Expert Grup
CENTRU ANALITIC INDEPENDENT

Evolution of exports of the Republic of Moldova to the European Union:

The role of trade regimes

Authors: Ana Popa, Valeriu Prohnițchi, Alex Oprunenco

Chisinau, April –August 2008

This paper was developed within the project „Trade relations of the Republic of Moldova with the European Union: current state and perspectives of improvement”.
This project was implemented with the financial support of the Soros – Moldova Foundation.

Summary:

Foreword

During 1995-2007 the foreign trade of the Republic of Moldova increased considerably but the evolution was very unbalanced as the imports prevailed over the exports. The total value of Moldovan imports increased by 4.4 times, while the exports rose only by 80%.

During this period the European Union became the main trading partner of the Republic of Moldova. In 2007 the exports to the EU countries constituted 50.6% and the imports 45.6%. Since the EU is the biggest economy in the world, its dominating position in Moldovan foreign trade fits neatly in predictions of gravitational theory of the international trade regarding the anticipated structure of the foreign trade of our country.

It is known that the EU has the largest number of trade arrangements according to the WTO in comparison to any other party to this organization. Beginning with 1997 the EU offered to the Republic of Moldova a number of trade preferences within the framework of the General System of Preferences, while January 2006 the EU considerably extended the list of goods with preferential trading conditions for the imports from the Republic of Moldova. Recently, in March 2008 the Autonomous Trading Preferences entered into force.

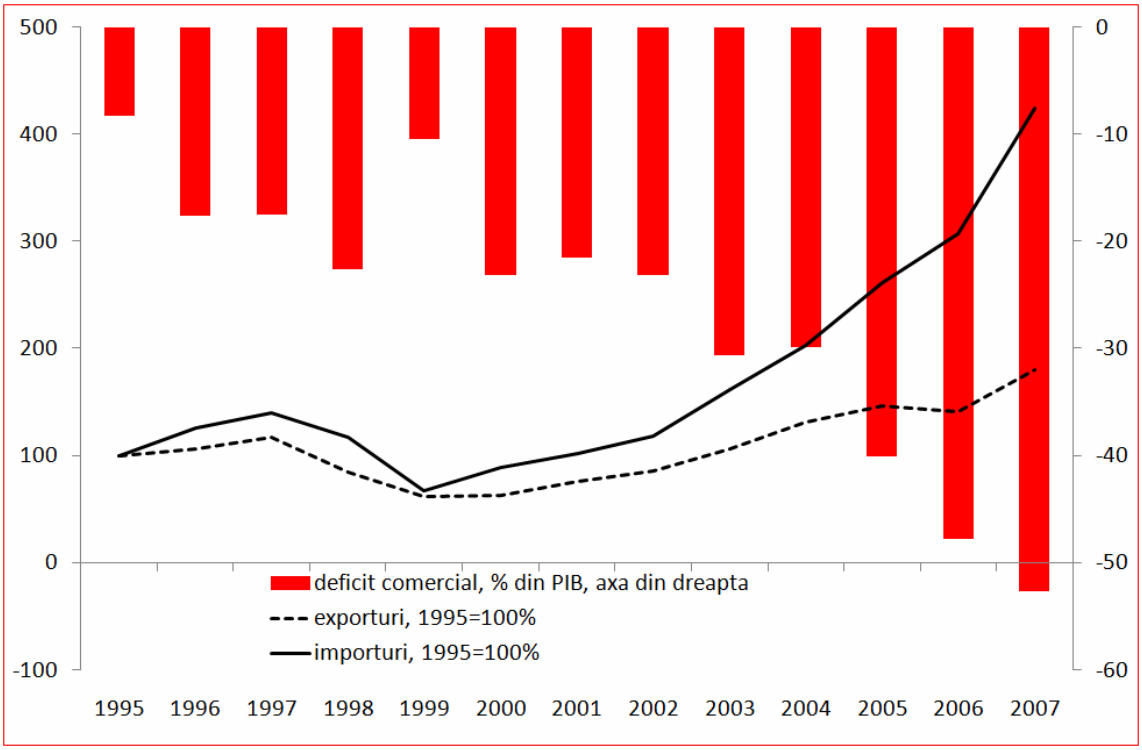
What was the role of these trading regimes granted by the EU to cover the Moldovan exports to the common market? This study aims to answer this question. For this purpose authors employ a gravitational model of the international trade which is adjusted to satisfy the analytical needs. The conclusions of the model are verified by using an alternative model.

