ESTIMATING POTENTIAL IN EXPORT
OF FINANCIAL SERVICES

Marija Lindemane
BA School of Business and Finance
K.Valdemāra iela 161, Riga, LV-1013, Latvia
Phone: +371 20044875
E-mail: mlindemane@netscape.net

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Abstract

The purpose of the current research is developing tools which help to estimate country's financial industry potential in export of financial services. For achieving this purpose expert and econometric methods were used. Statistical dates for potential estimation were taken from such public sources as UNCTAD Services Trade Database, World Databank and World Competitiveness Report. In the result of this research one has created gravity model of financial services export. Financial industry of Latvia was taken as an example for estimating potential in export of financial services.

Introduction

During the whole period of the development of world trade in financial services a trend in growth of its volumes was preserved. Actually all countries of the world are engaged in financial service trade, to a greater or lesser extent [1], and some of them specialized in it as a main kind of foreign economic activity and achieved impressive results in it. Despite the fact that foreign trade in financial services can acquire a specific negative role under conditions of global crisis, export of financial services as a component part of international trade, in author's opinion, is less exposed to the risk of detriment to financial stability of country.

During the last 30 years export of financial services increased approximately 100 times [2]. For all this, its rate of growth outstrips the increment of world export of both all services and world export of goods. At the same time geographical distribution of financial services exporters undergoes considerable changes nowadays [3]. Progress in means of communication, information technologies, computerization of processes and new ways of delivery [4], in conjunction with removal of national restrictions on transnational capital flows provide a possibility even for countries with a rather small population and territory with scarce natural resources to achieve a high living standard only by providing financial services to the world market.

Country's intentions to stimulate export and re-export of financial services must be substantiated by the availability of sufficient potential for that. It's just on its basis that one ought to form complete country's strategy of the development of financial services export. But the problem lies in the fact that it is difficult to define this potential. One needs a special set of

instruments that indicates in what direction, in what volume and even what kind of financial services one ought to export. However, neither the widely used analysis of Porter's five forces, STEP-analysis, SWOT-analysis and their varieties [5], nor risk analysis and the other ones [6, 7] are able to settle the fundamental problem regarding the way of combining heterogeneous parameters in a general assessment of possibilities. "Export capability" is difficult to yield to definition. As a rule, in analytical articles one quotes one or another market potential but without any substantiation of the cited "concrete" figures. Most authors are proficient in avoiding concrete examples and calculations. Some of the few researchers who, in any case, are engaged in this passing matter linked it with market capacity. Market capacity gives the possibility of showing what volume of financial services calculated in currency can be realized at a certain price level, demand, etc. The methods of evaluation differ depending on definition of the market level: the whole market, real or potential, admissible, target, main, territorial one, and so on. When one speaks about market capacity, at the same time one also includes in this concept 'sales volume', 'sales potential', 'market capacity', 'market potential' proper, as well as 'economic potential' [8]. Some of the authors speak about possibilities of realization under invariable circumstances, while the others mention time changes, and the third ones ponder over some factors essential for realization of goods/ services and the necessity of coefficients taking into account the importance of one or another factor [9, 10].

In view of the fact that at the present moment none of the officially accessible researches provide the calculation of capability of country's financial industry in export of financial services in monetary value, consecutive targets of the current research proved to be:
- working out conception of capability's notion in export of financial services;
- creating a set of instruments for measuring capability of country's financial sphere in export of financial services;
- calculating potential for financial industry of a certain country (financial industry of Latvia was taken as an example in view of the intention of this country to develop export of financial services) [11]).

For realization of the given tasks one mostly used methods of econometric analysis. Statistical information used for construction of set of instruments of potential's evaluation was limited by database of international organizations – The World Bank, UNCTAD.

Concept of Capability in Export of Financial Services

Capability is something possible but not yet actual. In authors opinion, from economical point of view *potential means possibilities of sufficient resources under maximum improvement of the existing state of influencing factors.* In mathematical terms one can express *potential* in the following way (1):

$$Capability = theoretical\ possibility - actual\ result \qquad (1)$$

where *theoretical possibility* is a maximum result that can be achieved using sufficient resources under conditions of the most favorable state of *influencing factors*. *Influencing factors* (or *factors of influence*) are those environment factors whose impact limits *theoretical possibility*. In some cases one can exert an influence on the state of factors in order to improve their impact.

