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Otto Wolff Institut
für Wirtschaftsordnung

Cross-border services trade and regulation

Evidence from the European architectural sector

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Otto-Wolff-Discussion Paper 1/2018 – November 2018

Executive Summary

The single European market offers architects different opportunities if they want to serve additional or different target groups to their local markets. The EU fundamental freedom of movement of people makes it possible to settle in another Member State at any time and thus move the focal point of one's own business. In the target country, the existing country-specific occupational regulations apply. Among other European Institutions, the European Commission has made great efforts in the past, e.g. with the Professional Recognition Directive, to reduce interface problems when moving to another Member State. In addition, the EU fundamental freedom to provide services allows architects to carry out projects in other Member States without a permanent or temporary change of locations.

In contrast to trade in goods, the so-called destination principle applies to such exports of services to another Member State. Architects therefore have to comply with the regulations of the respective target country of the service, even if they may be subject to different professional regulations in their own country. The Member States want to ensure a certain minimum quality via such regulative market interventions. The reason for these market interventions is to ensure the protection of public interests – such as construction safety, consumer and environmental protection as well as cultural, historical, and artistic concerns. At this point, there is both a political and an academic debate on the extent to which different national regulations constitute a trade barrier to cross-border service provision.

In this research project[1] we analyse to what extend differences in national regulations are actually a barrier to cross-border trade in architectural services in the single market. This question appears to be interesting for two main reasons: Firstly, the comparable low level of cross-border trade in architectural services in the internal market raises the question of causes and possible simplifications. Secondly, other research with a different geographic scope suggests a possible link between less uniform or very restrictive professional regulation and a low volume of cross-border trade in the case of many regulated professions.[2] In order to capture the respective national regulatory levels and possible national differences, these academic research uses indicators such as the OECD "Services Trade Restrictiveness Index for cross-border trade in services" (OECD-STRI).

In this project, we base our research directly on the academic research mentioned above. We analyse whether these findings also apply to trade in architectural services in the European internal market. If we use the OECD-STRI for architectural services, we find no empirical connection between a higher homogeneity of regulation and more cross-border trade in architectural services. Neither do we find any correlation between lower, supposedly trade-friendly OECD-STRI index values of the respective trading partners and a higher volume in intra-EU trade in architectural services.

However, we have reasonable concerns if the indicator reflects the relevant level of regulation for trade in services within the European internal market in an undistorted manner. This is mainly due to the fact that some subcategories of the OECD-STRI cover aspects that are only relevant in trade with third countries (e.g. questions referring to temporary business visas in the target country). As a

[1] This research was supported in part by a research grant provided by the Architects Council of Europe (ACE).

[2] See for example Nordås & Rouzet, (2017).

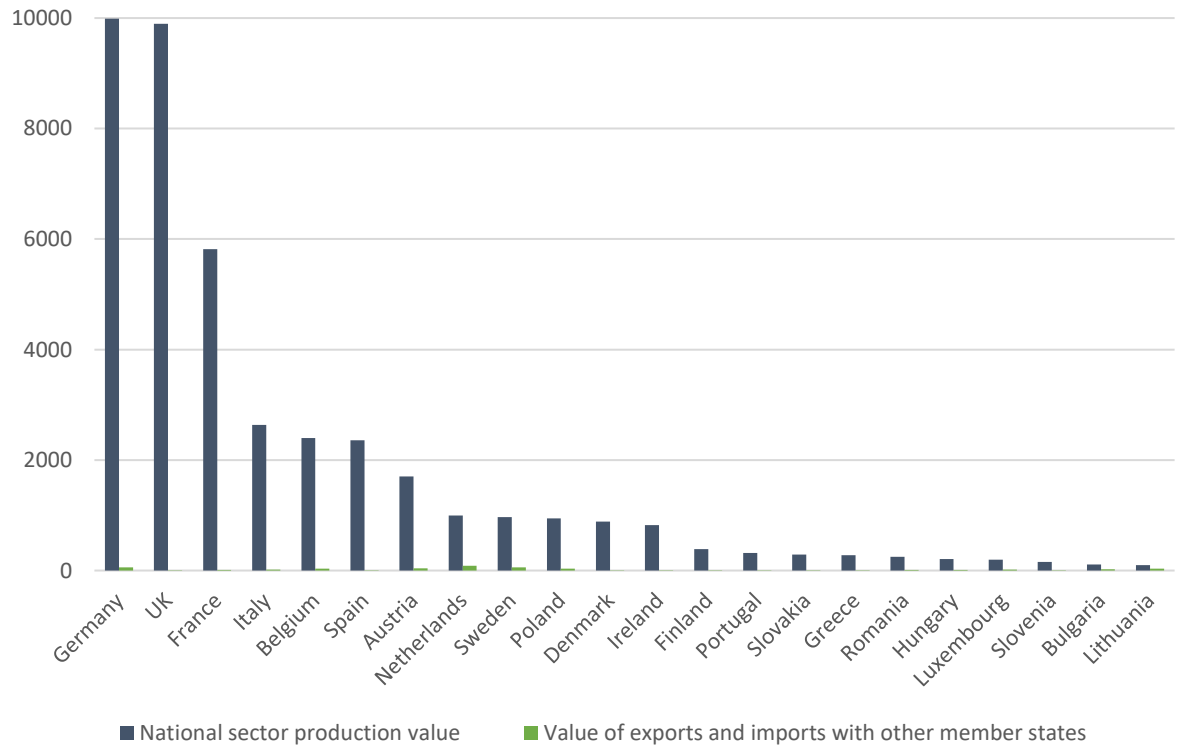
consequence, we additionally work with the regulatory characteristic of the chamber system in order to capture the central dividing lines of professional regulation in the Member States of the EU between direct state supervision and indirect professional supervision in professional co-administration. If we use the characteristic of a chamber system as an indicator for the respective country-specific regulatory approach, the empirical findings point to some interface problems between the two systems. Trade rates between two countries of which one has a chamber system and the other does not are somewhat lower. However, there is no empirical evidence that countries which both have a chamber system trade with each other more or less than countries which both have no chamber system. This tends to indicate that none of the two historically developed regulatory approaches seems superior in principle in the case of cross-border service provision of architectural services.

Cross-border trade of architectural services in the European single market

In all countries of the European Union, domestic architecture firms dominate the respective national markets for architectural services. Exports and imports of architectural services to and from other Member States play a smaller role by comparison. This situation becomes particularly clear when comparing production values of the national architectural sectors to the total trade volume with other Member States (see Figure 1). In 2015, for example, architectural services in Germany, which has the largest national architecture services sector in the EU, generated sales of almost 10 billion euros. During the same period, Germany exported architectural services worth 26 million euros to all other Member States. Imports had a volume of 34 million euros in the same period. Even though Eurostat's official export and import statistics show some gaps for a few Member States, one basic observation seems to be quite robust: At present, hardly any national architectural sector is able to exploit conceivable export opportunities to other Member States on a larger scale.

Figure 1: National sector production and value of intra-European exports and imports in architectural services.

Year 2015, in million Euro, sector architectural activities NACE Rev.2 M711/SJ311

