THE INFLUENCE OF SERVICES TRADE LIBERALIZATION ON SERVICE FLOWS AND INDUSTRY PRODUCTIVITY IN CIS COUNTRIES AND RUSSIA

Knobel Alexander

Working paper No E12/05E

Abstract

This paper estimates the influence of the service sector's liberalization on service flows in transition economies and on productivity of the Russian industry that uses these services as intermediate consumption. Empirical analysis of the international statistics shows that service trade between CIS countries and OECD countries is strongly underestimated and could grow 2.5–3 times larger due to liberalization. Modeling of the international service trade shows that services imports into Russia are strongly limited by existing trade barriers. For Russia, according to the estimates, the most liberalized service sector is communication services, and the least liberalized sector is information technology. This paper demonstrates that services are actively used by Russian industry as intermediate consumption. On the basis of the inter-industry empirical analysis, one can conclude that service sector liberalization may have a positive impact on the productivity of various sectors of the Russian manufacturing industry.

Keywords: import volumes, services, trade liberalization, gravity model, panel data, labor productivity

JEL: C23, F12, F14, O14

Alexander Knobel, Gaidar Institute for Economic Policy. Head of International Trade Department. office 544, build. 1, 3–5, Gazetny lane, Moscow, 125993 Russia. Tel: +7 (495) 629–92–66. EMail: knobel@iep.ru. I would like to thank David Tarr, Oleksandr Shepotylo, and Volodymyr Vakhitov for valuable comments.

February 2012

CONTENT

1. Introduction

During the Soviet era, external trade in services was extremely limited. Given the modern growth of the international trade in goods, trade in services demands separate consideration for transition economies in general; for Russia in particular, this issue has been poorly investigated. Throughout the transition period, the services sector share of the economy grew, though in recent years this growth has slowed: from 1990 to 2008, the share of services in value added rose from 35% to 57%. At the same time, the share of trade in services of total trade did not increase: service imports as a share of total Russian imports were 23% in 1994 and 21% in 2008. Thus, it is quite probable that the international trade turnover of the Russian Federation in the services sphere strongly underestimates the potential level. One possible explanation that will be investigated in this paper is that there are restrictions on services trade that affect both domestic and foreign suppliers of trade in services, including discrimination against foreign suppliers.

All manufacturing industries use services as inputs. Thus, service liberalization may lead to reduced input prices and increased industry productivity of the manufacturing sector. In recent years, considerable liberalization of the service sector in Eastern European countries has taken place. Many researchers conclude that service liberalization has had a positive impact on productivity in the industry, and this result proves to be true of firm-level and industry-level data. On the other hand, many believe that the Russian service sector remains underdeveloped, making it is impossible to open completely to foreign companies.

The first hypothesis of this paper is that Russia's and CIS trade in services with their major partners is at an artificially low level, with potential trade hampered by the presence of service trade restrictions. The second is that liberalization of the services sector in Russia has a strictly positive impact on industrial productivity.

In this paper I investigate whether Russia's trade in services with its major partners remains below what would be predicted for countries with similar conditions as Russia. We also investigate whether liberalization of the services sector would have a positive impact on Russian industrial productivity.

2. Literature review

This paper focuses on the role of the services sector liberalization in international service trade and its impacts on downstream manufacturing industry productivity. The literature suggests that transition countries can benefit from service sector liberalization significantly.

In the modern economic literature, it is possible to emphasize two approaches to estimating the size and influence of various barriers to service trade. The first approach consists in obtaining information concerning the regulatory regimes in services, converting this information into quantity indicators, and using these indicators as the variables explaining various observable characteristics of the prices and costs (see Findlay and Warren, 2000). The second approach is based on the gravity model to estimate what the predicted service flows in the absence of trading restrictions. Such an approach has a number of drawbacks — for example, it does not consider the difference between prices and costs (the price-cost margin) (Francois and Hoekman, 2010) — but due to the absence of data on regulatory barriers in services over time, it is more easily applied and used in this research.

In the absence of good data, the estimation of gravitational models of the service trade has developed rather recently. For the first time (Sapir, Lutz, 1980), the aggregated data on trade included not only trade in the goods but also total trade in services. Among early papers on use of the gravitational equation for an estimation of bilateral trade in services, some works (Francois, 1993) used data for the United States. Other researchers used, basically, the data for developed countries, though in last decade new data has been available, allowing

estimations for a wider set of countries (see Kimura and Lee, 2006; Mizra and Nicoletti, 2004; Francois, Hoekman, and Woerz, 2007; Francois and Wignarajan, 2008).

Theory suggests that service sector liberalization can have two positive effects on social welfare: through the competition effect through which prices decline and increased efficiency, as foreign firms introduce global best practices to the domestic market (Konan, Maskus, 2006). Thus, the influence of service sector liberalization on service trade and on changes in productivity in industries that uses these services as inputs are inseparably linked with each other. The first effect is due to service sector liberalization in general and the second stems from service trade liberalization.

Thus, service sector liberalization results both in growth of the service trade and declines in the costs of services used as industrial inputs. Growth in service trade (that is, the attraction of new foreign suppliers) provokes decreases in such costs to the domestic market. Hence, questions regarding the influence of service sector liberalization on service trade and on changes in productivity in industries that uses these services as inputs are inseparably linked with each other.

There is a limited literature on the influence of liberalization of the services sector on productivity in this sector and the downstream industries. The existing research can be divided into two groups: studies at the sector level and those that use firm-level data. Among studies of the first group, Echenbach and Hoekman (2005), in transition economies over the period 1990–2004, found a positive correlation between rates of economic growth and liberalization of the services sector. Earlier, Nikoletti and Scarpetta (2003) using industry level data found a positive influence of the liberalization of the services sector on rates of industrial production growth. Conway, Guiseppe, Steiner (2006) have also used sector level data to conclude that in those countries in which the services sector is more open, a larger degree of convergence (that is, higher rates of economic growth) takes place. Fernandes

(2007) has carried out a comparative analysis of the liberalization of various subsectors of services and concluded that liberalization connected with an industry subsector leads to labor productivity growth in that industry.

Regarding studies that use firm level data, Javorcik (2004) has shown, using Lithuanian data, that foreign investment positively influences growth in the services sector but does not influence the productivity of downstream sectors. She does find, however, that firms that are linked upstream to services sectors benefit from improved services sectors. Arnold, Javorcik, Matto (2011) have shown, using firm level data, a positive influence of services sector liberalization on the industrial sector productivity. Arnold, Matto, and Narciso (2006) have carried out the analysis of firms from sub-Saharan Africa over the period 2001–2005 and have shown that total factorial productivity is influenced positively by the quality of services, including telecommunications, electric power and the financial sector. Fernandes and Paunov (2012) estimated the influence of foreign investment in the services sector on industry total factor productivity growth and found that 1% growth in foreign investment explains 0.1–0.2% of TFP growth. Furthermore, authors have shown that the basic result (the positive influence of service FDI on growth of the industrial enterprises productivity) is true for various industries. These authors also find that the productivity impact of additional foreign investment is stronger for those industries in which products are more differentiated, and they find no difference between the effects on large versus small enterprises.

In research at the micro level, as a rule, the production function of firm-level data is estimated first. These estimations are used to find the total factor productivity (TFP), after that the hypothesis of dependence of this TFP (or growth in TFP) on foreign investment or on the liberalization of services sector are checked. Getting estimations of TFP at the aggregated level is much more difficult (in the absence of data on sectors' capital intensity), but it is possible to use labor productivity.

3. Models specification and estimation results

3.1. Service trade flows estimation

In relations between countries, there are some circumstances that interfere with trade between them, including trade barriers and its distortions and also some difficult-to-formalize parameters, such as fundamental cultural distinctions and historically developed trading traditions, e.g., unwillingness to trade with certain states due to an ethnic animosity, which cannot vary in the course of time even if their change will lead to more favorable economic results. Though it may be possible to say with confidence that trade barriers reduce the natural level of service turnover that would take a place in their absence, such parameters can lead to both under- and overestimates of the trade level that would be reached in market balance. For example, during the existence of the USSR, there were certain economic relationships between union republics that remain to this day.

3.1.1. Service trade between the CIS and OECD

One of this paper's aims is the estimation of possible consequences of services trade liberalization on international service flows. To this end, it is necessary to use the data on the international service trade; therefore, I used the United Nations data on trade in services[1].

The data and estimation model include the following properties:

1) This database include only BOP service trade, i.e. only mode 1 (cross-border supply), partially mode 2 (consumption abroad). There are no data about commercial presence (mode 3), FDI.