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Then one can speak about *maximum possibility*, i.e. maximum result that can be achieved using sufficient resources on condition of maximum improvement of actual state of *influencing factors yielding to influence (fig. 1)*. In other cases influencing factors are actually beyond the zone of influence. *Maximum possibility* can be roughly forecasted. As regards to resources, they are undoubtedly important. One can imagine a situation when possibilities actually available under the existing state of influencing factors or opening as a result of its maximum improvement are not realized in full measure through insufficiency of resources. Incomplete use of even surplus resources can be regarded as insufficiency of resources.

In author's opinion, on the whole one can present *potential* in the form of *current potential* and *additional potential* (Figure 1). *Current potential* is characterized by the situation when under the existing state of influencing factors available resources don't allow to achieve the result equal to the *open* possibility. And vice versa, current potential is considered exhausted when with the help of the available resources and under actual state of influencing factors one achieves the result that is equal to the primarily assumed possibility or even exceeds it.

Potential can be higher than the *current* one in case there is a possibility to improve the state of influencing factors, so that they could stimulate the growth of possibilities. Thus, the actions favoring the improvement of influencing factors are leading to the increase of possibilities of using *additional potential*.

Theoretically potential can be even higher if one can succeed in improving the state of influencing factors in other countries (or that may happen without our interference) and get the possibility of using *external potential*.

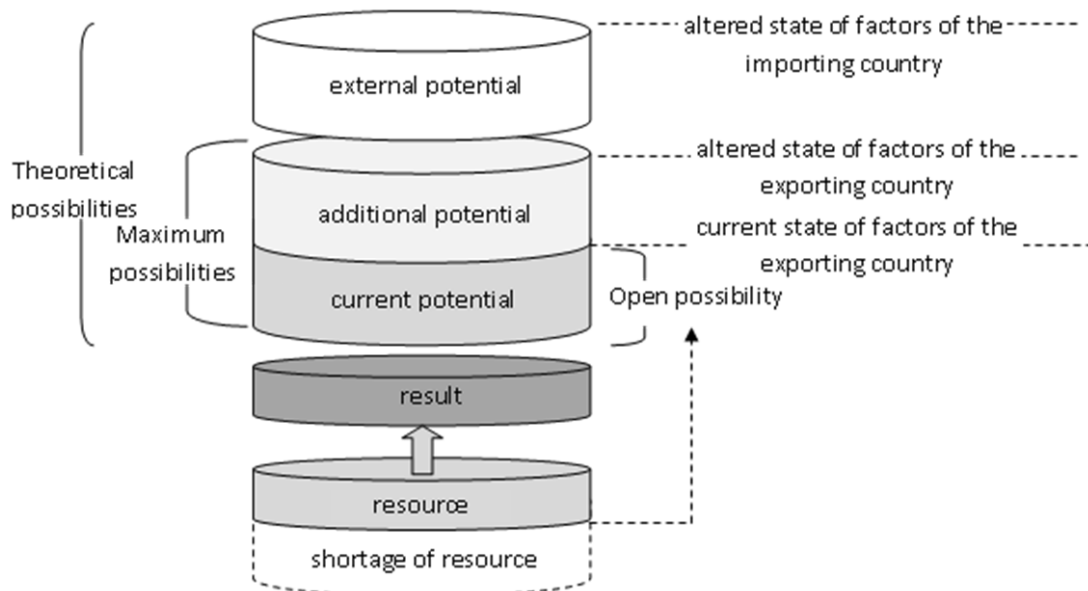Potential is indicated schematically in Figure 1.

Figure 1. Levels of possibilities

Source: compiled by the author

Potential in export of financial services is income in excess of the achieved result gained through sale of financial services to non-residents that might be received on account of sufficiency of resources under maximum improvement of the current state of those factors influencing export on which one can exert influence. In the frames of a individual financial institution one can relate to its resources qualified personnel, technical equipment of the organization, company's capital and other resources connected with rendering services. In the frames of international trade one can consider the whole financial industry of every country as its resource. In the context of financial services export the author tends to consider as resources that part of financial industry which includes resident parent financial companies due to the fact that subsidiary companies and branches of foreign banks represent individually their mode of international trade in financial services on the territory of host country (commercial presence). As a rule, they are not intended for further export of financial services to the markets of other countries. However, in the current work the author leaves out of account resources in order to calculate potential in export of financial services. The main consideration is given to calculation of additional capability of country's financial industry in export of financial services the importance of which for the country lies in:

- ascertaining the volume of its benefit for both country's national economy and resident financial institutions (owners and employees) in case of realization of potential;
- substantiated re-orientation of business strategy or a considerable concentration of the efforts of financial institutions towards rendering service to non-residents;
- well-considered decisions of government administrative bodies regarding stimulation of financial services export;
- choice of the most appropriate country's strategy for the development of financial services export.