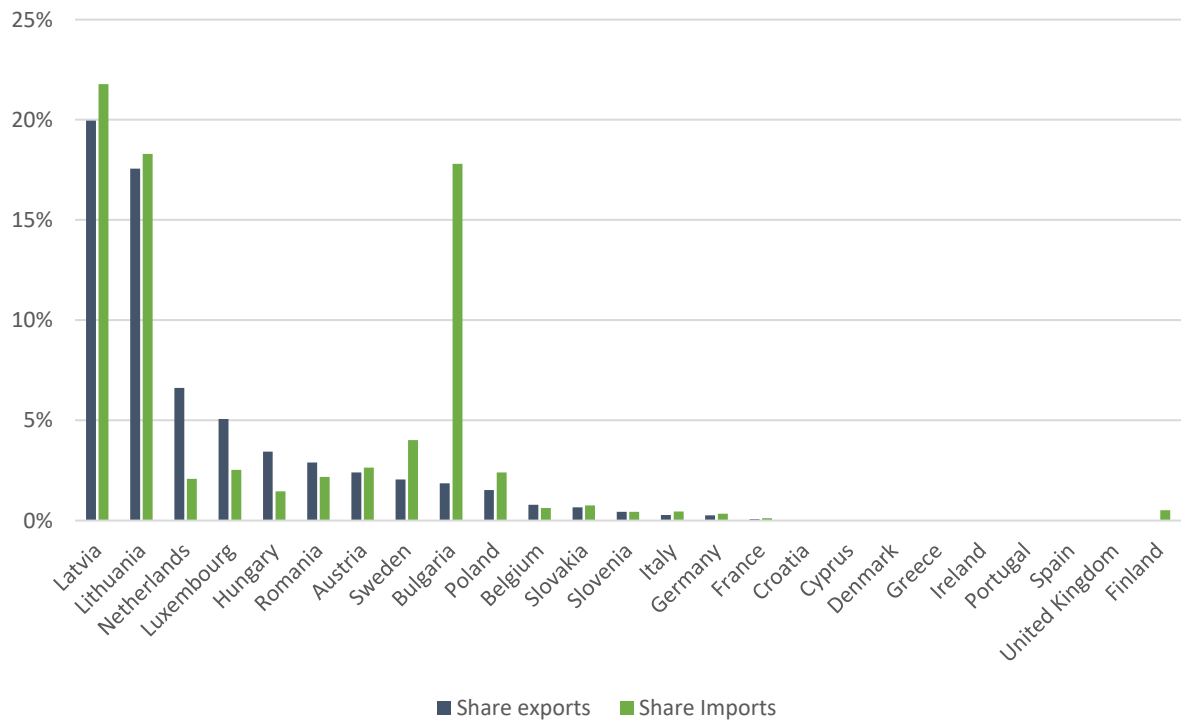


Source: Own calculation, Data Eurostat: “Annual detailed enterprise statistics for services (NACE Rev. 2 H-N and S95) [sbs_na_1a_se_r2]” and “International trade in services (since 2010) (BPM6) [bop_its6_det]”, Sector architectural activities NACE M711. No sector data for Czech Republic, Malta and Estonia. No complete Europe-wide export data for UK, Spain, Denmark, Ireland, Portugal, Greece, Croatia and Cyprus.

There are only few exceptions to the generally small proportions of cross-border trade of architectural services. Higher import quotas are only present in Latvia, Lithuania and Bulgaria. However, since the total market volume in these countries is quite small even a few individual orders from abroad can significantly increase the quotas. All member states with an absolute large national architectural sector have import quotas well below five percent. Dutch architects currently sell with a volume of 66 million euros in 2015the largest absolute quantity of architectural services to other European countries. This corresponds to a share of a roughly 6.5 percent of the domestic market volume in the Netherlands (see figure 2).

Figure 2: Export shares and import shares in intra-European trade with architectural services

Year 2015, reference value: respective national production value in sector architectural services NACE Rev.2 M711/SJ311



Source: Own calculation, Data Eurostat: "Annual detailed enterprise statistics for services (NACE Rev. 2 H-N and S95) [sbs_na_1a_se_r2]" and "International trade in services (since 2010) (BPM6) [bop_its6_det]", Sector architectural activities NACE Rev.2 M711/ SJ311. No robust, Europe-wide import and export data for UK, Spain, Denmark, Ireland, Portugal, Greece, Croatia and Cyprus due to a lack of import and or export data for some of the trading partners. Actual trade flows may be therefore slightly higher in these countries. No share for Czech Republic, Malta and Estonia due to lack of data on total national production value.

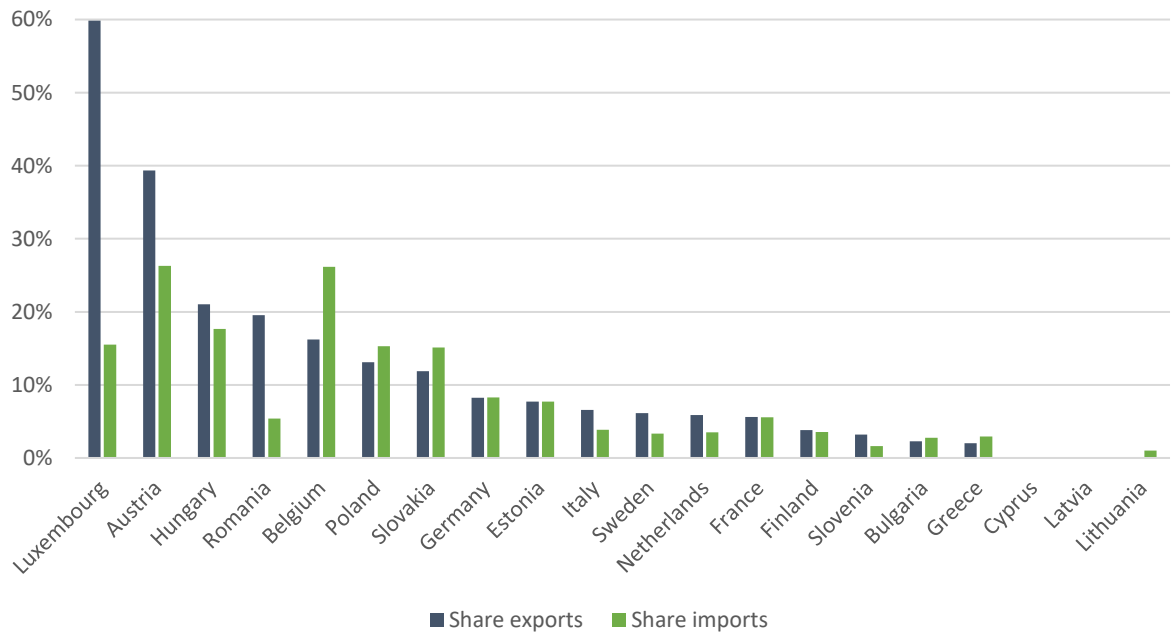
Comparing the architecture services sector with other professional services is especially interesting for similar activities. In the context of the regulatory debate, other regulated professional services such as engineering services, legal services or accounting services are often used for comparison with architecture services. These professions are also subject to national regulations that might constitute

barriers to trade. In addition, these are personal services as well. In contrast to the more anonymous trade of goods, contact and interaction with the customer play an important role in the provision of professional services. On-site appointments with the customer are required in order to be able to provide the respective service (e.g. on-site visits by architects or planning engineers at the location of the respective project). This may create a natural barrier to the provision of these services over longer distances.

The services provided by architects can perhaps best be compared to those provided by independent engineering firms. In both professions, visits to the customer are the rule. Compared to architectural services, the import and export quotas for engineering services in most member states are significantly higher (see Figure 3). In 2015, Germany was the largest importer and exporter of engineering services. The exports to other Member States had a volume of 3,697 million euros; the imports had a volume of 3,724 million euros. With regard to these absolute figures, it is worth mentioning that the production value of all national engineering sectors is also almost seven times higher than the production value of the respective national architecture sectors.

Figure 3: Export shares and import shares in intra-European trade with engineering services

Year 2015, reference value: respective national production value in sector engineering services NACE Rev.2 M712/ SJ312. Attention: Other axis scale from 0 to 60 percent.



Source: Own calculation, Data Eurostat: "Annual detailed enterprise statistics for services (NACE Rev. 2 H-N and S95) [sbs_na_1a_se_r2]" and "International trade in services (since 2010) (BPM6) [bop_its6_det]", Sector engineering services NACE Rev.2 M712/ SJ312. . No robust, Europe-wide import and export data Denmark, Croatia, Malta, Spain, Portugal and UK due to a lack of import and or export data for some of the trading partners. No share for Czech Republic and Ireland due to lack of data on total national production value.

For the sake of completeness, an overview of export and import quotas for legal and accounting services can be found in the appendix. In these two sectors, as well, quotas are higher. The same applies to the absolute market volume in these sectors (see figures A1 and A2 in appendix). The same is true for the entire business services sector, as defined by the Statistical Classification of Economic Activities in the European Community (NACE). This combined sector includes the services of management consultants, advertising agencies and a few others in addition to the services of architects, engineers, lawyers, tax consultants. Measured in terms of the respective market volume, the services provided by management consultants dominate this combined sector. In this sector in particular, cross-border border provision of services is more common. This leads to average export and import quotas of roughly 20 percent, also for the combined sector of business services (see figure A3 in appendix).

Explanation approaches for the relatively low level of cross-border provision of architectural services

Comparisons with other regulated professions do not provide any explanation why architects make less use of the single market. As mentioned, one reason could be that architects often have to be on location during a project. The majority of clients may prefer a local architect who is close to the construction site in case of complications. Nevertheless, there may still be other barriers to cross-border architectural services in the single market. It is therefore worth considering possible explanations for the low level of cross-border trade.

- ### Explanatory approach number one: The lack of uniform professional regulation is the decisive obstacle to the cross-border provision of architectural services.

