.²⁸

As in the case of BOP services trade, we also estimate a specification of the gravity model including country pair fixed-effects. The estimation results are presented in columns (5) to (8) of Table 7. In these regressions, the estimation of the coefficient on the EU dummy variable relies entirely on the time-series variation in EU membership, that is, the three accessions in 1995 and the Eastern enlargement in 2004. The inclusion of pair fixed effects raises the regression R-squares to the upper 90th percentile. In columns (5) and (6), we employ the maximum number of observations available for each FDI aggregate. What may at first seem like a surprising result, we find a positive EU effect for inward FDI, but not for outward FDI. Again, the difference in

²⁷ Chow tests (barely) do not reject the hypothesis that the two coefficient estimates on the EU dummy variable are the same, though one should keep in mind that the number of observations in the constrained-sample estimation is substantially smaller than in the unconstrained-sample estimations in columns (1) and (2).

²⁸ The International Monetary Fund (2004) concludes that “[...] investigations into bilateral discrepancies are very resource-intensive and, because of confidentiality constraints, are difficult to resolve. [...] An OECD direct investment workshop in 2001 decided not to attempt a detailed reconciliation of bilateral FDI data because the exercise was considered to be too difficult until such time as the methodologies that countries use to compile the data are more in line with the international statistical recommendations.”

the estimated coefficients cannot be straightforwardly explained by the different composition of the estimation samples. When constraining the estimations to the same sample in columns (7) and (8), we still find a statistically significant EU effect for inward FDI only.²⁹

It is worth noting that the different performance of the EU variable in the estimations without and with pair fixed effects is not necessarily contradictory. In the former, the estimated coefficient mainly relies on the cross-partner variation in FDI and statistical mismeasurement can plausibly have a different impact than in a time series context. Unfortunately, without further insights into the source of statistical mismeasurement, it is difficult to speculate what might explain the difference in results.

One intriguing explanation for the finding of a positive EU effect only in the case of inward FDI would be that inward FDI is allocated to the residence of the immediate owning enterprise, whereas outward FDI is allocated to the residence of the ultimate beneficial owning enterprise. If so, our results would suggest that non-EU enterprises rely on existing EU subsidiaries when investing in other EU countries. Certainly, trade preferences within the EU extend to third-country service providers that are established in one of the EU member states. However, this interpretation of our results is speculative. International compilation manuals recommend that national statistical agencies compile outward as well as inward FDI data based on the residence of the immediate owning enterprise.³⁰ That said, it is not clear how consistently this recommendation is reflected in actual compilation practices.³¹

In sum, even though the apparent presence of statistical mismeasurement leaves some unanswered questions, our estimations suggest a positive effect of EU membership on total FDI. We believe that the estimations including pair fixed effects are more credible, because they control for unobserved country pair heterogeneity. In addition, it is unlikely that the adoption of the common currency explains the positive EU effect in these estimations, because the first set of

²⁹ However, Chow tests again reject the hypothesis that the two coefficients are the same.

³⁰ See OECD (1996) and United Nations (2002).

³¹ For example, the International Monetary Fund (2004) indicates that Canadian statistics on outward FDI attribute an investment to the 'ultimate country of destination' when the first FDI enterprise is a foreign holding company.

accessions occurred several years before the introduction of the euro and the ten states that acceded in 2004 were still outside the eurozone in the last year of our estimation sample.

5. Conclusions

Countries around the world are signing PTAs to foster a deeper integration of regional service markets, though to date there has been little empirical evidence that such PTAs are actually trade-promoting. This paper looked at one preferential agreement, the EU's Single Market Program, which arguably has the longest and most ambitious regional liberalization record, going back to the 1957 Treaty of Rome. Controlling for unobserved country-specific and, in several estimations, also unobserved pair-specific determinants of trade, we found that BOP trade in services and total FDI stocks of EC members are up to one-third larger within the region than with the rest of the world.