2) This database includes service trade flows during 2000–2009 and covers the following fields of services:

---

[1] http://unstats.un.org/unsd/ServiceTrade/default.aspx

1 Transportation
2 Travel
3 Communications services
4 Construction services
5 Insurance services
6 Financial services
7 Computer and information services
8 Royalties and license fees
9 Other business services
10 Personal cultural and recreational services

Total EBOPS Services

I use data on bilateral service trade for countries from Europe, CIS, OECD, and China. I pay special attention to common languages and common borders. The institutional climate is extremely crucial for service trade, so I use a corruption index to assess each trade partner. The trading partners' relative price level is used also.

3) In my estimates, I avoid "the null" problem: the presence of countries with zero trade flows (see gravity estimation in Helpman, Melitz, Rubinstein, 2007; Westerlund, Wilhelmsson, 2009). For the selected countries (OECD and CIS), there is no such problem. For example, Baldwin and Taglioni (2006) mention this issue in their estimates but do not use countries with zero trade flow, thereby avoiding this problem too.

I use the same approach as (Francois, Wooton, 2001); (Park, 2002); (Blanchard, 2007); (Francois, Pindyuk, Woerz, 2008); (Francois, Hoekman, 2010) and estimate the following equations:

$$
\begin{aligned}
\ln(Service\_flow_{ij,t}^{l}) = & \beta_0^l + \gamma_t^l + \alpha^l D_{OECD-CIS} + \beta_1^l \ln Y_{i,t} + \beta_2^l \ln Y_{j,t} + \beta_3^l \ln d_{ij} + \\
& + \beta_4^l \ln PPP_{ij,t} + \beta_5^l \text{border}_{ij} + \beta_6^l \text{comlang\_ethno}_{ij} + \beta_7^l sevrice\_agreement_{ij,t} + \\
& + \beta_8^l corruption_{i,t} + \beta_9^l corruption_{j,t} + \xi_{ij,t}^l
\end{aligned}
$$

$l \in \{1.\text{Transportation}; 2.\text{Travel}; 3.\text{Communications}; 4.\text{Construction}; 5.\text{Insurance};$
$6.\text{Financial services}; 7.\text{Computer and information services}; 8.\text{Royalties and license fees}$
$9.\text{Other business services}; 10.\text{Personal cultural and recreational services};$
Total EBOPS Services$\}$,

(1)

where i, j = European countries, CIS, OECD, China.

$\mathbf{Y_i}$ ($\mathbf{Y_j}$) = exporter (importer) GDP in 2000 USD (WDI database);

$\mathbf{d_{ij}}$ = distance between capitals (CEPII database)[2];

$\mathbf{PPP_{ij}}$ = relative price level (price level of destination country relative to price level of origin country), computed as ratio of PPP conversion factors of market exchange rate ratio (WDI database)[3];

border=1 if i and j have a common border; **comlang_ethno=1** if a language is spoken by at least 9% of the population in both countries (CEPII database);

service_agreement=1 if i and j have preferential service trade agreement[4];

corruption = index of freedom from corruption: the higher the index value, the more freedom from corruption (Heritage Foundation)[5];

$\mathbf{D_{OECD\text{-}CIS}}$=1 if services flow from an OECD country to CIS country.

The base hypotheses are α^l, β_1^l, β_2^l, β_3^l, β_4^l, β_5^l, β_6^l, β_7^l, β_8^l, $\beta_9^l \neq 0$. I expect a positive sign for β_1^l, β_2^l, β_4^l, β_5^l, β_6^l, β_7^l, β_8^l, β_9^l and negative sign for α^l, β_3^l.

The use of distance in models of international trade in services is not as obvious as in models of trade in goods. In case of trade in goods, the distance is a proxy for transport costs while for trade in services, given the modern development of information transfer technologies, distance in many cases is irrelevant. Nevertheless, the inclusion of distance between trading partners in the regression is connected with the presence of proximity burden. As services are flow variables and thereby are not storable, service trade frequently requires the proximity of supplier and consumer (Francois, Hoekman, 2010), for example, in transport services the supplier must reach the location of the consumer of services. Modern research shows that the distance between supplier and consumer has a negative impact on trade, but this negative influence is explained by completely different mechanisms for trade in goods

---

[2] http://www.cepii.fr/anglaisgraph/bdd/distances.htm
[3] http://databank.worldbank.org/ddp/home.do
[4] Trade Agreements Database http://www.unescap.org/tid/aptiad/agg_db.aspx
[5] http://www.heritage.org/index/

and trade in services (see Francois, Hoekman, 2010). For services, frequently there are no physical transport costs, which depend on the distance between the trading countries. The costs of distance in the case of trade in services can be connected with coordination problems between service supplier and consumer rather than the cost of physically loading and shipping goods.

Table 1 represents the estimation results for Equation (1). Almost all the coefficients have expected sign. The dummy for trade flow between OECD and CIS was statistically insignificant only for construction services, i.e., we can suggest that construction service flow is approximately at its potential level. For all types of services flows, we can construct trade potentials for service import from OECD to CIS (exponential of coefficient α^l), i.e., trade flow share of its predicted level without trade barriers (see Figure 1).

FIGURE 1

Trade potentials in selected service sectors in trade between OECD and CIS (without commercial presence)
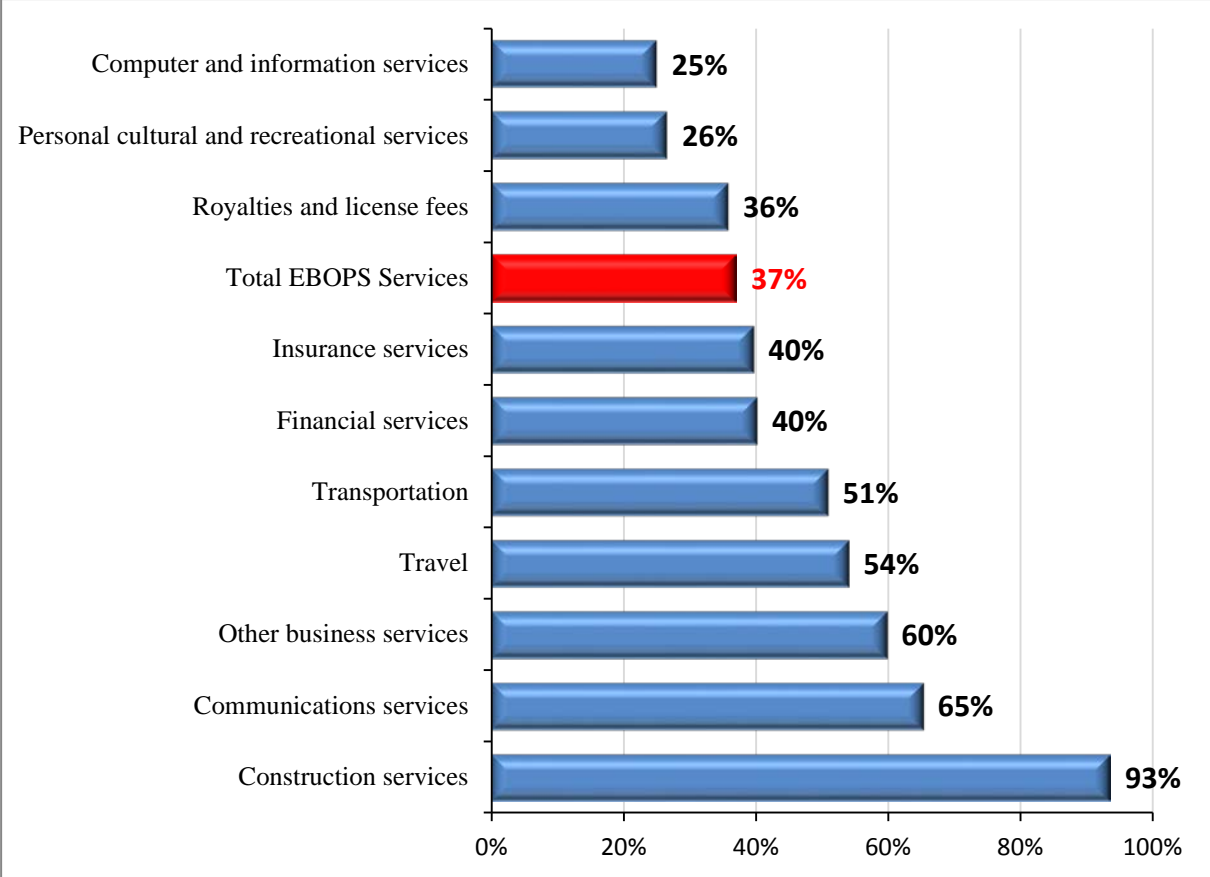
Source: Author's calculations.