  The basic idea of this hypothesis is that regulatory differences raise the cost of servicing the market in another Member State. The decisive factor would therefore be not so much the absolute level of supposedly restrictive regulations but rather their heterogeneity between trading partners. The following example explains the intuition of this argument: If an architect from country A has to comply with certain (perhaps restrictive) training or insurance requirements the existence of these regulatory rules should not create an obstacle to export if the target country B has similar requirements.

  The profession of architect is not regulated uniformly in the Member States. (e.g. training, insurance and capital requirements differ, membership in local professional associations or chambers could be mandatory or voluntary). If different requirements have to be met for a project in another Member State, this may create an additional obstacle to export.[3]

  The heterogeneous regulations are strongly correlated with the historic evolution of occupational profile of architects. In some Member States, for example, construction plans are always fully inspected by public authorities. In other member states, safety-relevant aspects such as statics are the responsibility of the architect and the civil engineer commissioned by him. Regardless of the historical origin of these differences, there is a political and academic debate whether standardising these rules might lead to more cross-border provision of architectural services. An example of harmonisation efforts at the political level is the "*Transparency and mutual evaluation of regulated professions"* procedure initiated by the European Commission[4]. In addition, recent research by OECD economists has raised the

[3] See Arentz & Recker (2017) and Arentz, Recker, Michel, Pommerening, Rieger (2017) for a detailed discussion on national differences of the professional regulation of architects.

[4] In the context of this initiative, EU countries asked for clarification of the status of regulated professions in the EU. At their request, the European Commission agreed to conduct a transparency exercise and a mutual evaluation exercise. The aim is to provide a comprehensive overview of regulated professions in the EU. See for further information:
http://ec.europa.eu/growth/single-market/services/free-movement-professionals/transparency-mutual-recognition_en

academic question to which extent more uniform professional rules can promote cross-border service provision. The aim of this research (among some other related research papers) is to empirically test the hypothesis that more cross-border trade in services takes place between countries with uniform professional regulations.

The research work of the OECD economists takes account of a wide range of services, including architectural services. In their empirical work, they find indications that regulation that is more homogeneous increases cross-border trade in several services, among them architectural services.[5] The geographical scope of the OECD-work is the cross-border trade of services between all OCED member states. It is therefore not immediately apparent to what extent the results apply to intra-EU trade of services. In terms of professional regulation, the member states of the OECD (including the pacific-area or the American continent) are more heterogeneous than the member states of the European Union. In addition, several regulations do not affect intra-EU trade, but only trade with third countries within the OCED.[6] Therefore, it is possible that the positive effect of more similar regulation in the global setting including all OECD members might be mainly induced by trade between the member states of the European Union (with comparatively homogeneous regulation) in the sample. Inferring a need for additional regulatory harmonization within the European Union based on these global results for OCED trade flows may therefore be a fallacy. OECD economists are aware of this fact and therefore refer to the need for further research in order to draw additional conclusions for intra-EU trade.

This research project is a first attempt at closing this gap. For this purpose, we consider cross-border architectural services in the European internal market based on the methodology applied by the OECD researchers (see the following sections on the empirical model).

[5] see Nordås, H. (2016) and Nordås & Dorothée (2017).

[6] See ibid.

- Explanatory approach number two: Restrictive professional regulation in some Member States makes it difficult to export architectural services to these markets.

  In contrast to the hypothesis of heterogeneity, this explanatory approach assumes that high regulatory requirements are in themselves a decisive barrier to cross-border service provision. There is already a fairly developed academic literature that has empirically investigated this possible connection. The general findings for many different service sectors indicate that services trade restrictions are negatively associated with both imports and exports of services. Following this branch of literature high regulatory requirements in the target market could negatively affect the fixed cost of market entry and could also increase variable costs of servicing that market. An explanation for the negative effect of high regulatory requirements in a country on its export activities is that restrictive national regulations could affect the international competitiveness of that particular sector. A good overview of existing research work on this issue can be found, for example, in Hildegunn, Nordås and Rouzet, (2017).[7]

  Both empirical studies on the effects of regulatory heterogeneity and empirical studies on the effect of regulation intensity require a measure of the respective national level of regulation. A good deal of the research is based on regulatory indicators of the OECD or the World Bank. These indicators incorporate a large number of factors that could have a potential influence on the provision of services. Although it is worth to debate the composition and weighting of the respective factors, these indicators could be used as a general approximation the regulation level in a country (see section Measuring the intensity of regulation / Data on Regulation). Recently, OECD economists have also analysed the influence of absolute regulatory intensity on cross-border service provision based on the OECD "Services Trade Restrictiveness Index for cross-border trade in services" (OECD-STRI).[8] The subject of these empirical studies was trade in services between all OECD countries. Due to the lack of more granular data, the services of architects could only be investigated together with the services of independent engineering firms in this OCED-wide setting. As a result, the authors find robust indications that support the thesis of additional trade barriers through restrictive regulation.

  We also take up this research work and look at whether similarly robust effects can be found for intra-European trade in architectural services (see the following sections on the empirical model).

[7] See Nordås & Rouzet, (2017), p. 1156.

[8] Nordås & Rouzet, (2015) and Nordås & Rouzet, (2017).

- Explanatory approach number three: Not professional regulation itself hinders cross-border trade but different national building regulations.

  This hypothesis assumes that professional regulation is not with a major barrier to cross-border trade of architectural services. The real barrier are rather the non-standardised building regulations in the individual member states or even in the individual regions or cities. There are two main reasons why a lack of uniform construction rules can make cross-border services more difficult. First, regionally different rules require local expertise, which external architects can hardly develop. Local knowledge and contacts are more important, when specifics of the building process are at the discretion of the local construction supervisor. Second, very different building regulations can prevent economies of scale if planning sketches can only be adapted to local regulations in another member state with considerable additional effort.

  The hypothesis of heterogeneous and difficult national building regulation and cumbersome building permit procedures is also pursued by the European Commission. In this context, reference should be made to a study carried out by the Delft University of Technology on behalf of the European Union, which has recently taken a close look at the background to this possible link.[9] The main objective of this study was to determine whether Member States make full use of the principles of administrative and regulatory simplification with a focus relevant authorization schemes including building permits for construction. With these objectives in mind, the study compared the administrative and regulatory burden caused by these authorization schemes in of fourteen Member States. Findings of the research include several obstacles to the service provision across borders and in the form of administrative requirements and cumbersome procedures or limited recognition of requirements that are already met in other EU countries.

  In contrast to the previously presented hypotheses relating to professional regulation, the question of non-uniform building law is not the subject of our research here. This additional hypothesis serves rather as a hint that, in addition to issues of professional regulation, other regulatory fields can also have a conceivable influence on trade barriers in the area of architectural services.

[9] For further reading and excess to this study, see https://publications.europa.eu/en/publication-detail/-/publication/3e6f95eb-c658-11e5-a4b5-01aa75ed71a1 .

Measures for the scope and intensity of regulation

In order to assess the impact of regulation on the cross-border provision of services, the relevant regulation has to be captured accurately in a numeric value. Therefore, many complex aspects of the national regulation have to be transformed into an indicator. The OECD, among others, works on such complex indicators on behalf of its member states.

The experts of the OECD recently presented a "Services Trade Restrictiveness Index for cross-border trade in services" (OECD-STRI) with a special focus on regulatory aspects of cross-border trade in services. This new indicator complements the OECD "Indicators of Product Market Regulation", which has been available for some time for professional services and relates exclusively to the respective national occupational regulation.[10] [11] In addition, the European Commission is currently working on its own regulatory indicator for several professional services that is based on the OCED indicator for product market regulation.[12] However, the studies on cross-border provision in services presented in the previous section are all based on the STRI. Therefore, and as we also use this indicator as a first starting point for our study of intra-European trade in architectural services, we will give a more detailed description in following.

The OECD published the first version of the STRI in 2014. This is the first comprehensive measure of trade restrictiveness for a large number of services sectors, including the services of regulated professions such as architects. The STRI regulatory database brings together information from more than 16,000 laws and regulations for 22 services sectors in 40 countries, including all 23 EU member states, which are also members of the OECD. The OECD has compiled the database into the STRI based on a common methodology agreed by the OECD-Members. For each services sector, the database captures country-specific regulatory aspects with a specific focus on cross-border services trade in the following five policy areas:

[10] For further information on the OECD PMR for professional services, see http://www.oecd.org/eco/growth/indicatorsofproductmarketregulationhomepage.htm .