EU – Moldova Trade Developments

Trade performance of Moldova – overall outlook

During 1995-2007 many implemented reforms contributed to the opening of the Moldovan economy to the global one. Quite predictably, with economy deep in recession, Moldovan exports and imports followed different paths in the wake of this opening, final outcome being soaring trade deficit (see Figure 1).

Figure 1 Evolution of imports, exports and the trade deficit of the Republic of Moldova, 1995-2007



Source: NBS and estimations of the authors

During this period the imports set on an almost exponential increase, growing more than four-fold in only 12 years (from 840,7 mil USD in 1995 to 3689,9 mil USD in 2007). Due to the dire situation of the real sector, which was periodically hit by the economic and climate shocks, in 1995-2007 the domestic exports increased by 2.5 times slower than the imports (from 745,5 mil USD to 1341,8 mil USD). During the entire analyzed period only once (in 2001) the exports outstripped the imports.

Obviously, the more rapid growth of imports is not necessarily a bad issue in a short term perspective, however in long term this displays a low index of trade performance of the country[1]. A faster growth of imports vs. exports was noticed also in the case of 9 countries out of the 27 countries in transition, while for 18 countries the trade performance index showed a commercial expansion (Table 1). The

[1]Definition: trade performance index for a certain country and a particular time is the ratio of the exports' growth rate and the imports' growth rate for the named time lag. An index above one shows a relative trade expansion, while an index bellow one shows a relative trade contraction.

trade performances were not necessarily correlated with the magnitude of the implemented economic reforms. In particular, it has been noticed that such countries as Azerbaijan, Belarus, Turkmenistan and Uzbekistan succeeded to have a stronger expansion of exports compared to the countries which have implemented a higher number of reforms in the field. Obviously, in certain cases the trade expansion was due to the export of hydrocarbons, which prices rose almost constantly during the analyzed period. In the majority of cases the exports' growth seems to be the result of the countries' expanding production capacities following the growing capital investments and the structural and institutional reforms.

Table 1 Trade performance index, 1995-2006.

Performing trade countries (relative trade expansion)		Non-performing trade countries (relative trade contraction)	
Azerbaijan	3,25	Slovakia	0,98
Bosnia-Herzegovina	2,46	Kirghizstan	0,94
Kazakhstan	1,57	Latvia	0,90
Armenia	1,57	Romania	0,88
Russian Federation	1,46	Croatia	0,87
Uzbekistan	1,20	Tajikistan	0,83
Czech Republic	1,20	Serbia	0,83
Estonia	1,17	Macedonia	0,80
Georgia	1,14	Bulgaria	0,75
Turkmenistan	1,12	Moldova	0,41
Belarus	1,11		
Slovenia	1,06		
Ukraine	1,06		
Albania	1,04		
Hungary	1,03		
Poland	1,02		
Lithuania	1,01		

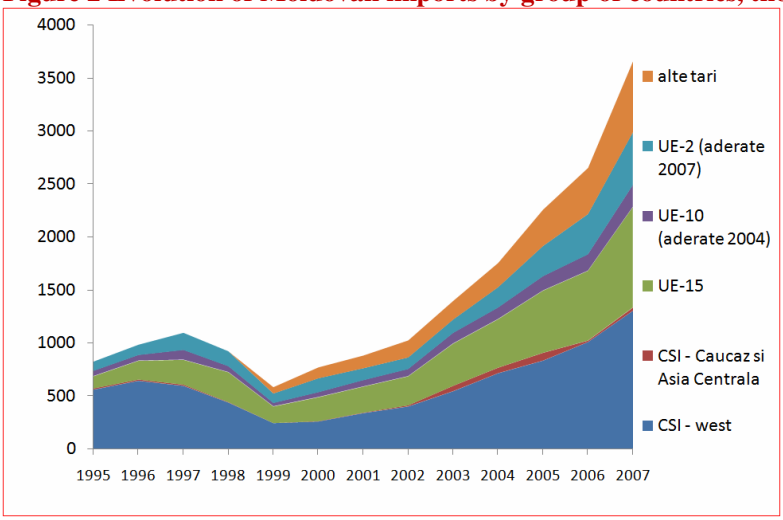
Source: EBRD database

Regretfully, Moldova showed a poor trade performance occupying the last position in the list of transition countries. This counter-performance may not be explained by the unfavorable evolution of the terms of trade. This would sound unexpectedly, however during the analyzed period regardless of the energy shocks, the average price of Moldovan exports rose as quickly as the average price of imports. One of the factors of the relatively slow growth of exports is the general and protracted economic crisis and also the fact that despite the relatively timely opening of the market, the Republic of Moldova was unable to implement structural reforms which would lead to the supply growth. Moreover, the exponential growth of imports was driven by the rising population's revenues, especially since 2000 with remittances starting to play the primary role in financing the imports.

