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Austria's Potential for Trade in Services

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Abstract

We estimate the potential for trade in services in a 2-step approach using a gravity model for a sample of bilateral service trade flows in individual service categories between 65 countries over the period 2000 to 2005. In particular, we focus on the Austrian economy's potential for untapped trade in services which appears to be substantial. While Austria's travel services are reaching their potential, there is still ample room for exports of commercial services. Our analysis further points to the fact that this lack of exploiting the potential arises less from legal and institutional features as measured by OECD regulation indicators, but rather from other structural features of the Austrian economy.

Keywords: trade in services, commercial services, gravity modelling, regulation
JEL classification: F14

1. Introduction

The global integration of markets has brought tremendous growth in Foreign Direct Investment and merchandise trade flows, and served as a catalyst for the development of trade in services. Growth in services trade has been on par with the expansion of merchandise trade – meaning that certain sectors have enjoyed double-digit growth over the past decade (such as computer and information, communication, and financial services). While trade is rarely an end in itself, it is often associated with many beneficial effects for the economy. A country may profit from an increased scale of production, cost efficiency improvements through the exposure to international competition or enhanced technological progress through embodied knowledge and other intangibles in the imported goods, yielding positive knowledge and technology spillovers. Many of these gains from trade can be extended more or less directly to trade in services. Moreover, a deeper understanding of trade in services seems especially warranted given its increasing weight in overall trade, as well as its important role as an input for manufacturing production (e.g. commercial services.). Over time, and given an overall rise in the level of development, economies have seen the intermediate linkages between commercial services as inputs and the production of manufactured goods deepen. That trade in services can thus improve not only the performance of the service sector, but of the economy as a whole, has been shown in the literature (Arnold et al., 2006; Francois and Woerz, 2007). As a result, foregone trading potential may also imply foregone spillover effects from the services sector to the rest of the economy. In this paper we use the gravity model in order to quantify the unexploited (or 'overexploited') potential for trade in services for the EU, with special emphasis on Austria. As a small open economy characterized by a high degree of services trade, Austria constitutes an interesting case study. In 2004, the Austrian service exports to GDP ratio was at roughly 17% compared to the EU-15 average of 8.4%. This is consistent with the 14% ratio found for the Netherlands, which is substantially higher than the 5% figure that characterizes both France and Germany. The UK, manifestly specialized in services trade, exhibits an exports to GDP ratio of more than 9%.

Country-specific characteristics determine these ratios to a large extent, and thus the ratios themselves do not adequately capture whether or not a given country is operating at its full trade-in-services potential. Namely, does a high services trade to GDP ratio necessarily mean that a country is fully tapping into its potential? Or, might such a country still merit the title of 'underperformer' once other characteristics (location, stage of development, structural and institutional features, etc.) have been taken into account? One illustration of the importance of country characteristics is noting that smaller economies tend to be more open to services trade – as is also the case for trade in goods. Indeed, in spite of Austria's high openness ratio for services trade, our study reveals that the country is operating well below its estimated potential, especially in commercial services. This finding seems particularly important given the influential role commercial services have in shaping other sectors of the economy.

In discovering unexploited trade potential, a natural question arises: What, exactly, are the factors underlying this finding? Heuristically, it is useful to distinguish between the legal and institutional factors of an economy, on the one hand, and other structural characteristics, on the other. The former can be influenced by policy interventions in the short or medium term, whereas the latter exhibit more inertia and can only be changed in the long run (e.g. price competitiveness arising from unit labour costs, skill endowments of the work force, average firm size, concentration within industries, etc.). Indeed, only long-run economic policies can change the other structural characteristics of an economy.

Quantifying a 'potential' for trade implicitly assumes having a reliable and accurate means of measuring trade in services. Yet, our work suffers from many of the data issues that continue to plague the services trade literature as a whole (such as ambiguities in the definition of trade in services, inconsistency or lack of data sources for certain modes of international service delivery). Given these data limitations, our paper focuses on the cross-border delivery of services and consumer movement, omitting trade through commercial presence abroad.

The paper proceeds as follows: The next section provides a detailed account of the data sources used. A thorough discussion of the database seems warranted since the quality of services trade data is still far from the quality we are accustomed to when examining merchandise trade flows. Section 3 explains our estimation procedure. Section 4 reports and analyses the results. Section 5 assesses the extent to which trade can be increased by changes in the existing regulatory regimes. Finally, Section 6 concludes.
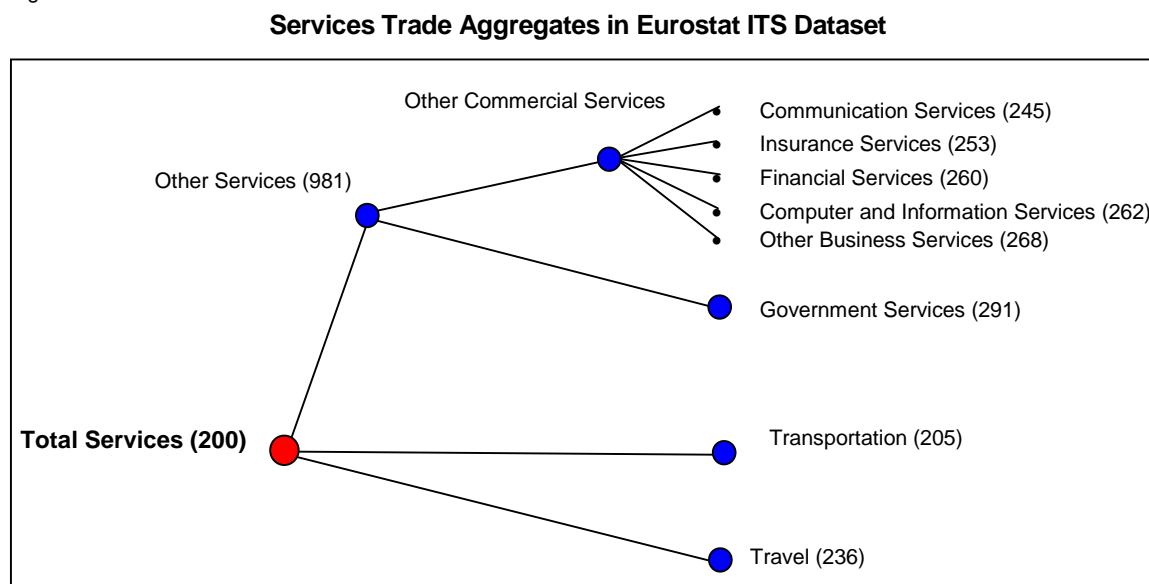

2.   Data and Descriptive Statistics

2.1 Eurostat ITS Database

The trade in services data used in this study are drawn from the Eurostat ITS database. This database is in turn based on the Balance of Payments (BoP) information supplied by the member states of the European Union: each year either the national banks or the national statistical offices of the member states provide Eurostat with data according to a set of questionnaires approved by all member states and designed to fulfil a set of requirements. When it comes to services (BoP 200), the data come from a variety of surveys – they may be reported either by the banks or directly by the enterprises or households.[1] The BoP records transactions between a member state's resident and non-resident entities, which covers to a varying extent three of the four modes defined under the General Agreement on Trade in Services (GATS). Let us briefly describe each of

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[1]   The Eurostat ITS database can be downloaded at http://epp.eurostat.ec.europa.eu/ under the *Economy and Finance* heading and the '*Balance of Payments – International Transactions, International Trade in Services (since 1985)*' subheading.

these modes in turn. Mode 1 (cross-border supply) includes the following service categories: communications, insurance, financial services, royalties and licence fees, most of the transactions recorded under transportation services, and parts of computer and information services, other services and personal, cultural and recreational services. Mode 2 (consumption abroad) is essentially comprised of travel services and a fraction of transportation services (supporting and auxiliary services to carriers in foreign ports). Mode 4 (presence of natural persons) is only partly covered by BOP statistics, mainly through construction services and parts of computer and information services, other business services – and personal, cultural and recreational services. Other elements of mode 4 are recorded in labour-related flows in the BoP statistics and in FATS (Foreign Affiliate Trade Statistics) through foreign employment in foreign affiliates. However, mode 3 (commercial presence) is excluded *a priori* from the Eurostat ITS database. This mode would be captured by FATS statistics and does not yet exist for most countries in the world. Hence, our analysis is restricted to modes 1, 2 and parts of mode 4.

Figure 1
Services Trade Aggregates in Eurostat ITS Dataset

The Eurostat ITS database provides both trade in total services (BoP position 200) and trade in disaggregated service categories. In comparing Austria's trade potential with that of other countries, some of these disaggregated categories will be of interest in their own right.[2] These sub-categories can also be summed together to construct a number of services trade aggregates that come very close to the definition of cross-border trade in services. Namely, a 'residual services' position can be constructed by subtracting transport (BoP position 205) and travel (236) from total services (200). This aggregate includes both

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[2]   Sectors of interest that can be directly drawn from the BoP framework include: Financial Services (BoP position 260), Computer and Information Services (262), Transportation (205), Travel (236), Communication Services (245), and Insurance Services (253).

'non-allocated services' (982) and government services (291). The Eurostat ITS database also reports an 'other services' position (981) that omits 'non-allocated services' from the 'residual services' category. Next, subtracting 'government services' from 'other services' yields an 'other commercial services' category. Figure 1 illustrates how the different services trade aggregates are directly reported in the Eurostat ITS database, and how additional aggregates are created. Appendix Table 1 provides a detailed account of all the service sectors included in this report.

The high level of sectoral disaggregation allows us to focus on cross-border trade in services, and the extensive time coverage (1985-2005) allows for the use of panel estimators – making the Eurostat ITS database useful in assessing Austria's trade potential. In practice, we choose to restrict the sample to 2000-2005 for two reasons. Firstly, the reliability of bilateral services trade data is generally considered to increase over time: most central banks and international organizations did not publish bilateral services trade data until 1999. Secondly, the number of non-missing observations in 1998 and 1999 is low enough that discarding them constitutes a minor loss of information.

2.2 OECD PMR Database

From a policy-making point of view it is important to isolate those variables that can be changed to improve Austria's trade potential (as opposed to immutable characteristics such as distance, or sharing a common border). To this end, we find that an important policy variable is the domestic regulatory environment, which is highly relevant for services trade since it can be viewed as an indirect trade barrier. Measures for domestic regulation are provided by the OECD's aggregate product market regulation (PMR) indicator. While it can be said that the OECD PMR indicator has the disadvantage of not dealing exclusively with domestic regulations in the services sector, it does cover a wide array of services sector-specific regulations – and can therefore be considered as strongly correlated with domestic regulations in the services sector. As such, the OECD PMR indicator is chosen over other indices for this present study.[3] For a detailed account of the database we refer the reader to Conway et al. (2005). It is important to point out that the OECD PMR index only covers regulations that have the potential to reduce competition in areas where technology and market conditions make competition viable. Lastly, the indicator is normalized over a scale of 0 to 6, where higher values indicate more restrictive domestic regulation. It is available for the years 1998 and 2003.