[11] A brief discussion of the OCED PMR indicator in relation to the architectural profession can be found in Arentz & Recker (2017).

[12] The EU Commission's "New Restrictiveness Indicator for Professional Services" basically covers the same aspects as the OCED "Indicators of Product Market Regulation" for professional services (e.g. exclusive or shared exclusive rights, qualification requirements, compulsory membership). One main difference is that the EU Commission's indicator includes the services of patent agents, real estate agents and tourist guides besides those of architects, civil engineers, accountants, lawyers that were already covered by the OCED indicator.

A first overview of the proposed methodology can be found in the following short study http://www.europarl.europa.eu/RegData/etudes/STUD/2017/607349/IPOL_STU(2017)607349_EN.pdf

and in the EU-COM Communication COM(2016) 820 final http://ec.europa.eu/transparency/regdoc/rep/1/2016/EN/COM-2016-820-F1-EN-MAIN-PART-1.PDF .

- Regulation on foreign entry

  This section of the database mainly captures information on foreign equity restrictions, restriction on the legal form of a business that want to serve the national market, restriction on commercial association between architects and other professionals, regulation on majority requirements and qualification of the manager of a company that wants to serve the national market, the question if commercial presence is required in order to provide cross-border services, or conditions on subsequent transfer of capital.

- Restrictions on movement of people

  This section of the database mainly captures information on quotas and/or limitation on duration of stay for the employees of a commissioned architect's office as well as its possible subcontractors, the questions if a certain nationality or citizenship, or if prior or permanent residency is required to carry out a project in this country, if there are laws or regulations that define a process for recognising qualifications gained abroad, if foreign professionals are required to take a local examination to carry out a project in this country, if foreign professionals are required to practice locally for at least one year bevor they are allowed to serve this market form abroad and if there is a temporary licensing system for the duration of a project is in place.

- Other discriminatory measures

  This section of the database mainly captures information on how foreign suppliers are treated in comparison to domestic suppliers regarding taxes and eligibility to subsidies, if there is an explicit preference for local suppliers in public procurement, if the rules of public procurement explicitly prohibit discrimination of foreign suppliers, if the procurement process affects the conditions of competition in favour of local firms, the thresholds above which tender is mandated or if the use of foreign firm names is restricted.

- Barriers to competition

  This section of the database mainly captures information if decisions by the regulatory body can be appealed, if there are mandatory minimum and/or maximum fees that have to be respected by foreign suppliers as well, if there are recommended minimum and/or maximum fees or restrictions on advertising and if there are minimum capital requirements that have to be met by a foreign supplier.

- Regulatory transparency

  This section of the database mainly captures information if there is a legal obligation to communicate regulations to the public within a reasonable time prior to entry into force, the average visa processing time, the cost to obtain a business visa, the number of documents

needed to obtain a business visa, as well as some other aspects that are not directly related to the question of cross-border provision of services such as the number of working days to complete all mandatory procedures to register a company or the number of mandatory procedures to register a company.

In principle, the STRI covers many relevant aspects of cross-border provision of architectural services. Although some relevant aspects (e.g. possible requirements for professional indemnity insurance) are not covered. However, for intra-European trade of architectural services many of the items do not apply due to the rules of the internal market.[13] They would only be relevant for trade relations with non-EU countries. In other words, the cross-border trade regulation is already harmonised to a large extend.

For example, the free movement of capital in the internal market excludes some restrictions that are covered in the section "Regulation on foreign entry" of the OECD database. The fundamental freedom of free movement of workers excludes some of the possible restrictions that are covered in the section "Restrictions on movement of people", mainly in questions of quotes or limitation on duration of stay for employees form other Member States. The EU state aid law should prevent some of the discriminatory elements for architects form another Member State that are covered in the section "Other discriminatory measures" - even if very restrictive regulations towards third countries could also indicate an implicit discrimination against EU providers. In addition, architects from other Member States are not bound by mandatory minimum and/or maximum fees captured on the section "Barriers to competition" such as the HOAI in Germany if they do not have their office in the target country and only export architectural services there. Also in the last section "Regulatory transparency" there are some aspects, e.g. the processing time for business visas, that seems to by not very important for intra-European trade. However, long processing times in this area may also indicate longer processing times for other relevant documents for intra-European trade in architectural services such as the recognition of one's own qualification or building applications.

Even if all single measures of the may not completely apply to intra-European trade in services, this database seems not entirely inappropriate to capture barriers to trade in intra-European trade. Many aspects such as different qualification requirements, mandatory memberships in chambers or professional associations, restrictions on the approved legal form or to the controlling powers of importing companies, advertising bans, or certain capital requirements do matter for intra-European trade as well.

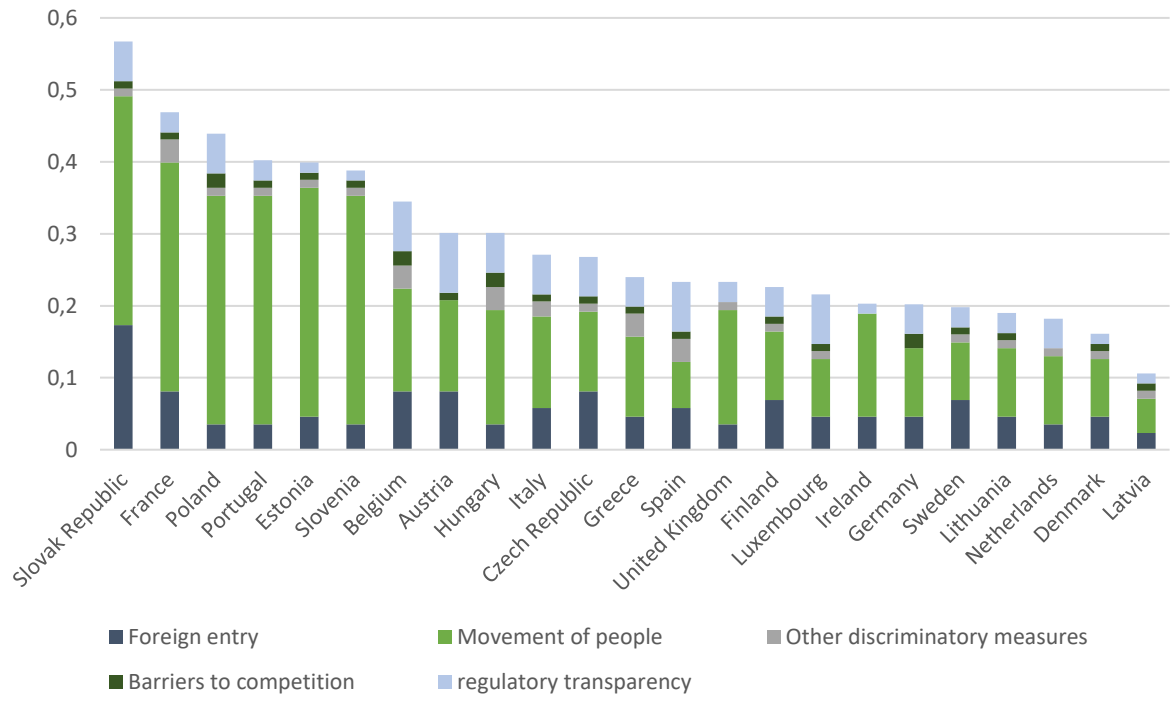
The computation of the STRI from this regulatory database consists of the following steps in which the OECD scores and assigns weights to the different aspects of regulation. Firstly, all individual policy measures are assigned a score of 0 (not restrictive) or 1 (restrictive). Then average values are generated for each of the five policy areas described above. All measures in each of the five areas are assigned

[13] Also Nordås (2016) notes that the Member States of the European Union might be an exception to some extent. Mainly because the common single market for services removes some of the potential trade barriers covered by the STRI between the member states.

the same weight. In the last step, a common value from all five areas is created. Therefore, the five policy areas are weighted according to their relative importance. The weights are the result of an expert consultation process for every sector. Thus, the same policy area could take a different weight in different sectors. For trade of architectural services, around 39 percent of the final index score is based on measures in the area of "Restrictions on foreign entry", 34 percent on "Restrictions to movement of people", 6 percent on "Other discriminatory measures", 7 percent on "Barriers to competition" and the remaining 14 percent on "Regulatory transparency". The resulting final index can than take values between zero and one, where lower values reflect regulation with fewer barriers to trade..[14]

Figure 4: OECD Services Trade Restrictiveness Index for cross-border trade in architectural services

Year 2016, EU Member States that are also OECD members



Source: Own diagram based on OECD database for Services Trade Restrictiveness Index, sector architectural services. Online access to the database via *https://stats.oecd.org/Index.aspx?DataSetCode=STRI#* .