TABLE 1

Estimation of equations (1)

	Total EBOPS Services	Transportation	Travel	Communications services	Construction services	Insurance services	Financial services	Computer and information services	Royalties and license fees	Other business services	Personal cultural and recreational services
log of importer GDP	0.863*** (0.00799)	0.708*** (0.00967)	0.939*** (0.0110)	0.742*** (0.0163)	0.947*** (0.0255)	0.639*** (0.0208)	0.583*** (0.0229)	0.732*** (0.0203)	0.876*** (0.0226)	0.874*** (0.0132)	0.565*** (0.0217)
log of exporter GDP	0.782*** (0.00729)	0.699*** (0.00950)	0.702*** (0.0103)	0.662*** (0.0169)	0.509*** (0.0295)	0.787*** (0.0248)	0.780*** (0.0271)	0.796*** (0.0224)	0.992*** (0.0247)	0.812*** (0.0142)	0.739*** (0.0253)
log of distance	–0.996*** (0.0162)	–0.786*** (0.0212)	–0.778*** (0.0231)	–0.960*** (0.0356)	–0.592*** (0.0597)	–0.824*** (0.051)	–0.725*** (0.0531)	–0.813*** (0.0449)	–0.871*** (0.0518)	–1.01*** (0.0279)	–0.598*** (0.0513)
log of relative price level	0.0450*** (0.0156)	0.0828*** (0.0194)	0.00607 (0.0216)	0.105** (0.0428)	–0.0359 (0.0636)	0.00724 (0.0622)	–0.0170 (0.0634)	–0.0152 (0.0518)	–0.121* (0.0641)	0.139*** (0.0326)	0.102* (0.0546)
Common border	0.897*** (0.0518)	0.881*** (0.0612)	1.27*** (0.0654)	1.25*** (0.0998)	1.16*** (0.144)	0.133 (0.144)	0.397** (0.158)	0.671*** (0.125)	0.159 (0.150)	0.869*** (0.0939)	0.642*** (0.148)
Common language	0.992*** (0.0505)	0.816*** (0.0637)	1.03*** (0.0651)	1.14*** (0.0947)	0.0501 (0.187)	1.34*** (0.121)	0.884*** (0.127)	0.824*** (0.117)	0.823*** (0.126)	0.946*** (0.0838)	0.768*** (0.129)
Service agreement	0.0899*** (0.0293)	0.155*** (0.0395)	–0.265*** (0.0428)	–0.0310 (0.0869)	0.260* (0.147)	–0.132 (0.131)	–0.422*** (0.154)	–0.588*** (0.123)	–0.218 (0.141)	0.171** (0.0698)	–0.747*** (0.140)
Freedom from corruption importer	0.0105*** (0.000689)	0.0162*** (0.000877)	0.0131*** (0.000957)	0.0126*** (0.00160)	0.00185 (0.00262)	0.0124*** (0.00236)	0.0308*** (0.00259)	0.0115*** (0.00199)	0.00966*** (0.00229)	0.0139*** (0.00128)	–0.00136 (0.00244)
Freedom from corruption exporter	0.0119*** (0.000591)	0.00626*** (0.000774)	0.00116 (0.000834)	0.0102*** (0.00141)	–0.00677*** (0.00219)	0.0235*** (0.00204)	0.0263*** (0.00216)	0.0323*** (0.00181)	0.0367*** (0.00206)	0.0172*** (0.00111)	0.0281*** (0.00201)
Dummy for import from OECD to CIS	**–0.997*** (0.0579)**	**–0.678*** (0.0713)**	**–0.618*** (0.0815)**	**–0.429*** (0.0899)**	**–0.0676 (0.140)**	**–0.928*** (0.130)**	**–0.915*** (0.144)**	**–1.39*** (0.113)**	**–1.03*** (0.135)**	**–0.517*** (0.0847)**	**–1.33*** (0.126)**
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Numder of observations	10594	7989	7415	2694	1740	2142	2292	2214	2227	3754	2117
R^2 adjusted	0.78	0.71	0.72	0.69	0.54	0.66	0.60	0.67	0.68	0.75	0.60

Source: Author's calculations. Robustness standard errors in parentheses. *** — significance at 1% level; ** — significance at 5% level; * — significance at 10% level.

These results do not contradict the first hypothesis of my research, according to which trade in services of the CIS with OECD countries is at a level lower than potentially possible: service liberalization could substantially increase service trade flows. According to the estimations, total EBOPS services could be 1/0.37=2.7 times larger given service liberalization; computer and information services and personal cultural and recreational services could be 4 times larger; royalties and license fees, insurance services, financial services, travel, transportation, communications and other business services could be 1.5–2.8 times larger.

3.1.2. International service trade

The previous analysis considered the average effect for OECD and CIS countries of service trade liberalization on service flows size. For an estimation of inter-country distinctions in openness to trade in services, I use the data on every possible service flow between countries[6] and I estimate the following equations for each type of trade in services:

$$
\begin{aligned}
Service\_flow_{ij,t}^{l} = \exp\{ & \beta_0^l + \gamma_t^l + \beta_1^l \ln Y_{i,t} + \beta_2^l \ln Y_{j,t} + \beta_3^l \ln d_{ij} + \\
& + \beta_4^l \ln GDPpc_{i,t} + \beta_5^l \ln GDPpc_{j,t} + \beta_6^l PRORERTY\_RIGHT_{j,t} + \\
& + \beta_7^l border_{ij} + \beta_8^l comlang\_ethno_{ij} \} + \xi_{ij,t}^l
\end{aligned}
$$

$l \in \{$1.Transportation; 2.Travel; 3.Communications; 4.Construction; 5.Insurance;
6.Financial services; 7.Computer and information services;8.Royalties and license fees
9.Other business services; 10.Personal cultural and recreational services;
Total EBOPS Services$\}$,

(2)

there Y_i (Y_j) = exporter (importer) GDP in 2005 USD (WDI database); **GDPpc$_i$** (**GDPpc$_j$**) = exporter (importer) GDP per capita in 2005 USD, PPP (WDI database); **d$_{ij}$** = distance between capitals (CEPII database); **PROPERTY RIGHT** = index of property right institution development: the greater the index value, the better developed this institution (Heritage Foundation); **border=1** if i and j have a common border; **comlang_ethno=1** if a language is spoken by at least 9% of the population in both countries (CEPII database).

---

[6] http://unstats.un.org/unsd/ServiceTrade/default.aspx

The base hypothesis is β_1^l, β_2^l, β_3^l, β_4^l, β_5^l, β_6^l, β_7^l, $\beta_8^l \neq 0$. I expect a positive sign for β_1^l, β_2^l, β_4^l, β_5^l, β_6^l, β_7^l, β_8^l and a negative sign for β_3^l.

In order to estimate model (2), I do not use the logarithmic form of the equation. Instead, I use the power form that allows the consideration of a problem of zero trade, applying the method of maximum likelihood (for some pairs of countries and some service flows, there is a zero volume of trade). The presence of time effects averages coefficient estimations for cross-sections for different years. The estimation results of Equation (2) are presented in Table 2 below.

On the basis of the estimations of Equation (2), for each country j and for each service sector l, I estimate an service trade potential index that shows average distance from the leader on service imports, taking into account explanatory factors:

$$\phi_j^l = \frac{\dfrac{1}{IT}\sum_{i,t} Service\_flow_{ij,t}^l}{\dfrac{1}{IT}\sum_{i,t} Service\_flow_{ij,t}^l + \max_s\{\dfrac{1}{IT}\sum_{i,t} RESIDUAL_{is,t}^l\} - \dfrac{1}{IT}\sum_{i,t} RESIDUAL_{ij,t}^l}, \quad (3)$$

where I is the number of trading partners for country j in service sector l, and T is the total number of periods. Thus, I estimate the "distance" to a maximum level of service trade, minus the explanatory factors of the model. Results are presented in Table 3. This table displays the leaders in openness to trade in all services and in different subsets of the international service trade.

