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Service trade restrictiveness and foreign direct investment—Evidence from greenfield FDI in business services

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Abstract

We study the impact of service trade restrictions on bilateral greenfield FDI projects in four business services sectors within a gravity model framework. Project level FDI data for 43 destination countries and up to 41 source countries spanning the years 2014–2020 stems from the fDi Markets database and restrictions from the OECD's Service Trade Restrictiveness Index (STRI). Using a negative binomial estimator to explain the number of bilateral FDI projects, we find that service trade restrictions represent a significant barrier for greenfield FDI. In three out of four business services, we obtain statistically significant evidence of a negative effect of the compound STRI level. Using three sub-components of the index (restrictions to foreign entry, restrictions to the movement of people, other service trade restrictions) generally improves the explanatory power of the models. To illustrate potential magnitudes, we simulate how the number of expected FDI projects would increase in response to a hypothetical policy reform reducing relevant restrictions by 50%. We find average increases across the destination countries ranging between 20% and 104%, with a strong dependence on which business service sector

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is considered and whether or not the FDI projects only involve countries of the European Economic Area (EEA).

KEYWORDS

business services, count data models, foreign direct investment, gravity model, greenfield FDI, regulations, service trade restrictions

1 | INTRODUCTION

The capacity to attract foreign direct investment (FDI) is generally seen as one dimension of a country's economic competitiveness. For policymakers FDI is desirable as an additional source of capital and—by means of knowledge transfers and spill-overs—also for productivity gains. These and other potential benefits from FDI have been studied and quantified in a sizeable literature (Beugelsdijk et al., 2008; Francois & Hoekman, 2010; Jungmittag & Welfens, 2020). International organisations like the OECD or the World Bank have emphasised the negative impacts of FDI barriers and promoted their removal (Borchert et al., 2012; Nicoletti et al., 2003). Consequently, many countries have over time relaxed entry and foreign ownership restrictions and signed up to international guidelines that pledge non-discriminatory policies towards foreign investors.¹

Yet, with the recent rise of protectionist tendencies, the introduction of new FDI restrictions resurged and reached a 20-year high in 2018 (UNCTAD, 2019, p. xi). The questioning of globalisation that has emerged in the aftermath of the COVID-19 crisis might further corroborate this trend (Irwin, 2020; UNCTAD, 2020, p.80ff). Therefore, a study of the downsides of restrictive regulation appears to be quite timely.

This is the case even more in view of the lacklustre economic growth and stagnant productivity increases recorded over the last decade in large parts of the EU (Bauer et al., 2020). The removal of FDI obstacles could be one option to trigger more dynamism and harness underexploited opportunities in the EU Single Market (Aussilloux et al., 2017).² According to this reasoning, policymakers should focus on the service sectors, as they are the domain of most of the remaining restrictions (Mistura & Roulet, 2019), and because of their dominating economic weight in most high-income economies. Services also represent an increasingly large share of total FDI, accounting for about one-half of all announced global greenfield FDI projects in year 2019 (50% by estimated value, 54% by number).³ Within the services, business services are often prioritised due to their systemic role for many value chains, including manufacturing. About half of all service greenfield FDI projects were in business services in 2018 or one-sixth in terms of value.⁴

¹E.g. OECD Declaration on International Investment and Multinational Enterprises.

²Restrictions in some industries of strategic importance might of course be fully justified, with military as one obvious example.

³Source: UNCTAD (2021), based on information from the Financial Times Ltd, fDi Markets (www.fDimarkets.com) and own calculations. Obviously due to the COVID-19 pandemic, compared to 2019, in 2020 the number of total greenfield FDI projects decreased by 29%, but that of service FDI projects only by 22%, so that in 2020 the share of the latter continued to increase. The situation is similar for the estimated values of these projects.

⁴Source: UNCTAD (2019), based on information from the Financial Times Ltd, fDi Markets (www.fDimarkets.com). Among all service sectors, business services accounted for the third largest volume of announced greenfield FDI projects in 2018, surpassed only by the 'electricity, gas and water' and 'construction' sectors, which each accounted for almost a quarter of the greenfield FDI volume of the entire service sector. UNCTAD (2020, 2021) no longer clearly distinguish business services from the other services sectors, but it can be assumed that the shares have hardly changed, at least in 2019, and changes in 2020 should be interpreted with caution because of the COVID-19 pandemic.



The purpose of the present article is to contribute to this debate by quantifying the extent to which restrictive regulation impedes inward FDI in business services. To capture FDI flows, we exploit microdata on bilateral greenfield investments from the fDi Markets database in four specific business services, namely computer services, legal, architecture and engineering and accounting services. This complements previous studies, which mostly used aggregate FDI stocks and flows (e.g. FATS database, IMF Balance of Payments) or sectoral data on M&A transactions (Barattieri et al., 2016; Gregori & Nardo, 2021; Mistura & Roulet, 2019).

To estimate how FDI flows are affected by restrictive regulation, we match our greenfield investment data with the sectoral Service Trade Restrictiveness Indicator (STRI) of the OECD. This compound indicator is broadly defined, capturing restrictions on any of the channels of international service trade, not only FDI. In fact, within the four *modes* of cross-country service trade defined by the WTO,⁵ greenfield FDI corresponds to ‘commercial presence’—for example an architecture firm opening a branch in a foreign country—and thus belongs to mode 3. Empirically this is the most relevant mode, for example in year 2013 it accounted for 69% of all EU service exports to non-EU countries (Rueda-Cantuche et al., 2016).

The overall STRI is the sum of five individual sub-indicators, covering (i) entry restrictions, (ii) restrictions on movement of people, (iii) other discriminatory measures, (iv) barriers to competition and (v) regulatory in-transparency. A natural ex-ante expectation is that the first sub-indicator on entry restrictions would be the most relevant FDI deterrent. However, as an added value of our study we include all sub-indicators and test for each one whether there is a negative influence on FDI flows, which does not seem implausible in the case of, for example regulatory transparency.⁶ It also explains why we refrain from using the ready-made OECD FDI Regulatory Restrictiveness Index,⁷ which has a narrower scope. In addition, the FDI regulatory restrictiveness index is based on statutory measures as reflected in official OECD instruments or identified in OECD Investment Policy Reviews and yearly monitoring reports. Unlike the OECD STRI, it does not take into account the actual implementation of legal and other restrictions.

The main contribution of our study is to provide new evidence on the negative effect of anti-competitive regulation on business service FDI flows from so far unexploited data. We derive our results with a panel data gravity approach, using data for 43 destination countries and up to 41 source countries, spanning the years 2014–2020. We find that service trade restrictions create a relevant barrier for greenfield FDI. For three out of four business services, we obtain highly significant evidence of a negative impact, while in legal services the sign of the coefficients is still always negative, but the impact is only statistically significant for the intra-EEA FDI projects. Furthermore, for three sectors (computer services, legal services and architectural and engineering services) the statistical explanatory power of the models improves when the three individual sub-indices of the STRI are included in the models (restrictions to foreign entry, restrictions to the movement of people and other service trade restrictions), instead of the composite STRI. This differentiation also makes it possible to derive clearer and more targeted policy recommendations.

To illustrate the potential impact of an ambitious reduction in regulatory barriers on FDI flows, we present hypothetical simulations of the effects on the expected number of FDI projects from a 50% reduction in the statistically significant service trade restrictions. The results of these simulations

⁵Namely (1) cross border provision, (2) consumption abroad, (3) commercial presence and (4) temporary movement of natural persons.

⁶Correlations between the different sub-indicators can be high, and a principal component analysis shows that most of the variance between them can be explained with just two principal components (Jungmittag, 2020).

⁷<https://www.oecd.org/investment/fdiindex.htm>

suggest that despite the currently already low level of restrictions, there is still ample scope in several EU Member States for policy reforms.

In terms of policy implications, the sector-specific approach reveals that it would be inefficient to simply dismantle barriers to trade in services across the board. Rather, policy measures should be geared towards reducing those restrictions that actually have an effect in specific sectors. Our study provides a number of starting points for this purpose.

The remainder of the paper is structured as follows. Section 2 provides a brief review of the relevant literature. Section 3 explains the empirical model and the estimation strategy. Section 4 describes the data and includes some descriptive statistics. Section 5 presents and discusses the estimation results, while Section 6 summarises the results of the policy simulations for each of the four business services sectors. Finally, Section 7 contains a cross-sectoral summary and discussion of our findings, as well as the conclusion.

2 | LITERATURE REVIEW

A large and well-known body of literature has investigated, mostly empirically, the determinants of FDI.⁸ Gravity models emerged as the workhorse approach for identifying and estimating relevant macro-level determinants, which include country characteristics (economic size, distance and wage differentials between partner countries, etc.) and institutional factors such as common language, trade openness or ease of doing business. However, apart from a few core variables, there still is no robust consensus on the exact set of variables that are consistently relevant for such models (Blonigen & Piger, 2014).

As in our study we are concerned with FDI mostly among OECD and only nine non-OECD countries, we do not review here the rich literature on the determinants of FDI in developing countries (Bénassy-Quéré et al., 2007). Instead, we directly turn to previous research on FDI in service sectors, which is less developed than that on FDI in manufacturing. One important insight from this literature is that the country variables commonly used to model manufacturing FDI are also relevant for service FDI, albeit with different relative importance (Ramasamy & Yeung, 2010). For instance, market size and expected growth are significant drivers for both, but more strongly for manufacturing than for services FDI. The two also show a high temporal correlation, suggesting that service FDI follows (or accompanies) manufacturing FDI (Kolstad & Villanger, 2008; Ramasamy & Yeung, 2010). Finally, findings are ambiguous with regard to trade openness: while Ramasamy and Yeung (2010) affirm its role as a positive determinant of FDI flows, Kolstad and Villanger (2008) do not corroborate this.

Markusen and Strand (2009) used theoretical arguments to point out the particular importance of regulatory barriers when it comes to trade and investment in services. They claim that certain regulatory restriction—even when not targeting foreign firms explicitly—can have a detrimental effect on service trade, for example requirements to validate professional qualifications or complicated licensing procedures. Crozet et al. (2016) eventually confirmed this conjecture empirically, using firm-level data.

Recent empirical research broadly confirms the negative impact of restrictive regulation on, inter-alia, cross-border M&A in service sectors (Borchert et al., 2012), cross-border service trade by mode 1 (van der Marel & Shepherd, 2013), all modes except 3 (Nordås & Rouzet, 2017), FDI in retail services (Jungmittag, 2019) and domestic service competition (Rouzet & Spinelli, 2016). Indirectly, service trade barriers also have a negative impact on downstream manufacturing sectors, in particular on their productivity (Beverelli et al., 2017) and export performance (Hoekman & Shepherd, 2017).⁹

⁸Theoretical approaches to the determinants of FDI are surveyed, for instance, by Faeth (2009).

⁹Francois and Hoekman (2010) provide a comprehensive review—including of the earlier empirical work—of the topic and its wider implications on productivity and growth.



All of these studies used either the OECD STRI or a similar compound index from the World Bank to gauge service trade barriers. However, van der Marel and Shepherd (2013) showed that analyses with individual components of the index, which capture mode-specific restrictions, can unveil additional insights on modal interplay, especially when combined with sectoral-level service trade data. In particular, while overall service trade shows inter-modal substitution between modes 1 and 3 (i.e. restrictions on direct imports are associated with an increase in foreign affiliates, and vice versa), business, financial and insurance services show complementarity.

Nordås and Rouzet (2017) introduced a further differentiation, when they constructed a bilateral index of regulatory differences by exploiting the detailed information on policies underlying the STRI index. In the subsequent empirical analysis, they could confirm that regulatory heterogeneity has a negative impact on service trade (but data did not encompass mode 3), especially when the two partners' individual STRI's are relatively low, that is in case of two relatively open countries. According to the authors, the presence of more severe measures that tend to close countries against trade override the effect of differently shaped regulation, which explains the observed effect.

A recent contribution closely related to ours is Mistura and Roulet (2019), who proxy FDI barriers by the newly conceived OECD FDI Restrictiveness Index and then estimate its impact on bilateral FDI and cross-border M&A stocks. The data used in their econometric analysis covers 60 industrial and emerging economy countries, and 15 or more years. At the economy-wide level, they confirm a negative effect from FDI restrictiveness, both (and at comparable levels) on FDI positions and M&A stocks. When the estimation is repeated separately for the primary, manufacturing and service branch of the economy, it turns out that the negative effect is around one third stronger for services than for the overall economy.

Finally, using again the OECD FDI Restrictiveness Index as a proxy to study the impact of restrictive regulation (and FDI screening mechanisms) on M&A flows to the European Union, Gregori and Nardo (2021) confirm its negative effect on manufacturing and non-financial services. Similar to our approach, they also present a differentiated analysis of the specific types of restrictions and identify those related to the establishment of branches and the repatriation of profits as most harmful for service M&A flows.

In the latter two contributions, FDI data are restricted to cross-border M&A, in part due to the lack of adequate sectoral data on total FDI stocks. Mistura and Roulet (2019) critically discuss the use of M&A data as a proxy for FDI, conceding that 'these are potentially more asset-specific and, in this respect, possibly less sensitive to competing locations than greenfield investments'. In other words, greenfield investment might be more sensitive to countries' investment and regulatory conditions than M&A transactions. Although this assertion would merit further elaboration and perhaps some qualification (see, e.g. Davies et al., 2018), it still underlines the scope for an analysis based on greenfield data. What is more, our data are sectorally disaggregated and allows for a differentiated analysis of the number of FDI projects in four business services sectors.

3 | EMPIRICAL MODEL AND ESTIMATION STRATEGY

The gravity model, first introduced by Tinbergen (1962) and Pöyhönen (1963), is a suitable approach and by now the workhorse of the empirical trade and FDI literature. Its original specifications was guided by heuristics and included as explanatory variables the GDP of trading partners (as a measure of country size) and the distance between them (as a proxy for transport costs), but eventually it became firmly linked to theory. For example, Anderson and van Wincoop (2003) provided general theoretical foundations of the gravity model based on differentiated products and homothetic prefer-

ences, and Eaton and Kortum (2002) using a Ricardian model with perfect competition. Also heterogeneous firm models of international trade à la Melitz (2003) yield a gravity equation for aggregate bilateral trade flows, as shown by Melitz and Ottaviano (2008) and Helpman et al. (2008).¹⁰

The gravity model is also increasingly employed to model bilateral FDI (Bénassy-Quéré et al., 2007). With a horizontal motivation for FDI—likely the most relevant in business services—firms aim to replicate their operations in other countries to be closer to consumers in those markets. Gravity variables like GDP of the source and destination country as proxies for supply and demand forces and distance accounting for transaction costs and other frictions in international investment may adequately capture these motivations (Blonigen & Piger, 2014). However, recent theoretical models of multinational enterprises' FDI decisions suggest additional factors that possibly determine FDI patterns and emphasise several modifications of a standard gravity model that may be necessary to explain horizontal and vertical FDI accurately (Bergstrand & Egger, 2007; Carr et al., 2001).