Figure 4 shows an overview of the OCED STRI values for the Member States in the area of architectural services. The variation between the Member States is quite large. However, it must be added that the greatest absolute differences in the respective country-specific total scores result from different valuations in the area "Restrictions to movement of people". This is, of course, partly due to the fact

[14] A detailed overview of the methodology of the OECD STRI is given by: Geloso Grosso, M. et al. (2015).

that this area is clearly more strongly weighted, among the area of “Restrictions on foreign entry”. This weighting raises some questions in the application of the aggregated STRI values to intra-European trade relations. At least, when interpreting the STRI values and research based on it, one must keep in mind that the greatest differences in national scores stem from a category, which has little impact on trade in services in the single market due to the freedom of movement of persons in the EU.

Therefore, we alternatively work with a second measure for the regulation of architectural services in this study. Instead of a composite measure, we are use the existence of a mandatory chamber system as an identifier for relevant regulations on cross border trade. The reason behind that is that there is a close link between the existence of a mandatory chamber system and the regulatory system in the Member States:

In continental Europe in particular, the member states have transferred central aspects of quality assurance of architectural services from state administration to a professional chamber system. These countries try to ensure the desired minimum quality level through education requirements and further training combined with exclusive professional rights. The monitoring itself is organized within this framework of professional co-administration in a chamber system. We refer to this also as ex-ante regulation.

Mainly in the Anglo-Saxon area of the European Union and in Northern Europe, the Member States follow a different approach. They organize central aspects of quality control at the state level (e-g- a more extensive review process of building applications by state employees). This stronger state supervision is often combined with a very detailed and close-meshed building law. In addition, stricter liability regulation should ensure the desired minimum quality. In return, some of these states completely dispense with specific education requirements or guidelines further training requirements. We refer to this also as ex-post regulation.[15]

Figure 5 gives an overview which member states have chosen a mandatory chamber system. The inclusion of this criterion appears interesting both for the trade effects of the homogeneity of regulation (see explanatory approach number one) and for the trade effects of intensity of regulation (see explanatory approach number two). On the one hand, interface problems between both systems are quite likely (e.g. recognition of mandatory training requirements in a state with ex-ante regulation that are not embedded in the ex-post system). On the other hand, the high requirements for professional regulation in countries with a chamber system are seen as a barrier to the internal market for architectural services. Therefore, we also observe whether countries with a chamber system generally trade fewer architectural services.

[15] See Arentz & Recker (2017) and Arentz, Recker, Michel, Pommerening, Rieger (2017) for a detailed discussion.

Figure 5: Compulsory chamber membership in architectural services

Year 2013 – 2016, green-coloured Member States have a mandatory chamber system

Source: OECD Sector Regulation (NMR) database, architectural services, question Q8.2.5h "Entry requirements in the architecture profession - Is membership in a professional organisation compulsory in order to legally practice?", Basic map form Europe under free public Wikimedia Commons licensing.

Measures for regulatory heterogeneity

Based on the regulatory database described above, we construct indicators for the homogeneity of the national regulations in the architectural services sector in the EU. We follow the same approach as Nordås and Rouzet (2017).[16]

The underlying concept of an indicator for regulatory heterogeneity is to compare countries pairwise (respective trade partner) for each relevant regulatory measure the sector of interest. If both Member States have the same regulation, heterogeneity is zero for this measure. If the two countries have a different regulation, it is one. The necessary information about the regulation in the countries of interest stems from the OECD database for the STRI.

The scores on individual measures are then combined in an overall heterogeneity score. Within the five policy areas described above, we calculate the mean of the respective scores; across policy areas, we use the same weights as for the STRI. Just like the STRI, the regulatory heterogeneity index takes on values between zero and one. If two Member States have the same answers on all regulatory measures, their bilateral heterogeneity index is zero; if they have different answers on all measures, their heterogeneity index is one. It does not matter whether the answers imply a trade restriction or not. A hypothetical country pair where both Member States are completely closed to foreign trade may have a heterogeneity index of zero.

Nordås and Rouzet (2017) also calculate an alternative heterogeneity index based on the scores assigned by the OCED to each measure. Although closely related, the two methodologies are not the same. Differences can occur if no binary answers are stored in the database for a measure (e.g. is there a compulsory chamber system, yes or no), but continuous variables are queried (e.g. how many working days does a visa application take?). In the latter case, it is less likely that two Member States in a country pair reported exactly the same number of days. For better comparability, the OECD has assigned scores to such continuous variables, each of which describes a specific range (e.g. 0-5 days: score of zero, 5-8 days, score of one, etc.). With the score based variant of the heterogeneity index, we only check whether both Member States have the same score for such continuous variables. The rest of this procedure in analogous to the answer-based heterogeneity index. The score based procedure leads, as expected, to slightly lower index values (e.g. a little less heterogeneity between the country specific regulations).

As indicated above, we are also use an alternative measure based on the existence of mandatory chamber system. With the same logic as the STR, this alternative indicator is also zero (no heterogeneity) if both Member States in a country pair have either a chamber system or have both have no chamber system. If a chamber system exists in just one Member State the indicator has the value 1.

[16] Nordås & Rouzet, (2017), p. 1171 et seq.

Empirical evaluation of intra-European trade in architecture services

In our empirical model we investigate at first whether regulatory heterogeneity – measured by the heterogeneity scores constructed from the OECD's STRI or the alternative indicator based on the regulatory characteristic of the mandatory chamber system – have an influence on the cross-border provision of architectural services within the European Union. In a second step, we also analyze whether the absolute level of regulation has an influence. For this second analysis, we use again both the OECD STRI and the characteristic of the mandatory chamber system as measures for regulatory intensity.

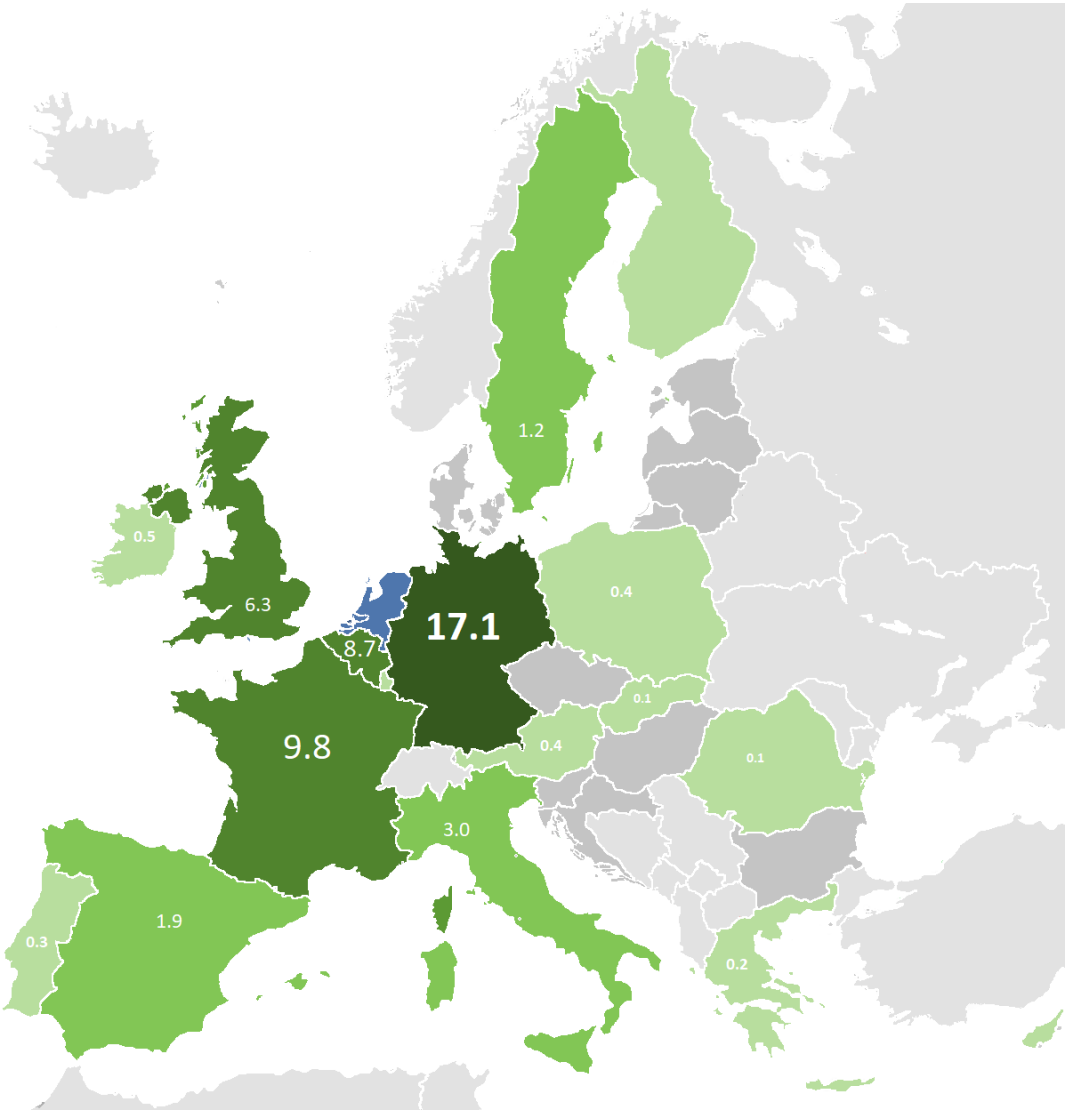
We use a so-called gravity equation to assess the impact of regulatory heterogeneity alongside other measures such as distance between countries and the size of countries on trade flows in architectural services. The idea behind the gravity equation is that the size of the two trading countries (often measured in terms of GDP) and the distance between the two trading countries can explain international trade very well. Although firstly developed by Tinbergen (1962) to describe trade of goods, the model can as well accurately predict trade flows between countries for services. As an example, we would like to refer here to the work carried out by Kimura and Lee (2006) or Head et al. (2009), who extensively examined and documented the transferability of the model to services trade.