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[3] Another good choice might be the World Bank's 'Governance' indicator. However, instead of summarizing objective regulatory measures (as for the OECD PMR), it assembles individual perceptions on the regulatory environment into an indicator. Thus, in the present study, an 'objective' indicator is chosen over a more 'subjective' one.

2.3 Other Explanatory Variables

Aside from the Eurostat ITS and the OECD PMR datasets, the gravity analysis that follows draws on several other data sources.

- **Trade cost proxies** (distance, common border, common language) are taken from the CEPII's bilateral database. Specifically, distance is measured as the population weighted average of the great circle distances[4] between the 20 largest cities in the origin and destination countries. Common border is a dummy that is equal to one when two countries share a border, and zero otherwise. Common language is based on the ethnological definition and takes on the value of one when a language is spoken by at least 9% of the population in both countries.
- **GDP** and **population data** are chiefly provided by the World Bank's 'World Development Indicators Online' database – and complemented by the IMF's 'World Economic Outlook' database when observations are missing.

2.4 Trends in the Data

Trade in services is a rapidly growing phenomenon as is also shown in Table 1. Starting from low initial levels, certain commercial services, such as computer and information, communication and financial services, have experienced an extremely rapid expansion. We observe a long-term structural shift away from transportation and travel services, which have traditionally been the dominant categories, towards other services. Even the UK, the largest exporter of services in the EU, continues to exhibit high growth rates, of more than 9% on average, for total services. The most important service exporters in the EU (in decreasing order: Germany, Spain, France, Italy, the Netherlands and Austria, followed closely by Ireland, Belgium and Luxembourg) often exhibit continuously strong trade growth (at double-digit rates in Ireland and Luxembourg). From a global perspective, the EU is by far the most important exporter of services. Including all intra-EU trade it accounts for roughly 75% of world service exports. It also represents the most integrated area with rather low barriers to trade in services, even if such barriers (explicit or implicit through differences in national regulations) still exist.

While we can observe a secular decline of transportation and travel services, Austria shows comparably strong concentration in both these categories. According to the new BoP figures released in 2008, the importance of travel services has further increased. Nevertheless, growth is highest in other services, particularly in financial services, but also in construction and transportation services. From a sectoral point of view, Austria's growth potential appears limited, especially since the latter two categories are characterized by low average growth rates internationally. From a geographical perspective, the most important trading partners

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[4] Distance is most often measured using the 'great circle' formula, which approximates the shape of the earth as a sphere and calculates the minimum distance along the surface.

for Austria are Germany, Switzerland, Italy, the UK and the Netherlands (again in decreasing order). These countries are all large service exporters and importers, with the UK and the Netherlands showing a particularly dynamic demand for services (see Table 2). Moreover, other countries with strong growth in services import demand, such as Hungary, are among the most important destinations for Austrian service imports. Hence, drawing from the geographical structure of Austria's service exports and the performance of these markets, we obtain a rosier picture of Austria's trade potential: structural considerations notwithstanding, we would expect positive growth in services trade.[5] The following analysis will shed more light on this, controlling for the widest possible range of explanatory variables.

Table 1

Long-Run Average Annual Growth in Service Exports, 1994-2005

BOP position	Total 200	Transport-ation 205	Travel 236	Other Services 981	Comm-unication 245	Cons-truction 249	Insurance 253	Finance 260	Computer& Information 262	Other Business 268
AT	3.5	10.5	1.1	20.2	2.4	11.6	3.4	11.4	2.2	3.8
BE	3.5	2.2	6.0	7.0	10.1	-7.5	-4.4	7.7	5.4	12.2
DE	6.3	5.9	4.6	8.4	4.3	9.7	9.2	19.7	6.8	7.0
DK	11.3	2.6	4.7	0.0	0.0	0.0	0.0	0.0	2.3	0.0
ES	8.3	9.2	6.1	9.3	11.8	-4.9	12.7	13.4	14.7	12.4
FI	8.0	0.9	2.0	8.6	11.2	4.8	-3.4	-0.6	15.9	12.5
FR	2.3	2.3	4.2	21.0	0.0	-4.8	-12.2	15.7	2.8	2.1
GB	9.4	5.4	3.7	12.3	-5.5	6.2	17.2	18.7	12.8	12.4
GR	9.3	17.4	10.3	10.1	-6.6	19.2	-19.8	-8.3	-8.1	-5.7
IE	26.3	8.5	7.4	27.1	-15.7	8.3	37.0	63.9	27.3	36.7
IT	2.7	-1.5	2.1	18.0	-5.5	0.2	-14.0	12.7	13.6	7.5
LU	9.7	8.5	6.7	7.1	11.6	7.7	11.1	23.4	6.1	25.0
NL	5.8	-0.2	5.1	18.2	-3.7	7.8	10.4	14.3	8.8	9.3
PT	6.7	8.1	5.3	3.1	6.3	2.9	0.1	15.2	13.4	8.9
SE	9.5	4.9	6.9	10.1	-13.9	7.9	7.9	16.4	18.5	13.4
EU-15	*6.7*	*5.8*	*4.5*	*11.0*	*13.2*	*-0.2*	*8.1*	*10.1*	*22.3*	*9.4*
BG	9.1	9.5	12.1	7.5	2.0	4.0	-3.7	4.4	23.7	6.8
CY	8.2	14.4	3.0	8.3	0.6	0.6	0.8	1.1	6.8	26.0
CZ	3.7	7.5	3.1	-2.3	1.4	-17.9	13.1	19.6	1.0	1.8
EE	12.9	11.1	12.9	15.4	9.6	25.3	23.5	28.1	23.4	18.8
HU	9.3	19.8	6.0	14.0	9.8	-3.3	-0.5	9.9	5.1	8.2
LT	16.6	16.0	19.3	13.3	-7.2	-8.3	4.7	11.2	27.4	15.8
LV	8.7	4.9	19.0	17.3	10.3	1.3	21.0	17.0	27.6	22.3
MT	3.7	3.9	1.2	10.1	0.0	7.0	0.0	12.5	9.5	11.0
PL	4.6	5.0	8.7	-1.6	-5.4	-17.8	4.0	34.5	6.3	0.2
RO	12.0	12.3	2.5	19.7	10.4	3.3	6.2	49.5	26.1	18.1
SK	5.8	10.1	5.7	-2.2	-0.7	7.5	-0.6	16.8	0.3	1.9
SI	5.6	6.9	3.9	20.6	-1.1	12.8	11.7	23.2	7.3	7.8
EU-12	*6.9*	*8.6*	*6.0*	*9.2*	*6.3*	*-0.4*	*-6.7*	*11.4*	*39.9*	*9.9*

Table 2

Long-Run Average Annual Growth in Service Imports, 1994-2005

BOP position	Total 200	Transport-ation 205	Travel 236	Other Services 981	Comm-unication 245	Cons-truction 249	Insurance 253	Finance 260	Computer& Information 262	Other Business 268
AT	7.0	6.0	0.8	12.5	4.7	10.4	-0.6	9.5	2.0	3.9
BE	3.7	3.5	5.3	14.9	3.2	-9.4	0.7	11.4	4.1	9.9
DE	4.8	5.9	3.2	7.7	0.4	7.7	17.7	16.4	5.7	5.7
DK	10.5	2.2	5.5	0.0	0.0	0.0	0.0	0.0	3.6	0.0
ES	10.8	11.3	10.7	15.3	13.5	-2.8	13.9	9.8	12.8	10.5
FI	4.1	5.7	2.9	8.9	24.5	1.0	-5.8	0.6	3.6	3.5
FR	3.4	2.3	5.8	17.3	3.2	-0.3	-5.4	12.6	5.5	3.3
GB	8.7	6.7	8.7	8.2	-8.8	6.9	8.6	13.0	12.8	10.0
GR	13.9	20.6	9.9	13.5	5.5	9.4	-6.6	10.5	7.6	6.2
IE	19.5	2.3	11.2	15.9	-35.6	43.9	17.6	7.4	25.3	22.7
IT	3.3	-1.9	4.2	16.0	7.2	8.2	-18.3	10.7	11.3	7.6
LU	8.3	2.0	7.9	26.0	8.0	6.0	10.4	17.0	5.0	26.5
NL	6.0	-0.3	4.4	18.0	-4.6	1.0	14.2	15.1	9.9	9.6
PT	4.4	5.9	3.2	6.5	0.1	1.1	0.3	12.5	6.0	4.2
SE	6.9	0.7	5.6	13.5	-18.5	3.7	5.1	11.8	17.3	10.1
EU-15	*6.6*	*5.3*	*5.3*	*9.7*	*12.4*	*-0.2*	*7.3*	*6.7*	*14.5*	*9.6*
BG	8.0	9.6	9.9	1.2	8.8	7.4	-4.0	4.3	21.5	9.4
CY	9.6	7.5	9.7	14.0	0.3	-0.6	0.8	1.3	34.9	20.3
CZ	5.5	6.9	0.5	7.4	3.9	8.4	18.6	20.8	6.6	8.2
EE	13.4	12.5	17.4	20.5	16.3	-29.8	17.7	18.0	19.9	12.5
HU	12.5	18.8	11.3	17.0	2.3	8.9	1.5	9.2	4.5	7.8
LT	11.6	9.3	17.4	13.5	1.1	3.2	1.1	11.5	7.2	10.5
LV	11.9	9.8	18.8	15.4	10.3	13.1	10.2	19.9	24.0	12.4
MT	2.5	-2.0	1.7	2.8	0.0	3.3	-0.1	13.9	10.4	9.6
PL	9.3	6.0	26.0	4.4	-3.7	-5.7	7.2	21.1	7.5	5.6
RO	9.9	11.3	0.3	24.7	22.7	17.2	8.4	36.2	12.3	14.8
SK	6.8	14.6	7.4	-6.1	11.3	12.1	10.4	13.7	1.3	3.5
SI	6.6	2.7	5.5	27.4	17.5	6.7	9.5	15.8	7.4	10.5
EU-12	*8.8*	*8.7*	*9.5*	*10.5*	*8.9*	*2.2*	*3.6*	*14.0*	*28.1*	*9.6*

3. Estimation Procedure

The gravity equation is a common formulation for the statistical analysis of bilateral flows between different geographical entities. Its fundamental intuition is that trade flows between two countries can be accurately captured by an analogue of Newton's Law of Universal Gravitation: trade flows are proportional to the product of their masses (GDPs) and inversely related to the distance between them. Ever since Tinbergen (1962) and Poyhonen (1963) first proposed this analogue, the gravity equation has known great empirical success. That said, while 'the' gravity equation has become the workhorse model for trade economists, it has often been criticized for its tenuous theoretical foundations – the past decade has seen a clear move towards structural specifications that are derived from standard economic theory. A common lesson that has emerged from a more theory-conscious literature is that the determinants of bilateral trade flows can be separated into origin-specific, destination-specific

and bilateral-specific components where part of any one of these components may be unobserved by the analyst. In particular, it has been shown that theoretically the unobserved origin- and destination-specific terms are necessarily correlated with unobserved country characteristics, leading to omitted variable bias if this correlation is not appropriately taken into account.[6] The current paper adopts a two-stage estimation procedure that minimizes the omitted variable bias given the data limitations for services trade.