TABLE 2

Estimation of Equations (2)

	Total EBOPS Services	Transportation	Travel	Communications services	Construction services	Insurance services	Financial services	Computer and information services	Royalties and license fees	Other business services	Personal cultural and recreational services
log of importer GDP	0.814 (0.00639)***	0.759 (0.00782)***	0.828 (0.0079)***	0.787 (0.00986)***	0.813 (0.0143)***	0.662 (0.0132)***	0.595 (0.0130)***	0.761 (0.0114)***	0.839 (0.0137)***	0.849 (0.00831)***	0.681 (0.0124)***
log of exporter GDP	0.774 (0.00622)***	0.755 (0.00773)***	0.795 (0.00777)***	0.717 (0.00973)***	0.736 (0.0146)***	0.762 (0.0132)***	0.593 (0.0128)***	0.671 (0.0117)***	0.856 (0.0137)***	0.797 (0.00813)***	0.680 (0.0123)***
log of distance	−1.05 (0.0116)***	−0.917 (0.0141)***	−1.07 (0.014)***	−1.22 (0.0177)***	−0.821 (0.0260)***	−0.696 (0.0237)***	−0.814 (0.0237)***	−0.917 (0.0204)***	−0.751 (0.0238)***	−1.05 (0.015)***	−0.901 (0.0220)***
Importer index of property right institution development	0.0242 (0.000652)***	0.0286 (0.000825)***	0.0143 (0.000848)***	0.0154 (0.000971)***	0.00647 (0.00141)***	0.0116 (0.0013)***	0.0242 (0.00134)***	0.0265 (0.00116)***	0.0133 (0.00139)***	0.0230 (0.000849)***	0.012 (0.00127)***
log of importer GDP per capita	0.091 (0.0186)***	−0.132 (0.0242)***	0.333 (0.0249)***	0.353 (0.0303)***	−0.0793 (0.0451)*	0.321 (0.0402)***	0.463 (0.0381)***	0.0264 (0.0360)	0.0373 (0.0436)	−0.0147 (0.0245)	0.114 (0.0409)***
log of exporter GDP per capita	0.639 (0.0123)***	0.506 (0.0160)***	0.358 (0.0161)***	0.571 (0.0199)***	0.144 (0.0322)***	0.813 (0.0285)***	1.34 (0.0274)***	1.00 (0.0248)***	1.450 (0.0306)***	0.669 (0.0162)***	0.713 (0.0274)***
common border	0.812 (0.0520)***	0.885 (0.0581)***	1.20 (0.0554)***	1.04 (0.0652)***	1.13 (0.0836)***	0.831 (0.0821)***	0.796 (0.0905)***	0.475 (0.0738)***	0.433 (0.0856)***	0.597 (0.0637)***	0.691 (0.0791)***
common language	1.16 (0.0378)***	0.965 (0.0493)***	1.20 (0.0439)***	1.02 (0.0607)***	−0.0316 (0.0910)	1.68 (0.0735)***	1.5 (0.0755)***	1.26 (0.0591)***	0.871 (0.0744)***	1.04 (0.0493)***	0.912 (0.0715)***
Number of observations	29320	20960	19258	13494	9804	10935	13043	12218	10510	18535	10398
R2 adjusted	0.71	0.65	0.71	0.67	0.43	0.56	0.58	0.58	0.61	0.67	0.58

Source: Author's calculations. Robustness standard errors in parentheses. *** — significance at 1% level; ** — significance at 5% level; * — significance at 10% level.

TABLE 3

Estimated service trade potentials

Total EBOPS Services		Transportation		Travel		Communications services		Construction services		Insurance services	
USA	100%	USA	100%	Armenia	100%	USA	100%	Kuwait	100%	UAE	100%
China	77%	Panama	52%	Barbados	64%	UK	25%	Panama	89%	Panama	55%
Viet Nam	42%	UAE	39%	Australia	48%	Panama	23%	Belize	87%	Singapore	54%
India	39%	Germany	32%	Iceland	45%	Germany	19%	Iceland	42%	Ireland	37%
Japan	35%	UK	29%	Mongolia	36%	Netherlands	12%	Luxembourg	42%	Hong Kong	34%
UK	30%	Japan	29%	Luxembourg	34%	Australia	11%	Singapore	28%	Belize	31%
Panama	30%	France	26%	New Zealand	31%	Italy	11%	UAE	20%	UK	31%
Italy	29%	Italy	17%	Cyprus	27%	France	9%	Cyprus	18%	Luxembourg	25%
France	27%	China	16%	Malta	27%	Japan	8%	Bahrain	17%	USA	25%
Germany	27%	Kazakhstan	11%	Sweden	26%	UAE	7%	Costa Rica	14%	Austria	20%

Financial services		Computer and information services		Royalties and license fees		Other business services		Personal cultural and recreational services	
Luxembourg	100%	USA	100%	Georgia	100%	USA	100%	USA	100%
USA	35%	Barbados	35%	PNG	97%	Germany	37%	Singapore	94%
UK	19%	Germany	33%	Azerbaijan	93%	Netherlands	30%	Panama	93%
Belize	16%	Singapore	30%	Honduras	73%	UAE	28%	Switzerland	89%
Panama	16%	UK	28%	Viet Nam	57%	Singapore	27%	Cyprus	84%
Hong Kong	12%	Netherlands	25%	Kuwait	56%	UK	26%	Denmark	78%
Singapore	8%	Ireland	19%	Paraguay	50%	Switzerland	20%	France	73%
Belgium	7%	Japan	18%	Moldova	49%	Sweden	20%	Australia	72%
Germany	7%	Trinidad and Tobago	17%	Singapore	46%	Ireland	20%	Hong Kong	64%
Australia	6%	Australia	16%	Malta	44%	Japan	20%	UK	62%

Source: Author's calculations.

TABLE 4

Estimated service trade potentials for CIS countries

Total EBOPS Services				Transportation				Travel				Communications services		
Country	**Trade potential**	**World rank**		**Country**	**Trade potential**	**World rank**		**Country**	**Trade potential**	**World rank**		**Country**	**Trade potential**	**World rank**
Uzbekistan	13.0%	19		Kazakhstan	10.7%	15		Armenia	100.0%	1		Russia	4.5%	15
Russia	11.8%	20		Uzbekistan	3.0%	34		Tajikistan	22.2%	14		Ukraine	2.6%	23
Kazakhstan	8.6%	25		Russia	3.0%	35		Moldova	13.6%	25		Kazakhstan	1.7%	34
Turkmenia	5.3%	39		Ukraine	2.6%	38		Uzbekistan	10.6%	31		Tajikistan	1.6%	36
Tajikistan	4.3%	45		Azerbaijan	2.2%	43		Turkmenia	9.9%	32		Uzbekistan	0.7%	50
Ukraine	3.5%	51		Armenia	1.6%	51		Kazakhstan	8.9%	34		Moldova	0.5%	56
Kyrgyzstan	3.3%	53		Georgia	1.3%	59		Russia	6.4%	46		Turkmenia	0.5%	58
Georgia	3.2%	54		Tajikistan	1.3%	61		Ukraine	4.9%	58		Armenia	0.4%	61
Moldova	2.7%	64		Turkmenia	0.9%	68		Georgia	4.0%	63		Georgia	0.4%	65
Azerbaijan	2.0%	76		Moldova	0.4%	83		Belarus	2.0%	78		Belarus	0.3%	70
Armenia	1.7%	84		Kyrgyzstan	0.2%	96		Azerbaijan	1.7%	82		Azerbaijan	0.2%	76
Belarus	0.4%	125		Belarus	0.1%	103		Kyrgyzstan	0.3%	123		Kyrgyzstan	0.1%	92
Construction services				**Insurance services**				**Financial services**				**Computer and information services**		
Country	**Trade potential**	**World rank**		**Country**	**Trade potential**	**World rank**		**Country**	**Trade potential**	**World rank**		**Country**	**Trade potential**	**World rank**
Tajikistan	8.1%	15		Tajikistan	1.5%	49		Tajikistan	2.3%	22		Kazakhstan	5.9%	32
Kazakhstan	6.7%	20		Russia	1.1%	55		Uzbekistan	1.5%	29		Ukraine	3.3%	44
Turkmenia	2.9%	34		Azerbaijan	1.0%	57		Ukraine	1.2%	33		Tajikistan	2.8%	49
Armenia	1.5%	54		Armenia	0.7%	64		Kazakhstan	1.0%	41		Uzbekistan	2.2%	56
Russia	1.3%	57		Georgia	0.4%	67		Russia	0.8%	54		Russia	2.2%	60
Uzbekistan	1.3%	58		Uzbekistan	0.4%	69		Armenia	0.7%	58		Georgia	1.4%	72
Georgia	1.2%	59		Ukraine	0.3%	76		Azerbaijan	0.5%	64		Armenia	1.2%	76
Kyrgyzstan	0.3%	77		Kazakhstan	0.2%	78		Georgia	0.4%	71		Azerbaijan	1.1%	79
Belarus	0.3%	78		Turkmenia	0.2%	80		Turkmenia	0.2%	83		Turkmenia	0.8%	86
Azerbaijan	0.3%	79		Moldova	0.2%	81		Moldova	0.2%	85		Moldova	0.5%	96
Ukraine	0.3%	80		Kyrgyzstan	0.1%	90		Kyrgyzstan	0.1%	99		Belarus	0.2%	104
Moldova	0.2%	84		Belarus	0.1%	95		Belarus	0.1%	102		Kyrgyzstan	0.2%	105

Source: Author's calculations.