Figure 6 illustrates the basic concept of the model. This map shows Netherlands' exports of architectural services to different European trading partners in the year 2015. The influence of the two central explanatory variables of the gravity equation (distance and size of the trading partner in terms of GDP) is obviously: Trade with direct neighbors such as Belgium and Germany as well as trade with larger economies such as Italy or Spain, even though they are not very close, appears to be larger in volume. When comparing the volume of exports to the neighboring countries of Belgium and Germany, it becomes also very clear that the combination of proximity and the size of the neighboring country plays a decisive role in the explanatory approach of the gravity equation.

Within this basic model, it can now be tested whether other influencing factors such as cultural (e.g. same language) or regulatory differences have an additional impact on cross-border service provision. There are already first studies that have tested the effect of effect of regulation as well as regulatory heterogeneity based on the OECD "Indicators of Product Market Regulation" (OECD PMR) for other services sectors such as telecommunication. In this context we would like to refer to the work of Kox and Lejour (2005) or Kox and Nordas (2007). However, our work refers directly to the research carried out by Nordås and Rouzet (2017), who, on the basis of the OECD STRI, examined cross-border trade in services between OECD-countries in the case of regulated professions (among other sectors).

Figure 6: Illustration of the gravity approach: Dutch exports of architectural services

Year 2015, export volume in million Euro



Source: Eurostat: "International trade in services (since 2010) (BPM6) [bop_its6_det]", Sector architectural activities NACE M711. No export data to Denmark, Croatia and Czech Republic. Basic map form Europe under free public Wikimedia Commons licensing.

Trade and distance data for the empirical model

For our empirical analysis, we use data on 23 EU Member States that are also members of the OECD for the period 2014-2016. The OCED trade restrictiveness index (STRI) is available for the period 2014-2017 only for these 23 Member States. Even though the respective values for the EU Member States have not changed before this period with very few exceptions, we have limited the period of analysis to these years. Together with the availability of trade data (2010-2016), this results in a period of three years (2014-2016) for our empirical analysis based on the STRI. Our analyses based on the alternative measure of the chamber system includes all 28 EU Member States of for the same time period.

We use Eurostat International Trade in Services data for the architectural services sector (BOPS2010 sector SJ311). While the data available from Eurostat are quite extensive, there are still quite a number of missing observations. Bilateral trade data between all 28 EU Member States for three years includes n(n-1)3 = 2268 observations. Of these 2268 observations, importers reported 988 as missing or not at all. Exporters reported 1021 as missing or not at all. That is a share of roughly 44 and 45 percent, respectively. For our analysis, we use trade flows reported by exporters where available. Where exports are missing, we use mirror flows reported by the respective importer. By using this method, we can reduce the share of missing values to 19 percent (see Table 1 for information on missing and zero trade flows in our data). This substitution is not perfect because of asymmetric trade data. Exports from i to j reported by i often do not match exactly imports from i to j reported by j. This may be due to different ways of measuring imports vs. exports or differences between the countries' systems of reporting. Still, this method is widespread and recognized in the literature and allows us to at least approximate trade flows where observations would otherwise be missing. Where zero trade flows are reported, some authors decide to treat them as missing values. However, very low and even zero trade flows seem plausible for the services of architects in question. Therefore, we treat zero observations, as such. These trade flows occur mainly in trade between smaller, non-neighboring Member States.

Table 1: Missing and zero observations in Eurostat architecture trade data

	No. Missing		Share missing		No. Zero		Share zero	
	Reported	Incl. mirror flows	Reported	Incl. mirror flows	Reported	Incl. mirror flows	Reported	Incl. mirror flows
Imports	988	423	0.44	0.19	856	1175	0.38	0.52
Exports	1021	423	0.45	0.19	853	1175	0.38	0.52

No. of observations for trade in architecture services 2014-2016 EU28: 2268.

We use data on distance, common official language and common legal system from the CEPII distance and gravity data sets and sectoral production data from Eurostat. In addition, we use data on GDP (current US$) from the World Bank World Development Indicators. As measures of regulation and regulatory heterogeneity, we use the OECD's STRI scores and regulatory heterogeneity measures constructed from the STRI data, as explained above. We also use information on compulsory national chamber systems from the OECD Product Market Regulation Indicator (PMR).

Specification of the empirical model

To estimate the potential effects of homogeneity and national regulation within the gravity framework, we use Poisson Pseudo Maximum Likelihood estimation as supposed by Santos Silva and Tenreyro (2006), which allows us to include zero trade flows in our analysis. This is useful because our data set contains a relatively large share of zero trade flows. A more detailed examination of the method can be found in Nordås and Rouzet (2017). The authors do also provide further information on the implementation.

Just like Nordås and Rouzet (2017), we look at the possible effect of a more heterogeneous regulation - but in our case for the Member States of the European Single Market. For a basic understanding of the approach, a look at the associated model is useful (see Equation below). The baseline regression is the following

$$exports_{ij,t} = \exp[\beta_0 + \beta_1 \ln(distance_{ij}) + \beta_2 comlang_{ij} + \beta_3 comleg_{ij} + \beta_4 heterogeneity_{ij,t} + \gamma_{i,t} + \delta_{j,t}] + \epsilon_{ij,t}$$

The dependent variable $exports_{ij,t}$ is the value of cross-border exports from country i to country j at time t. $\ln(distance_{ij})$ is the log distance between countries i and j, $comlang_{ij}$ is a dummy for a common official language, $comleg_{ij}$ is a dummy for common legal origin (civil law and common law), $heterogeneity_{ij,t}$ measures heterogeneity between the countries' regulatory regimes, $\gamma_{i,t}$ is a an exporter-year fixed effect, $\delta_{j,t}$ is an importer-year fixed effect and $\epsilon_{ij,t}$ is the error term.

We can use the model to investigate how regulatory heterogeneity, in addition to distance measures such as the geographic distance between two trading partners i and j, a common language and common legal origin influence exports of architectural services between EU Member States. While a bilateral heterogeneity score, a common language or the distance between two countries are factors that apply or do not apply equally to both trading partners, it is obvious that country-specific factors such as GDP or the size of the national architectural services sector also influence cross-border trade. Therefore, we follow the current literature in the field of gravity trade analysis and work with country-year fixed effects, which should capture such country-specific features for the respective years of analysis. In addition, these fixed effects should also capture other relevant country-specific characteristics such as difficult national building regulation or cumbersome building permit procedures, as discussed under the explanatory approach number three (different building regulation).

Results based on the empirical model

We find no empirical connection between a higher homogeneity of regulation and more cross-border architectural services if the STRI is used as a measure of the homogeneity of national regulations. Nor do we find any correlation between lower OECD-STRI values of the respective trading partners and higher trading volumes in intra-European trading in architectural services. However, if the existence of a chamber system is used as an indicator for the respective country-specific regulatory approach, the empirical findings may point to some interface problems between the two systems. Trade between two countries that differ on this characteristic is somewhat lower. However, there is no empirical evidence that countries with a chamber system trade with each other more or less than countries without a chamber system. This tends to indicate that none of the two historically evolved regulatory approaches seems superior in principle in the case of cross-border service provision.