3.1 First Stage

The first stage regresses the natural log of bilateral exports on the three aforementioned trade cost proxies (the log of distance, geographical contiguity, common language) as well as (i) a full vector of exporter-period fixed effects, (ii) a full vector of importer-period fixed effects, and (iii) period fixed effects.[7] To minimize the influence of measurement error in the services exports data on our results, we average yearly services exports data over the periods 2000-2002 and 2003-2005.

$$\ln exports_{ijt} = \beta_0 + \beta_1 \ln dist_{ij} + \beta_2 \ln comlang_{ij} + \beta_3 \ln comborder_{ij} + \alpha_{it} + \alpha_{jt} + \varepsilon_{ijt}, \qquad (1)$$

where α_{it} and α_{jt} are vectors of country-time fixed effects and α_t is a vector of time fixed effects. The period fixed effect captures the existence of any time series variation that is common to *all* countries. The two remaining fixed effects are what we are interested in: the reporter-period and partner-period fixed effects. In particular, their coefficients (referred to as α hereon) capture the volume of bilateral trade that is explained by observed and unobserved period-specific country characteristics. For instance, the α corresponding to Austria in 2002 can be interpreted as the volume of Austria's trade that is explained by observed and unobserved characteristics *particular* to Austria in that given period – i.e. the total observed flow *parsed* of the volume of trade explained by bilateral characteristics and the common time trend. This country-specific portion of the bilateral trade volume is then used as the regressor in the second stage.

3.2 Second Stage

Before delving into the second-stage specification in detail, we note that the underlying purpose of the second-stage regression is to compare country-specific trade volumes[8] (α)

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[6] More specifically, bilateral distance is shown to be correlated with a country's unobserved multilateral openness (see Baldwin and Taglioni, 2006.)

[7] To avoid perfect multicollinearity, note that one dummy was dropped in each of the three fixed effect categories. For the year fixed effect, the year 2000 was chosen, whereas the country that came first alphabetically was systematically dropped for the year-fixed effect.

[8] As explained above, these country-specific trade volumes are estimated in the first stage and parsed of the component determined by bilateral variables.

with the volumes ($\hat{\alpha}$) predicted by observed country-specific variables. In fact, this predicted volume ($\hat{\alpha}$) is what may be called a country's *trade potential*, in the sense that it measures a country's services exports predicted by its observable characteristics. Specifically, we are interested in the residual of the second-stage regression, which is nothing more than $\alpha - \hat{\alpha}$. This residual can be interpreted as the *deviation* from trade potential for a given country in a given period. In particular, a *negative* residual indicates that observed trade lies below its volume predicted by observable country characteristics, meaning that the country is 'under-performing'. Put differently, a negative residual is synonymous with 'untapped' potential. Conversely, a positive residual is indicative of over-performance.[9]

$$\alpha_{it} = \gamma_0 + \gamma_1 \ln POP_{it} + \gamma_2 \ln (GDP/capita)_{it} + \gamma_3 MO_{it} + \ln PMR_{it} + \varepsilon_{it} \qquad (2)$$

Our second-stage specification is given in equation 2. A parsimonious specification of the gravity equation in the second stage would include only two explanatory variables commonly found in the gravity literature: population and GDP/capita. The natural log of population is included as a proxy for economic size and the estimated coefficient is expected to be positive. The idea behind including the log of per-capita incomes (ln GDP/capita) is that higher-income countries trade more in general. A number of reasons accounting for this observation have been put forth for trade in goods: higher-income countries tend to have lower tariffs, superior transportation infrastructure, etc. In the context of services trade, higher-income countries tend to be more services-oriented: their share of services in GDP is higher, leading to higher services exports at a given size. It is therefore expected that the estimated coefficient on GDP/capita is positive.

This parsimonious specification is augmented by adding a multilateral openness control that measures a country's exposure to trade with *all* its trading partners instead of its bilateral exposure with *one* specific trading partner as the above bilateral trade cost proxies. The multilateral openness term is created using a combination of distance data from the CEPII database and GDP data from the World Bank and IMF databases. Essentially it is the distance-weighted sum of a country's actual and potential trading partners GDPs.[10] The multilateral openness term controls for the fact that trade flows do not only depend on bilateral trade barriers, but also on trade barriers across all trading partners. A forceful demonstration of this point can be found in Anderson and Van Wincoop (2003) who show that bilateral trade depends on the bilateral trade barriers between two countries relative to the product of their multilateral openness terms. More specifically, they show that bilateral trade decreases with the product of the multilateral openness terms. The intuition is readily

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[9] Note that it is not possible to extract these residuals by one-stage estimation procedure, since the country-year specific variables would be perfectly collinear with the country-year fixed effects.

[10] Algebraically we express the multilateral openness term as for instance in Francois et al. (2007):

$MO_{it} = \sum_{j=1}^{J} \frac{GDP_j}{dist_{ij}}$, where J is the set of country i's all potential trading partners.

grasped by an example provided by Head (2003). Imagine comparing trade flows between two country pairs: Australia-New Zealand, a country pair with low multilateral openness due to its geographical remoteness, and Austria-Portugal, a country pair with a high multilateral openness due to its proximity to large European economies. The distance between each pair's economic centres is roughly the same (Lisbon-Vienna and Auckland-Canberra both happen to be 1430 miles apart), and the product of their GDPs is also comparable (the latter is 20% smaller).[11] In the absence of a multilateral openness control, the gravity equation would predict that Austria-Portugal trade would be slightly larger (on account of their greater GDPs). Yet, in 1993 Australia-New Zealand trade flows were nine times greater than for Austria-Portugal. This straightforward example reveals the extent of overestimation or underestimation of trade potentials that can emerge in the absence of a multilateral openness control.[12] It should also be clear from the above example that we expect a negative sign of the estimated coefficient on the multilateral openness variable.

The specification we are eventually adopting for the present purpose further includes the OECD's PMR indicator. Given the intangible nature of services that precludes the imposition of tariffs, policy-induced barriers to services trade take the form of specific domestic regulations. These domestic regulations can either discriminate against foreign service providers, as would be the case of a restriction on the number of foreign service providers allowed in the domestic market, or be non-discriminatory but nonetheless act as a barrier to services trade, as would be the case of a licensing requirement that applies equally to domestic and foreign service providers. We therefore expect a negative sign of the estimated coefficient on the OECD PMR indicator. In including the OECD PMR indicator, our purpose is twofold. That domestic regulation should have an impact on services trade seems natural enough, but we are interested in observing whether there is statistically robust evidence for this relationship. Secondly, if the OECD PMR index proves to be statistically significant, gauging the variable's *economic* significance becomes important: how does the estimated magnitude of this policy variable compare with the other explanatory variables? In other words, if a country were to reduce the restrictiveness of its domestic regulation – does our model predict a notable increase in services trade?

4. Results

The first- and second-stage results for six service sectors are presented in Table 3 below. Before moving on, let us comment on the structure of the panel used in the estimation. After running the estimates on both an unbalanced and a balanced panel, the latter was chosen for the more consistent deviations in trade potential it provides. In other words, for any given

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[11] See Head (2003).

[12] Note that in Anderson and Van Wincoop (2003) the multilateral openness terms are implicit price indices. Since these implicit price indices are not observed by the econometrician they can only be estimated simultaneously with the gravity equation, replaced by country-specific dummies, or be proxied by an observable variable. We choose the third option.

country, the unbalanced panel tended to exhibit a large degree of variability in the estimated trade potentials from one period to the next – whereas the balanced panel yielded more plausible yearly deviations. The greater stability provided by the balanced panel is probably due to the fact that we restrict entry and exit of countries into the panel. However, in balancing the panel we must bear in mind the implicit assumption that the data are missing randomly (or that the self-selection rule is deemed 'ignorable', Verbeek and Nijman, 1996). In essence, we assume that the attrition in the panel from countries exiting or entering late into the panel does not distort the random design of the survey, and does not call into question the representativeness of the observed sample in drawing inference about the population we are studying. Balancing the panel leaves us with a maximum of 6306 observations on

Table 3

First and Second Stage Estimation Results

Services Exports	Total	Financial	Computer & Information	Other business	Other services	Other commercial
BoP position	200	260	262	268	981	984a
1st stage						
log distance	-1.359***	-0.336**	-0.268	-1.114***	-1.471***	-0.972***
	(0.082)	(0.152)	(0.182)	(0.118)	(0.093)	(0.162)
common border	0.699***	1.230**	0.861	0.127	0.594***	0.634*
	(0.182)	(0.507)	(0.627)	(0.272)	(0.200)	(0.351)
common language	0.586***	-0.184	0.096	0.273	0.362*	0.001
	(0.129)	(0.453)	(0.503)	(0.264)	(0.198)	(0.252)
fixed effects:						
exporter-year	yes	yes	yes	yes	yes	yes
importer-year	yes	yes	yes	yes	yes	yes
year	yes	yes	yes	yes	yes	yes
N	2102	246	342	1016	1560	780
R-squared	0.86	0.91	0.88	0.88	0.87	0.90
RMSE	0.84	0.71	0.77	0.70	0.79	0.70
2nd stage						
log population	0.946***	0.302	0.706***	0.969***	0.972***	1.007***
	(0.053)	(0.208)	(0.220)	(0.073)	(0.092)	(0.088)
log gpd/capita	1.105***	1.240***	1.062*	1.136***	1.219***	0.924***
	(0.164)	(0.370)	(0.557)	(0.283)	(0.236)	(0.325)
log multi openness	-0.872***	0.216	0.126	-0.197	-0.155	0.155
	(0.158)	(0.355)	(0.315)	(0.250)	(0.211)	(0.239)
log oecd pmr	-0.700**	-1.232	-1.763	-1.213	-1.529***	-1.659**
	(0.328)	(1.112)	(1.273)	(0.715)	(0.469)	(0.692)
N	58	36	40	50	58	44
R-squared	0.90	0.67	0.63	0.85	0.87	0.89
RMSE	0.50	0.89	1.13	0.65	0.64	0.63

Robust standard errors in parentheses (adjusted for cluster by country pair in 1st stage and country in 2nd stage)

*** denotes significance at 1%, ** at the 5%, * 10%

bilateral export flows for BoP position 200 (total services) and with a minimum of 738 observations for the financial services sector.[13] The second-stage regressions have fewer observations, given that the bilateral dimension of the data is suppressed. Additionally, we restrict the second-stage regressions to OECD countries by using the OECD PMR indicator. Thus, the second stage has a maximum of 58 observations (for total services) and a minimum of 36 (for financial services). One benefit that arises from circumscribing the sample to OECD countries is that we are comparing structurally relatively similar countries.