Based on this branch of literature, we use a panel data gravity model to estimate the effects of service trade restrictions on greenfield FDI activities in four business services sectors. More specifically, we use as dependent variable the number of bilateral FDI projects of a source country i in a destination country j taken from the fDi Markets database (a detailed description of this data is provided in the next section). Thus, the dependent side is given by a count data variable. A common starting point for modelling count data is the Poisson regression model. However, our sample of bilateral FDI projects count data has a sample variance much greater than the sample mean, suggesting that a model incorporating this over-dispersion would be better suited. The negative binomial regression model, which arises as a natural extension of the Poisson regression model, is a popular choice for over-dispersed counts in the empirical literature.¹¹

Assuming that the mean μ_{ijt} of the negative binomial distribution of the numbers of bilateral FDI projects y_{ijt} of a source country i in a destination country j and in year t varies systematically with

¹⁰Most recently, Chaney (2018) proposed a micro-level model where the geographic distribution of any one firm's exports depends on how distance affects the direct cost of creating contacts, and which still—after aggregation—yields a gravity equation at the macro level.

¹¹The Poisson estimator can also be applied to nonnegative continuous variables (Wooldridge, 2002), referred to as the Poisson pseudo-maximum likelihood (or Poisson PML) estimator, which is also consistent. In the econometric literature, the term PML refers to estimating by maximum likelihood (ML) under the assumption that the specified density is not correct (Gourieroux et al., 1984). With respect to gravity models with continuous trade data (including zero trade flows), Santos Silva and Tenreyro (2006) stated that due to the logarithmic transformation of the equation, linear estimators may be inconsistent in the presence of heteroscedasticity, and that non-linear estimators, particularly the Poisson PML, should be used. They argue that the approach is consistent in the presence of heteroscedasticity and deals naturally with zero trade flows and thus, they deem it fit for estimating the gravity equation. The same argument holds for continuous data for FDI flows or FDI stocks. As an extension, some researchers considered other PML estimators based on non-Poisson distributions. The negative binomial PML estimator is appealing because it encompasses both Poisson PML and gamma PML as special cases since the negative binomial distribution assumes that the conditional variance is a linear combination, to be estimated, of the conditional mean and of its square. It has been increasingly used in trade as well as mergers and acquisitions studies, e.g. in Head et al. (2009), Burger et al. (2009), Briant et al. (2014), Westerlund and Wilhelmsson (2011) and Garita and van Marrewijk (2008). However, Bosquet and Boulhol (2010, 2014) showed that the negative binomial PML estimator is inappropriate when applied to continuous dependent variables, such as trade or FDI flows, because the estimates artificially depend on the choice of the measurement unit, which is arbitrary. In our study, we do not have to deal with the problem of scale-dependent nonnegative continuous data, since we use count data (numbers of FDI projects) with over-dispersion, meaning that a negative binomial maximum likelihood (ML) estimator appears to be the right choice. However, in the robustness checks where we change the dependent variable from number of FDI projects to the associated investment volumes (a scale-dependent nonnegative continuous variable based on—largely estimated—data from fDi Markets), we do use the Poisson PML estimator.



some independent variables, we place the value μ_{ijt} , as customary, within a loglinear model (Cameron & Trivedi, 2005). Thus, our gravity model is

$$\mu_{ijt} = E[y_{ijt} | \mathbf{X}_{ijt}] = e^{\alpha_0 + \alpha_i + \alpha_t + \beta_1 X_{1ijt} + \beta_2 X_{2ijt}}, \quad (1)$$

where α_0 is the constant term, α_i are the source country fixed effects, and α_t are the time fixed effects. X_{1ijt} are bilateral explanatory variables (e.g. distance or common language) and X_{2ijt} are destination country specific explanatory variables (e.g. GDP per capita and the service trade restrictiveness indicators). β_1 and β_2 are the regression coefficients associated with these variables.

The next section provides a complete description of all variables. Ideally, a gravity model should include, besides bilateral explanatory variables, source and destination country fixed effects in order to capture multilateral resistance (Anderson & van Wincoop, 2003). However, since the purpose of our analysis is to estimate the impact of destination countries' service trade restrictions, which show over time only very little variation, this approach is not feasible. Destination country fixed effects would absorb the effects of the service trade restrictions and all other destination country-specific variables and impede the disentanglement of the effects of these variables.¹²

Using the notation from Equation (1), our complete negative binominal regression model of the gravity equation for an observation ijt is

$$\Pr(Y_{ijt} = y_{ijt} | \mu_{ijt}, \theta) = \frac{\Gamma(y_{ijt} + \theta^{-1})}{\Gamma(y_{ijt} + 1) \Gamma(\theta^{-1})} \left(\frac{1}{1 + \theta \mu_{ijt}} \right)^{\theta^{-1}} \left(\frac{\theta \mu_{ijt}}{1 + \theta \mu_{ijt}} \right)^{y_{ijt}}, \quad (2)$$

where $\Gamma(\bullet)$ is the gamma function and $\theta (\geq 0)$ a dispersion parameter. In order to estimate this panel data model, we apply an unconditional negative binomial regression estimator with dummy variables to represent the destination country and time fixed effects. Allison and Waterman (2002) have shown that the often-used conditional negative binomial model for panel data, proposed by Hausman et al. (1984), is not a true fixed-effects method, because it does not in fact control for all stable covariates. Looking for alternative estimators, the simulation study of Allison and Waterman (2002) yields good results for the unconditional negative binomial regression estimator with dummy variables for the fixed effects, and there is no evidence of any incidental parameters bias in the coefficients. To avoid a downward bias in the standard error estimates we use two-way clustered (source country and destination country) standard errors to evaluate the statistical significance of the coefficients' estimates.

4 | DATA SET AND DESCRIPTIVE STATISTICS

We assembled a data set from various data sources, allowing to analyse for the first time the impact of service trade restrictions on bilateral greenfield FDI projects in four different business services sectors within a gravity model framework.

The number of bilateral FDI projects from a source country i in a destination country j are taken from the fDi Markets database, which is maintained by fDi Intelligence, a division of Financial Times Ltd. This database collects worldwide FDI projects from 2003 onwards. According to the fDi Markets definition, a FDI project is the establishment of a new foreign enterprise or the substantial expansion of an existing foreign investment, that is so-called greenfield investments, while cross-border mergers and acquisitions (M&A) are not included. The FDI project information is derived from company data

¹²Nordås and Rouzet (2017) argue in a similar way in their analysis of the impact of service trade restrictions on trade flows.

and media sources and can be considered as investment commitments or investment plans. The data include information on the month when the FDI project started, the name of the investing company, the source and destination addresses at the city level, the industry sector in which the investment takes place, the type of activity, the estimated amount of capital invested and the estimated number of jobs created. Data from the fDi Markets database have been used by the UNCTAD in its World Investment Reports series and in recent academic research (Amoroso & Müller, 2018; Burger et al., 2013; Castellani et al., 2016; Castellani & Pieri, 2016; Crescenzi et al., 2014; Falk, 2016).

Since the amount of capital invested and the number of jobs created are often only rough estimates, we use the *number* of bilateral FDI projects as our main dependent variable. Only as a robustness check do we also estimate all models with the annual bilateral investment *volumes* on the dependent side, as calculated from the estimates given in the fDi Market database.¹³ Regarding the sectors to be included, the starting point for our data selection is Eurostat's definition that business services are activities (business functions) performed by enterprises for other enterprises or public administrations.¹⁴ They comprise technical services such as architecture, engineering and technical studies, computer services such as software design and database management, and other professional services such as accounting, legal, consultancy and management services.

From an official statistics point of view, business services refer to economic activities covered by NACE Rev. 2 divisions 62 (computer programming, consultancy and related activities), 69 (legal and accounting activities), 71 (architecture and engineering activities, technical testing and analysis), 73 (advertising and market research) and 78 (employment activities), as well as groups 58.2 (software publishing), 63.1 (data processing, hosting and related activities, web portals) and 70.2 (management consultancy activities). Among these activities, the OECD STRI is only available for five sectors, namely computer services (NACE Rev. 2 divisions 62 and 63), legal services (NACE Rev. 2 group 69.1), accounting services (NACE Rev. 2 group 69.2), architecture services (NACE Rev. 2 group 71.1.1) and engineering services (NACE Rev. 2 group 71.1.2). Since the fDi Market database combines the latter two into a joint sector of architecture and engineering services, we finally consider four business services sectors in the empirical analysis.

With respect to the time span and the included countries, the OECD STRI database again constitutes the bottleneck. It is available only from 2014 onwards, and only for the 36 OECD countries plus Brazil, the People's Republic of China, Colombia, Costa Rica, India, Indonesia, Malaysia, the Russian Federation and South Africa. Out of these 45 countries in total, we excluded as source countries all those for which not a single FDI project has been recorded between 2014 and 2020 in the sectors under consideration. For such countries, the country-fixed effects would otherwise perfectly explain the dependent variable. Furthermore, we omitted Iceland and Slovenia as destination countries, as no FDI projects in business services were recorded for them during the entire period.

The resulting number of observations in each sector and some descriptive statistics are presented in Table 1. For example, for computer services, the aggregation of FDI projects across source-destination pairs yields bilateral FDI data for 41 source and 43 destination countries. In this case, 1724 country pairs with observations for the period 2014–2020 result in a total of 12,068 observations. Fewer observations are available for the other three sectors because there are fewer source countries passing the before mentioned exclusion criteria.

¹³In doing so, we follow the suggestion of an anonymous reviewer.

¹⁴https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Business_services.

From the means and medians observable in Table 1 and the distributions of the number of FDI projects by country pair shown in Figure 1, it is obvious that this count data contains many zero counts. For accounting and legal services 96% of the observations are zero counts, for architectural and engineering services 95% and for computer services 88%. Even for the non-zero observations, the number of FDI projects per country pair is generally small. Furthermore, in all four sectors the variance of the number of FDI projects is much greater than the mean (by a maximum factor of 6.9 for computer services and a minimum factor of 1.9 for architecture and engineering services). This over-dispersion suggests that a negative binomial regression model is indeed appropriate, as a natural extension of the Poisson regression model (Blonigen & Piger, 2014).

The explanatory variable of interest in our analysis are the restrictions to service trade, with the hypothesis that they have a negative impact on FDI activities in the business services sectors. From a theoretical point of view, restrictions on foreign entry should be the main barrier to FDI, but other restrictions might also be relevant. The OECD service trade restrictiveness index (STRI) database synthesises information from more than 16,000 laws and regulations for 22 service sectors in 44 countries (OECD, 2017, 2020) on a yearly basis, starting in 2014 and reaching 2020. For each sector, country and year, this database provides an index value for five distinct policy areas:

TABLE 1 Descriptive statistics for the FDI projects data

	Source countries	Destination countries	Years	Nobs.	Mean	Median	Std. dev.	Min.	Max.
Computer services	41	43	7	12,068	0.267	0	1.358	0	44
Accounting services	20	43	7	5880	0.062	0	0.415	0	11
Legal services	31	43	7	9114	0.074	0	0.553	0	15
Architecture and engineering services	34	43	7	10,003	0.065	0	0.355	0	8

Source: fDi Market database, own calculations.

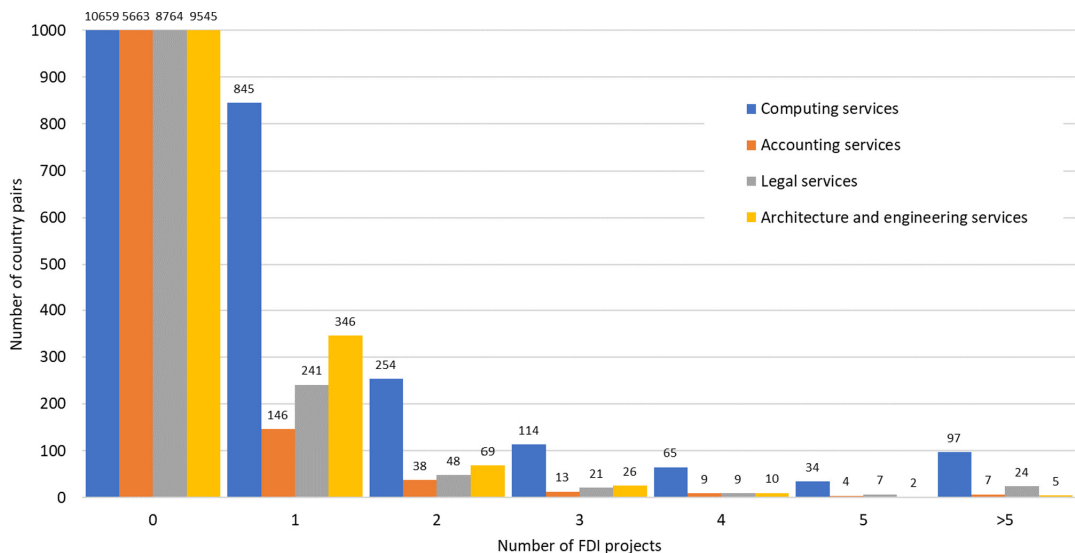


FIGURE 1 Distribution of bilateral FDI projects in business services, aggregated over the period from 2014 to 2020 (source: fDi markets database, own calculations). [Colour figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com)]

- restrictions on foreign entry,
- restrictions on the movement of people,
- other discriminatory measures,
- barriers to competition,
- regulatory transparency.

The first three areas capture measures related to market access and national treatment, the first area in particular restrictions on market access via mode (3), commercial presence and the second area via mode (4), temporary movement of natural persons. These restrictions to the market access for natural persons providing services on a temporary basis affect contractual or independent service suppliers, but also intra-corporate transferees (OECD, 2019a, 2019b, 2019c, 2019d, 2019e). Restrictions for the former type of natural persons could have a positive impact if FDI is used to substitute the temporary presence of natural persons, while restrictions affecting the latter type of persons could more likely have a negative impact on FDI if intra-corporate transferees are necessary for the successful operation in a foreign market.

The third area of other discriminatory measures comprises regulations related to taxes, subsidies and public procurement, which are partly used to give advantages to local suppliers. The effect on FDI of such preferential measures cannot be identified a priori. If a commercial presence in a foreign market could be used to circumvent them, this would stimulate FDI projects. However, if they affect foreign branches negatively, this would rather deter FDI projects.

The fourth area reflects the lack of pro-competitive regulation. The most common measure in this area are minimum capital requirements that may constitute a barrier to FDI projects. Finally, the fifth area focusses on the lack of regulatory transparency and burdensome administrative procedures. The quantitative measurement of this area relies partly on the World Bank's Doing Business Survey that records time, cost and the number of procedures required for establishing a company. It is obvious that high values in this area might hinder FDI projects.

In each area, the OECD converted qualitative information on the regulatory regime into numerical indices, initially with values ranging from zero (absence of any restrictive regulation) to one (completely closed sector). In a second step, it also provides a composite overall STRI calculated as the simple sum of the five sub-indices, but rescaled so that it also ranges from zero to one.

The OECD STRI methodology follows the principle of the most-favoured nation (MFN) and, therefore, does not reflect the relevant level of regulation of service trade between countries with a preferential trade agreement (PTA) in force. However, in the group of countries covered by the OECD STRI, around 50% of cross-border services trade is between PTA partners. The share is highest for the member countries of the European Economic Area (EEA), which typically export more than 70% of their services to PTA partners, in particular to other EEA members.