TABLE 5

Estimated service trade potentials for CIS countries

Royalties and license fees				Other business services				Personal cultural and recreational services		
Country	**Trade potential**	**World rank**		**Country**	**Trade potential**	**World rank**		**Country**	**Trade potential**	**World rank**
Georgia	100.0%	1		Russia	2.7%	30		Armenia	54.0%	12
Azerbaijan	92.9%	3		Uzbekistan	1.0%	54		Uzbekistan	37.6%	19
Moldova	49.3%	8		Kazakhstan	0.9%	56		Tajikistan	31.4%	27
Armenia	36.4%	12		Ukraine	0.6%	66		Azerbaijan	26.7%	30
Ukraine	36.0%	13		Tajikistan	0.5%	70		Kyrgyzstan	26.6%	31
Kyrgyzstan	35.6%	14		Azerbaijan	0.3%	78		Kazakhstan	14.5%	48
Kazakhstan	28.2%	16		Turkmenia	0.3%	79		Turkmenia	11.2%	53
Belarus	11.2%	46		Armenia	0.2%	87		Georgia	11.0%	54
Russia	7.2%	59		Georgia	0.1%	97		Ukraine	9.2%	57
Turkmenia	0.3%	92		Moldova	0.1%	98		Russia	8.2%	59
Tajikistan	—	—		Belarus	0.1%	103		Moldova	5.1%	68
Uzbekistan	—	—		Kyrgyzstan	0.0%	112		Belarus	1.4%	93

Source: Author's calculations.

According to the results, the most opened service trade takes place in the U.S., China, Vietnam, India, Japan, the U.K., Panama, Italy, France, and Germany. Service imports to the these countries appears to be the greatest once one takes into account the size of these countries and the size of their trade partners, the level of their economic and institutional development, the distance to the trade partners, and the presence of common borders with the trade partners and common language. Russia is not included among the leaders in service trade liberalization.

It is necessary to notice that the used methodology of trade potentials definition is sensitive to the data outliers. So, for example, Luxembourg has developed financial system, therefore it financial services import is very high. Because of it the economy nearest to Luxembourg (USA) has financial service trade potential only 35%. Hence, the given approach is applicable, first of all, for definition of a rank of this or that country in a world rating of an openness for service trade.

From tables 4 and 5 it is possible to see a place of all CIS countries in a rating of service trade openness, constructed on the basis of estimations of the equations (2). The most open Russian service import sector, given the economic conditions of Russia, is the communication services. From these tables also it is visible that the most open CIS countries for service import are Russia, Kazakhstan, and Uzbekistan, and the least open are Belarus, Moldova, and Kyrgyzstan.

Thus, the estimation suggests that the first hypothesis of this paper is not rejected: we can suggest that service liberalization may indeed increase international service trade between CIS and OECD countries, for all modes of services. Russian trade in services is very low for its level of economic development. If liberalization took place, service imports into Russia would increase very significantly.

3.2. Industry productivity and service liberalization

As specified in (Arnold, Javorcik, Mattoo, 2011), industrial manufacturers benefit from service liberalization through three possible channels.

First, after privatization or entry into the market of successful foreign service suppliers, quality and reliability of supplied services can improve. For example, as a result of investment in infrastructure by new internal or foreign owners, telecommunications and electric energy supply become more reliable. In the financial sector, credit is granted more quickly as a result of the increased competition. These improvements will reduce the frequency of idle time in industrial production and, accordingly, will increase productivity.

Second, new types of services can be the brought into the market by foreign service suppliers using new technologies. New financial tools or digital technologies in telecommunications are examples of these new types of services. Availability of new services can lead to changes in production and increased productivity. For example, with development of telecommunications infrastructure, firms can start to accept orders through the Internet or enter online auctions for supplies of raw materials.

Third, liberalization will lead to wider availability of services than those the small circle of firms previously provided to consumers. For example, the Internet becomes accessible in rural areas due to the development of telecommunications. The development of consulting services will make these services accessible not only to large firms but also to small ones. Such improvements can increase the productivity of firms that previously had no access to these or other services.

As mentioned above, all industries use services as inputs. How much of the Russian extracting and manufacturing industry uses services as intermediate consumption? In Table 6 below, I cite the data on the use of various services in the industry. Trading-intermediary services compose the greatest shares of production and inputs (10.1% and 15.6%,

respectively). Russian industry also actively uses construction services and transport and communication services (together they provide a 5.5% share of production and a 8.6% share of inputs). Thus, the service sector plays very important role for the extracting and manufacturing industries in Russia.

TABLE 6

Service significance for Russian industry

	Service share in production	Service share in input
Construction services	1.4%	2.2%
Transport and communication services	4.1%	6.4%
Trading-intermediary services	10.1%	15.6%
Housing and communal services and non-productive kinds of consumer services of the population	0.6%	0.9%
Personal cultural, education and recreational services	0.1%	0.1%
Scientific service, geology, geodetic and hydro meteorological services	0.9%	1.3%
Financial and Insurance services	0.9%	1.4%
Total share	**18.0%**	**27.8%**

Source: www.gks.ru, author's calculations.

Use of services differs essentially between industries. Services are used most actively in electric power manufacture (almost 50% of inputs and 30% of production) and least actively in light industry (almost 18% of inputs and 12% of production). It is necessary to note the range of industrial uses of services as inputs differ from the range of uses in production (see Figure 2). For example, the peat industry's share of services as inputs is 41% (second to the electric power industry), but the share of services in production is only 16%. It

is connected with the fact that the peat industry has the highest share of added value in production (62%).

FIGURE 2

Service significance for different branches of Russian industry
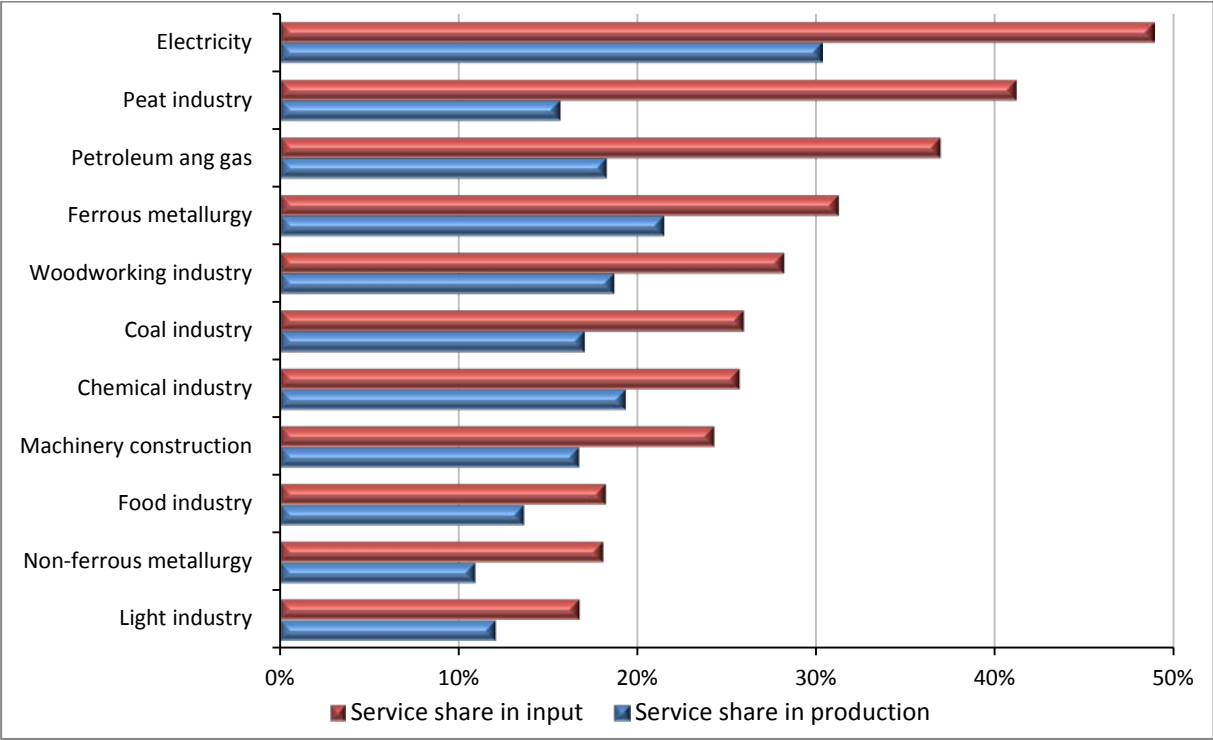
Source: www.gks.ru, author's calculations.

As services are actively used by the Russian industry as intermediate consumption, service sector liberalization could raise productivity in the industry because liberalization leads to service price reduction due to increased competition and decreased costs as foreign firms introduce best practices to the domestic market.