4.1 First-Stage Results

The first-stage regressions reveal that the natural log of distance is significantly negative at the 1 per cent level across all sectors under consideration. In four of the six sectors, the distance's coefficient ranges from a magnitude of roughly –0.9 to –1.5. Given that the estimated distance coefficient hovers around unity, the log-log specification implies that a 50% decrease in distance corresponds to a 50% increase in trade flows. This magnitude is about 1/3rd lower for two sectors: Financial services and computer & information services. At first sight, this discrepancy does not seem too surprising given that these two service sectors are distinguished by the high informational content of their trade (as opposed to 'other business services' which tends to involve the movement of persons). In other words, that distance should matter less in the context of trade in financial or IT services does not seem too puzzling.

Sharing a common border has a significantly positive influence on trade flows in most service sectors. It is not significant for computer and information services and other business services, which are generally traded over larger distances.

The common-language dummy has a significantly positive influence on trade in services in general as well as for the aggregate of other services. However, when looking at individual commercial service sectors, this influence disappears. Thus, the common language seems to matter more for non-commercial services, such as travel, personal, cultural and recreational, etc.

As for explanatory power, in the context of gravity analysis it is often held that an 'R-squared of 0.7 on cross-section data is par for the course' (Baldwin and Taglioni, 2006). This is indeed the case with the present regressions, which have an R-squared ranging from 0.85 to 0.9.

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[13]   Note that averages of yearly export flows over the periods 2000-2002 and 2003-2005 have been used as the dependent variable to minimize the influence of measurement error on our results. The number of observations reported in Table 2 corresponds therefore to the total number of export observations divided by three.

4.2 Second-Stage Results

The estimated coefficients for the natural log of population are very close to 1 for four out of the six sectors. The finance sector is the only one to exhibit a statistically insignificant coefficient and, interestingly enough, also the sector to have the highest estimate for GDP per capita. This seems to be a reasonable result, given that financial services tend to be concentrated in areas with high GDP per capita, regardless of the GDP as a whole (e.g. Luxembourg, Qatar, etc.).

The multilateral openness control is only relevant for trade in services as a whole, where it is statistically significant at the 5 per cent level. As expected, the multilateral openness control takes on a negative sign. It is not significant for all other service categories, implying that bilateral trade relations play a much more important role here. This may be particularly true for commercial services, where well-established, often personal relationships have been known to mature over time between producers and consumers of a given service.

The domestic regulation variable, as measured by the OECD PMR indicator, is negative in all sectors and statistically significant for total services, other services and other commercial services. As expected, domestic regulation appears to exert a negative influence on services trade. Yet, on a more disaggregated level, this indicator does not show a significant influence on service trade flows in individual producer-related activities. However, recall that our measure of regulation is an economy-wide indicator that captures the overall regulatory environment. While regulation clearly displays the expected influence on services trade, for a deeper understanding of its exact influence within individual service sectors, one should probably rely on more precise measures of sector-specific regulations.[14] Indeed, the influence of individual components within the aggregate OECD indicator is likely to vary widely across specific service activities.
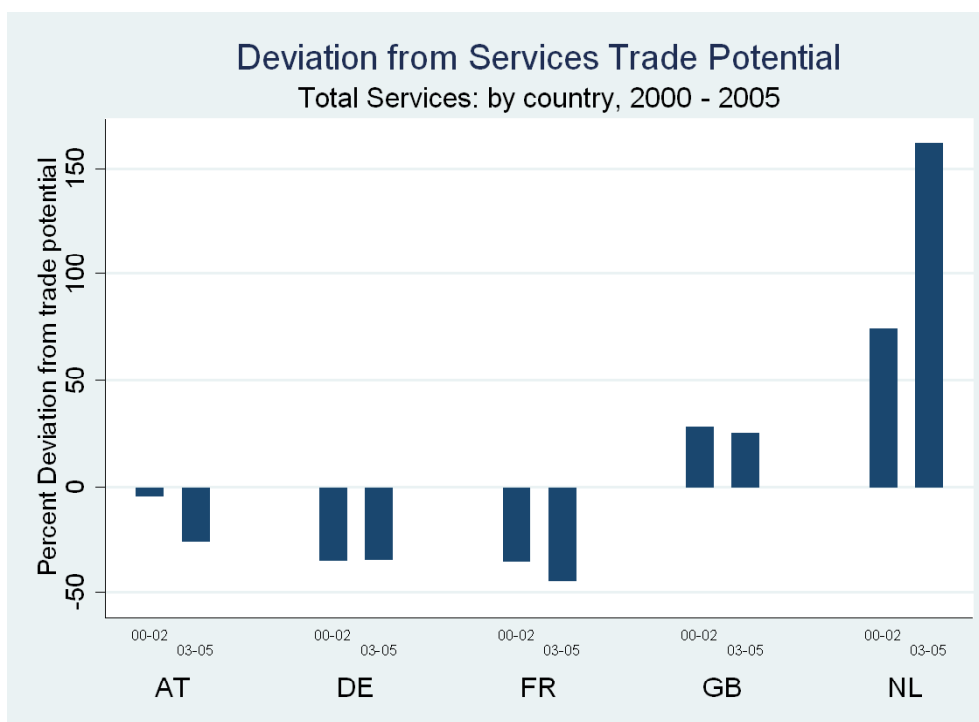
4.3 Comparing Trade Potential Across Countries

The five countries chosen for the graphical comparison of trade potentials are Austria, Germany, France, Great Britain and the Netherlands. They were chosen on account of being among Austria's largest European trading partners and among the most important service traders in the world.

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[14] However, in our model this might also induce problems related to endogeneity, therefore we opted for the more aggregate measure of regulation.

Austria is found to be underperforming in all six sectors under consideration. Thus, we turn our attention to Austria's potential *relative* to its major trading partners: Germany, France, Great Britain, the Netherlands. To this end, we look at each services aggregate in turn.[15]

Total Services (200). Compared to the four trading partners, Austria finds itself in a middle position in terms of deviation from trade potential. Great Britain and the Netherlands are strong over-performers, whereas France and Germany are underperforming to a greater extent than Austria. In other words, at the aggregate level, the untapped potential of Austria appears smaller than for France and Germany. Even though this is controlled for in the estimation, it has to be noted that these large countries show a strong specialization on manufacturing trade. For instance, service exports as a per cent of GDP amounted to only 5% for Germany in 2004, compared to the EU-15 average of 6%. In comparison, Austria had a trade to GDP ratio of nearly 17%, while Great Britain's ratio was at more than 9%. In order to isolate where Austria might have trade potential worth exploiting we need to look at services on a more disaggregate level.