As the EEA constitutes a common market and thus a deeper integration than a normal PTA, which is not captured by the STRI, the OECD has recently released an additional version of the STRI, the 'Intra-EEA Services Trade Restrictiveness Index'.¹⁵ Covering the same five areas as the original STRI, this index is meant to accurately reflect service trade restrictions between the 25 EEA countries (the 23 EU countries available in the original STRI database plus Island and Norway). The report of Benz and Gonzales (2019) shows that service trade within the EEA is substantially more liberal than the multilateral policies applied by EEA member countries towards non-members, but a certain level

¹⁵https://qdd.oecd.org/subject.aspx?Subject=STRI_INTRAEEA.



of restrictiveness remains within the Single Market, demonstrating that there is potential for further market integration.

We make use both of the original and intra-EEA composite STRI, for the four business services sectors under consideration (computer services, accounting services, legal services, architecture and engineering services). Since the OECD provides two separate but highly correlated STRI series for architecture services and engineering service, we define the STRI for the joint group of architecture and engineering services as the simple average of these two indices.

We assign the Intra-EEA STRI value of the destination country to a country pair whenever both countries are EEA members. If at least one country of a country pair is not an EEA member, the original STRI of the destination country is used. In addition, some estimates of alternative regression models include sub-indexes of the specific restrictions on foreign entry and movement of people, as well as the residual sub-index of *all other* remaining restrictions (calculated as the sum of the other three remaining sub-types of restrictions).

The OECD FDI regulatory restrictiveness index (FDI RRI)¹⁶ is another potential indicator to measure regulatory barriers to FDI. This index is only available for four business services sectors, and not for computer services. It covers the following four specific categories:

- limitations on foreign equity,
- discriminatory screening and approval procedures applied to inward FDI,
- restrictions on the employment of foreign key personnel,
- other restrictions such as on land ownership, corporate organisation or repatriation of profits and capital.

According to Mistura and Roulet (2019, box 1), the extent of discrimination between foreign and domestic private investors is the central criterion for how a measure should be scored, but non-discriminatory measures are also covered when they are considered more burdensome for foreign investors. The index is updated annually and covers 22 sectors in 62 countries (the OECD members and 22 other countries) for the period from 1997 to 2020.

The information basis for the FDI regulatory restrictiveness index are statutory measures as reflected in official OECD instruments or identified in OECD Investment Policy Reviews and yearly monitoring reports. In contrast to the OECD STRI, the actual implementation of legal restrictions is not considered in the scoring process. Furthermore, other facets of the regulatory framework, such as the nature of corporate governance, the extent of state ownership and institutional or informal restrictions, which may affect the FDI climate, are also not taken into account (Kalinova et al., 2010; Mistura & Roulet, 2019, box 1). Thus, for the purpose of our study, the FDI RRI has some weaknesses compared with the STRI.

Two further aspects of the FDI RRI make it also less appealing for our study. First, unlike the STRI, it does not allow to differentiate between pairs of countries with a high or low degree of trade integration. Second, it contains a remarkably high number of countries with zero FDI restrictions—between 21 for accounting services and 29 for architectural services—for our sample of a maximum of 45 countries. For all these reasons, we have decided not to include this indicator in the analysis.¹⁷

¹⁶<https://www.oecd.org/investment/fdiindex.htm>.

¹⁷This decision is further backed by the study of Jungmittag (2020), which provides a comprehensive comparison and multivariate statistical analysis of both indicators for the four business services. For example, only for one out of the four business services (accounting) a weak correlation between the 2018 values of the two OECD indicators could be found.

The additional explanatory variables of the econometric analysis are, on the one hand, standard variables of the gravity model, and, on the other hand, variables identified in the review of the theoretical literature in Section 2. There are two types of explanatory variables, bilateral variables and destination country-specific variables.

Four widely used bilateral gravity model variables are geographic distance and dummy variables for common borders (contiguity), common language and former colonial ties of a country pair. For our analysis, these four variables are taken from the GeoDist database of CEPII (Mayer & Zignago, 2011). Some of our models include as further bilateral variable an EEA dummy variable that is one if both countries of a country pair are members of the EEA and zero otherwise.

Besides geographical distance, cultural distance might be another important factor with an expected negative influence on business services FDI activities. Following previous research, we measure the cultural distance between the source and destination countries by the Kogut and Singh (1988) index, which in this analysis is based on the differences in scores on each of Hofstede's (2011) six dimensions of national culture. This index CD_{ij} is calculated as

$$CD_{ij} = \frac{1}{6} \sum_{c=1}^6 \frac{(C_{ci} - C_{cj})^2}{V_c}, \quad (3)$$

where C_{ci} represents country i 's score of Hofstede's c th cultural dimension and V_c the variance of this dimension across all available countries. Although the Kogut–Singh index has been criticised (Shenkar, 2001), we use this index to keep our data set comparable to other studies.¹⁸

Horizontal FDI is the prevailing type of FDI in the business services sector, and, according to the knowledge-capital model, becomes more important when countries are similar in relative factor endowments and size (see Section 2). Furthermore, an investor may find it easier to invest in a country with a similar size that could offer more similarities with the home country (Fournier, 2015). Following Fournier (2015) and Golub et al. (2003), a factor dissimilarity index (FD_{ijt}) is calculated as

$$FD_{ijt} = \left| \ln \left(\frac{Y_{it}}{POP_{it}} \right) - \ln \left(\frac{Y_{jt}}{POP_{jt}} \right) \right|, \quad (4)$$

where Y is GDP, POP is population, and the dissimilarity in GDP per capita is used as a proxy for the dissimilarity in the capital stock per worker between country i and j in year t .¹⁹

Finally, as the main destination-specific variable, market size is approximated by real GDP per capita (purchasing power parity, constant 2017 international USD) and population size. The former is taken from the World Bank and the latter from Eurostat. These two variables are used with a lag of 1 year. The GDP per capita data is also used to calculate the factor dissimilarity indices. Table A1 shows the descriptive statistics for all explanatory variables.

However, even here the values are hugely different for some countries, for example South Korea, which has a score of 1 in the STRI and 0 in the FDI RRI.

¹⁸A similar argument can be found in Linders (2005) or Zwinkels and Beugelsdijk (2010).

¹⁹Again, following Golub et al. (2003) and Fournier (2015), we also calculated an index of size similarity, but this index showed no statistical significance in any of the estimated equations. Thus, we do not report these results.



5 | EMPIRICAL RESULTS

We estimate two principle variants of the gravity model: In the first variant, we only use the total STRI as the measure of services trade restrictions. This represents a restricted estimate, with an implicit assumption that the three sub-indices (restrictions on foreign entry, restrictions on the movement of people and all other restrictions) have the same regression coefficient. This follows directly from the fact that the three sub-indices add up to the total STRI, i.e.

$$\beta \cdot STRI = \beta(entry + people + other) = \beta \cdot entry + \beta \cdot people + \beta \cdot other. \quad (5)$$

In the second variant of the model, we include the three sub-indices, but exclude the composite STRI. This is an unrestricted estimate, in which the sub-indices may have different regression coefficients. The disadvantage of the unrestricted estimation is that due to the often high collinearity of the sub-indices, these coefficient estimates can become very inaccurate and thus the influence of the individual sub-indices can no longer be estimated in a meaningful way. A likelihood ratio test can be used to check whether the restricted model has the same explanatory power as the unrestricted model, or whether the latter is preferable.

To check whether country pairs where both countries are EEA members are different from the rest in terms of the influence of the explanatory variables, we estimate four versions of each of the two basic variants of the gravity model. The first version includes all country pairs, where EEA country pairs are given the EEA-STRI value of the destination countries, while the other country pairs take the original non-PTA STRI value of the destination countries. This first version also includes a dummy variable for the EEA country pairs to capture possible other effects of EEA membership. As this dummy variable fails to be significant in any of the cases, it is omitted in the second version. In the third version, the estimation of the two variants of the gravity model is based only on EEA country pairs, whereas in the fourth version only country pairs with at least one non-EEA member are included.

In the following subsections, we present the empirical results for the four business services sectors one after the other. We do so in a detailed manner for computer services, but for the sake of brevity more concisely for the other three business services.

5.1 | Computer services

Table 2 shows the results for all eight models of the fixed effects negative binomial estimations for the computer services, where the fixed effects are, on the one hand, source country fixed effects, and, on the other hand, time fixed effects. Likelihood-ratio tests show that both types of these effects are highly significant in all eight models. The total sample for the estimations comprises 12,068 observations (1724 country pairs for the period from 2014 to 2020), which can be divided into an Intra-EEA subsample of 3388 observations (484 EEA country pairs for the period from 2014 to 2020) and a further subsample of 1240 country pairs where at least one country is not an EEA member (8680 observations for the period from 2014 to 2020).

The restricted model (1) with the total STRI shows the results for the whole sample. As expected, the gravity variables GDP per capita and the population size of the destination country have a highly significant positive impact on the number of FDI projects, while distance has an equally significant negative effect. A 1% increase in GDP per capita in the destination country increases the expected number of FDI projects by 0.63% and a 1% larger population raises it by 0.64%, while a 1% increase



TABLE 2 STRI and computer services FDI projects: Results from negative binomial estimations

	All FDI projects, total STRI	Intra-EEA FDI projects, total STRI	Other FDI projects, total STRI	All FDI projects, STRI sub-indices	Intra-EEA FDI projects, STRI sub-indices	Other FDI projects, STRI sub-indices		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
log(GDPPC_destination)	0.625*** (0.186)	0.699*** (0.172)	0.297 (0.417)	0.682*** (0.196)	0.477*** (0.197)	0.492*** (0.191)	0.279 (0.416)	0.559*** (0.209)
log(pop_destination)	0.640*** (0.063)	0.648*** (0.064)	0.821*** (0.122)	0.594 *** (0.065)	0.650*** (0.060)	0.654*** (0.059)	0.815*** (0.132)	0.603*** (0.061)
log(distance)	-0.441*** (0.090)	-0.356 *** (0.079)	-0.336 (0.241)	-0.438*** (0.119)	-0.406*** (0.087)	-0.366*** (0.076)	-0.336 (0.240)	-0.403*** (0.119)
Contiguity	-0.125 (0.139)	-0.106 (0.130)	0.144 (0.210)	-0.146 (0.273)	-0.099 (0.143)	-0.088 (0.137)	0.139 (0.204)	-0.141 (0.277)
Common language	0.987*** (0.164)	1.017*** (0.164)	0.680** (0.357)	1.111 *** (0.186)	0.982*** (0.153)	0.996*** (0.156)	0.686* (0.373)	1.103*** (0.179)
Colony	0.784*** (0.179)	0.842*** (0.181)	0.457 (0.307)	0.796*** (0.223)	0.767*** (0.179)	0.789*** (0.180)	0.459 (0.308)	0.772*** (0.223)
log(cultural dissimilarity)	-0.157* (0.095)	-0.157* (0.094)	-0.342*** (0.125)	-0.074 (0.098)	-0.171* (0.091)	-0.172* (0.090)	-0.344*** (0.127)	-0.088 (0.094)
Factor dissimilarity	0.417*** (0.124)	0.425*** (0.124)	0.739 (0.583)	0.454*** (0.131)	0.424*** (0.119)	0.427*** (0.119)	0.742 (0.586)	0.439*** (0.126)
EEA membership	-0.522 (0.420)	-	-	-	-0.254 (0.421)	-	-	-
STRI composite	-6.242*** (1.746)	-4.927*** (1.053)	-14.514*** (4.644)	-5.272*** (1.809)	-	-	-	-
Restrictions on foreign entry					-8.231*** (2.144)	-7.925*** (1.971)	-11.516 (19.743)	-7.199*** (2.300)



TABLE 2 (Continued)

	All FDI projects, total STRI (1)	Intra-EEA FDI projects, total STRI (3)	Other FDI projects, total STRI (4)	All FDI projects, STRI sub-indices (5)	Intra-EEA FDI projects, STRI sub-indices (7)	Other FDI projects, STRI sub-indices (8)
Restrictions on the movement of people				−0.723 (3.040)	0.462 (2.430)	−1.813 (2.986)
Other restrictions				−8.112** (3.309)	−7.708** (3.047)	−5.266* (3.127)
Observations	12,068	12,068	8680	12,068	12,068	8680
log likelihood	−4486.5	−4491.8	−1331.5	−4476.5	−4477.6	−3088.8
LR χ^2 source country fixed effects	2382.6***	2434.4***	501.6***	2394.5***	2433.6***	1876.6***
LR χ^2 year fixed effects	67.1***	64.6***	57.3***	67.7***	66.8***	32.9***
LR χ^2 same coefficients for the sub-indices	20.0***	28.4***	0.1	See model (1)	See model (2)	See model (3) (4)

Note: The dependent variable in all models is new FDI projects (FDI_{it}). Estimation is negative binomial with fixed effects. Two-way clustered (source country and destination country) standard errors appear in parentheses below the parameter estimates. ***, ** and *Statistical significance at the 1%, 5% and 10% levels, respectively.

in distance reduce it by 0.44%.²⁰ A common border between the source country and the destination country has at the usual levels of significance no impact on the number of FDI projects. In contrast, a common language and colonial ties have, as expected, highly significant positive effects. The former will increase the expected value of the number of FDI projects by 168% and the latter by 119%. The coefficient estimate for cultural diversity has the expected negative sign, but it is only statistically significant at a level of 10%. The situation is clearer when it comes to the influence of differences in factor endowments. Contrary to theoretical expectations from knowledge-capital models, larger differences increase the number of FDI projects with high significance. Instead, the classical factor endowment theory seems to apply here. Countries relatively abundant in capital prefer countries relatively abundant in skilled but cheap labour as destinations for computer service FDI projects.

The coefficient for the total STRI is highly significant negative for greenfield FDI projects in computer services. The estimated value implies that an increase in the STRI by 0.01 index points reduces the expected number of FDI projects by 6%.²¹ The fact that the STRI variable already takes into account the lower service trade restrictiveness within the EEA by using the intra-EEA STRI for the intra-EEA country pairs leads to non-significance of the EEA dummy variable. Thus, the positive effect of EEA membership on FDI projects seems to be stemming mainly from the lower restrictions on trade in services that come along with it.

An additional robustness check also confirms this conclusion. In this, we estimate the model 1 with the original non-PTA STRI as explanatory variable for all country pairs, regardless of whether it is an intra-EEA or a non-intra-EEA relationship.²² The result (model 1 in Table A2) shows that the coefficient of the STRI remains almost unchanged, but the EEA dummy variable now exerts a significant positive influence. The coefficient of the EEA dummy variable implies that for EEA country pairs the expected number of FDI projects is 59% higher than for other country pairs.

In view of these findings, we omit the EEA dummy variable in the restricted model (2). This has little effect on the other coefficient estimates. The estimated coefficient for the STRI is now somewhat smaller but gains in statistical significance. An increase in the STRI by 0.01 index points now reduces the expected number of FDI projects by 5%.