As an example the author made calculation of capability of financial industry of Latvia. Separate aspects of potential were also analyzed in a number of other countries. In the given research one did not consider potential of a concrete financial service or an individual financial institution in export of financial services but the financial industry of Latvia as a whole because, in author's opinion, it is just at the level of a country there is a possibility of altering influencing factors which form the environment level that is favorable for the development of export of financial services.

Gravity Model for Measuring Capability in Export of Financial Services

For making research of *maximum possibilities* (Figure 1), the author went on using mathematical methods of econometric analysis. When choosing the model type the author decided in favor of *gravity model* as, in author's opinion, under conditions of the suggested conception it suits best for making calculations. Theoretical basis of working out *gravitation models* is founded by analogy with Newton's law of universal gravitation where the degree of gravitation between two objects is defined by their size and distance between them. Among all kinds of gravitation models of macroeconomic level the most popular is *gravity model of international trade* which, in its essence, is an adaptable regression model. The gravity model of

international trade specifies trade as a positive function which attracts "masses" of two countries whereas the distance between them is regarded as a negative function that pushes them away. Defining total trade between countries "*i*" and "*j*" as *TRADEij* , the distance between both of them as *DISTij* and considering as gravitation mass the product of gross domestic products GDP of countries "*i*" and "*j*", then the classical gravity model of trade is as follows [12] (2):

$$TRADE_{ij} = f[(GDP_i \cdot GDP_j) / DIST_{ij}].$$ (2)

Transformed into natural logs, the regression equation is commonly specified as (3):

$$trade_{ij} = a_0 + a_1(gdp_i \cdot gdp_j) + a_2(dist_{ij}) + u_{ij}.$$ (3)

Researchers have a right to adapt the model for their purposes on their own including, for example, variables to control for demographic, geographic, economic and other conditions. Having studied peculiarities of adaptation of gravity models in economics [12, 13, 14], the author modified the classical gravity model of international trade to calculate country's additional potential in financial services export. Having taken obligatory elements of gravity model of international trade – _distance_ and _GDP_ of two countries, the author supplemented the given classical model by two of the formerly disclosed by her key factors – _total business tax rate (as % of profit)_ and _financial market sophistication_ [15]:

$$FSE_{ij} = a_0 + a_1(gdp_i \cdot gdp_j) + a_2(fms_i \cdot fms_j) + a_3(tax_i / tax_j) + a_4(dist_{ij}) + u_{ij}$$ (4)

FSE_{ij} – volume of financial services export from the country *i* to the country *j* [16];
$gdp_i \cdot gdp_j$ – gravity factor that reflects product GDP of both countries. Besides the fact that GDP of every country is a classical gravity factor by itself there is a synergy effect of their interaction that is explained by the fact that the size of GDP can be also defined, among other factors, by international trade. The higher and more successful it is, correspondingly, the higher are capital flows between the countries one has to serve, and that (factor) increases export of financial services. That is why the author applied multiplication of countries' GDP and did not use GDP of every country as a separate factor.
$fms_i \cdot fms_j$ – financial market sophistication [17] of country *i* and country *j* is a key factor of gravitation. The product of factors of both countries was used due to the fact that in case financial market is developed in one country, then the participants of that market come to know well the particulars in financial services. This fact, in its turn, means that, when importing services, they will tend to accept services from more developed markets where one understands their demands. In that way one can expect the more considerable export/import of financial services between the countries with most sophisticated markets of financial services.
tax_i / tax_j – difference between tax burden for business between countries *i* and *j* [18]. The given factor is attractive as customers aspire to get from jurisdiction with high taxes to jurisdictions with lower taxes, and that factor is reflected in export of financial services. As this factor works with reverse traction, i.e. the higher the taxes the weaker attraction, it is calculated with reverse motion – from importer to exporter. The power of attraction is defined through division of total tax rate for business in importing country by analogous parameter in exporting country. Calculation of power of attraction for countries with privileged (low) taxation, "grey and black

off-shores", is an exclusion. Specific character of these countries lies in re-export of capital. That is why these countries not only export but also import in large quantities financial services accompanying capital flows. Proceeding from such a specific character, the author considers it correct to apply division so that the rate of the given off-shore is always in denominator, irrespective of the fact whether it is an exporter or importer of financial services regarding the partner country.