Deviation from Services Trade Potential
Total Services: by country, 2000 - 2005

Other Services (981). Austria is underperforming the most compared to its four trading partners in this services aggregate which includes all services except for transport and travel. This suggests that Austria is faring relatively better in travel and transport – omitting
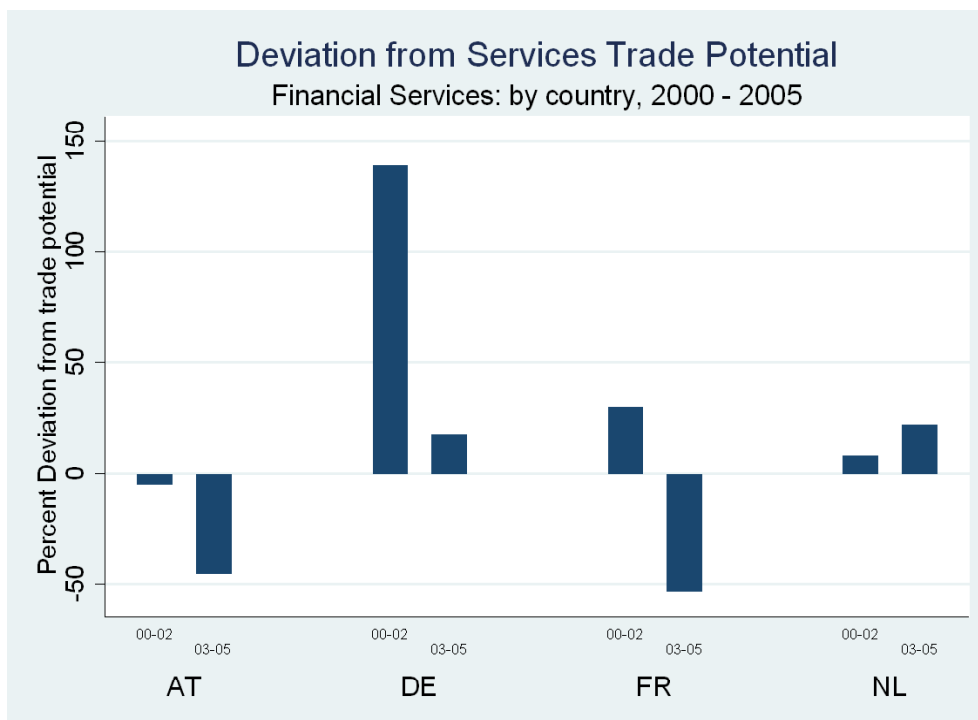
these two sectors brings its deviation from trade potential down to approximately –75 per cent. That said, Austria's underperformance is almost identical to Germany's and France's, which are doing only slightly better.
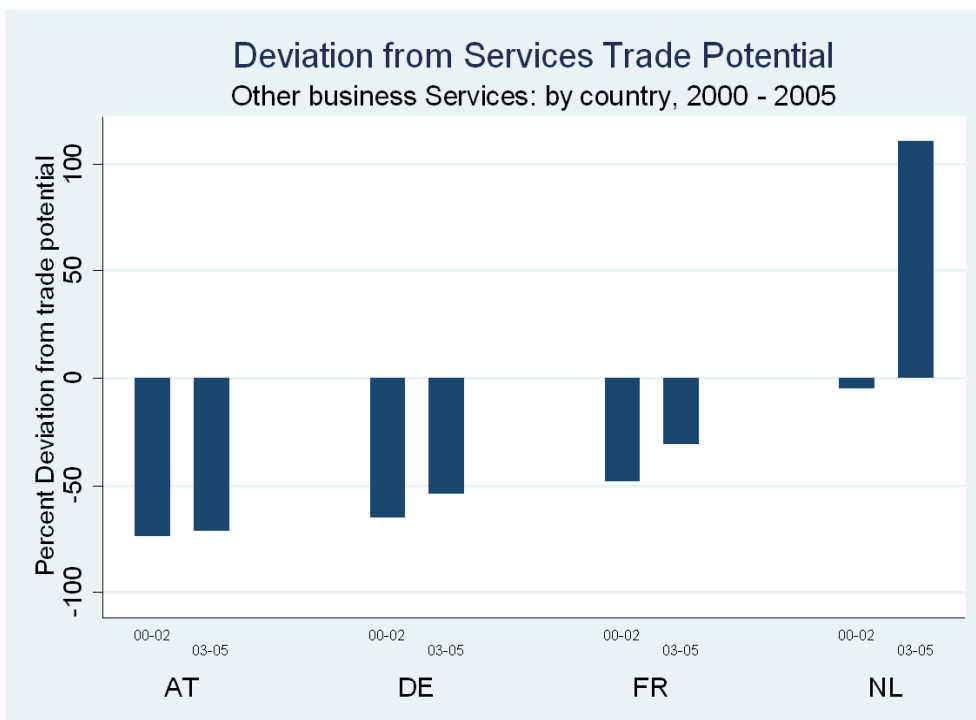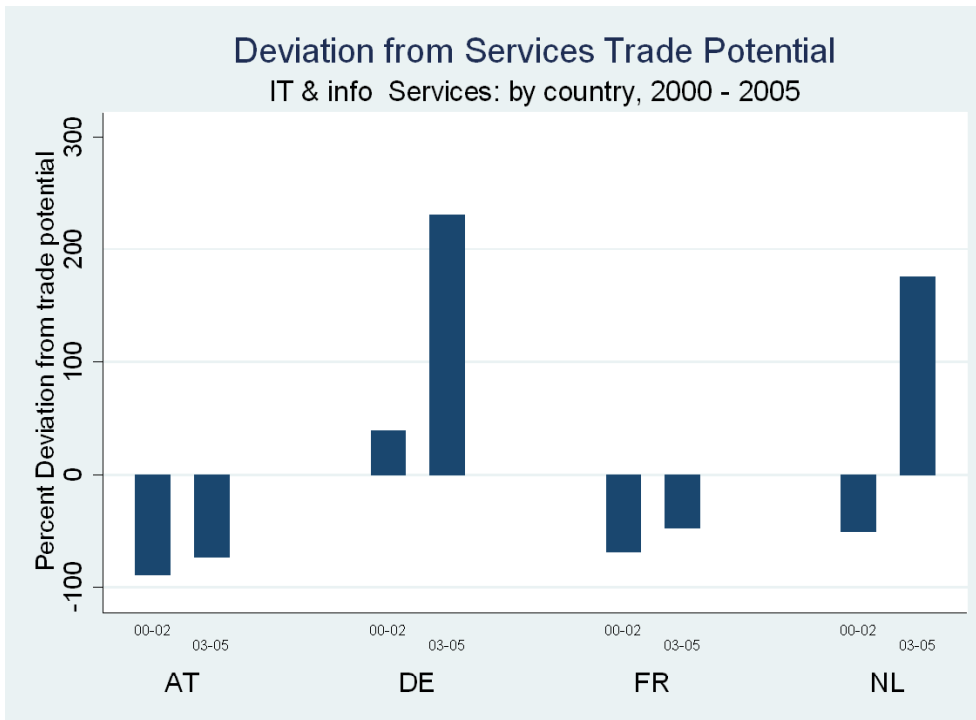
Other Commercial Services (984a). Government services (BoP 291) are subtracted from 'other services' to form this aggregate:[16] this change leaves the picture almost unchanged. While Austria is underperforming the most in the country sample, its deviation from trade potential remains comparable to both Germany and France. Great Britain and the Netherlands have a large (greater than 50 per cent) positive deviation from trade potential on average.

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[16]   See Appendix Table 1 for the breakdown of this services aggregate.

Deviation from Services Trade Potential
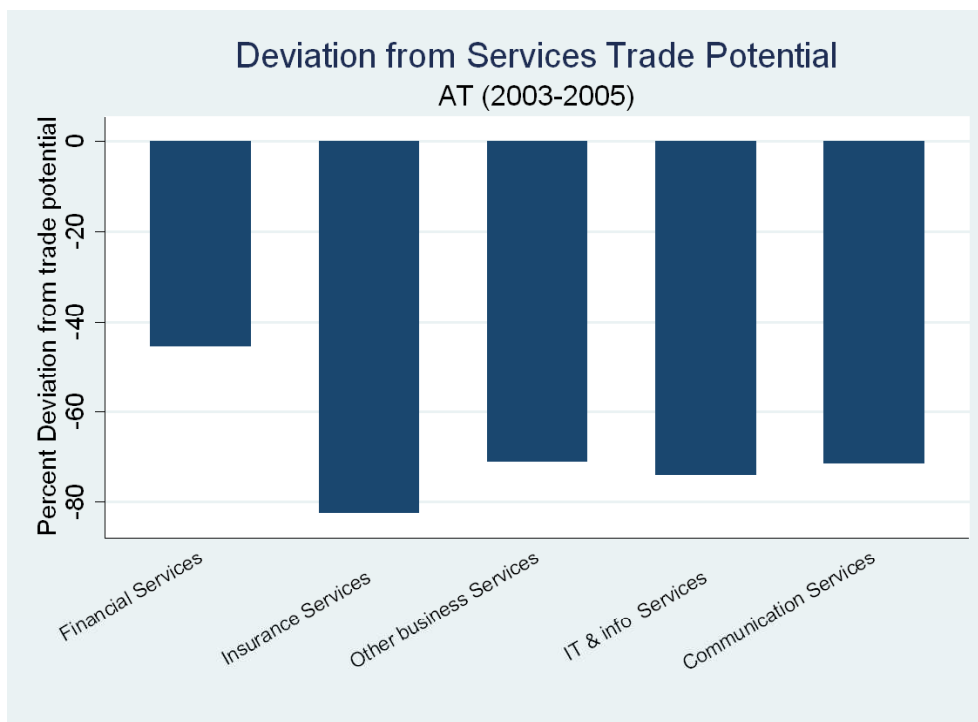Financial Services: by country, 2000 - 2005

Financial Services (260). Regrettably, Great Britain is missing from the balanced panel in this industry where it is likely to be a significant over-performer. Among the remaining countries, France exhibits the greatest negative deviation, while Germany and the Netherlands exhibit positive deviations. Austria is realizing only little more than half of its estimated potential in financial services. However, it is worth noting that Austria displays relatively strong outward investments to the Central and Eastern European countries in this sector. Hence, in assessing Austria within this sector, the omission of some of these countries and of mode 3 trade might be biasing Austria's performance considerably downwards.

Deviation from Services Trade Potential
IT & info Services: by country, 2000 - 2005

Deviation from Services Trade Potential
Other business Services: by country, 2000 - 2005

Computer and Information Services (262). Great Britain is absent from the balanced sample once more. Austria and France are characterized by negative deviations from trade potentials during the whole 2000-2005 period. Germany and the Netherlands have positive deviations in the period 2003-2005 and appear to be on a rising trend.

Other Business Services (268). Austria is underperforming the most in this services aggregate which includes (i) merchanting and other trade-related services, (ii) operational leasing services, and (iii) miscellaneous business, professional, and technical services (such as management and consulting activities, legal services, advertising, etc.). Germany and France are also underperforming, but less so. The Netherlands are characterized by a very positive deviation from trade potential, at roughly +100% in the 2003-2005 period.