Table 2: Heterogeneity and cross-border exports of architecture services, PPML estimation

	(1)	(2)	(3)	(4)
Log distance	-1.240***	-1.345***	-1.361***	-1.214***
	(0.158)	(0.154)	(0.154)	(0.156)
Common language	0.782**	0.780**	0.832**	0.679*
	(0.293)	(0.297)	(0.304)	(0.301)
Common legal origin	0.363*	0.358*	0.371*	0.341*
	(0.147)	(0.144)	(0.149)	(0.142)
Heterogeneity answer		-0.897		
		(1.616)		
Heterogeneity score			0.664	
			(1.164)	
Heterogeneity chamber				-0.303*
				(0.127)
Importer-year fixed effects	Yes	Yes	Yes	Yes
Exporter-year fixed effects	Yes	Yes	Yes	Yes
Observations	1845	1293	1293	1845
Geographic scope	EU 28	23 MS	23 MS	EU 28
Pseudo R-squared	0.585	0.580	0.580	0.588

Standard errors clustered by importer and exporter in parentheses.
* p<0.05, ** p<0.01, *** p<0.001

Table 2 reports our empirical results on the explanatory hypotheses number one (lack of uniform professional regulation) for the rather low level of intra-European cross-border trade in architectural services. Therefore, this is where we consider how the homogeneity of national regulation between two trading partners affects intra-EU trade in architecture services. The results show no significant relationship between regulatory heterogeneity in terms of the OECD-STRI and architecture services

trade among the 23 EU countries in our sample. The connection between more homogeneous regulation and higher trade, which Nordås and Rouzet (2017) find in their analysis of trade between OCED countries for several services sectors, thus is not apparent for intra-EU trade in architectural services. The coefficient for a heterogeneity dummy based on whether both countries have the same regulation in terms of a professional chamber system (1 if both have chambers and if neither has chambers) is, however, negative and significant at a 5 percent level. In line with the gravity literature, we also find a strongly significant negative relationship between trade and distance while a common language and common legal origin (civil law and common law) appear to have a positive effect on trade. The slight positive influence of the same legal origin is not entirely surprising in the context of the also slightly positive effect of the same regulatory system as measured by the criterion of a chamber system. There are overlaps between the two categories, as most Member States in the tradition of a civil law are also in the tradition of a chamber systems in the area of professional regulation.

Table 3: Regulation and cross-border exports of architecture services, PPML estimation

	(1)	(2)	(3)	(4)
Log distance	-1.357***	-1.357***	-1.239***	-1.228***
	(0.153)	(0.152)	(0.161)	(0.158)
Common language	0.799**	0.790**	0.784**	0.686*
	(0.298)	(0.298)	(0.292)	(0.305)
Common legal origin	0.365*	0.366*	0.363*	0.355*
	(0.149)	(0.149)	(0.148)	(0.143)
STRI pair average	-8.251			
	(8.685)			
STRI pair GDP-weighted average		-0.806		
		(1.806)		
STRI pair both above average			-0.0213	
			(0.345)	
Chamber in both countries				0.478
				(0.260)
Importer-year fixed effects	Yes	Yes	Yes	Yes
Exporter-year fixed effects	Yes	Yes	Yes	Yes
Observations	1293	1293	1845	1845
Geographic scope	23 MS	23 MS	EU 28	EU 28
Pseudo R-squared	0.580	0.580	0.585	0.587

Standard errors clustered by importer and exporter in parentheses.

* p<0.05, ** p<0.01, *** p<0.001

Table 3 reports the results of our empirical work on the explanatory hypotheses number two (too restrictive professional regulation by itself) for the rather low level of intra-European cross-border trade in architectural services. So this is where we consider how the level of regulation affects intra-

EU trade in architecture services. We include bilateral measures of regulation in our regression, to allow for using fixed effects. In contrast to the work of Nordås and Rouzet (2017) and related previous working paper of Nordås and Rouzet (2015) with a different geographic scope, the simple average of the two trading partners' respective STRI scores, a GDP-weighted average, above-sample-average STRI scores in both countries all show insignificant effects for trade in architectural services within the common internal market. The same applies to a dummy that indicates if both countries have a chamber system.

The fact that the estimates based on the OECD "Services Trade Restrictiveness Index" (OECD-STRI) do not show any significant results both in the empirical work on the homogeneity of regulation and in the work on the level of regulation does not necessarily mean, however, that these links do not exist. Based on our qualitative analysis of the OECD-STRI (see section Measures for the scope and intensity of regulation), it may well be that this indicator does not necessarily reflect the actual relevant regulation in the case of trade in services in the European internal market. In this case of an inadequate indicator, it is not unlikely that no systematic effects can be found in an empirical analysis even if respective relationships exist in reality.

For this reason, we have performed the additional analyses based on the basic regulatory characteristic of the chamber system. The finding that this fundamental heterogeneity in the historically evolved regulatory systems constitutes a slight disturbance to the cross-border provision of services is not entirely surprising. The same seems to apply to other cultural differences between the member states of the common internal market such as different legal traditions or language barriers. It is interesting, however, that neither of the two subsystems seems to lead to significantly more trade in services within the Member States of either system when compared to the other. Therefore, one specific of the two regulatory approaches in itself does not seem to be a cause for the difficulties in cross-border trade in architectural services.

Concluding remarks

The Member States of the European Union have chosen different approaches to ensure the quality of architectural services. Indicators such as the OECD "Services Trade Restrictiveness Index for cross-border trade in services" (OECD-STRI) attempt to reflect these differences. Methodologically, this is not always easy. Nevertheless, the OECD-STRI covers many relevant aspects that could constitute a barrier to the cross-border provision of architectural services in general. However, some of the barriers covered by the STRI indicator do not exist for trade in services within the EU. For this reason, analyses based on this indicator for domestic European trade may be distorted. Anyway, it would seem hasty to deny the complete relevance of the OECD-STRI to issues of trade in services within the internal market. At least it would not be surprising if restrictiveness indicated by a high OECD-STRI characterizes Member States that are generally less open to trade and in which there are further implicit and explicit barriers to trade which may well be relevant to cross-border services.

Since the OECD-STRI plays a relevant role in the regulatory literature, we used this indicator as a starting point for our analysis to link to this academic research. Contrary to the results of existing research using the OECD-STRI, we find no evidence of positive trade effects for intra-European trade in architectural services as a result of more homogeneous regulation. The limited relevance of some of the policy areas covered by the OECD-STRI for the EU may be able to partly explain this. However, if one assumes that the indicator tends to represent correctly the nature of national regulation, these results would at least not argue in favor of abolishing the different regulatory regimes that have evolved over time within the EU.

As an alternative to the OECD-STRI, we use the regulatory aspect of the chamber system in order to capture the central dividing lines of professional regulation in the Member States of the EU between direct state supervision and indirect professional supervision in professional co-administration. Our results based on this indicator point to some interface problems between the two historically evolved systems. The same seems to apply to other evolved cultural differences between the Member States such as different legal traditions or language barriers. However, there is no empirical evidence that one of the two historically developed regulatory approaches seems superior in principle in the case of cross-border trade in architectural services.