Two caveats apply to our findings. First, deeper integration of service markets may at least partly be a by-product of greater goods market integration or other forms of policy cooperation, notably the adoption of the common currency. It is interesting to note, though, that our cross-sectional estimates on transport services—the sector most closely related to goods trade—did not show any EU effect, and that our findings hold in a time series context for the EU accession countries, which had not yet adopted the common currency. Second, the presence of statistical mismeasurement in bilateral FDI data—in particular, the misallocation of FDI stocks to partner countries—leaves some questions unanswered, though we always found a positive EU effect in at least one of the FDI aggregates.

Can the empirical results obtained for the EU countries be of any guidance to other PTAs? On the one hand, the integration effects may well be larger for other agreements. The EU block is relatively open to the rest of the world, especially with regard to the establishment of non-EU service providers. The internal preference margin may thus be smaller than in other PTAs, where signatory countries maintain more restrictions towards outsiders. In addition, services trade and investment flows within the EU are probably still below their potential. In particular,

service providers are still constrained by a variety of regulatory barriers in EU member states, which the 2006 Services Directive sought to remove.

On the other hand, other PTAs lack a supra-national institutional structure that may be necessary to effectively dismantle barriers towards services trade. The EU has powerful executive, legislative, and judicial organs that have proved instrumental in challenging protectionist government measures and fostering greater coherence of national regulatory systems. In the end, the extent of feasible integration of services markets may therefore be smaller for other PTAs.

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Tabel 1: Acquis communautaire in services, early 2006

	Number of texts						All (shares) (%)
	1958 1985	1986 1990	1991 1995	1996 2000	2001 2005	All	
Freedom of workers	4			1	8	13	2,2
Right of establishment, freedom to provide services	5	1		3	1	10	1,7
Free movement of capital	1	2	1	5	4	13	2,2
Financial services							
Banking and financial conglomerates		1	2	5	2	10	1,7
Insurance and occupational pensions	10	5	7	4	11	37	6,3
Securities markets and investment services	1		1	2	9	13	2,2
Others				1	10	11	1,9
Information society and media							
Audiovisual Policy		2		3	3	8	1,4
Electronic communications		2	2	7	39	50	8,6
Information Society Directive				4	2	6	1,0
Transport Policy							
Land transport: road	6	5	16	25	27	79	13,6
Land transport: rail	1		3	6	25	35	6,0
Inland waterways	5	4	10	9	4	32	5,5
Maritime transport	5	6	8	20	50	89	15,3
Air transport		1	17	21	49	88	15,1
State aid	3	2	10	4	4	23	3,9
Energy							
Electricity					3	3	0,5
Gas					3	3	0,5
Hydrocarbons	4		2	1		7	1,2
Coal					2	2	0,3
New and renewable sources of energy	1		2	2	10	15	2,6
Nuclear energy	2	4	4	6	5	21	3,6
TransEuropean networks							
Transport			1	2	5	8	1,4
Energy			1	3	3	7	1,2
Acquis communautaire in services	48	35	87	134	279	583	100,0
in percent of total	8,2	6,0	14,9	23,0	47,9	100,0	

Source: Messerlin (2008).

Table 2: Coverage of gravity dataset, 1999-2002

Reporting country	Number of observations	
	Credit	Debit
Australia	64	96
Austria	190	193
Belarus	18	18
Belgium	55	57
Canada	9	9
Cyprus	23	44
Czech Republic	122	100
Denmark	136	213
Estonia	11	5
Finland	99	106
France	169	181
Germany	128	81
Greece	98	103
Hong Kong	92	72
Ireland	9	7
Italy	203	207
Japan	111	116
Korea, Rep. of	12	12
Latvia	41	54
Lithuania	6	3
Luxembourg	30	26
Netherlands	171	202
Norway	24	37
Portugal	196	212
Russia	40	40
Singapore	59	50
Slovakia	74	78
Spain	60	60
Sweden	74	66
Tunisia	9	9
Ukraine	185	171
United Kingdom	222	225
United States	113	113
Total	2,853	2,966

Table 3: Gravity estimations on balance-of-payments trade in services, 1999-2002, credit data