The graph below is helpful in comparing Austria's performance across all sectors in the most recent year of our sample, 2005. We can identify insurance services, IT, communication and other business services as the ones with the greatest negative deviations from the predicted potential. While the realization of this potential is significantly better in financial services (more than 50% of the estimated potential is realized), the rising gap between potential and actual performance in this category implies that Austrian financial services exporters are not successful in harnessing the global expansion of these services. Travel services are the only category where Austrian firms are over-performing. Moreover, as Austria's second most important services export sector, transportation services provide ample growth opportunities given Austria's central geographic location in Europe.
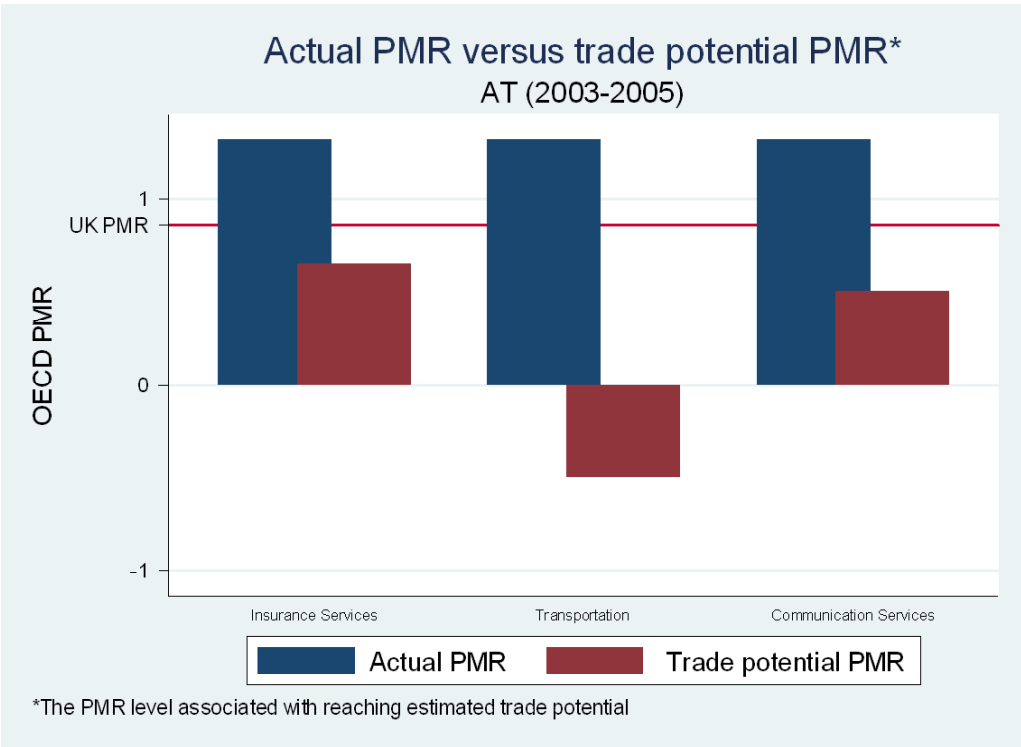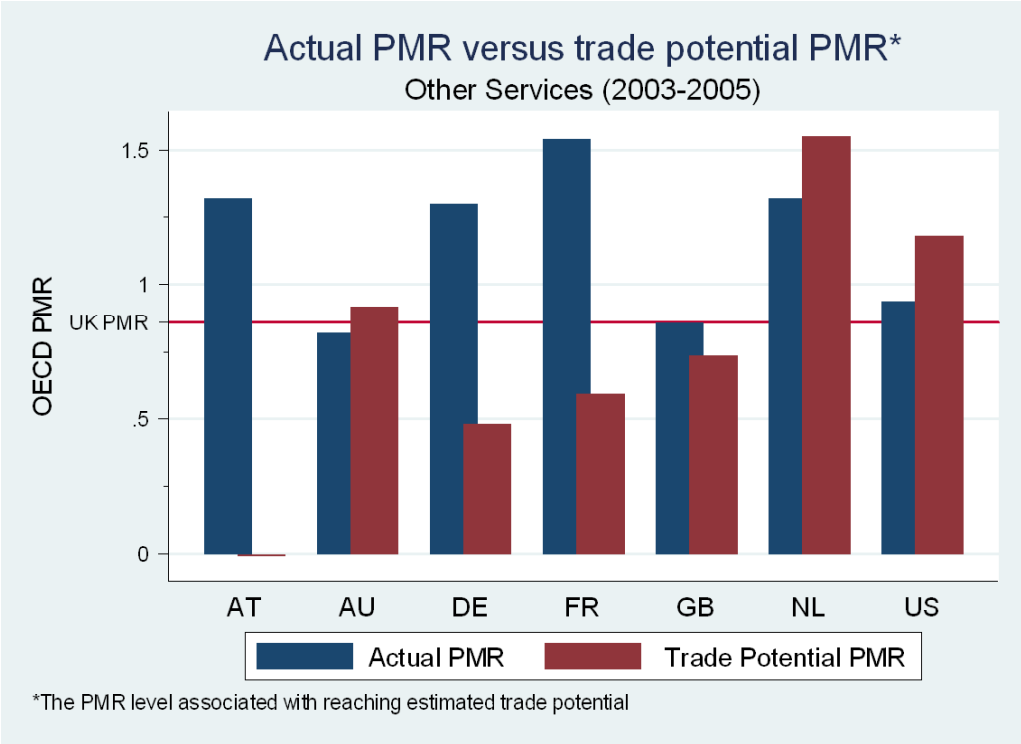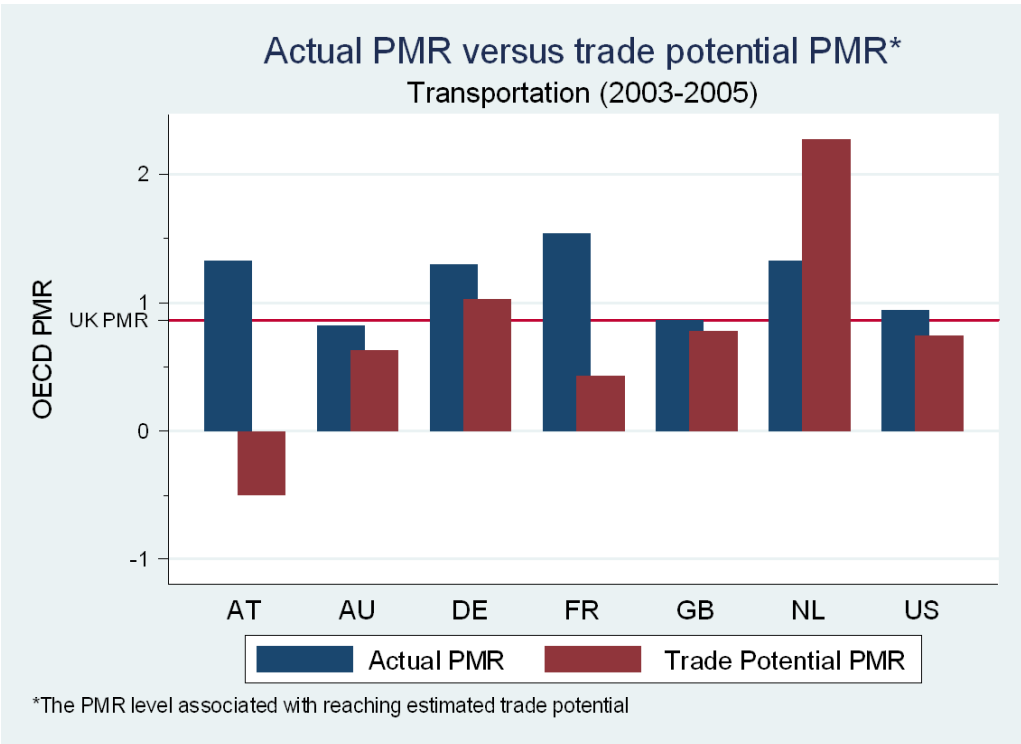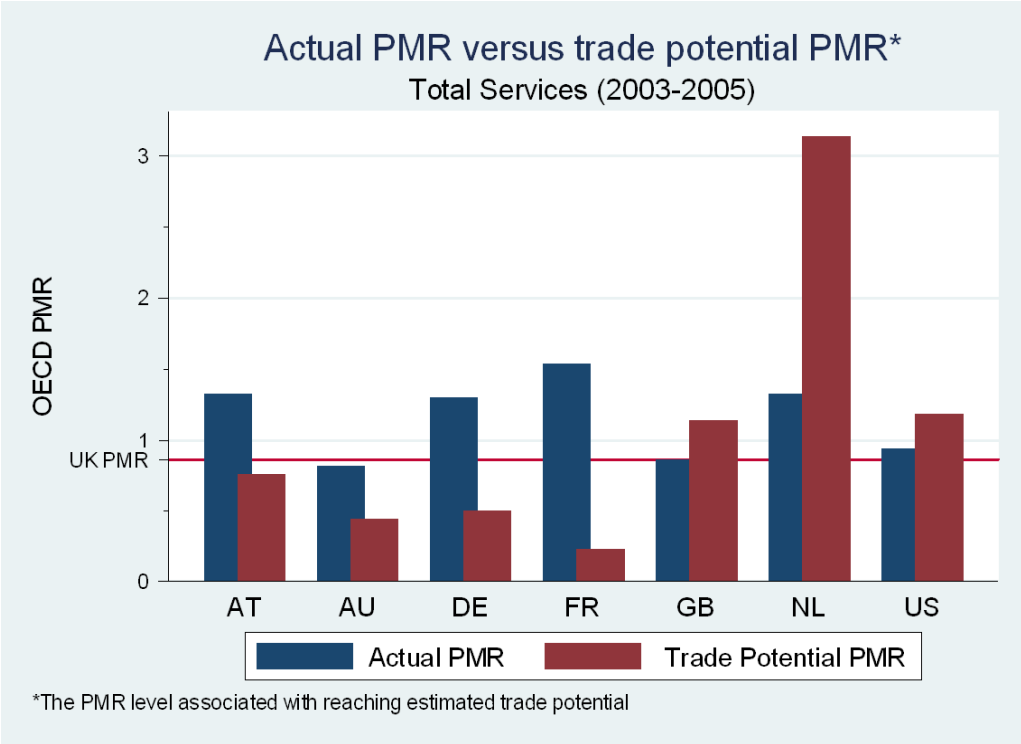
5. PMR Simulations