How can the degree of service sector liberalization be measured? There are EBRD indices that show the degree of liberalization of various sectors of a national economy[7], including the following elements: trade and forex system; banking reform and interest rate liberalization; securities markets and non-bank financial institutions; overall infrastructure

---

[7] http://www.ebrd.com/downloads/research/economics/tic.xls

reform; telecommunications; railways; and roads. The minimum value of an index is 1 and the maximum 4.3.

Overall, the infrastructure reform index highly correlates with the general level of economic development (GDP per capita, PPP), as shown in Figure 3.

FIGURE 3

Scatter diagram for Overall infrastructure reform index and GDP per capita, 2009
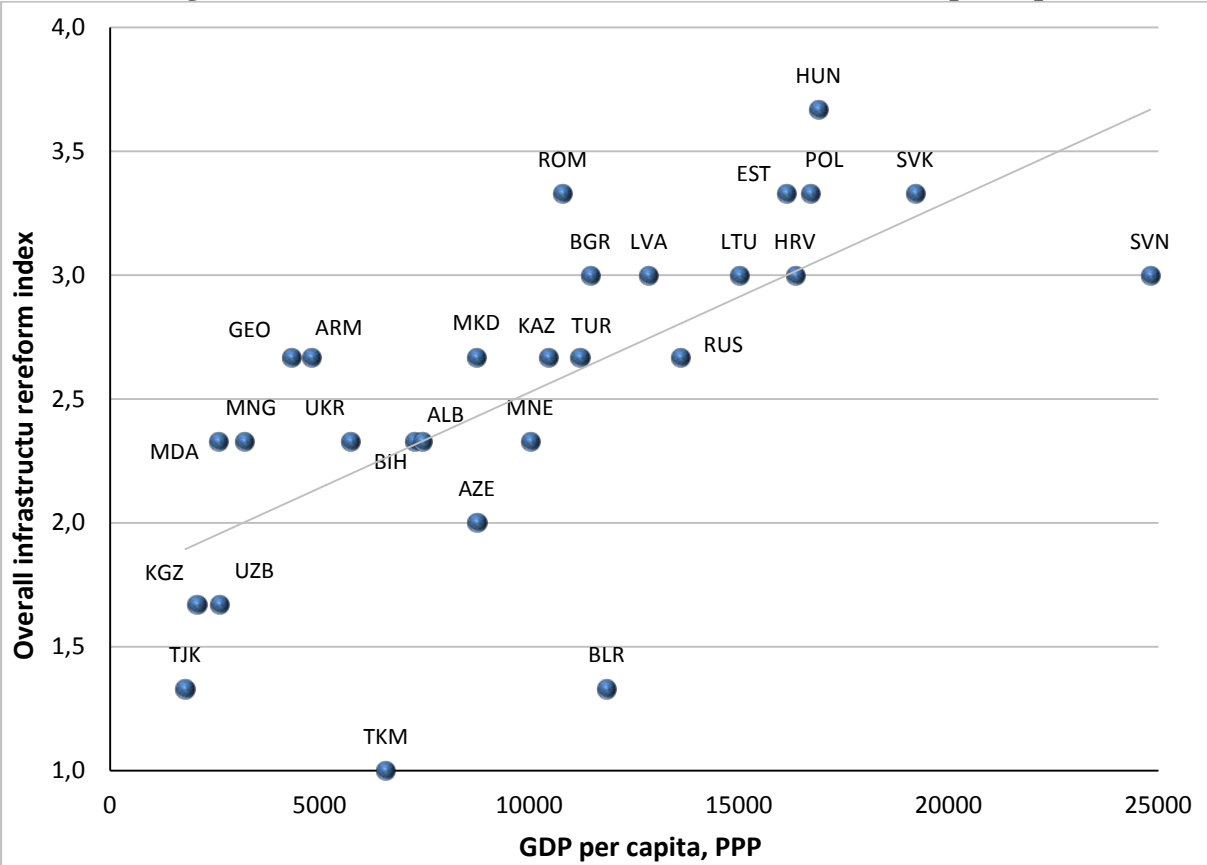
One of the questions investigated by (Fernandes, 2007) is the dependence of productivity of the industrial enterprises that use services on service sector liberalization. The author finds a positive and statistically significant effect of service sector liberalization on labor productivity in the industries using services. Labor productivity for each industry in every period is calculated by division of the real industry value added by total industry labor force.

The connection between industry and service liberalization by (Fernandes, 2007) is calculated with input-output coefficients. These coefficients for each industry represent a

share of the cost of services from each service sector of the total cost of production. For each industry, corresponding factors are multiplied by the degree of service liberalization of each sector. Fernandes uses EBRD indices of reforms progressiveness for the degree of liberalization of each service sector and shows that there is a positive and statistically significant influence of service liberalization on labor industry productivity for all Eastern European countries in the study. In other words, industries that use services to a greater degree from more liberalized service sectors exhibit, on average, higher productivity than other industries.

Like (Fernandes, 2007), this paper uses the following formula to calculate the index of service input liberalization for industry i in year t:

$$INDEX_{i,t} = \sum_k a_{i,k} INDEX_{k,t}, \tag{4}$$

where $k \in \{\text{Transport and communication; Trading-intermediary; Financial and Insurance}\}$, $a_{i,k}$ is the input-output coefficient for industry i and service sector k, and $INDEX_{k,t}$ is the index of liberalization for service sector k in year t. The index of liberalization for service sector k is calculated as follows:

$$INDEX\,(\text{Transport and communication}) = \frac{1}{3}(\text{Telecommunications+Railways}+\text{Roads}) \tag{5}$$

$$INDEX\,(\text{Trading-intermediary}) = \text{Trade } \& \text{ Forex system} \tag{6}$$

$$INDEX\,(\text{Financial and Insurance}) = \frac{1}{2}(\text{Banking reform}+\text{Securities markets }) \tag{7}$$

Figure 4 shows the values index of service input liberalization for selected industries. Naturally, those industries that use services more actively as the production factor have a greater index value, for example, the electric power industry. At the same time, the dependence on services as a production factor and the value of an index is not a one-to-one relationship (compare Figures 2 and 4).

Figure 4

Index of service input liberalization (2000–2008 average)
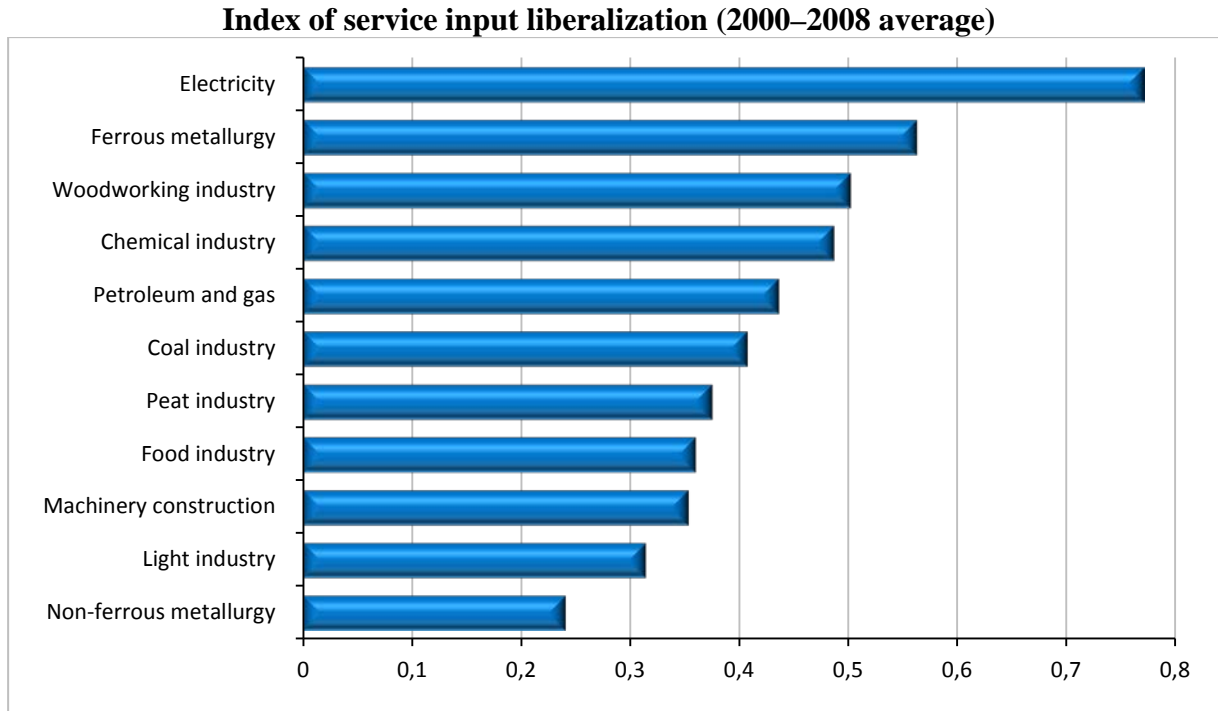
Source: author's calculations.