For the estimations of the restricted models (3) and (4), we split the whole sample into two subsamples. Model (3) is based on the 3388 observations for intra-EEA country pairs. Astonishingly, GDP per capita has no influence on the number of FDI projects within the EEA. In contrast, the effects of population size and distance are somewhat larger than those found for the full sample. The direct neighbourhood of two countries has no impact on the number of FDI projects, while a common language affects it positively. Colonial links do not play a role within the EEA, but cultural dissimilarities have a highly significant negative impact on the number of FDI projects, while the significance is only moderate for the whole sample. Conversely, differences in relative factor endowments do not affect the number of intra-EEA FDI projects.

Interestingly, the coefficient estimate for the intra-EEA STRI of model (3) is considerably larger than that for the STRI in the full sample, which includes both the original non-PTA STRI and the

²⁰In general, in a Poisson or negative binomial regression, the effect of an absolute change in an explanatory variable x_i on the percentage change in the expected value of the dependent variable y can be determined as follows: $\% \Delta E(y|x) = (\exp(\beta_i \cdot \Delta x_i) - 1) \cdot 100 \approx \beta_i \cdot \Delta x_i \cdot 100$. However, the approximation given in the last term should only be used for small values of $\beta_i \cdot \Delta x_i$, because it quickly becomes inaccurate as $\beta_i \cdot \Delta x_i$ grows. If x_i is $\log(z_i)$ for a variable $z_i > 0$, then the coefficient β_i can be interpreted as an elasticity of the expected value of y with respect to z_i . Furthermore, if x_i is a dummy variable, then $(\exp(\beta_i) - 1) \cdot 100$ gives the percentage change in the expected value of y for a change in the dummy variable from zero to one.

²¹For the calculation of the effects of the STRI and other variables on the expected number of FDI projects, we refer to footnote 21 in this section.

²²A reviewer suggested this robustness check.



intra-EEA STRI. However, the mean value of the intra-EEA STRI in 2020 is a very low 0.036, while the mean value of the non-PTA STRI is 0.223. It can therefore be expected that changes in the intra-EEA STRI will be much smaller than changes in the non-PTA STRI. Assuming a proportionally similar increase in the intra-EEA STRI of 0.002 (instead of 0.01 as for the combined STRI), would imply a reduction in the expected number of FDI projects by 2.9%.

The results of model (4) for the subsample with all country pairs where at least one country is not an EEA member are very similar to the results for the whole sample, so there is no need to discuss them again.

The unrestricted models (5)–(8) in Table 2 include the three sub-indices for restrictions on foreign entry, restrictions on the movement of people, and ‘all other’ restrictions, while dropping the overall STRI. The likelihood ratio tests, which test the restricted models presented before against these unrestricted models, show in all cases except intra-EEA FDI projects that the unrestricted models outperform the restricted models and that the assumption of equal regression coefficients for the three sub-indices must be rejected. With respect to the effects of the usual gravity variables, there are hardly any changes in the unrestricted estimations, so that we can focus on the discussion of the results for the STRI sub-indices.

In computer services, intra-EEA restrictions on foreign entry and on the movement of people are largely non-existent. Only Denmark, Germany, Italy and Latvia have a small index score of 0.016 for intra-EEA restrictions on foreign entry in 2014, and only Germany, Italy and Latvia from 2015 onwards. For intra-EEA restrictions on the movement of people, the index score is always zero. This should always be taken into account in the following interpretation of the estimation results.

In models (5) and (6), which are based on the entire sample, the restrictions on foreign entry have a highly significant negative impact on the number of FDI projects in computer services. Focussing on the estimated coefficients of model (6) (as again the EEA dummy variable in model (5) is not significantly different from zero), an increase in 0.01 index points in this type of restriction leads to a 7.6% reduction in the expected number of FDI projects. Since the mean value of the non-PTA STRI in 2020 is 0.07 and the intra-EEA index value in 2020 is zero with the just mentioned three exceptions, the EEA trade regime can be associated with an increase in the expected number of FDI projects by 43%. Furthermore, restrictions on the movement of people have no significant effect on the number of FDI projects in these two models. However, the other restrictions have a significant negative effect. Based on model (6), an increase in these restrictions by 0.01 index points implies a decrease in the expected number of FDI projects by 7.4%.

In model (7), which is based on the sub-sample of intra-EEA country pairs, only the restrictions on foreign entry and the other restrictions can be included since, as mentioned before, the intra-EEA restrictions on the movement of people are always zero. As expected, there is no significant effect of the very small number of non-zero entry restriction indices. In contrast, the other intra-EEA restrictions on trade in services have a highly significant negative impact on the number of FDI projects. Actually, the other intra-EEA restrictions with a mean of 0.034 in 2020 dominate the total intra-EEA STRI, which shows in 2020 an only slightly larger mean of 0.036 for the 23 available EEA countries. For a hypothetical increase of 0.002 in this sub-index (as done above for the total intra-EEA STRI), the expected number of FDI projects would decrease by 2.9%.

The results of model (8), which is based on the subsample of country pairs with at least one non-EEA member, are again very similar to the results for the whole sample (just as model (4) vis-à-vis (2)). Only the point estimate of the coefficient for the other restrictions is slightly lower than that for the whole sample.

As mentioned in Section 4, as a robustness check we also estimated all eight models with the bilateral investment *volumes* associated with the new FDI projects (as estimated in the fDi Markets

database). Following the literature, the Poisson pseudo maximum likelihood (PPML) estimator was used for this purpose. Table A3 shows the detailed results of this exercise. Although the investment volumes in the fDi Markets database are often just rough estimates, in the case of computer services the standard gravity model variables result to have similar coefficient estimates as in the models for the number of FDI projects. At first glance, it is surprising that the EEA dummy variable shows a highly significant negative influence in model (1) with the STRI for all FDI projects and in model (5) with the sub-indices for all FDI projects. This could be a consequence of the fact that the intensive margin of FDI projects (i.e. the average investment volume per project) is much smaller for intra-EEA projects (6.8 million euros per project) than for the other FDI projects (15.4 million euros per project).

With regard to service trade restrictions, the estimates for investment volumes essentially confirm the negative effects. The composite STRI has a significant negative impact on all FDI projects as well as on the non-intra-EEA FDI projects. However, since the EEA dummy turned out to be significant in model (1), but it is not included in our models (2) and (3), the composite STRI is not significant in these models. However, this finding may be due to the very different intensive margins for intra-EEA and non-intra-EEA FDI projects just mentioned. For the models using the STRI sub-indices, the negative impact of foreign entry restrictions is confirmed. It is now also significant for model (7) of the intra-EEA FDI projects. Only the other restrictions' negative impact on the intra-EEA FDI projects is not confirmed by the robustness check.

5.2 | Accounting services

Table 3 shows the overall results obtained for the accounting services. Likelihood-ratio tests confirm that the fixed source country effects are highly significant different from zero in all eight models, while the fixed time effects are at least at the 5% level significantly different from zero in six out of all eight models. As we have only 20 source countries that can be used for the analysis of accounting services, the total sample comprises only 5880 observations (840 country pairs for the period from 2014 to 2020). It can be divided into an Intra-EEA subsample of 2149 observations (307 EEA country pairs for the period from 2014 to 2020) and a further subsample of 533 country pairs with at least one non-EEA member (3731 observations for the period from 2014 to 2020).²³

Leaving aside the standard gravity variables,²⁴ the overall STRI shows a highly significant negative effect in all four restricted models, with substantially higher coefficient estimates for the intra-EEA sub-sample (model (3)) than for the sub-sample of the other country pairs (model (4)). However, the mean of the STRI in the first sub-sample is much lower than that of the second sub-sample (0.084 vs. 0.351). Assuming for the latter a reduction in the STRI by 0.01 index points, the expected value of the number of FDI projects would increase by 1.1%.²⁵ Assuming a similar proportional reduction in the STRI by 0.0025 index points for the intra-EEA sub-sample would imply an increase in the expected number of FDI projects by 3.5%.

In the four unrestricted models (5)–(8), in which the three sub-indices are included instead of the composite STRI, almost none of the STRI sub-indices show a significant impact on the number of

²³As mentioned in Section 4, a given source country is only used in the estimation if it has at least one non-zero observation for the number of FDI projects. Otherwise, the dependent variable would be perfectly explained by the corresponding fixed source country effect.

²⁴See Jungmittag and Marschinski (2020) for a more complete discussion of the gravity-related coefficients.

²⁵For the calculation of the effects of the STRI and other variables on the expected number of FDI projects, we refer to footnote 21 in the section on computer services.



TABLE 3 STRI and accounting services FDI projects: Results from negative binomial estimations

	All FDI projects, total STRI	Intra- EEA FDI projects, total STRI	Other FDI projects, total STRI	All FDI projects, STRI sub-indices	Intra-EEA FDI projects, STRI sub-indices	Other FDI projects, STRI sub-indices		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
log(GDPPC_destination)	1.255*** (0.286)	1.181*** (0.270)	1.3431* (0.796)	1.623*** (0.303)	1.317*** (0.343)	1.296*** (0.349)	1.420* (0.771)	1.532*** (0.353)
log(pop_destination)	0.683*** (0.074)	0.669*** (0.073)	0.496*** (0.166)	0.673*** (0.079)	0.684*** (0.074)	0.675*** (0.078)	0.470*** (0.158)	0.673*** (0.076)
log(distance)	-0.437* (0.235)	-0.552*** (0.152)	-0.735** (0.317)	-0.108 (0.288)	-0.449** (0.219)	-0.514*** (0.169)	-0.744** (0.299)	-0.069 (0.268)
Contiguity	-0.675 (0.434)	-0.746* (0.387)	-0.302 (0.501)	0.035 (1.024)	-0.650 (0.411)	-0.684* (0.391)	-0.484 (0.531)	0.089 (0.987)
Common language	1.229*** (0.250)	1.185*** (0.244)	0.320 (0.713)	1.446*** (0.219)	1.222*** (0.275)	1.186*** (0.273)	0.530 (0.795)	1.481*** (0.248)
Colony	0.934*** (0.250)	0.914*** (0.246)	0.987* (0.563)	0.957*** (0.281)	0.899*** (0.275)	0.889*** (0.265)	1.046* (0.566)	0.968*** (0.286)
log(cultural_dissimilarity)	0.155* (0.084)	0.148* (0.083)	0.213** (0.088)	0.184* (0.095)	0.175* (0.104)	0.173* (0.100)	0.282** (0.109)	0.174 (0.108)
Factor dissimilarity	0.441* (0.227)	0.450* (0.249)	-1.209 (0.899)	0.805** (0.325)	0.504* (0.264)	0.516* (0.269)	-1.492 (0.940)	0.719** (0.354)
EEA membership	0.412 (0.377)	- (0.377)	- (0.377)	- (0.377)	0.259 (0.453)	- (0.453)	- (0.453)	- (0.453)
STRI	-1.290** (0.512)	-1.537*** (0.583)	-14.322** (6.432)	-1.114* (0.631)	- (0.631)	- (0.631)	- (0.631)	- (0.631)

(Continues)

TABLE 3 (Continued)

	All FDI projects, total STRI (1)	(2)	Intra- EEA FDI projects, total STRI (3)	Other FDI projects, total STRI (4)	All FDI projects, STRI sub-indices (5)	(6)	Intra-EEA FDI projects, STRI sub-indices (7)	Other FDI projects, STRI sub-indices (8)
Restrictions on foreign entry					0.349 (2.676)	0.677 (2.423)	-2.841 (13.183)	-2.263 (1.744)
Restrictions on the movement of people					-1.583 (2.437)	-2.173 (2.611)	-92.664** (45.330)	-0.300 (2.323)
Other restrictions					-6.397 (7.822)	-7.143 (6.715)	-2.713 (12.469)	1.351 (4.533)
Observations	5880	5880	2149	3731	5880	5880	2149	3731
log likelihood	-815.1	-815.9	-340.4	-448.4	-814.4	-814.6	-336.8	-448.1
LR χ^2 source country fixed effects	447.8***	449.1***	79.3***	380.1***	446.9***	450.7***	76.8***	380.5***
LR χ^2 year fixed effects	13.8**	13.6**	7.1	16.9***	14.3**	14.3**	7.7	16.4**
LR χ^2 same coefficients for the sub-indices	1.5	2.6	7.4**	0.5	See model (1)	See model (2)	See model (3)	See model (4)

Note: The dependent variable in all models is new FDI projects (FDI_{ijt}). Estimation is negative binomial with fixed effects. Two-way clustered (source country and destination country) standard errors appear in parentheses below the parameter estimates. ***, ** and *Statistical significance at the 1%, 5% and 10% levels, respectively.

**TABLE 4** Correlation matrices for the accounting services' STRI and its sub-indices

	Foreign entry	Movement of people	Other	Foreign entry	Movement of people	Other
	All FDI projects			Intra-EEA FDI projects		
STRI	0.966	0.931	0.931	0.701	0.634	0.746
Foreign entry		0.816	0.869		0.318	0.115
Movement of people			0.840			0.319
	Other FDI projects					
STRI				0.964	0.895	0.909
Foreign entry					0.759	0.850
Movement of people						0.765

FDI projects. The likelihood-ratio tests also show that the restricted models (1), (2) and (4) have the same explanatory power as the unrestricted models (5), (6) and (8). The corresponding null hypothesis cannot be rejected in any case. It can therefore be assumed that the three sub-indices affect the number of FDI projects with the same coefficient. The reason for this is the high positive correlation between the three sub-indices and, consequently, between each sub-index and the total STRI (see Table 4). Only for the number of intra-EEA FDI projects (models (3) and (7)) the situation is somewhat different. Here the null hypothesis of equal regression coefficients for the three sub-indices has to be rejected and in model (7) it turns out that only the restrictions on the movement of people have a significant negative influence.