Our estimates suggest that Austria is characterized by large untapped potential in almost all commercial services. However, we have little guidance as to the reasons behind this underperformance. Do long-term structural features (e.g. the pre-dominance of small service firms) provide a convincing explanation for Austria's underperformance – or do legal and institutional factors better account for the untapped potential? These latter features may range from licensing requirements to complicated and burdensome registration procedures or other entry regulations. Detailed information on such direct and also implicit barriers to trade in services is difficult to obtain, especially for the large cross-sections of countries in our sample. As a first step towards tackling this very complex issue fraught with measurement problems, we simulated changes in the OECD PMR indicators. While these indicators are imperfect at best, they provide a comprehensive measure of domestic regulation across many nations. Thus, we have developed a framework which allows us to assess the direct and indirect effects of regulation at large on trade flows.
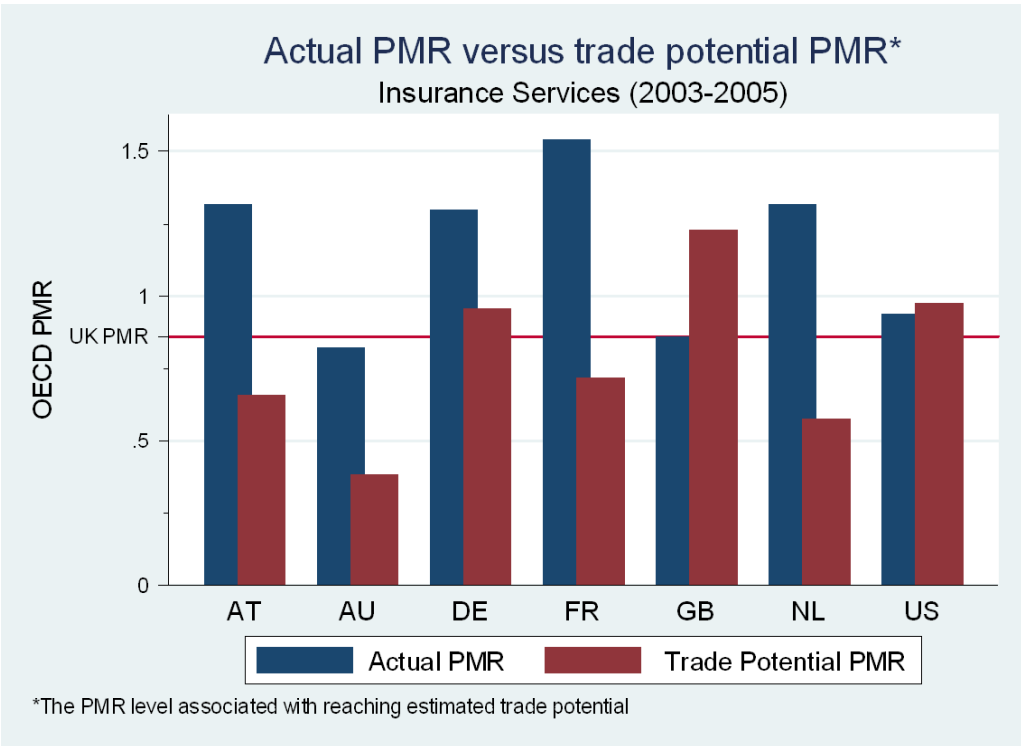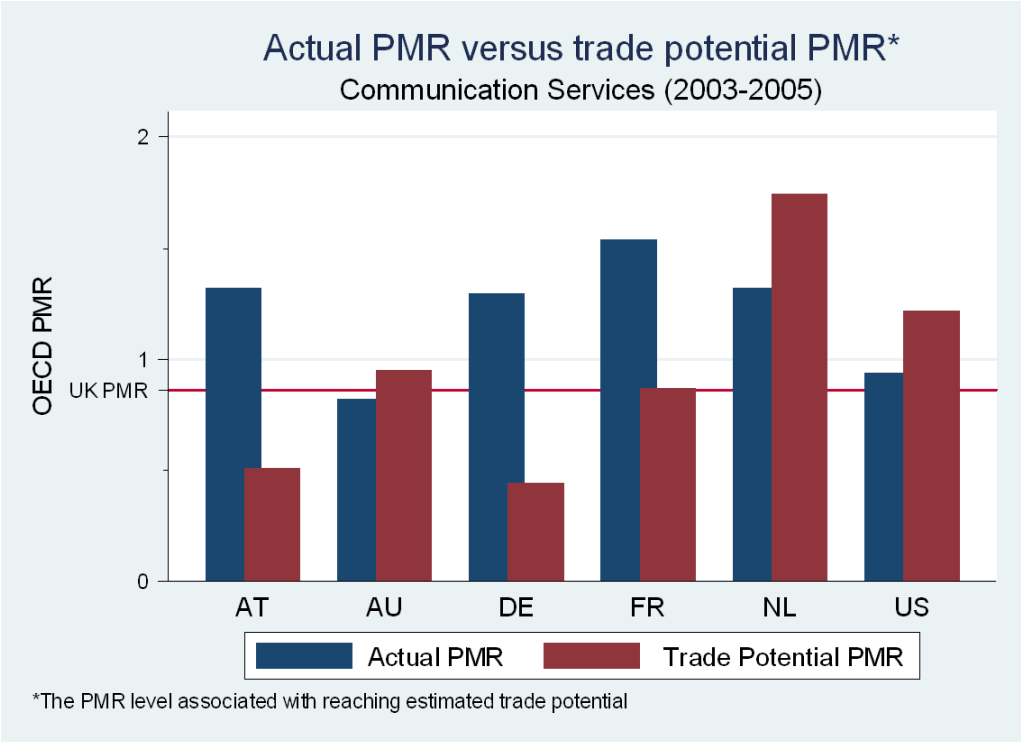
The idea behind these simulations is the following: seeing the restrictiveness of domestic regulation as our policy variable, by *how much* would it have to change in order for any given country to reach its trade potential? This thought-experiment was only conducted for service sectors in which the OECD PMR variable turned out to exert a statistically significant influence: Total (200), Computer and Information (262), Other Business (268), and Other Commercial (984a). The purpose was then to look at how countries fared within each sector: for those countries that have untapped trade potential, which ones could feasibly reach their potential by reducing or loosening their domestic regulation? Conversely, it is averred that for some countries, reaching their estimated trade is unfeasible, either because (i) the required *change* in regulation is too drastic (even in the long run) and/or (ii) the required *level* of regulation is below a certain threshold. Specifically, as illustrated in the graphs below, Great Britain's level of domestic regulation is taken as a benchmark for the minimum, feasible level of regulation. Thus, countries whose 'trade-potential' PMR level falls beneath this benchmark cannot realistically reach their trade potential through a loosening of domestic regulation alone.
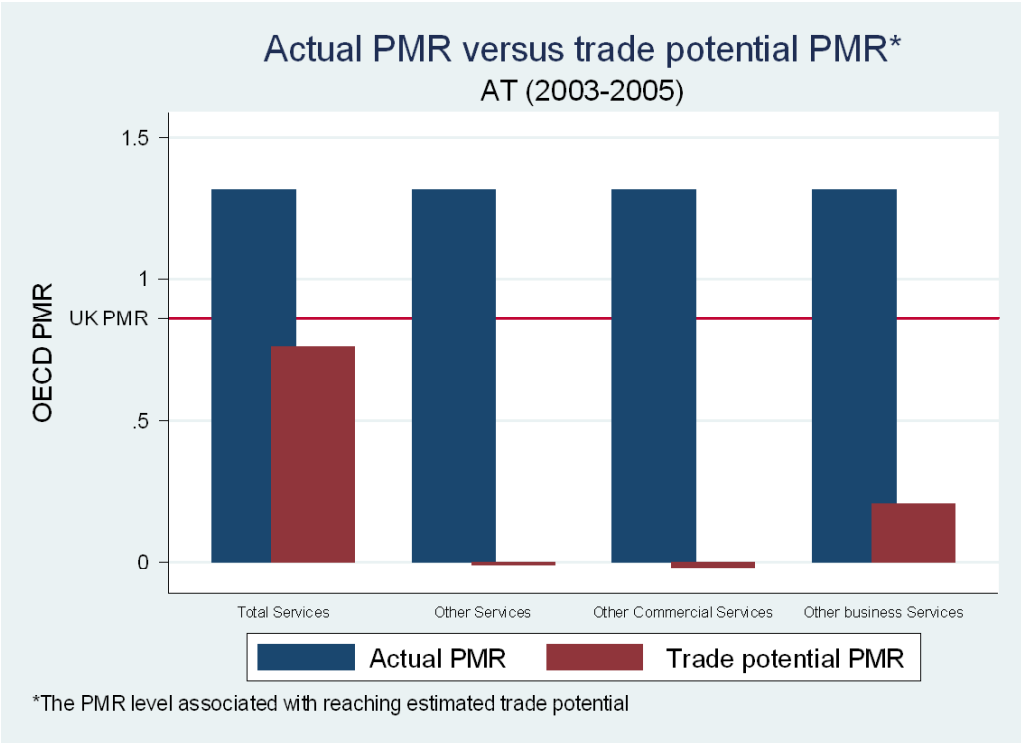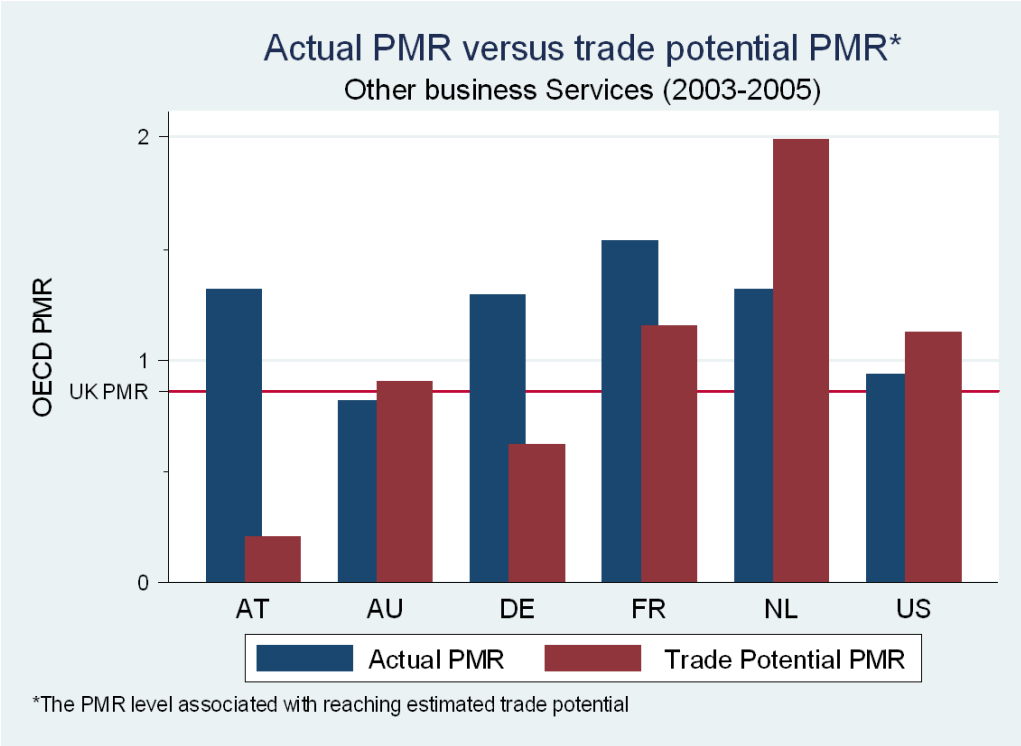
The graphs indicate that Austria would have to reduce its level of domestic regulation below the UK benchmark in the 2003-2005 period in order to reach its services export potential. This indicates that domestic regulation, while shown to reduce trade in some services sectors, cannot be regarded as the main culprit in Austria's underperformance: even if Austria were to reduce its level of domestic regulation to match the UK's, it would still fall short of its potential. This suggest that other structural policies, perhaps linked to education or taxes, but more likely linked to the industrial structure of Austria's service sector, may play a more prominent role in unleashing Austria's services trade potential. Reforms in the regulatory environment would help to increase exports in insurance, communication and other business services. However, regulatory reforms alone would not

be enough even in these sectors. Interestingly, we do not expect any effect from changes in the regulatory environment on Austria's transportation exports. The reasons for Austria's underperformance in this important service activity are to be found entirely in other structural features of the country and the transportation sector. Additional information would be necessary in order to pin down the reasons. For instance, taking into account the fragmentation of the industry – reflected in the small size of businesses – may partly explain the lack of international competitiveness in the transportation sector. But also comparably low levels of labour productivity together with relatively high unit labour costs by European standards explain this result.

Actual PMR versus trade potential PMR*

Other Services (2003-2005)

*The PMR level associated with reaching estimated trade potential

Actual PMR versus trade potential PMR*

AT (2003-2005)

*The PMR level associated with reaching estimated trade potential

Actual PMR versus trade potential PMR*
Total Services (2003-2005)

*The PMR level associated with reaching estimated trade potential

Actual PMR versus trade potential PMR*
Transportation (2003-2005)

*The PMR level associated with reaching estimated trade potential

Actual PMR versus trade potential PMR*
Communication Services (2003-2005)

*The PMR level associated with reaching estimated trade potential

Actual PMR versus trade potential PMR*
Insurance Services (2003-2005)

*The PMR level associated with reaching estimated trade potential

Actual PMR versus trade potential PMR*
Other business Services (2003-2005)

*The PMR level associated with reaching estimated trade potential

Actual PMR versus trade potential PMR*
AT (2003-2005)

*The PMR level associated with reaching estimated trade potential

Actual PMR versus trade potential PMR*
Other Commercial Services (2003-2005)

*The PMR level associated with reaching estimated trade potential

6. Conclusions

This paper examines the trade potential in the services sector. In our interpretation here we have stressed the export side, although a view from the import side might be important as well, particularly with regard to the role of commercial services as inputs in manufacturing production.[17] We empirically examine the competitiveness of post-industrial, service-based economies by comparing the extent to which individual countries are exploiting their export potential – after taking into account geographic, economic and regulatory characteristics.