$dist_{ij}$ – distance between capitals of countries as usual places of most financial activity. The factor is repulsive. The author holds the opinion that the factor of distance, to a certain extent, will also work in modern conditions of transition to remote service. It can be explained by 1) lack of convergence of working hours due to difference in time zones, 2) customer's necessity to visit, at least rarely, the residence country of financial services supplier for identifying oneself or settling some urgent problems, 3) a number of other minor reasons (mutual understanding, language, peculiarities of mentality).

Gravity model is intended for calculation of additional capability of a certain direction of export. For defining additional capability of country on the whole it is necessary to summarize additional potentials of all its directions in export of financial services.

When creating gravity model for export of financial services there exist a number of restrictions:

1) for dependable parameter FSE_{ij} one used statistics presented by *United Nations Service Trade Statistics Database*, section 6 "Financial services" [16] where one indicated not only total export and import of financial services of countries but, in many cases, they are subdivided into partner countries. However, in subdivided into countries statistics the volume of export from one country to another often greatly differs from the volume of import of the second country from the first one. In these cases the author used in her calculations the biggest of the two volumes assuming that the smaller volume is a consequence of omission of some data when compiling statistics.

2) in the model one used statistics of Austria, Germany, Poland, USA, Russia, Denmark, Czech Republic, Netherlands, Luxemburg and Cyprus in all directions of their imports. The data of these ten countries were used due to establishing the fact that only they imported financial services from Latvia. In their turn, the data of Latvian export of financial services for concrete countries were inaccessible. Thus the data of Latvian import to each of these ten countries were used as indices of export from Latvia to each of these ten countries.

3) this model was created according to the data of 2008. The access to the data of subsequent years was restricted on the moment of carrying out the research.

The author created gravity models (by the type of linear regression) for each of the ten importers. In author's view, the models indicated rather similar parameters. On their basis the author created an integrated gravity model of financial services export of Latvia. The used for construction of the model data mass which includes definition of export flows from the whole world to the ten above mentioned importers made 475 combinations.

To construct a more sensible gravity model on the basis of the regression model, the author used logarithm function (natural logarithm) (5):

$$\ln(y) = \ln(a) + \ln(b_1) + \ln(b_2) + u \ ; \qquad y = ax_1^{b_1} \cdot x_2^{b_2} + u \ ; \qquad b_1 = e^{\ln(b_1)} \tag{5}$$

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by adapting it for the case under consideration in the form of (6):

$$\ln(FSE_{ij}) = \ln(a_0) + a_1 \ln(gdp_i \cdot gdp_j) + a_2 \ln(fms_i \cdot fms_j) + a_3 \ln(tax_i / tax_j) + a_4 \ln(dist_{ij}) + u_{ij} \quad (6)$$

After processing the data by program SPSS, gravity model of financial services export was received with the following parameters (see Table 1).

Table 1

Parameters of gravity model of financial services export

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.636[a]	0.404	0.399	2.317172

a. Predictors: (Constant), Dist(ij), FMS$_i$ * FMS$_j$, Tax$_i$ / Tax$_j$, GDP$_i$ * GDP$_j$

ANOVA[b]

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1713.895	4	428.474	79.801	0.000[a]
	Residual	2523.564	470	5.369		
	Total	4237.459	474			

a. Predictors: (Constant), Dist(ij), FMS$_i$ *FMS$_j$, Tax$_i$ / Tax$_j$, GDP$_i$ * GDP$_j$
b. Dependent Variable: FSE(ij)

Coefficients[a]

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-17.221	1.346		-12.793	0.000
	GDP$_i$ * GDP$_j$	0.708	0.052	0.587	13.646	0.000
	Tax$_i$ / Tax$_j$	2.003	0.286	0.289	6.998	0.000
	FMS$_i$ *FMS	3.768	0.364	0.371	10.348	0.000
	Dist(ij	-1.040	0.106	-0.380	-9.852	0.000

a. Dependent Variable: FSE(ij)