To estimate the influence of service sector liberalization on productivity in the Russian extracting and manufacturing industry, I estimate the following econometric specifications for the period of 2000–2008:

$$\ln(Labor\ productivity_{i,t}) = \alpha^{(1)} + \beta_1^{(1)} \ln INDEX_{i,t} + \beta_2^{(1)} VA_{i,t} + \beta_3^{(1)} \left(\frac{VA}{PROD} \right)_i + \xi_{i,t}, \qquad (8)$$

$$\ln(Labor\ productivity_{i,t}) = \alpha^{(2)} + \beta_1^{(2)} \ln INDEX_{i,t} + \beta_2^{(2)} VA_{i,t} + \\ + \beta_3^{(2)} \left(\frac{VA}{PROD} \right)_i + \beta_4^{(2)} \ln GDPpc_t^{RUS} + \varepsilon_{i,t}, \qquad (9)$$

$$\ln(Labor\ productivity_{i,t}) = \alpha_i + \beta_1^{(3)} \ln INDEX_{i,t} + \beta_2^{(3)} VA_{i,t} + \beta_3^{(3)} NER_t + \eta_{i,t}, \qquad (10)$$

$$\ln(Labor\ productivity_{i,t}) = \alpha_i + \beta_1^{(4)} \ln INDEX_{i,t} + \beta_2^{(4)} VA_{i,t} + \\ + \beta_3^{(4)} NER_t + \beta_4^{(4)} \ln GDPpc_t^{RUS} + \rho_{i,t}, \qquad (11)$$

where

Labor productivity_{i,t} = labor productivity in 2005 prices in industry *i* in year *t* (ratio of value added to labor, in real terms);

$INDEX_{i,t}$ = index of service input liberalization for industry i in year t;

$VA_{i,t}$ = value added in 2005 prices in industry i in year t;

$\left(\dfrac{VA}{PROD}\right)_i$ = share of value added in production for industry i according to input-

output table;

$NER_{i,t}$ = nominal exchange rate (rubles per USD) in year t;

$GDPpc_t^{RUS}$ = GDP per capita in 2005 prices, PPP, in year t.

Unlike Fernandes (2007), in order to test the hypothesis about the positive influence of service sector liberalization on manufacturing and extracting industry productivity, I control for variables that can influence the productivity of every industry.

The regression uses variables for the value added into industries and the share of the value added in production to control for industry-specific characteristics. Thus, the share of value added in production used due to a condition in 2004 that prevents us from using the specification with the fixed effects with this variable. Gross national product per capita is used to control for the general level of economic development.

I add the nominal exchange rate in regressions with fixed effects because national currency depreciation leads to greater competitiveness of domestic industries and to a larger volume of production in dollar terms. Regressions with fixed effects show the influence of explanatory factors on productivity over time, assuming that this influence is identical to all objects; therefore, inclusion of a nominal exchange rate shows the average influence of ruble depreciation on industry productivity.

The estimation results of Equations (8)–(11) are shown in Table 7.

TABLE 7

Estimation of equations (8)–(11)

	Independent variable: Log of industry productivity			
Log of liberalization index	0.710*** (0.239)	0.583** (0.241)	3.05*** (0.167)	1.36* (0.769)
Industry value added	0.0572*** (0.00506)	0.0518*** (0.00550)	0.0131*** (0.00204)	0.0125*** (0.00201)
Share of VA in production	1.60** (0.699)	1.68** (0.685)		
Nominal exchange rate			–0.149*** (0.00947)	–0.0759** (0.0336)
Log of GDP per capita		1.07** (0.469)		1.51** (0.670)
Industry fixed effect	No	No	Yes	Yes
Number of observations	99	99	99	99
R^2 adjustment	0.62	0.64		
R^2 within			0.94	0.94

Source: author's calculations. Robustness standard errors in parentheses. *** — significance at 1% level; ** — significance at 5% level; * — significance at 10% level.

From the results, we can see that the hypothesis about zero coefficients on the logarithm of index of service input liberalization is rejected in all specifications. The models controlled for industry characteristics and level of the economic development, leaving results that support the hypothesis that service sector liberalization promotes labor productivity growth in the industry.

Considering that the values of the liberalization EBRD index vary from 1 to 4.3, the results of an estimation of Equation (9) (the most "pessimistic" scenario of liberalization's

influence on industry productivity) make it possible to calculate the degree to which only one service sector liberalization will affect labor productivity in the industry, holding constant the value added in industries, the share of value added in production, and the general level of gross national product per capita. Table 8 presents results of the influence of service liberalization for two scenarios: full service sector liberalization and partial liberalization, in which the difference between current values of EBRD indices and their maximum values will be reduced by 50%.

TABLE 8

**Predicted increasing of labor productivity in Russian industries
due to service liberalization**

	Full liberalization	**Partial liberalization**
Electricity	19.3%	10.0%
Petroleum and gas	20.8%	10.8%
Coal industry	22.8%	11.8%
Peat industry	22.1%	11.5%
Ferrous metallurgy	20.6%	10.7%
Non-ferrous metallurgy	20.2%	10.4%
Chemical industry	20.3%	10.5%
Machinery construction	20.0%	10.3%
Woodworking industry	20.2%	10.5%
Light industry	18.9%	9.7%
Food industry	19.0%	9.8%
Industry, total	**20.1%**	**10.4%**

Source: author's calculations.

Thus, service sector liberalization can have a large effect on the productivity of the extracting and manufacturing industries in Russia. Full liberalization could raise labor productivity about 20% on average, and partial liberalization could lift productivity by 10%.

4. Conclusion

Services play an increasingly important role in modern economies. Services are not only an end product but also used as intermediate consumption for the manufacturing and mining industry. This paper analyzes the influence of service sector liberalization on the level of trade of these services and on productivity of the industries that use these services as inputs.

The results indicate that trade in services in the CIS and OECD countries is lower than predicted for countries with similar characteristics. Trade in services between the CIS countries and the OECD countries could be, on average, 2.7 times larger if trade were at its predicted level. It is very likely that services trade between these regions would be much large if barriers to services trade were smaller.

Our results also indicate that service imports into Russia are well below predicted levels for countries with similar characteristics. Again, it is highly likely that the lower level of services trade is due to existing trade barriers. We find that the country most open to service imports is the U.S. Openness leaders in different service sectors are following countries: transportation services, communication, computer and information services, personal cultural and recreational services, other business services — USA; travel — Armenia; construction — Kuwait; insurance — UAE; financial services — Luxembourg; Royalties and license fees — Georgia. In Russia, the most liberalized service sector is communication services, and the least liberalized sector is information technology. In this sector with low services trade relative to predicted level, we would expect the greatest growth in imports due to liberalization, and, as a consequence, the greatest increase in competition and an introduction of foreign best practices to the Russian market. The most open CIS countries for service import are Russia, Kazakhstan, and Uzbekistan, and the least open are Belarus, Moldova, and Kyrgyzstan.

The research reveals that services are significantly used by the Russian industry as an input into production: about 20% of the value of production and about 30% of the value of intermediate inputs. The inter-industry empirical analysis has shown that liberalization of the service sector has a positive impact on productivity in manufacturing and mining sectors: full services sector liberalization could raise labor productivity an average of 20%, and partial liberalization — halfway to full liberalization — would raise labor productivity by 10%.

5. References

Arnold J.M., B. Javorcik, and A. Mattoo (2011): Does Services Liberalization Benefit Manufacturing Firms? Evidence from the Czech Republic, *Journal of International Economics*. Vol. 85. P. 136–146.

Arnold J.M., A. Mattoo, and Gaia Narciso (2006): Services Inputs and Firm Productivity in Sub-Saharan Africa. Evidence from Firm-Level Data, *World Bank Policy Research Working Paper No. 4048*.

Baldwin Richard and Daria Taglioni (2006): Gravity for Dummies and Dummies for Gravity Equations, *NBER Working Paper No. 12516*

Bergstrand J.H. (1985): The Gravity Equation in International Trade: Some Microeconomic Foundations and Empirical Evidence, *The Review of Economics and Statistics*. Vol. 67. P. 474–481.

Blanchard E. (2007): Foreign Direct Investment, Endogenous Tariffs, and Preferential Trade Agreements, *Advances in Economic Analysis and Policy*, Berkeley Electronic Press, 7(1).

Conway Paul, Donato de Rosa, Giuseppe Nicoletti, and Faye Steiner (2006): Regulation, Competition and Productivity Convergences, *OECD Economics Department Working Papers No. 509*.

Eschenbach Felix and Bernard Hoekman (2005): Services Policy Reform and Economic Growth in Transition Economies, 1990–2004, *World Bank Policy Research Working Paper No. 3663*.