The robustness check by means of additional estimations for the investment *volumes* shows unexpected and significantly different results with regard to the services trade restrictions than the estimates for the number of FDI projects (Table A4). According to these estimates, the composite STRI has a positive impact on the volumes of both total FDI projects and non-intra-EEA FDI projects. In the sub-index estimates, foreign entry restrictions consistently have a positive impact on investment volumes. In contrast, the other restrictions now have a highly significant negative influence on the volumes of both total and non-intra-EEA FDI projects. However, after a closer inspection of the correlation between the number of bilateral FDI projects and the associated investment volumes, this result becomes understandable. The scatterplot in Figure 2 shows that for the 217 year-country pairs with at least one FDI project, there is hardly any correlation between the number of FDI projects and the associated investment volumes. Equation (6) confirms that there is only a hint of significance for a positive correlation. This disappears completely when the two outliers (!) with investment volumes over 1 billion euros are excluded from the estimation (Equation 7).

$$\text{investment} = \underset{(22.9)}{-18.5} + \underset{(10.5)}{36.7^*} \text{projects} \quad (6)$$

$n = 217$, $R\text{-squared} = .054$, standard errors in parentheses

$$\text{investment} = \underset{(8.77)}{15.6} + \underset{(4.16)}{6.14^*} \text{projects} \quad (7)$$

$n = 215$, $R\text{-squared} = .010$, standard errors in parentheses

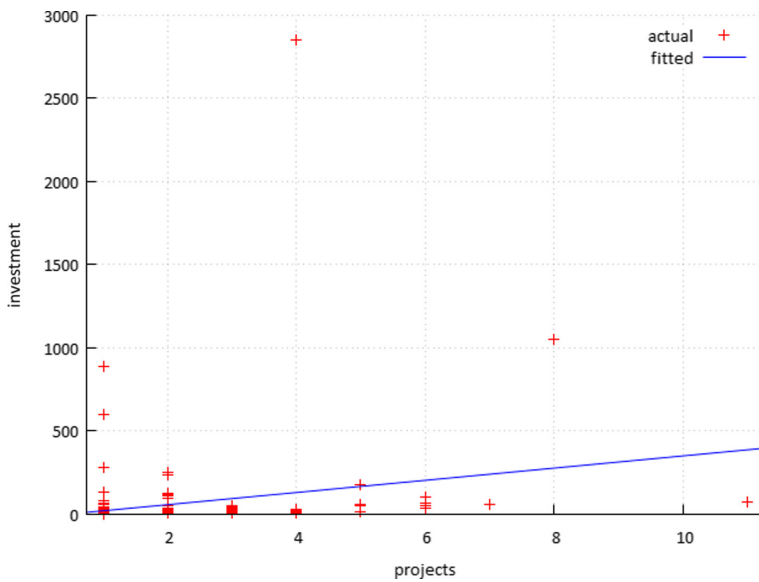


FIGURE 2 Correlation between numbers of FDI projects and associated investment volumes (source: fDi markets database, own calculations). [Colour figure can be viewed at wileyonlinelibrary.com]

5.3 | Legal services

Table 5 presents the overall results for the legal services. We have 31 source countries with sufficient data in our sample for legal services, and the total sample comprises 9114 observations (1302 country pairs for the period from 2014 to 2020). It can be divided into an intra-EEA subsample of 2611 observations (373 EEA country pairs for the period from 2014 to 2020) and a further subsample of 929 country pairs with at least one non-EEA member (6503 observations for the period from 2014 to 2020). Likelihood-ratio tests confirm that both kinds of fixed effects are different from zero with high significance in all eight models.

For legal services, the overall STRI has no significant impact in the restricted models (1), (2) and (4) for all FDI projects and non-intra-EEA FDI projects.²⁴ For intra-EEA FDI projects, there is a significant negative effect of these restrictions in model (3). In the unrestricted models, in which the three sub-indices are included, the situation is similar. Only in the unrestricted model (7), which is based on the subsample of intra-EEA FDI projects, restrictions on foreign entry have a highly significant negative impact. If these restrictions, which have a mean value of 0.044 across the 23 EEA members, were reduced by 0.002 index points, the expected number of intra-EEA FDI projects would increase by 5.4%.²⁵

In fact, the low influence of the STRI on the number of FDI projects in legal services is not that surprising. The two dominant source countries are the USA with 276 FDI projects and the UK with 222 FDI projects, out of a total of 675 FDI projects in the period from 2014 to 2020. These two countries have FDI projects in almost all destination countries considered and, as Figure 3 shows, always dominate in terms of the number of projects. All other source countries only have a very small number of FDI projects. China has 21, Spain 18, France 14, and Australia and Switzerland each have 11 FDI projects in the period under review, and less than 10 for all other source countries. For the latter countries, the service trade restrictions of the recipient countries might have a negative influence, but they hardly matter in the area of internationalisation of legal services, which seems to



TABLE 5 STRI and legal services FDI projects: Results from negative binomial estimations

	All FDI projects, total STRI		Intra-EEA FDI projects, total STRI		Other FDI projects, total STRI		Intra-EEA FDI projects, STRI sub-indices		Other FDI projects, STRI sub-indices	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		
log(GDPPC_destination)	1.772*** (0.365)	1.755*** (0.350)	1.126* (0.597)	1.618*** (0.401)	1.776*** (0.383)	1.772*** (0.375)	0.933* (0.536)	1.592*** (0.417)		
log(pop_destination)	0.778*** (0.065)	0.772*** (0.064)	1.106*** (0.257)	0.768*** (0.071)	0.768*** (0.063)	0.764*** (0.059)	1.194*** (0.285)	0.752*** (0.064)		
log(distance)	-0.331*** (0.121)	-0.376*** (0.084)	-1.215*** (0.197)	-0.111 (0.184)	-0.348*** (0.121)	-0.371*** (0.076)	-1.438*** (0.149)	-0.130 (0.189)		
Contiguity	-0.022 (0.187)	-0.046 (0.192)	0.137*** (0.039)	0.149 (0.362)	-0.020 (0.160)	-0.031 (0.172)	0.047 (0.197)	0.166 (0.341)		
Common language	0.428 (0.389)	0.409 (0.401)	-0.141 (1.167)	0.584* (0.316)	0.399 (0.421)	0.386 (0.422)	0.174 (0.922)	0.573* (0.326)		
Colony	1.052*** (0.158)	1.044*** (0.160)	0.476 (0.687)	1.034*** (0.014)	1.061*** (0.182)	1.064*** (0.180)	0.685 (0.533)	1.046*** (0.075)		
log(cultural_dissimilarity)	-0.194 (0.124)	-0.197 (0.125)	-0.532* (0.281)	-0.124 (0.105)	-0.195 (0.120)	-0.195 (0.120)	-0.407 (0.279)	-0.124 (0.108)		
Factor dissimilarity	0.705** (0.309)	0.710** (0.313)	3.984*** (1.140)	0.443** (0.217)	0.719** (0.296)	0.719* (0.297)	4.500*** (1.397)	0.475** (0.210)		
EEA	0.186 (0.333)	-	-	-	0.100 (0.437)	-	-	-		
STRI	-0.953 (0.818)	-1.056 (0.748)	-17.666*** (6.368)	-0.891 (0.803)	-	-	-	-		

(Continues)

TABLE 5 (Continued)

	All FDI projects, total STRI (1)	(2)	Intra-EEA FDI projects, total STRI (3)	Other FDI projects, total STRI (4)	All FDI projects, STRI sub-indices (5)	(6)	Intra-EEA FDI projects, STRI sub-indices (7)	Other FDI projects, STRI sub-indices (8)
Restrictions on foreign entry								
					−0.350 (1.248)	−0.273 (1.206)	−26.274*** (8.469)	−0.532 (1.065)
Restrictions on the movement of people					−0.782 (2.280)	−1.006 (1.760)	−45.894 (59.494)	0.083 (1.414)
Other restrictions					−5.491 (5.405)	−5.561 (5.153)	1.536 (11.203)	−7.599 (8.054)
Observations	9114	9114	2611	6503	9114	9114	2611	6503
log likelihood	−1208.3	−1208.6	−306.3	−866.3	−1207.2	−1207.3	−301.9	−864.7
LR χ^2 source country fixed effects	921.9***	922.2***	214.6***	720.2***	923.5***	924.7***	219.2***	721.4***
LR χ^2 year fixed effects	13.9**	13.7**	11.3*	14.0**	14.1**	14.1**	14.2**	14.3**
LR χ^2 same coefficients for the sub-indices	2.2	2.6	8.8**	3.1	See model (1)	See model (2)	See model (3)	See model (4)

Note: The dependent variable in all models is new FDI projects (FDI_{it}). Estimation is negative binomial with fixed effects. Two-way clustered (source country and destination country) standard errors appear in parentheses beneath the parameter estimates. ***, ** and *Statistical significance at the 1%, 5% and 10% levels, respectively.

be largely driven by a push from the two large global players USA and UK, and less by pull factors associated with the destination country.

The estimates for the investment volumes carried out as robustness check completely confirm the results of the estimates for the number of projects (Table A5). In addition, for the non-restricted models, they show that the residual other service trade restrictions have a significant negative impact on FDI investment volumes in all four models.

5.4 | Architecture and engineering services

Table 6 shows the results for the architecture and engineering services. With 34 source countries available for these services and 43 destination countries, the total sample comprises 10,003 observations (1429 country pairs for the period from 2014 to 2020). It can be subdivided into an Intra-EEA subsample of 3080 observations (440 EEA country pairs for the period from 2014 to 2020) and a further subsample of 989 country pairs with at least one country not being a EEA member (6923 observations for the period from 2014 to 2020). Likelihood-ratio tests confirm that the fixed source country effects are highly significantly different from zero in all eight models, while the fixed time effects are not statistically significant at the usual error levels.

As was the case in the other business services, the mere fact that both countries of a country pair are members of the EEA has no effect on the number of FDI projects in architecture and engineering services.²⁴ Rather, it seems that the lower level of service trade restrictions leads to more FDI projects. On the one hand, this is suggested by the fact that the estimated STRI coefficient from model (1) hardly changes if the EEA dummy variable is omitted in model (2). Only the statistical significance of this coefficient increases. The unconditional expected value for the number of FDI projects for

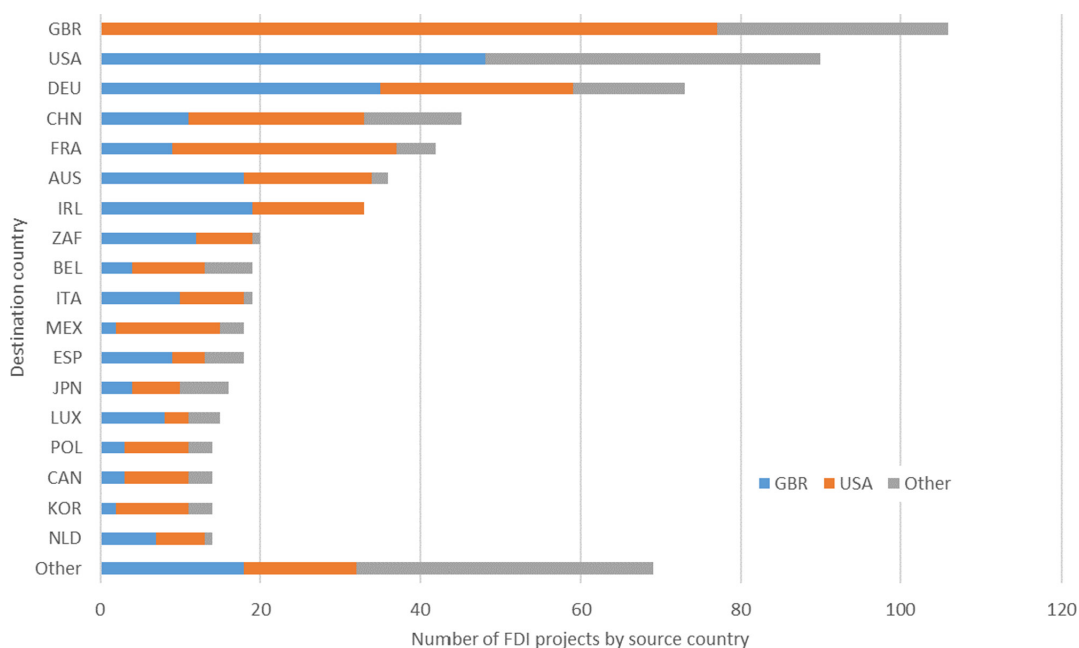


FIGURE 3 Number of legal services FDI projects by source and destination country, aggregated over the period from 2014 to 2020 (*source*: fDi markets database, own calculations). [Colour figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com)]

TABLE 6 STRI and architecture & engineering services FDI projects: Results from negative binomial estimations

	All FDI projects, total STRI	Intra-EEA FDI projects, total STRI	Other FDI projects, total STRI	All FDI projects, STRI sub-indices	Intra-EEA FDI projects, STRI sub-indices	Other FDI projects, STRI sub-indices		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
log(GDPPC_destination)	1.140*** (0.305)	1.157*** (0.291)	1.987*** (0.429)	1.164*** (0.291)	1.377*** (0.386)	1.394*** (0.378)	2.029*** (0.444)	1.420*** (0.395)
log(pop_destination)	0.790*** (0.092)	0.793*** (0.091)	1.180*** (0.168)	0.671*** (0.061)	0.765*** (0.090)	0.771*** (0.086)	1.045*** (0.161)	0.649*** (0.063)
log(distance)	-0.350 (0.222)	-0.327 (0.208)	-0.820*** (0.293)	-0.080 (0.324)	-0.380*** (0.180)	-0.347*** (0.176)	-0.798*** (0.267)	-0.147 (0.288)
Contiguity	0.180 (0.415)	0.190 (0.405)	0.126 (0.182)	0.694 (0.631)	0.177 (0.365)	0.193 (0.361)	0.198 (0.206)	0.625 (0.594)
Common language	1.226*** (0.230)	1.231*** (0.238)	1.119** (0.450)	1.283*** (0.294)	1.197*** (0.241)	1.206*** (0.247)	1.255*** (0.430)	1.240*** (0.297)
Colony	0.476*** (0.106)	0.481*** (0.100)	-0.531 (0.534)	0.560*** (0.093)	0.456*** (0.109)	0.459*** (0.104)	-0.893 (0.708)	0.594*** (0.095)
log(cultural_dissimilarity)	-0.071 (0.073)	-0.070 (0.073)	-0.148*** (0.049)	-0.067 (0.105)	-0.063 (0.068)	-0.062 (0.068)	-0.171** (0.068)	-0.059 (0.099)
Factor_dissimilarity	0.298 (0.301)	0.288 (0.306)	1.634** (0.679)	0.395 (0.316)	0.256 (0.295)	0.244 (0.302)	1.266* (0.717)	0.404 (0.294)
EEA	-0.124 (0.432)	- (0.432)	- (0.432)	- (0.432)	-0.176 (0.499)	- (0.499)	- (0.499)	- (0.499)
STRI	-4.365** (2.090)	-4.054*** (1.515)	-11.314*** (2.936)	-3.302* (1.856)	- (0.499)	- (0.499)	- (0.499)	- (0.499)
Restrictions on foreign entry					3.299 (6.545)	3.547 (6.565)	1.256 (20.009)	2.926 (6.020)



TABLE 6 (Continued)

	All FDI projects, total STRI (1)	Intra-EEA FDI projects, total STRI (3)	Other FDI projects, total STRI (4)	All FDI projects, STRI sub-indices (5)	Intra-EEA FDI projects, STRI sub-indices (7)	Other FDI projects, STRI sub-indices (8)
Restrictions on the movement of people						
				−3.445 (2.918)	−2.872 (2.596)	−4.596* (2.471)
Other restrictions				−11.851** (5.261)	−11.559** (4.920)	−30.884** (13.191)
Observations	10,003	10,003	6923	10,003	3080	6923
log likelihood	−1596.2	−1596.3	−549.1	−1586.7	−1586.9	−979.5
LR χ^2 source country fixed effects	532.8***	532.6***	169.7***	530.3***	529.9***	368.1***
LR χ^2 year fixed effects	3.7	3.7	5.3	3.0	3.0	7.1
LR χ^2 same coefficients for the sub-indices	19.1***	18.8***	8.7**	See model (1)	See model (2)	See model (3)
			7.1**	See model (1)	See model (2)	See model (4)

Note: The dependent variable in all models is new FDI projects (FDI_{it}). Estimation is negative binomial with fixed effects. Two-way clustered (source country and destination country) standard errors appear in parentheses below the parameter estimates. ***, ** and *Statistical significance at the 1%, 5% and 10% levels, respectively.

an intra-EEA country pair is 0.078, while for a country pair where only the destination but not the source country is an EEA member, it is only 0.043. For the former country pairs, the mean value of the STRI in the destination country is 0.052, for the latter 0.247. This constellation, or more generally the difference between the two subsamples, seems to be mainly responsible for the significance of the STRI coefficient in the overall sample. On the other hand, a robustness check by estimating model (1) with the original non-PTA STRI as explanatory variable for all country pairs, regardless of whether it is an intra-EEA or a non-intra-EEA relationship, confirms this conclusion. The result (model (4) in Table A2) shows that the coefficient on the STRI remains almost unchanged, but the EEA dummy variable now exerts a significant positive influence. The coefficient of the EEA dummy variable implies that for EEA country pairs the expected number of FDI projects is 100% larger than for other country pairs.