As it is seen from Table 1, the level of significance of all factors *Sig.* does not exceed 10%, i.e. one cannot accept a zero hypothesis. Determination coefficient *R Square* is equal to 0.404, and that indicates the fact that the proportion of variance of dependent variable *FSE$_{ij}$* can be fully explained (more than 40%) by the influence of the chosen factors. Verification of the hypothesis as regards determination coefficient indicated its statistical significance. One should note that the power of influence of every key factor on dependable parameter is not equal, as it is indicated by coefficients *Beta*. The strongest influence is exerted by GDP of two countries. Further, with practically equal level of influence, follow "distance between capitals" and "financial market sophistication", for all that the factor "distance between capitals" as a

repulsive one has a negative meaning correspondingly. The list is completed by "difference in taxes" as the weakest of the factors. The formulated by the author regression logarithm model looks as the following formula (7):

$$\ln(FSE_{ij}) = -17{,}221 + 0{,}708\ln(gdp_i \cdot gdp_j) + 3{,}768\ln(fms_i \cdot fms_j) + 2{,}003\ln(tax_i / tax_j) - 1{,}04\ln(dist_{ij}) + u \qquad (7)$$

Inserting factor parameters into the given formula, the author calculated theoretically possible volume of financial services export for each of 475 directions. For visual proof of the result the author made use of the program for visualization of modeling results – *GEPHI* (http://gephi.org/). Visualization of the data received with the help of the model on ten importers and all of their exporting partners is indicated in figure 2. In the given scheme countries are designated by spheres, their diameter depends on the amount of country's GDP. The ten chosen importing countries are marked in green, and the red ones are the countries which are engaged in financial services export to these countries. The flow of financial services export is marked by arrows, and the width of an arrow corresponds to the volume of the delivered financial services calculated on the basis of the model. The wider the arrow the larger export of financial services is. The location of the countries in space approximately corresponds to their situation on geographical map of the world.
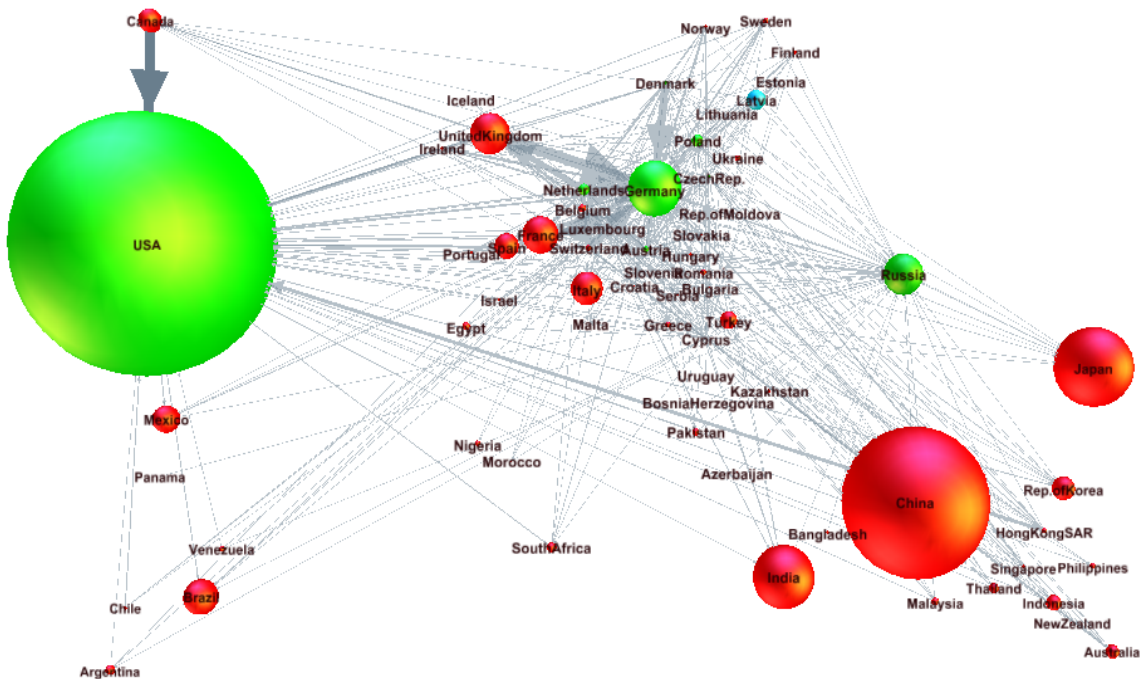