BOP category	Distance	Contiguity	Language	EU15	R-squared	Observations
Total services	-0.993*** (-30.92)	0.623*** (7.08)	0.319*** (4.19)	0.316*** (3.42)	0.878	2,853
Transportation	-1.070*** (-26.33)	0.587*** (5.54)	0.353*** (3.65)	-0.006 (-0.05)	0.813	2,853
Travel	-1.194*** (-29.98)	0.731*** (7.86)	0.481*** (5.62)	0.521*** (5.20)	0.877	2,853
Communications services	-1.158*** (-22.76)	0.770*** (6.92)	0.382*** (3.09)	0.273* (1.82)	0.842	1,888
Construction services	-0.881*** (-9.47)	0.852*** (4.58)	0.092 (0.41)	1.175*** (3.97)	0.719	1,453
Insurance services	-0.768*** (-13.42)	0.819*** (5.15)	0.531*** (4.61)	-0.275 (-1.55)	0.865	1,653
Financial services	-0.933*** (-13.31)	0.788*** (4.15)	0.166 (1.45)	-0.134 (-0.52)	0.868	1,853
Computer and information services	-0.786*** (-11.41)	0.638*** (3.93)	0.291** (2.24)	0.592*** (2.57)	0.831	1,501
Personal, cultural and recreational services	-0.911*** (-11.56)	0.461** (2.50)	0.318** (2.20)	0.236 (0.98)	0.883	1,395
Other business services: total	-1.116*** (-23.31)	0.662*** (5.32)	0.398*** (4.12)	0.357** (2.21)	0.867	2,902
Other business services: merchanting and other trade-related services	-0.966*** (-12.78)	0.860*** (4.32)	-0.357* (-1.83)	0.916*** (3.84)	0.854	1,152
Other business services: operational leasing services	-1.000*** (-6.55)	0.732*** (2.64)	-0.229 (-0.88)	-0.388 (-1.08)	0.828	860
Other business services: miscellaneous business, professional and technical services	-1.092*** (-13.94)	0.488*** (3.10)	0.344** (2.06)	0.805*** (4.90)	0.869	1,584

Note: Ordinary least squares estimates of a log-linear gravity model. Estimations include exporter and importer fixed effects for each of the four time periods. Figures in parenthesis are t-statistics, based on White heteroscedasticity corrected standard errors. One, two, and three asterisks indicate statistical significance at the ten, five, and one percent levels, respectively.

Table 4: Gravity estimations on balance-of-payments trade in services, 1999-2002, debit data

BOP category	Distance	Contiguity	Language	EU15	R-squared	Observations
Total services	-0.903*** (-28.86)	0.689*** (8.23)	0.425*** (5.72)	0.181** (2.11)	0.897	2,966
Transportation	-0.934*** (-22.40)	0.778*** (7.60)	0.352*** (4.10)	-0.013 (-0.12)	0.842	2,966
Travel	-1.038*** (-26.61)	0.766*** (7.69)	0.663*** (7.64)	0.095 (0.88)	0.879	2,966
Communications services	-1.149*** (-22.39)	0.611*** (4.88)	0.043 (0.32)	0.458*** (2.84)	0.815	1,985
Construction services	-0.741*** (-8.05)	0.933*** (4.98)	0.182 (0.97)	0.713** (2.48)	0.738	1,361
Insurance services	-0.772*** (-10.64)	0.704*** (4.27)	0.213 (1.61)	0.135 (0.56)	0.814	1,647
Financial services	-1.023*** (-13.69)	0.270 (1.27)	0.064 (0.49)	-0.200 (-0.69)	0.822	1,631
Computer and information services	-0.907 (-12.67)	0.579*** (3.60)	0.131 (0.86)	0.580*** (2.45)	0.819	1,416
Personal, cultural and recreational services	-0.727*** (-9.72)	0.562*** (3.35)	0.326** (2.22)	0.464** (1.88)	0.828	1,478
Other business services: total	-0.956*** (-24.27)	0.558*** (4.89)	0.281*** (3.27)	0.549*** (3.93)	0.877	2,984
Other business services: merchanting and other trade-related services	-0.946*** (-14.10)	0.394** (2.20)	-0.283* (-1.88)	1.089*** (5.59)	0.870	1,350
Other business services: operational leasing services	-0.833*** (-5.46)	0.713** (2.69)	0.341 (1.41)	0.249 (0.71)	0.836	693
Other business services: miscellaneous business, professional and technical services	-0.961*** (-13.69)	0.520*** (3.33)	0.303* (1.88)	0.408** (2.28)	0.869	1655