Our empirical analysis is based on the gravity model, which is widely used to analyse trade in goods, and has more recently been applied to services trade. According to this approach, the determinants of bilateral trade flows can be separated into origin-specific, destination-specific and bilateral-specific components. GDP per capita, country size, institutional factors and overall trade orientation are among the variables that capture origin- and destination-specific characteristics; distance, common language and adjacency capture the bilateral-specific components. In order to reduce a potential bias introduced by the omission of any of these factors, we rely on a two-stage estimation procedure.

We apply this econometric model to a sample of OECD members, which implies that on the whole we are dealing with structurally similar countries. In particular, we focus on Austria and the largest European service traders: the UK, Germany, France and the Netherlands. Our

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[17] Given the construction of the database, this would also be possible based on our calculations.

analysis reveals the existence of substantial unexploited trade potential for Austria, France and, to a lesser extent, Germany. The UK and the Netherlands emerge as strong over-performers given their predicted potential. While most countries, including Austria, export more travel services than the model would predict, the untapped potential is often particularly large in commercial services. This is especially true for Austria, which displays a relatively weak performance in activities such as communication services, insurance services and other business services. Although there is also room for improvement in financial services, Austria's performance is reasonably strong in this sector, especially since Austria's main mode of financial services exports, foreign affiliates sales, are not included in this analysis. Moreover, when taking into account Austria's strong export growth to new member states, the country's performance in financial services appears particularly promising.

Having identified ample opportunities for improving Austria's trade performance in commercial services, we proceed to evaluate the influence of a given country's regulatory environment at large. According to our estimates, regulatory reform would indeed boost exports to a certain extent – notably in insurance, communication and other business services – but such reforms must be accompanied by other measures if Austria is to fully exploit its trade potential. In the transportation sector – which represents 22% of all service exports and is thus of particular interest to Austria – regulatory reform does not emerge as a limiting factor for export performance. Hence we conclude that other, structural features of the economy and the respective service industry are primarily responsible for Austria's weak performance. In particular we suggest that low labour productivity, high unit labour costs and the small business size that characterizes the Austrian service industry may act as an impediment to export performance. The latter may be of particular relevance for the insurance sector, as well as other service activities such as consulting, where three big firms more or less dominate international trade in Europe. This issue may also apply to the transportation sector, while we expect here deficits in price competitiveness to play a stronger role. For certain sectors (such as computer and information services; communication services), the average skill level and other more qualitative attributes may play a fundamental role in shaping a country's services trade performance. In order to better understand the main obstacles preventing Austria from reaching its full trade potential in commercial services, additional research at a higher level of disaggregation is warranted.

Since commercial services represent the most dynamic category of global trade in services, it seems pressing to identify these factors in order to improve Austria's performance in this sector. In the medium run, Austria may also benefit from bolstering traditional service activities such as travel and transportation. Given the country's natural resources and its prime geographical location in Central Europe, Austria should capitalize on the comparative (if not absolute) advantage it possesses in these sectors. However, allocating resources to further the expansion of these traditional services must be done

without compromising the growth of Austria's producer services – especially communication and financial services. While structural characteristics seem to be limiting the trade performance in commercial services, the crafting of effective policy prescriptions - conducive to sustaining strong growth in services trade - will require a deeper analysis.

References

Anderson, J. and E. Van Wincoop (2003), 'Gravity with gravitas: A solution to the border puzzle', *American Economic Review* 93(1), 170-192.

Arnold, J., B. S. Javorcik and A. Mattoo (2006), 'The Productivity Effects of Services Liberalization: Evidence from the Czech Republic', World Bank working paper.

Baldwin, R. and D. Taglioni (2006), 'Gravity for Dummies and Dummies for Gravity Equations', NBER working paper 12516, September.

Conway, P., V. Janod and G. Nicoletti (2005), 'Product Market Regulation in OECD Countries: 1998 to 2003', Economic Department Working Papers No. 419, OECD, Paris.

Francois, J., B. Hoekman and J. Woerz (2007), 'Does Gravity Apply to Intangibles? Measuring Barriers to Trade in Services', Paper presented at the CEPII-OECD Workshop 'Recent Developments in International Trade in Services', Paris, November.

Francois, J. and J. Woerz (2007), 'Producer Services, Manufacturing Linkages, and Trade', FIW Working Paper No. 2, Forschungsschwerpunkt Internationale Wirtschaft, Vienna.

Head, K. (2003), 'Gravity for Beginners', http://strategy.sauder.ubc.ca/head/gravity.pdf.

Poyhonen, P. (1963). 'A Tentative Model for the Volume of Trade between Countries', *Weltwirtschafliches Archiv/Review of World Economics* 90(1), 93-100.

Tinbergen, J. (1962), 'Shaping the World Economy – Suggestions for an International Economic Policy', The Twentieth Century Fund, New York.

Verbeek, M. and Th. E. Nijman (1996), 'Incomplete panels and selection bias', Chapter 18 in L. Matyas and P. Sevestre (eds), *The Econometrics of Panel Data: A Handbook of the Theory With Applications*, Kluwer Academic Publishers, Dordrecht, 449-490.

Appendix Table 1

ITS code	Description
Transportation(205)	Covers all transportation services that are performed by residents of one economy for those of another and that involve the carriage of passengers, the movement of goods (freight), rentals (charters) of carriers with crew, and related supporting and auxiliary services.
Travel (236)	Travel covers primarily the goods and services acquired from an economy by travellers during visits of less than one year to that economy. The goods and services are purchased by, or on behalf of, the traveller or provided, without a quid pro quo (that is, are provided as a gift), for the traveller to use or give away. Excluded are transportation of travellers within the economies that they are visiting, where such transportation is provided by carriers not resident in the particular economy being visited, as well as the international carriage of travellers, both of which are covered in passenger services under transportation. Also excluded are goods purchased by a traveller for resale in the traveller's own economy or in any other economy. Travel is divided in two sub-components: *Business Travel (code 237)* and *Personal Travel (code 240)*.
Communication services (245)	They comprise *Postal and Courier Services (code 246)* and *Telecommunication Services (code 247)*. - **Postal Services (code 872)** Includes *poste restante* services, telegram services and post office counter services, such as sales of stamps, money orders etc. Postal services are often, but not exclusively, supplied by national postal administrations. Postal services are subject to international agreements, and the flows between operators of different economies should be recorded on a gross basis. - **Courier Services (code 873)** Courier services focuses on express and door-to-door delivery. Couriers may use self-owned, privately shared or public transportation to carry out these services. Included are express delivery services, which might include, for example, on-demand pick-up or time-definite delivery. - **Telecommunications Services (code 247)** Encompasses the transmission of sound, images or other information by telephone, telex, telegram, radio and television cable and broadcasting, satellite, electronic mail, facsimile services etc., including business network services, teleconferencing and support services. It does not include the value of the information transported. Also included are cellular telephone services, Internet backbone services and on-line access services, including provision of access to the Internet.
Insurance Services (253)	Covers the provision of various types of insurance to non-residents by resident insurance enterprises, and vice versa. These services are estimated or valued by the service charges included in total premiums rather than by the total value of the premiums. It comprises *life insurance and pension funding (code 254), freight insurance (code 255), other direct insurance (code 256), reinsurance (code 257)* and *auxiliary services (code 258)* to insurance.
Financial Services (260)	Financial services covers financial intermediation and auxiliary services, except those of life insurance enterprises and pension funds (which are included in life insurance and pension funding) and other insurance services that are conducted between residents and non-residents. Such services may be provided by banks, stock exchanges, factoring enterprises, credit card enterprises and other enterprises. Included are services provided in connection with transactions in financial instruments, as well as other services related to financial activity, such as advisory, custody and asset management services.

Computer and information services (262)	- **Computer services (code 263)** Consists of hardware and software-related services and data-processing services. Included are hardware and software consultancy and implementation services; maintenance and repair of computers and peripheral equipment; disaster recovery services, provision of advice and assistance on matters related to the management of computer resources; analysis, design and programming of systems ready to use (including web page development and design), and technical consultancy related to software; development, production, supply and documentation of customized software, including operating systems made on order for specific users; systems maintenance and other support services, such as training provided as part of consultancy; data-processing services, such as data entry, tabulation and processing on a time-sharing basis; web page hosting services (i.e., the provision of server space on the Internet to host clients' web pages); and computer facilities management. - **Information services (code 264)** Comprises *News Agency Services (code 889)* and *Other information provision services (code 890)*.
Other business services (268)	Comprises *Merchanting and other trade-related services (code 269)*, *Operational leasing services (code 272)* and *Miscellaneous business, professional, and technical services (code 273)*. - **Merchanting and other trade-related services (code 269)** Comprise *Merchanting (code 270)* and *Other trade-related services (code 271)* - **Operational leasing services (code 272)** Covers resident/non-resident leasing (rental) and charters, without operators, of ships, aircraft and transportation equipment, such as railway cars, containers and rigs, without crew. - **Miscellaneous business, professional, and technical services (code 273)** Comprises *Legal, accounting, management consulting, and public relations (code 274)*, *Advertising, market research and public opinion polling (code 278)*, *Research and development (code 279)*, *Architectural, engineering and other technical services (code 280)*, *Agriculture, mining, and other on-site processing (code 283)*, *Other business services (code 284)* and *Services between related enterprises, n.i.e. (code 285)*.
Government services, n.i.e. (291)	It is a residual category covering government transactions (including those of international organizations) not contained in the other components of EBOPS as defined above. Included are all transactions (in both goods and services) by embassies, consulates, military units and defence agencies with residents of economies in which the embassies, consulates, military units and defence agencies are located and all transactions with other economies. Excluded are transactions with residents of the home economies represented by the embassies, consulates, military units and defence agencies, and transactions in the commissaries, post exchanges and these embassies and consulates. A breakdown of this item into services transacted by *Embassies and consulates (code 293)*, services transacted by *Military units and agencies (code 293)* and *Other government services n.i.e. (code 294)* is required
Other services (981)	All *Services (code 200)* not included in *Transportation (code 205)* or *Travel (code 236)*.
Other services (984a)*	All *Services (code 200)* not included in *Transportation (code 205)* or *Travel (code 236)* and without *Government Services (code 291)*

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*   This is the only aggregate that does not appear directly in the Eurostat ITS database: it comes closest to the definition of cross-border trade in services. Unfortunately, the number of non-missing observations for this aggregate is low.