The situation is different for the two subsamples used in models (3) and (4), and a different interpretation is appropriate for the estimates of the STRI coefficients. In model (3) based on the subsample for the intra-EEA FDI projects, the intra-EEA STRI has a strong negative impact. Thus, although the mean intra-EEA STRI is quite low, it still varies so much that EEA members with a high intra-EEA STRI *ceteris paribus* seem to attract less intra-EEA FDI projects than EEA members with lower index values. By contrast, in model (4) based on the sub-sample for FDI projects with at least one non-EEA country and using the standard STRI, the STRI has only at the 10% level a significant impact on the number of these FDI projects, despite its overall higher level. Therefore, the STRI does not seem to vary to such an extent as to have a strong impact within this sub-sample. Actually, the minimum of the intra-EEA STRI of the first sub-sample is 0.013, the maximum is 0.118 (thus nine times the minimum) and the coefficient of variation is 0.586, while in the second sub-sample the minimum of the non-PTA STRI is 0.118, the maximum is 0.556 (only five times the minimum), and the coefficient of variation is 0.359.

In the unrestricted models (5)–(8), in which all three sub-indices of the STRI are included, the estimations indicate that the residual other service trade restrictions have a significant negative impact on the number of FDI projects for all FDI projects and for intra-EEA FDI projects. Non-intra EEA FDI projects are only negatively affected by restrictions on the movement of people. For all four model variants, the likelihood ratio tests show that the null hypothesis must be rejected, implying that the restriction of the models (1)–(4) to have the same coefficients for all three sub-indices of the STRI leads to a significant reduction in the explanatory power.

The estimates for the investment volumes of bilateral FDI projects, which serve as a robustness check, show a highly significant negative impact of the composite STRI in all four restricted models, just as the estimates for the number of FDI projects (Table A6). The magnitude of the coefficient estimates is also very similar. In the case of the unrestricted estimates, the residual other services trade restrictions are now not only significant for all FDI projects and for intra-EEA FDI projects, but also exert a significant negative influence on non-intra-EEA FDI projects. Unexpectedly, however, foreign entry restrictions seem to have a significant positive impact on investment volumes in these estimates for models (5) and (6) for all FDI projects and for model (8) for the non-intra-EEA FDI projects.

6 | POTENTIAL IMPACTS OF HYPOTHETICAL POLICY REFORMS

To illustrate the potential impact of a policy-driven ambitious reduction in regulatory barriers on FDI flows, we here present hypothetical simulations of the effects from a 50% reduction in the service trade restrictions on the expected number of FDI projects. Regarding intra-EEA FDI projects, we used the unrestricted models (7) for the computer services, legal services as well as architecture and

engineering services, while—based on the discussion in Section 5.2—we used the restricted model (3) for accounting services. Since for computer services as well as architecture and engineering services only the ‘other’ service trade restrictions are relevant, we assumed that each EEA member would eliminate 50% of these restrictions (year 2020 level) vis-à-vis other EEA members. For legal services, intra-EEA restrictions on foreign entry appear to be the only category for which a policy-led substantial reduction should have a significant impact on the number of FDI projects. We therefore calculated the impact on the expected numbers of FDI projects from a 50% reduction in the 2020 scores of these restrictions. For accounting services, the unrestricted models do not allow meaningful allocations of the effects of the individual sub-indices of the STRI, and thus we only use model (3) to assess the effects of a policy reform consisting of a 50% reduction in the total intra-EEA STRI in 2020.

Figure 4 shows the results of these exercises, with countries ordered (arbitrarily) by the magnitude of the percentage increase in the expected number of FDI projects in computer services. For these services, there are six groups of EEA countries. Italy and Austria, as the two countries with the strongest other restrictions on trade in services, would experience the highest growth with increases in the expected number of intra-EEA FDI projects of 94% and 77%. As a second group, Belgium, Luxembourg and Spain would show increases in 58%. The third group includes five countries (Czech Republic, Hungary, Germany, Poland and Slovakia) with slightly above average intra-EEA restrictions, which would achieve increases from 38% to 41%. The fourth group with Finland, Ireland, Latvia and Portugal is slightly below average and would record increases between 23% and 26%, while the mean expected percentage increase across all the 23 EEA members would be 30%. The fifth group comprises Denmark, Estonia, France, Greece, Lithuania, the Netherlands, Norway and Sweden, for which we calculate that the expected number of intra-EEA FDI projects would increase by 12%. Finally, the United Kingdom had no intra-EEA restrictions on trade in computer services in 2020, so there is no scope for reform here.

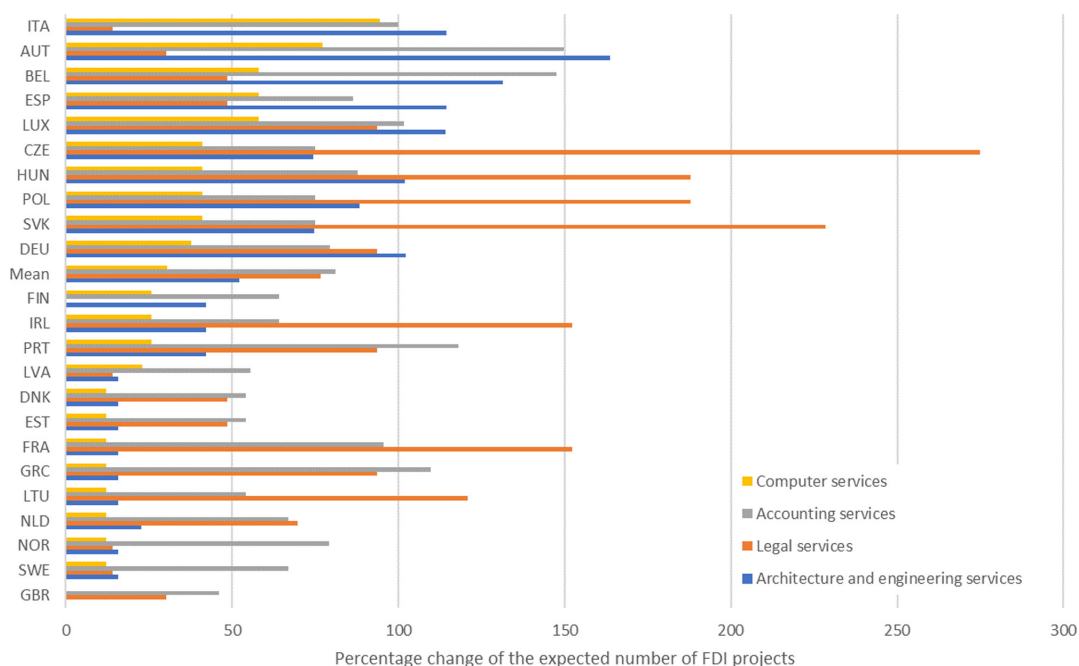


FIGURE 4 Effects of reducing business services' intra-EEA STRI by 50%. [Colour figure can be viewed at wileyonlinelibrary.com]

For accounting services, Austria, Belgium and, with some distance, Portugal and Greece would experience the largest percentage increases in the expected number of intra-EEA FDI projects from a 50% reduction in the intra-EEA STRI, gaining between 150% and 110%. The remaining countries' expected increases fall relatively continuously from 102% for Luxembourg to 64% for Finland. Denmark, Estonia, Latvia and Lithuania would expect an increase in about 54%–56%, while for the UK the percentage increase in the expected number of FDI projects in accounting services is 46%. The mean percentage increase across all 23 intra-EEA destination countries is 81%.

With regard to legal services, some Central and Eastern European countries would experience large percentage increases in the expected number of intra-EEA FDI projects received by them (from 188% to 275%). However, also for the other countries, which have scores above the mean for these restrictions, the potential percentage increases are considerable. They range from 94% for Germany to 152% for France and Ireland. The average expected percentage increase across all the 23 EEA members would be 77%. At the lower end of the possible increases are Italy, Latvia, Norway and Sweden with 14% each and Finland with 0%.

For architecture and engineering services, the greatest effects from a 50% reduction in intra-EEA other restrictions would be experienced by Austria and Belgium with a 164% and 131%, respectively, increase in the expected number of FDI projects. Italy, Spain and Luxembourg would follow with 114% each. The expected increase would be above average for a further five countries, from Germany with 102% to the Czech Republic with 74%. The average increase in the expected number of intra-EEA FDI projects would be 52%. Below average increases could be realised for three groups of countries. Finland, Ireland and Portugal could achieve an increase in 42%, the Netherlands an increase in 23%. Eight other EEA countries could still experience an increase in the expected number of intra-EEA FDI projects of 16%. Finally, United Kingdom would not achieve an improvement, as it has already reached zero values for other services trade restrictions in architectural and engineering services.

For those FDI projects where at least one country is not an EEA member ('other FDI projects'), we calculated the impact of 50% reduction in the year 2020 conventional (non-PTA) STRI on the expected number of non-intra EEA FDI projects in each of the 43 destination countries. For computer services, we used model (8), assuming that each of the three sub-indices is 50% lower (thus also the total STRI is 50% lower) and then aggregated the three effects into the total change in the expected number of non-intra EEA FDI projects. For architecture and engineering services, the assessment of the impact on the FDI projects is also based on model (8), but only the statistically significant non-PTA restrictions on the movement of people were reduced hypothetically by 50%. For accounting services, we used the restricted model (4) to calculate directly the impact of this decrease in the compound STRI, since the unrestricted models do not allow meaningful allocations of the effects of the individual sub-indices of the STRI. For legal services, it is not meaningful to assess the effects of a reduction in the STRI, because neither the total STRI nor its sub-indices proved to have an influence on the number of non-intra EEA FDI projects.

Figure 5 shows the result of these impact illustrations, with countries again (arbitrarily) ordered by the magnitude of the percentage increase in the expected number of FDI projects in computer services. For these services, it is noticeable that the countries cannot be divided into groups as was the case with the intra-EEA restrictions (Figure 4), but that there is a gradual decline in the impacts, ranging from Indonesia, which with 181% would achieve the maximum increase in expected FDI projects, to France, which with 30% would see the smallest increase. On average across all 43 destination countries, the expected number of non-intra-EEA FDI projects would be expected to increase by 71%. For accounting services, the possible percentage increases have a considerable range. South Korea, with 75%, would achieve the largest increases, followed by India, China and Indonesia with increases between 50% and 57%. Thereafter, the possible increases fall relatively continuously from

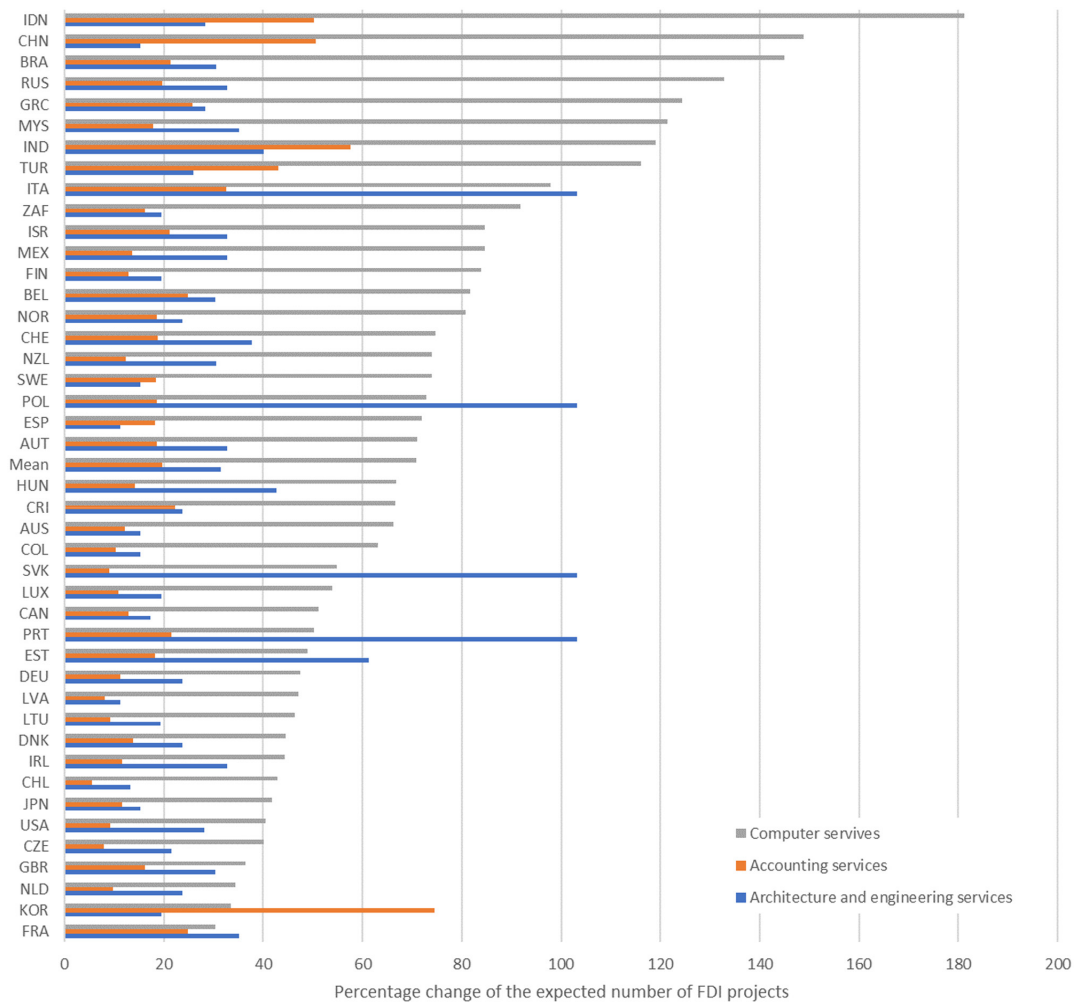


FIGURE 5 Effects of reducing the standard (non-PTA) business services' STRI by 50%. [Colour figure can be viewed at wileyonlinelibrary.com]

43% for Turkey to 5% for Chile. The mean percentage increase across all 43 destination countries is 20%. Finally, for architecture and engineering services, the greatest effects from a 50% reduction in non-PTA restrictions on the movement of people would be realised in Italy, Poland, Portugal and Slovakia, each with a 103% increase in the expected number of FDI. Then the percentage increases fall continuously from 61% for Estonia to the mean value of 31% and down to the minimum of 11% for Latvia.