Fernandes Ana (2007): Structure and Performance of the Services Sector in Transition Economies, *Policy Research Working Paper No. 4357*.

Fernandes Ana and Caroline Paunov (2012): Foreign Direct Investment in Services and Manufacturing Productivity Growth: Evidence for Chile, *Journal of Development Economics*. Vol. 97. P. 305–321.

Findlay, C. and Warren, T. (2000) *Impediments to Trade in Services: Measurement and Policy Implications*. Routledge, London.

Francois Joseph (1993): Explaining the Pattern of Trade in Producer Services, *International Economic Journal*. Vol. 7. P. 23–31.

Francois Joseph and Wooton (2001): Trade in International Transport Services: The Role of Competition, *Review of International Economics*. Vol. 9. P. 249–61.

Francois Joseph, B. Hoekman, and J. Woerz (2007): Does Gravity Apply to Nontangibles? Trade and FDI in services, https://www.gtap.agecon.purdue.edu/resources/download/3407.pdf

Francois Joseph and G. Wignarajan (2008): Economic Implication of Asian Integration, *Global Economy Journal*. Vol. 8. P. 1–48.

Francois Joseph, O. Pindyuk, and J. Woerz (2009). International Transactions in Services: Data on International Trade and FDI in the Service Sectors, *University of Linz, Institute for International and Development Economics discussion paper 20090802*.

Francois Joseph and Bernard Hoekman (2010): Services Trade and Policy, *Journal of Economic Literature*. Vol. 48. P. 642–692.

Helpman Elhanan, Marc Melitz, Yona Rubinstein (2007): Estimating Trade Flows: Trading Partners and Trading Volumes, *NBER Working Paper No. 12927*.

Javorcik Beata S. (2004): Does Foreign Direct Investment Increase the Productivity of Domestic Firms? In Search of Spillovers through Backward Linkages, *American Economic Review*. Vol. 94. P. 605–627.

Kimura F. and H. Lee (2006): The Gravity Equation in International Trade in Services, *Review of World Economics*. Vol. 142. P. 92–121.

Konan D. and K. Maskus (2006): Quantifying the Impact of Services Liberalization in a Developing Country, *Journal of Development Economics*. Vol. 81. P. 142–62.

Mirza D. and G. Nicoletti (2004): What's so special in international trade in services? *Research Paper 2004/02, Centre for Research on Globalisation and Economic Policy*.

Nicoletti Giuseppe and Stefano Scarpetta (2003): Regulation, Productivity and Growth: OECD Evidence, *World Bank Policy Research Working Paper No. 2944*.

Park S. (2002): How Far has Regional Integration Deepened? Evidence from Trade in Services, *KIEP Working Paper 02–17*.
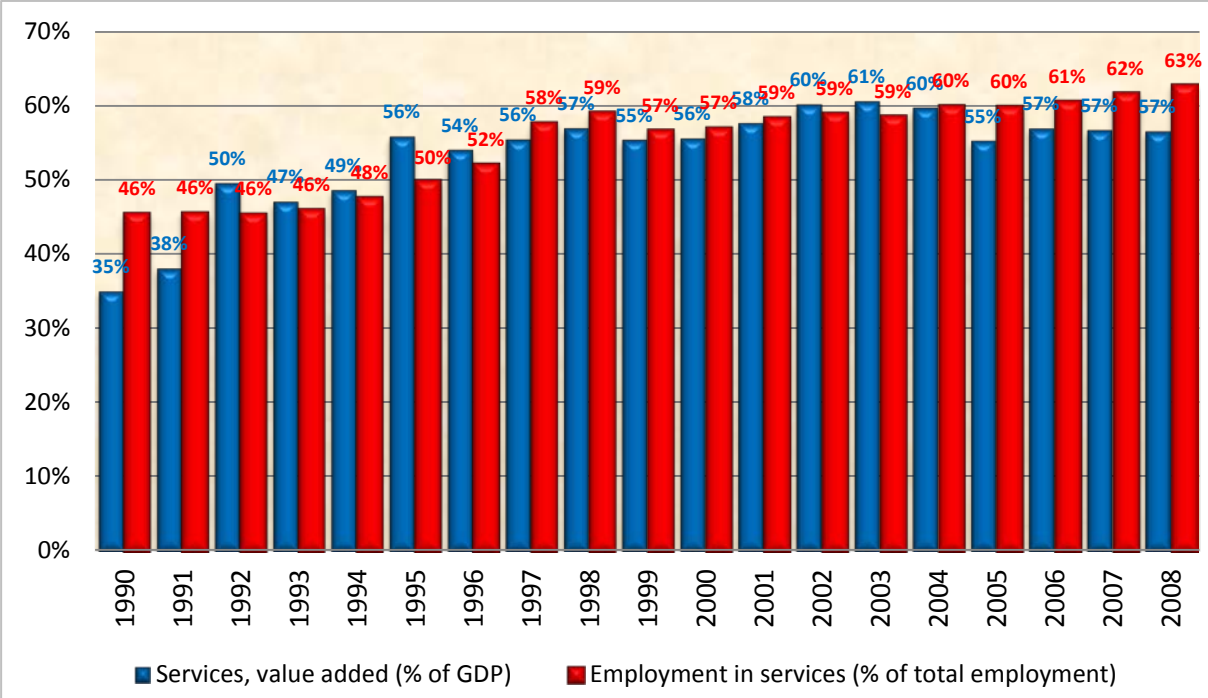
Sapir A. and E. Lutz (1980): Trade in Non-Factor Services: Past Trends and Current Issues, *World Bank Staff Working Paper No. 410.*

Westerlund Joakim and Fredrik Wilhelmsson (2009): Estimating the gravity model without gravity using panel data, *Applied Economics*. Vol. 43. P. 641–649.
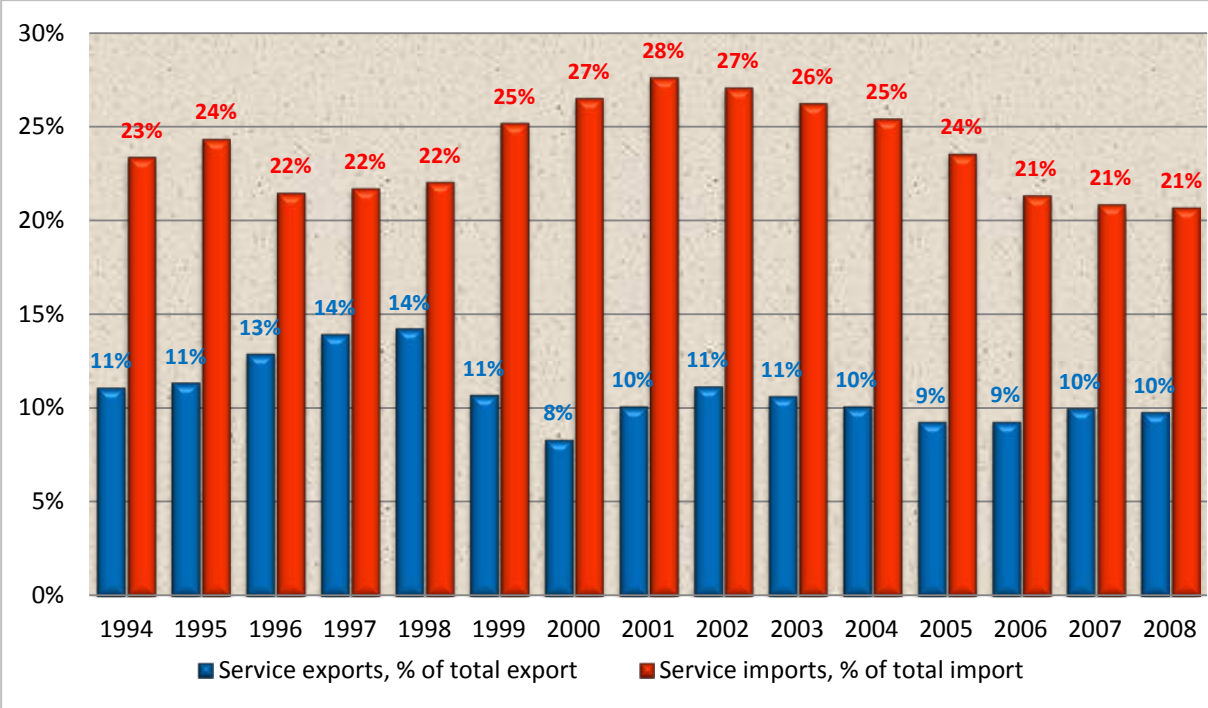
6. Appendix

FIGURE 5

Share of Services in Russian economy

Source: World Development Indicators

FIGURE 6

Share of Services in Russian international trade

Source: World Development Indicators