Note: Ordinary least squares estimates of a log-linear gravity model. Estimations include exporter and importer fixed effects for each of the four time periods. Figures in parenthesis are t-statistics, based on White heteroscedasticity corrected standard errors. One, two, and three asterisks indicate statistical significance at the ten, five, and one percent levels, respectively.

Table 5: Gravity estimations on balance-of-payments trade in services, 1999-2006, country pair fixed-effects

BOP category	Credit data			Debit data		
	EU	R-squared	Observations	EU	R-squared	Observations
Total services	0.326*** (7.89)	0.992	9,868	0.169*** (3.74)	0.992	10,145
Transportation	0.298*** (5.10)	0.984	9,868	0.188*** (3.30)	0.983	10,145
Travel	0.344*** (5.65)	0.986	9,868	0.424*** (6.95)	0.985	10,145

Note: Ordinary least squares estimates of a log-linear gravity model. Estimations include country pair fixed effects, as well as exporter and importer fixed effects for each of the four time periods. Figures in parenthesis are t-statistics, based on White heteroscedasticity corrected standard errors. One, two, and three asterisks indicate statistical significance at the ten, five, and one percent levels, respectively.

Table 6: Coverage of OECD dataset, 1992-2005

Reporting country	Outward position	Inward position
Australia	220	250
Austria	585	440
Canada	655	450
Czech Republic	293	328
Denmark	541	286
Finland	503	240
France	1,242	1,206
Germany	781	592
Greece	196	189
Hungary	145	264
Ireland	18	21
Israel	321	181
Italy	554	505
Japan	403	318
Korea	575	745
Luxembourg	96	78
Mexico	0	296
Netherlands	997	803
New Zealand	141	212
Norway	570	197
Poland	353	528
Portugal	300	251
Slovakia	213	196
Spain	61	61
Sweden	222	108
Switzerland	558	157
Turkey	245	239
United Kingdom	783	451
United States	976	614
Total	12,547	10,206

Table 7: Gravity estimations on total FDI, 1992-2005

	Outward FDI	Inward FDI	Outward FDI	Inward FDI	Outward FDI	Inward FDI	Outward FDI	Inward FDI
Distance	-0.988*** (-37.25)	-0.873*** (-30.29)	-0.759*** (-20.05)	-0.670*** (-18.40)	n/a	n/a	n/a	n/a
Contiguity	0.791*** (9.53)	0.434*** (6.20)	0.567*** (6.82)	0.528*** (6.67)	n/a	n/a	n/a	n/a
Language	0.827*** (15.02)	0.898*** (14.18)	0.681*** (10.21)	0.902*** (13.44)	n/a	n/a	n/a	n/a
EU	0.298*** (4.43)	-0.109 (-1.55)	0.179** (2.10)	0.066 (0.80)	0.031 (0.33)	0.231** (2.45)	0.091 (0.98)	0.157* (1.74)
Same sample?	No	No	Yes	Yes	No	No	Yes	Yes
Pair fixed effects?	No	No	No	No	Yes	Yes	Yes	Yes
R-squared	0.808	0.838	0.859	0.860	0.965	0.964	0.975	0.974
Observations	12,547	10,206	3,883	3,883	12,618	10,345	3,883	3,883

Note: Ordinary least squares estimates of a log-linear gravity model. Estimations include exporter and importer fixed effects for each of the four time periods, as well as country pair fixed effects (where indicated). Figures in parenthesis are t-statistics, based on White heteroscedasticity corrected standard errors. One, two, and three asterisks indicate statistical significance at the ten, five, and one percent levels, respectively.