7 | DISCUSSION AND CONCLUSIONS

This paper investigates empirically the relationship between sector-specific service trade restrictions and the numbers of bilateral greenfield FDI projects in four business services sectors. It employs the OECD STRI as well as its sub-indices to gauge the former and project-level micro data from the

fDi Markets database for the latter. As main result, we confirm that service trade restrictions represent a significant barrier for greenfield FDI. Leaving out the models with the always non-significant EEA dummy variables, Table 7 summarises the STRI-related coefficients found in the six remaining regression models we estimated.

For three out of four business services, we obtained highly significant evidence of a negative impact, and for legal services the sign of the coefficients was still always negative; however, the impact was only statistically significant for the intra-EEA FDI projects. Furthermore, for three sectors (computer services, legal services and architectural and engineering services) the unrestricted estimates, where an individual coefficient is estimated for three sub-indices of the STRI, are superior to the restricted estimates, where a common coefficient is assumed for all three sub-indexes. This is not the case for accounting services, which we attribute to the very high collinearity between the three sub-indexes found here.

In this respect, our results confirm the finding of Van der Marel and Shepherd (2013) that it is important to consider restrictions targeting the different modes of trade in services separately, since complementarity or substitution between the different modes may vary depending on the sector. Such separate estimations by type of restriction and sector yield indications that are more precise on where policy should reduce restrictions in order to promote new FDI projects as efficiently as possible.

Namely, to increase intra-EEA FDI projects in computer services, the only relevant leverage is to reduce the 'other restrictions' on trade in services, which consist of other discriminatory measures (regulations related to taxes, subsidies and public procurement), missing regulatory transparency (lengthy, costly and complex regulatory procedures to establish and operate a business) and barriers to competition. Here, our estimates imply that a 50% reduction in the mean index value of 0.039 would increase the number of intra-EEA FDI projects by 30%. For the other (non-intra-EEA) FDI projects in computer services, there are two main opportunities. In the case of foreign entry restrictions, a 50% reduction in the mean index value of 0.07 would raise the expected number of FDI projects by 29%, while in the case of other FDI service trade restrictions, a halving of the mean index value of 0.083 would imply a 25% increase in the expected number of FDI projects.

For accounting services, only the restricted estimations can reasonably be used to assess the effects of a reduction in service trade restrictions. If the average intra-EEA STRI index value of 0.083 would be halved, the expected number of intra-EEA FDI projects would increase by 81%. For non-EEA FDI projects, halving the average STRI index value of 0.321 would suggest a 20% increase in the expected number of FDI projects.

For legal services, the composite intra-EEA STRI and—with a larger explanatory power—the intra-EEA restrictions on foreign entry have a significant negative impact on the number of intra-EEA FDI projects, at least in our sample. Halving the mean value of 0.043 of the sub-index of foreign entry restrictions would imply a 77% increase in the expected number of intra-EEA FDI projects. No other restrictions on trade in legal services seem to have a significant impact on the expected number of FDI projects. It is noteworthy that this result is in line with the findings of a simulation study for the USA by Khachaturian and Riker (2019). They calibrate a model for the US market for legal services in 2012 and estimate the impact of an increase in the low US legal services STRI to the OECD average value. The findings suggest that this significant rise in the STRI would have hardly any impact on domestic sales, foreign affiliate sales and cross-border imports (modes 1, 2 and 4) of legal services. A hypothetical increase in all modes 1, 3 and 4 restrictions (STRI sub-indexes) to their international average levels is projected to only raise the US domestic market share by 0.08%, from 99.15% to 99.23%. Consequently, the authors conclude that the competitiveness of the domestic legal services sector reflects quality and cost advantages rather than protection from foreign suppliers.



TABLE 7 Summary of the regression coefficients for the STRI and its three sub-indices. Recall that there is no value for restrictions on free movement of people in intra-EEA projects of computer services because these restrictions are zero for all countries.

	Computer services			Accounting services		
	All FDI projects	Intra-EEA FDI projects	Other FDI projects	All FDI projects	Intra-EEA FDI projects	Other FDI projects
STRI composite	−4.93***	−14.51***	−5.27**	−1.54***	−14.32**	−1.11**
Restrictions on foreign entry	−7.93***	−11.52	−7.20***	0.68	−2.84	−2.26
Restrictions on the movement of people	0.46		−1.81	−2.17	−92.66**	−0.30
Other restrictions	7.71**	−14.95***	−5.27*	−7.14	−2.71	1.35
	Legal services			Architecture and engineering services		
	All FDI projects	Intra-EEA FDI projects	Other FDI projects	All FDI projects	Intra-EEA FDI projects	Other FDI projects
STRI composite	−1.06	−17.67***	−0.89	−4.05***	−11.31***	−3.30*
Restrictions on foreign entry	−0.27	−26.27***	−0.53	3.58	1.26	2.93
Restrictions on the movement of people	−1.01	−45.89	0.08	−2.87	47.07	−4.60*
Other restrictions	−5.56	1.54	−7.60	−11.56**	−30.88**	−6.67

Note: ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

A similar argument may apply to Western European countries. Unfortunately, for the EEA countries in our analysis, based on Eurostat's FATS database, the turnover shares of foreign affiliates can be calculated only for the combined sector 'legal and accounting activities'. In 2017, the shares of foreign affiliates' turnover ranged from 1% in Italy to 7.4% in Ireland.²⁶ The situation is different in Central and Eastern Europe. Here, for the countries in our sample, this combined turnover share of foreign affiliates ranges from 17% in the Czech Republic to 47% in Poland. Relatively high STRI index values do not seem to be an obstacle for these high turnover shares. For example, Poland has a STRI of 1 (completely closed) for legal services and within Central and Eastern Europe the second highest STRI index value of 0.277 for accounting services.

Finally, for architectural and engineering services, our estimates show that the 'other' service trade restrictions have a negative impact on the expected number of intra-EEA FDI projects, while restrictions to the movement of people exert a negative impact on the other FDI projects. If the mean value of the intra-EEA index, which is 0.027, were reduced by 50%, the expected number of intra-EEA FDI projects would increase by 52%. The expected number of other (non-PTA) FDI projects would rise by 31% if the mean value of the sub-index of restrictions to the movement of people, which is 0.119, would be lowered by 50%.

Summarised across the four business services sectors, our estimates show that intra-EEA FDI projects are not affected by restrictions on foreign entry. Rather, attention should be paid to the reduction in the 'other' restrictions on trade in services, and on movement of people for accounting.

²⁶An exception in Western Europe is Sweden with a turnover share of accounting and legal services foreign affiliates of 15%. No data is available for Belgium and Luxembourg.

The exception is legal services, where it seems that there are still restrictions on foreign entry that impede bilateral intra-EEA FDI projects. For those FDI projects involving at least one non-EEA country, only computer service projects show a significant negative impact from restrictions on foreign entry.

Finally, in terms of country-level policy implications, our robust estimation results and back-of-the-envelope simulations suggest that despite the already low level of current restrictions, there still is significant scope for policy reforms aiming to further reduce restrictions. This is the case especially in some EU Member States like Austria, Belgium, Hungary, Italy, Poland and Spain, where the prevailing relatively high level of effective trade restrictions on services offers ample scope for substantial increases in the number of both intra-EEA and other FDI projects in at least three of the four business services sectors.

Due to data availability restrictions, our analysis focuses on mode 3 of trade in services and considers the possible complementarity or substitution between the four different modes of trade in services only by including the relevant sub-indices for each mode. Ideally, the relationships between sales of foreign affiliates, international movement of persons and cross-border trade flows should be analysed in a simultaneous model. However, with the presently available data such an analysis is not feasible. Perhaps noteworthy, the TISMO database of the WTO is a promising step in that direction, but its sectoral disaggregation is still far too coarse to adequately study the effects of sector-specific restrictions.²⁷ Should more disaggregated data become available for the different modes of trade in services, interesting new research opportunities would open up.

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DATA AVAILABILITY STATEMENT

The data used to derive the numbers of bilateral FDI projects that support the findings of this study are available from a commercial provider, fDi Markets database, which is maintained by fDi Intelligence, a division of Financial Times Ltd. Restrictions apply to the availability of these data, which were used under licence for this study. Detailed info available at <https://www.fdimarkets.com>. All other data that support the findings were derived from the following resources available in the public domain: OECD STRI and Intra-EEA STRI, <https://stats.oecd.org/Index.aspx?DataSetCode=STRI>—OECD FDI Regulatory Restrictiveness Indicator, <https://stats.oecd.org/Index.aspx?datasetcode=FDIINDEX>—GeoDist database of CEPPII, http://www.cepii.fr/cepii/en/bdd_modele/presentation.asp?id=6—Hofstede's cultural dimensions, <https://www.hofstede-insights.com/product/compare-countries/>—Population data from Eurostat, <https://ec.europa.eu/eurostat/web/main/data/database>—GDP per capita data from the World Bank, World Development Indicators, <https://databank.worldbank.org/source/world-development-indicators>.

²⁷For a description of this database, see Rueda-Cantuche et al. (2016).



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APPENDIX 1

TABLE A1 Descriptive statistics for the explanatory variables

Variable	Mean	Median	Std. dev.	Min	Max
Computer services (nobs: 12068)					
STRI (index)	0.173	0.173	0.104	0	0.382
Foreign entry (index)	0.052	0.048	0.050	0	0.209
Movement of people (index)	0.049	0.046	0.039	0	0.137
Other restrictions (index)	0.072	0.074	0.037	0	0.145
GDPPC destination (PPP, 2017 USD)	38,300	37,600	19,500	4820	114,000
Population destination (in 1000)	109,000	18,300	280,000	545	1,390,000
Distance (km)	6570	6550	5120	60	19,800
Contiguity (dummy)	0.052	0	0.221	0	1
Common language (dummy)	0.068	0	0.253	0	1
Colony (dummy)	0.035	0	0.183	0	1
Cultural distance (index)	2.030	1.840	1.200	0.016	7.590
Factor dissimilarity (index)	0.613	0.484	0.511	0.000	3.090
EEA (dummy)	0.295	0	0.456	0	1
Accounting services (nobs: 5880)					
STRI (index)	0.253	0.192	0.220	0.053	1
Foreign entry (index)	0.113	0.066	0.114	0.022	0.531
Movement of people (index)	0.090	0.069	0.079	0.010	0.286
Other restrictions (index)	0.051	0.042	0.040	0.000	0.183
GDPPC destination (PPP, 2017 USD)	38,200	37,400	19,400	4820	114,000
Population destination (in 1000)	109,000	18,000	280,000	545	1,390,000
Distance (km)	6070	5880	4990	81	19,600
Contiguity (dummy)	0.061	0	0.239	0	1
Common language (dummy)	0.092	0	0.289	0	1
Colony (dummy)	0.048	0	0.213	0	1
Cultural distance (index)	1.810	1.660	1.100	0.020	7.480
Factor dissimilarity (index)	0.638	0.464	0.569	0.000	3.090
EEA (dummy)	0.365	0	0.482	0	1
Legal services (nobs: 9114)					
STRI (index)	0.296	0.221	0.239	0.015	1
Foreign entry (index)	0.137	0.080	0.134	0	0.503
Movement of people (index)	0.109	0.094	0.089	0	0.336
Other restrictions (index)	0.051	0.045	0.031	0	0.161
GDPPC destination (PPP, 2017 USD)	38,300	37,500	19,400	4820	114,000
Population destination (in 1000)	109,000	18,300	279,000	545	1,390,000
Distance (km)	6420	6320	4910	81	19,800
Contiguity (dummy)	0.052	0	0.222	0	1



TABLE A1 (Continued)

Variable	Mean	Median	Std. dev.	Min	Max
Common language (dummy)	0.075	0	0.264	0	1
Colony (dummy)	0.038	0	0.190	0	1
Cultural distance (index)	2.030	1.840	1.210	0.0204	7.490
Factor dissimilarity (index)	0.640	0.496	0.531	0.000173	3.090
EEA (dummy)	0.286	0	0.452	0	1
Architecture and engineering services (nobs: 10003)					
STRI (index)	0.185	0.186	0.117	0.013	0.556
Foreign entry (index)	0.046	0.034	0.042	0.006	0.196
Movement of people (index)	0.079	0.078	0.067	0	0.309
Other restrictions (index)	0.060	0.059	0.032	0	0.129
GDPPC destination (PPP, 2017 USD)	38,200	37,500	19,400	4820	114,000
Population destination (in 1000)	109,000	18,300	279,000	545	1,390,000
Distance (km)	6240	5920	5120	60	19,600
Contiguity (dummy)	0.058	0	0.234	0	1
Common language (dummy)	0.074	0	0.261	0	1
Colony (dummy)	0.037	0	0.189	0	1
Cultural distance (index)	2.060	1.860	1.240	0.020	7.590
Factor dissimilarity (index)	0.606	0.463	0.522	0.000	3.090
EEA (dummy)	0.308	0	0.462	0	1

Note: All STRI indices and sub-indices refer to the Intra-EEA index values if both countries of a country pair are EEA members and to the index values for non-PTA countries otherwise.

TABLE A 2 Original non-PTA STRI, EEA dummy variable and FDI projects: Results from negative binomial estimations

	Computer services	Accounting services	Legal services	Architecture & engineering services
	(1)	(2)	(3)	(4)
log(GDPPC_destination)	0.609*** (0.187)	1.234*** (0.277)	1.837*** (0.337)	1.041*** (0.286)
log(pop_destination)	0.626*** (0.061)	0.686*** (0.075)	0.775*** (0.065)	0.780*** (0.081)
log(distance)	-0.429*** (0.089)	-0.427* (0.234)	-0.319*** (0.116)	-0.319 (0.211)
Contiguity	-0.161 (0.140)	-0.677 (0.433)	-0.013 (0.201)	0.159 (0.407)
Common language	1.009*** (0.167)	1.227*** (0.256)	0.439 (0.366)	1.251*** (0.222)
Colony	0.789*** (0.180)	0.918*** (0.251)	1.039*** (0.167)	0.460*** (0.097)
log(cultural dissimilarity)	0.151 (0.098)	0.142 (0.087)	0.209* (0.123)	-0.066 (0.073)
Factor dissimilarity	0.410*** (0.126)	0.343 (0.215)	0.699** (0.282)	0.242 (0.305)
EEA membership	0.461** (0.223)	0.676* (0.358)	0.427* (0.249)	0.693** (0.295)
Non-PTA STRI	-6.115*** (1.638)	0.9949* (0.544)	-0.453 (0.573)	-4.524*** (1.557)
Observations	12,068	5880	9114	10,003
log likelihood	-4478.3	-815.9	-1210.6	-1587.1
LR χ^2 source country fixed effects	2386.3***	446.6***	916.9***	533.9***
LR χ^2 year fixed effects	69.3***	13.6**	14.1**	4.0

Note: The dependent variable in all models is new FDI projects (FDI_{ijt}). Estimation is negative binomial with fixed effects. Two-way clustered (source country and destination country) standard errors appear in parentheses below the parameter estimates. ***, ** and *Statistical significance at the 1%, 5% and 10% levels, respectively.