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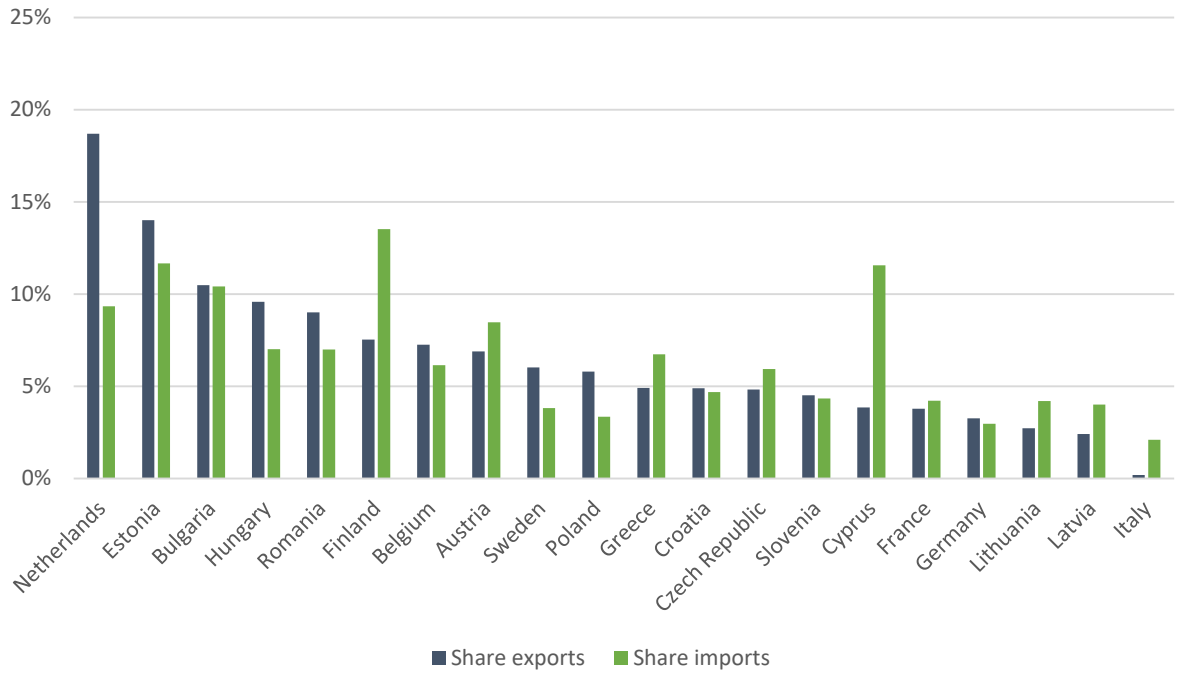
Appendix

Figure A1: Export shares and import shares in intra-European trade with legal services

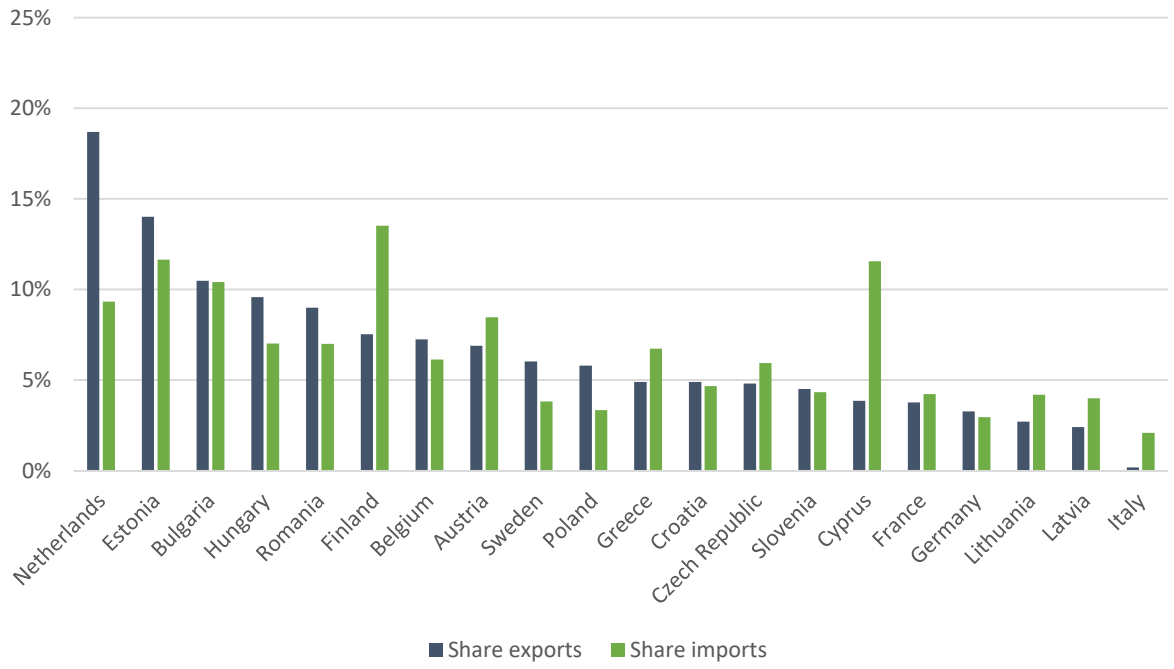
Year 2015, reference value: respective national production value in sector engineering services NACE Rev.2 M712/SJ211



Source: Own calculation, Data Eurostat: "Annual detailed enterprise statistics for services (NACE Rev. 2 H-N and S95) [sbs_na_1a_se_r2]" and "International trade in services (since 2010) (BPM6) [bop_its6_det]", Sector engineering services NACE Rev.2 M712/SJ211. No robust, Europe-wide import and export data Denmark, Ireland, Luxembourg, Malta, Spain, Slovakia, Portugal and UK due to a lack of import and or export data for some of the trading partners.

Figure A2: Export shares and import shares in intra-European trade with accounting, auditing, bookkeeping, and tax consulting services.

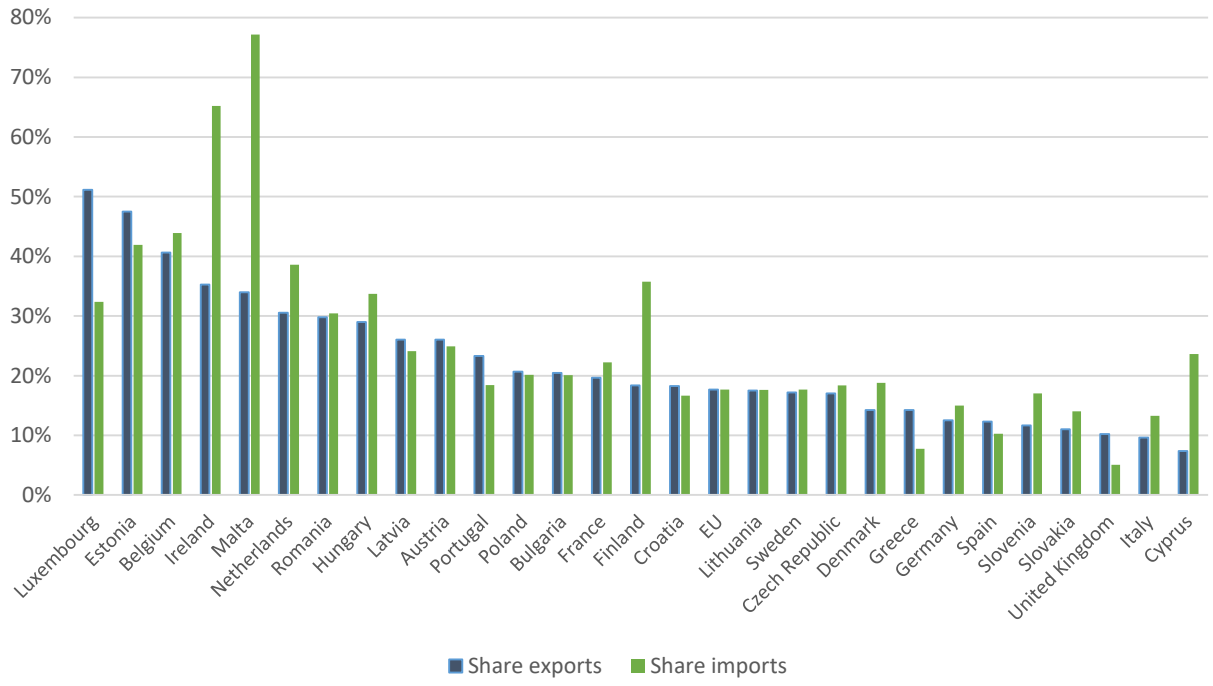
Year 2015, reference value: respective national production value in sector engineering services NACE Rev.2 M712/SJ212



Source: Own calculation, Data Eurostat: "Annual detailed enterprise statistics for services (NACE Rev. 2 H-N and S95) [sbs_na_1a_se_r2]" and "International trade in services (since 2010) (BPM6) [bop_its6_det]", Sector engineering services NACE Rev.2 M712/ SJ212. No robust, Europe-wide import and export data for Denmark, Spain, Portugal, UK due to a lack of import and or export data for some of the trading partners.

Figure A3: Export shares and import shares in intra-European trade with business services

Year 2015, reference value: respective national production value in combined sector business services NACE Rev.2 M



Source: Own calculation, Data Eurostat: "Annual detailed enterprise statistics for services (NACE Rev. 2 H-N and S95) [sbs_na_1a_se_r2]" and "International trade in services (since 2010) (BPM6) [bop_its6_det]", Sector business services NACE M.

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