Figure 2. Directions of financial services export

Source: compiled by the author

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Capability in Export of Financial Services

The indicated in Figure 2 flows of financial services export are not yet additional potential as such but calculated export of financial services based on four main factors of the model which make up 40.4% of all factors creating actual result. Additional potential of the country under study is calculated as the difference between maximum possibilities and calculated export of financial services in the direction of a certain country. For getting maximum opportunities one ought to improve at most the state of those key factors (on not all of which there is a possibility to exert an influence). In the first place, there is no opportunity to alter the condition factors of the importing country. In the second place, from the factors of the exporting country it is most difficult to exert an influence on the distance due to its physical essence, the existence of time zones, language and mental differences. Probably, only the development of information and communication technologies and the transition to serving in the regime 7x24x365 are in a position to smooth over these barriers. Another classical factor, GDP, is a mirror of economics whose change is also a rather slow process. It is easier to change the tax burden on business, but only in the frames of EU, where Latvia is a member country in the given case, whereas to change it radically for a tax-free harbor seems hardly probable.

The only chance to gain *additional potential* proves to be maximum improvement of the factor of *financial market sophistication.* To define maximum level of its improvement, the author took as a reference-point the best condition of this factor achieved in the period under research. Switzerland had the best parameter – 6.8 points on a 7-point scale [17]. Thus, instead of Latvia (4.5 points), this parameter was inserted in the model. The difference between the received second and first calculation results made up the sought-for *additional potential* of Latvia in financial services export by factor of financial market sophistication in 2008 (Table 2).

Table 2

Calculation of Latvia's capability in financial services export

Financial services						
No.	Expor-ter	Importer	Actual export	Theore-tical export	Theoretical result, improving the factor fms_i	Export capability, improving the factor fms_i
1	Latvia	Netherlands	9 876 420	2 285 576	10 828 902	8 543 327
2	Latvia	Luxembourg	6 479 428	1 163 608	5 513 096	4 349 488
3	Latvia	Cyprus	2 091 088	163 437	774 351	610 915
4	Latvia	Czech Republic	2 828 489	1 040 834	4 931 401	3 890 567
5	Latvia	Poland	838 585	1 781 479	8 440 528	6 659 049
6	Latvia	Denmark	187 145	1 270 733	5 946 292	4 675 559
7	Latvia	Russia	789 461	2 104 418	9 970 588	7 866 170
8	Latvia	Austria	1 472 597	3 636 402	17 229 026	13 592 624
9	Latvia	USA	831 600	3 299 303	15 631 872	12 332 569
10	Latvia	Germany	1 472 597	20 328 830	96 316 615	75 987 785
Latvia: Total, USD			**26 867 410**	**37 074 619**	**175 582 673**	**138 508 053**

Source: compiled by the author

As it is evident from Table 2, under maximum improvement of the factor of financial market sophistication Latvia obtains considerable additional capabilities for the growth of financial services export by 474% (by 138.5 million USD).

Conclusions

In financial services export potential is an income in excess of the achieved result from the sale of financial services to non-residents that one might obtain owing to sufficiency of resources under maximum improvement of actual condition of those factors influencing export on which there is possibility of exerting an influence. Resident parent financial companies constitute country's resources. *Potential* is presented as a difference between a maximum possible income and actual result of export. It can be roughly prognosticated by orientating oneself on the state of factors of the leader of financial services export. *Current potential* is characterized by the situation when due to insufficiency or non-activation of resources one failed to obtain possible income under actual condition of influencing factors. *Influencing factors* are environment factors the influence of which restricts maximum possibility of financial services export. Maximum improvement of the state of influencing factors provides *additional potential*. Calculated with the help of modified gravity model that is adapted for the needs of financial services export, *additional potential* of Latvia in export of financial services in the direction of Austria, Germany, Poland, USA, Russia, Denmark, Czech Republic, Netherlands, Luxemburg and Cyprus, under improvement of the factor of *financial market development* to the level of Switzerland, makes up 474% of the calculated result for the period under research.

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