TABLE A 3 STRI and computer services FDI investment volumes: Results from Poisson pseudo-maximum likelihood (PPML) estimations

	All FDI projects, total STRI		Intra-EEA FDI projects, total STRI		Other FDI projects, total STRI		All FDI projects, STRI sub-indices		Intra-EEA FDI projects, STRI sub-indices		Other FDI projects, STRI sub-indices	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
log(GDPPC_destination)	0.416*	0.631***	-0.626	0.456**	0.482**	0.601***	-0.404	0.589***	0.482**	0.601***	-0.404	0.589***
	(0.231)	(0.205)	(0.719)	(0.220)	(0.223)	(0.222)	(0.749)	(0.216)	(0.223)	(0.222)	(0.749)	(0.216)
log(pop_destination)	0.604***	0.636***	0.671***	0.602***	0.605***	0.640***	0.750***	0.596***	0.605***	0.640***	0.750***	0.596***
	(0.062)	(0.062)	(0.141)	(0.062)	(0.063)	(0.061)	(0.157)	(0.060)	(0.063)	(0.061)	(0.157)	(0.060)
log(distance)	-0.519***	-0.335**	-0.439	-0.461***	-0.500***	-0.319**	-0.498	-0.427***	-0.500***	-0.319**	-0.498	-0.427***
	(0.156)	(0.155)	(0.360)	(0.160)	(0.153)	(0.149)	(0.368)	(0.164)	(0.153)	(0.149)	(0.368)	(0.164)
Contiguity	-0.185	-0.181	-0.348**	-0.059	-0.430	-0.204	-0.344**	-0.083	-0.430	-0.204	-0.344**	-0.083
	(0.269)	(0.326)	(0.153)	(0.284)	(0.273)	(0.303)	(0.146)	(0.292)	(0.273)	(0.303)	(0.146)	(0.292)
Common language	1.545***	1.583***	0.202	1.735***	1.519***	1.516***	0.049	1.722***	1.519***	1.516***	0.049	1.722***
	(0.390)	(0.407)	(0.376)	(0.407)	(0.391)	(0.400)	(0.431)	(0.417)	(0.391)	(0.400)	(0.431)	(0.417)
Colony	-0.152	-0.046	-0.160	-0.135	-0.068	0.007	-0.142	-0.012	-0.068	0.007	-0.142	-0.012
	(0.331)	(0.382)	(0.686)	(0.342)	(0.324)	(0.361)	(0.634)	(0.358)	(0.324)	(0.361)	(0.634)	(0.358)
log(cultural dissimilarity)	-0.109	-0.163	-0.623***	-0.020	-0.119	-0.191	-0.622***	-0.024	-0.119	-0.191	-0.622***	-0.024
	(0.159)	(0.157)	(0.241)	(0.178)	(0.158)	(0.152)	(0.214)	(0.184)	(0.158)	(0.152)	(0.214)	(0.184)
Factor dissimilarity	0.417**	0.425*	1.293***	0.364*	0.396**	0.384*	1.229***	0.360**	0.396**	0.384*	1.229***	0.360**
	(0.199)	(0.229)	(0.315)	(0.189)	(0.200)	(0.224)	(0.333)	(0.182)	(0.200)	(0.224)	(0.333)	(0.182)
EEA membership	-1.478***	-	-	-	-1.429***	-	-	-	-1.429***	-	-	-
	(0.498)				(0.519)				(0.519)			
STRI composite	-5.512***	-1.874	-9.914	-5.010***	-	-	-	-	-	-	-	-
	(1.945)	(1.297)	(6.863)	(2.031)								

(Continues)

TABLE A3 (Continued)

	All FDI projects, total STRI	Intra-EEA FDI projects, total STRI	Other FDI projects, total STRI	All FDI projects, STRI sub-indices	Intra-EEA FDI projects, STRI sub-indices	Other FDI projects, STRI sub-indices		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Restrictions on foreign entry					−5.998*** (1.574)	−4.069*** (1.433)	−66.832*** (24.603)	−4.687** (1.944)
Restrictions on the movement of people					−7.970* (4.412)	−3.003 (3.991)	− (4.216)	−8.507** (4.216)
Other restrictions					−1.488 (3.452)	2.409 (3.571)	−2.474 (6.557)	−0.154 (3.511)
Observations	12,068	12,068	3388	8680	12,068	12,068	3388	8680
Pseudo R^2	.555	.492	.106	.587	.562	.500	.131	.595

Note: The dependent variable in all models is investment volume of new FDI projects (FDI_{it}). Estimation is Poisson pseudo-maximum likelihood with fixed effects. Two-way clustered (source country and destination country) standard errors appear in parentheses below the parameter estimates. ***, **, * and *Statistical significance at the 1%, 5% and 10% levels, respectively.



TABLE A 4 STRI and accounting services FDI investment volumes: Results from Poisson pseudo-maximum likelihood estimations

	All FDI projects, total STRI		Intra-EEA FDI projects, total STRI		Other FDI projects, total STRI		All FDI projects, STRI sub-indices		Intra-EEA FDI projects, STRI sub-indices		Other FDI projects, STRI sub-indices	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
log(GDPPC_destination)	1.457*** (0.499)	1.487*** (0.479)	1.038 (2.544)	3.211*** (1.194)	2.719*** (0.338)	2.810*** (0.382)	1.902 (2.015)	4.244*** (0.639)				
log(pop_destination)	0.967*** (0.119)	0.961*** (0.109)	0.973*** (0.224)	0.939*** (0.184)	1.047*** (0.123)	1.035*** (0.126)	0.865*** (0.297)	1.058*** (0.206)				
log(distance)	-0.795*** (0.291)	-1.273*** (0.426)	-0.780 (0.701)	-0.942* (0.500)	-0.785*** (0.302)	-0.969*** (0.292)	-0.130 (0.701)	-1.347*** (0.380)				
Contiguity	-2.082*** (0.117)	-2.694*** (0.453)	-2.298*** (0.602)	-2.969*** (1.051)	-2.149*** (0.616)	-2.363*** (0.553)	-1.828*** (0.513)	-4.394*** (1.698)				
Common language	1.017*** (0.294)	1.150*** (0.360)	2.011** (0.976)	1.133** (0.522)	2.039*** (0.772)	2.108*** (0.724)	2.679 (1.700)	1.960*** (0.748)				
Colony	1.801** (0.817)	1.624** (0.790)	2.560 (2.229)	2.253*** (1.109)	0.993* (0.570)	0.905 (0.562)	1.951 (1.454)	1.288 (1.044)				
log(cultural_dissimilarity)	0.086 (0.394)	0.209 (0.408)	0.376 (0.445)	0.166 (0.657)	0.458 (0.544)	0.513 (0.513)	0.728* (0.379)	0.412 (0.705)				
Factor dissimilarity	1.100* (0.647)	1.220* (0.629)	-0.961 (1.161)	3.047** (1.226)	2.003*** (0.451)	2.127*** (0.394)	-1.049 (1.288)	3.739*** (0.444)				
EEA membership	1.623** (0.335)	-	-	-	0.711 (0.704)	-	-	-				
STRI	1.697*** (0.542)	1.281* (0.703)	1.613 (10.091)	1.921*** (0.631)	-	-	-	-				

(Continues)

TABLE A 4 (Continued)

	All FDI projects, total STRI	Intra-EEA FDI projects, total STRI	Other FDI projects, total STRI	All FDI projects, STRI sub-indices	Intra-EEA FDI projects, STRI sub-indices	Other FDI projects, STRI sub-indices	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Restrictions on foreign entry				12.466*** (3.234)	13.203*** (3.216)	35.720*** (10.128)	15.707*** (3.983)
Restrictions on the movement of people				3.106 (4.669)	2.504 (4.652)	−168.191* (87.868)	0.178 (6.573)
Other restrictions				−36.649*** (12.178)	−38.847*** (11.976)	1.678 (18.629)	−40.746*** (11.652)
Observations	5880	2149	3731	5880	5880	2149	3731
Pseudo R^2	.447	.443	.280	.502	.503	.388	.555

Note: The dependent variable in all models is investment volume of new FDI projects (FDI_{it}). Estimation is Poisson pseudo-maximum likelihood with fixed effects. Two-way clustered (source country and destination country) standard errors appear in parentheses below the parameter estimates. ***, **, * and *Statistical significance at the 1%, 5% and 10% levels, respectively.



TABLE A 5 STRI and legal services FDI investment volumes: Results from Poisson pseudo-maximum likelihood estimations

	All FDI projects, total STRI (1)	(2)	Intra-EEA FDI projects, total STRI (3)	Other FDI projects, total STRI (4)	All FDI projects, STRI sub-indices (5)	Intra-EEA FDI projects, STRI sub-indices (7)	Other FDI projects, STRI sub-indices (8)
log(GDPPC_destination)	1.004*** (0.386)	0.950*** (0.367)	0.611 (0.709)	0.950** (0.444)	0.898** (0.393)	0.783 (0.679)	0.881*** (0.328)
log(pop_destination)	0.799*** (0.131)	0.777*** (0.130)	0.941*** (0.188)	0.814*** (0.138)	0.737*** (0.077)	0.969*** (0.207)	0.738*** (0.073)
log(distance)	0.029 (0.193)	-0.116 (0.149)	-1.382*** (0.170)	0.314 (0.277)	-0.178 (0.119)	-1.347*** (0.194)	0.036 (0.175)
Contiguity	-0.064 (0.285)	-0.239 (0.420)	0.171 (0.184)	0.286 (0.384)	-0.184 (0.233)	0.121 (0.162)	0.320 (0.307)
Common language	0.097 (0.340)	0.059 (0.344)	-0.249 (1.060)	0.152 (0.342)	0.198 (0.361)	-0.175 (1.083)	0.305 (0.296)
Colony	1.040*** (0.148)	0.991*** (0.143)	0.352* (0.213)	1.161*** (0.147)	1.154*** (0.177)	0.184 (0.352)	1.330*** (0.207)
log(cultural_dissimilarity)	-0.275** (0.131)	-0.277** (0.138)	-0.400 (0.346)	-0.256** (0.114)	-0.313** (0.124)	-0.416 (0.320)	-0.286*** (0.110)
Factor dissimilarity	0.483 (0.341)	0.499 (0.342)	2.918*** (0.501)	0.363 (0.359)	0.699** (0.331)	2.959*** (0.550)	0.678** (0.278)
EEA	0.579 (0.601)	-	-	-	-0.064 (0.517)	-	-
STRI	-1.203 (0.968)	-1.367 (0.893)	-19.357*** (5.930)	-1.264 (1.018)	-	-	-

(Continues)

TABLE A 5 (Continued)

	All FDI projects, total STRI (1)	(2)	Intra-EEA FDI projects, total STRI (3)	Other FDI projects, total STRI (4)	All FDI projects, STRI sub-indices (5)	(6)	Intra-EEA FDI projects, STRI sub-indices (7)	Other FDI projects, STRI sub-indices (8)
Restrictions on foreign entry					0.687 (1.702)	−0.657 (1.709)	−14.959** (6.625)	0.613 (1.338)
Restrictions on the movement of people					4.338 (2.959)	4.425 (2.552)	−52.897 (42.269)	4.814** (2.025)
Other restrictions					−40.309*** (5.754)	−40.226*** (5.806)	−22.184** (10.923)	−42.338*** (5.811)
Observations	9114	9114	2611	6503	9114	9114	2611	6503
Pseudo R ²	.396	.382	.350	.436	.502	.502	.367	.534

Note: The dependent variable in all models is investment volume of new FDI projects (FDI_{it}). Estimation is Poisson pseudo-maximum likelihood with fixed effects. Two-way clustered (source country and destination country) standard errors appear in parentheses beneath the parameter estimates. ***, ** and *Statistical significance at the 1%, 5% and 10% levels, respectively.



TABLE A 6 STRI and architecture and engineering services FDI investment volumes: Results from Poisson pseudo-maximum likelihood estimations

	All FDI projects, total STRI		Intra-EEA FDI projects, total STRI		Other FDI projects, total STRI		All FDI projects, STRI sub-indices		Intra-EEA FDI projects, STRI sub-indices		Other FDI projects, STRI sub-indices	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)				
log(GDPPC_destination)	0.739*** (0.278)	0.758*** (0.276)	1.834*** (0.572)	0.896*** (0.182)	1.496*** (0.351)	1.524*** (0.344)	1.762*** (0.633)	1.696*** (0.295)				
log(pop_destination)	0.838*** (0.099)	0.844*** (0.101)	1.433*** (0.207)	0.714*** (0.061)	0.796*** (0.080)	0.813*** (0.072)	1.085*** (0.138)	0.661*** (0.055)				
log(distance)	-0.164 (0.321)	-0.134 (0.298)	-0.989*** (0.342)	0.289 (0.492)	-0.270 (0.191)	-0.208 (0.209)	-0.886*** (0.265)	0.025 (0.346)				
Contiguity	0.428 (0.488)	0.448 (0.468)	0.650*** (0.111)	1.180 (1.041)	0.356 (0.392)	0.404 (0.382)	0.651** (0.119)	0.811 (0.862)				
Common language	0.953*** (0.318)	0.959*** (0.331)	0.041 (0.655)	1.065** (0.440)	0.912*** (0.287)	0.931*** (0.303)	0.160 (0.578)	0.959*** (0.386)				
Colony	0.461* (0.257)	0.461* (0.252)	-0.1306* (0.724)	0.538* (0.308)	0.500* (0.268)	0.488* (0.262)	-1.363* (0.736)	0.668*** (0.269)				
log(cultural_dissimilarity)	-0.143 (0.093)	-0.142 (0.095)	-0.292*** (0.111)	-0.116 (0.142)	-0.144 (0.096)	-0.140 (0.097)	-0.295* (0.156)	-0.107 (0.131)				
Factor dissimilarity	0.327 (0.382)	0.311 (0.373)	2.230*** (0.683)	0.452 (0.299)	0.301 (0.340)	0.271 (0.351)	1.519* (0.890)	0.621*** (0.278)				
EEA	-0.139 (0.449)	-	-	-	-0.306 (0.443)	-	-	-				
STRI	-4.788** (1.892)	-4.473*** (1.482)	-21.633*** (3.314)	-3.065 (1.877)	-	-	-	-				

TABLE A 6 (Continued)

	All FDI projects, total STRI	Intra-EEA FDI projects, total STRI	Other FDI projects, total STRI	All FDI projects, STRI sub-indices	Intra-EEA FDI projects, STRI sub-indices	Other FDI projects, STRI sub-indices		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Restrictions on foreign entry					14.279** (5.963)	14.597** (5.968)	27.683 (23.129)	12.993*** (4.389)
Restrictions on the movement of people					-3.628 (3.191)	-2.637 (2.641)	55.948* (33.885)	-6.774*** (2.529)
Other restrictions					-21.865*** (5.565)	-21563*** (5.617)	-56.988*** (33.885)	-12.797*** (5.063)
Observations	10,003	10,003	3080	6923	10,003	10,003	3080	6923
Pseudo R^2	.242	.242	.304	.327	.275	.277	.332	.356

Note: The dependent variable in all models is investment volume of new FDI projects (FDI_{it}). Estimation is Poisson pseudo-maximum likelihood with fixed effects. Two-way clustered (source country and destination country) standard errors appear in parentheses below the parameter estimates. ***, ** and *Statistical significance at the 1%, 5% and 10% levels, respectively.