Changes in the foreign trade of Moldova

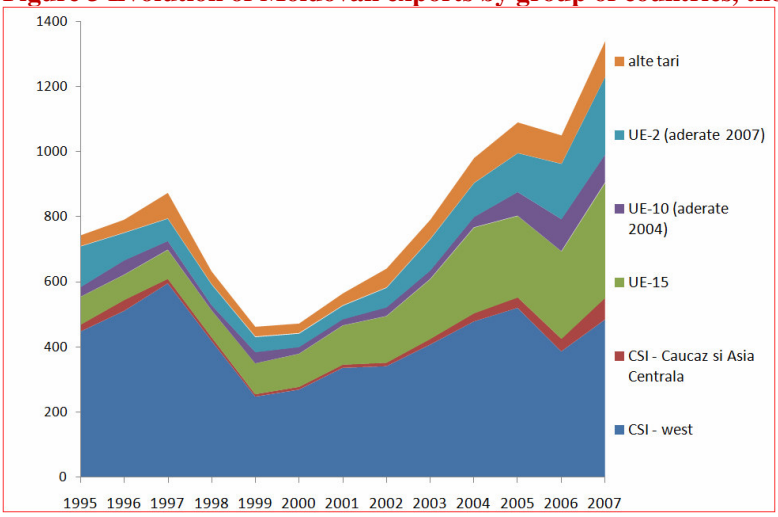
The geographical structure of the Moldovan trade significantly changed during 1995-2007. In 1995 Moldova highly depended on the CIS markets with about 70% for imports and 63% for exports. By 2007 the situation changed and the CIS markets accounted for only 36% for imports and 41% for exports (see figures 2 and 3). Overall, it may be stated that the country managed to diversify to reasonable extent its geographical destinations for both imports and exports. Actually, the gravitational theory of the international trade better explains the current geographical structure of the foreign trade of Moldova than the structure typical during the mid 1990' when the country depended heavily on the Eastern markets of the ex-USSR and the orientation of its trade flows was determined mostly by other factors than the economic ones.

Figure 2 Evolution of Moldovan imports by group of countries, thousands USD, 1995-2007



Source: NBS

Figure 3 Evolution of Moldovan exports by group of countries, thousands USD, 1995-2007



Source: NBS

It is necessary to mention an important aspect concerning the re-exports, which may add some shades to the above statements[2]. In 2005 the re-exports rose significantly (by almost 16 times) in 2006 by 15% and in 2007 by 46%. This growth is especially due to the significant growth of re-exports to such destinations as Italy, Romania, Slovakia, Russian Federation, Germany, Turkey and USA. In 2007 the EU countries held 64% of the total of re-exports of Moldova. Thus, if we exclude the re-exports then we may notice that in 2007 the EU held only 43.1% of the total exports vs. 50.7% of the gross exports.

During this period important changes took place in the structure of exported goods, however these changes are difficult to interpret univocally. At the disaggregation level of 4 digits important changes

[2] According to the UN definition, the re-exports are foreign goods exported in the same state as previously imported, from the free circulation area, premises for inward processing or industrial free zones, directly to the rest of the world and from premises for customs warehousing or commercial free zones, to the rest of the world.

are noticed concerning the structure of primary exported goods[3]. Out of the first 15 exported goods in 1995 only 7 'survived' into 2007, however the beef meat, cigars and cigarettes, non-processed tobacco, pumps, certain grains (wheat, corn and meslin), canned tomatoes were not on the list. On the other hand, other products showed up among the first 15 exported goods in 2007, and namely gypsum products, nuts, sun-flower seeds and products of the metallurgical industry. It is necessary to mention that in a certain way the situation from 2007 is due also to the entrance of certain companies of the eastern (break-away) regions of Moldova. Still, as shown in the Table 2, the wines were not only among the main exported products during the whole period, but also their position has consolidated (15.0% in 1995, 27.7% in 2003). The relatively small weight of wines in 2007 (12.6%) was due to the embargo introduced by the Russian Federation on the imports of alcoholic beverages from Moldova and it may be assumed that in 2008 the weight of wines will increase again.

The Hirshman-Herfindal index of exports' concentration at the 4 digits level rose from 21,6 in 1995 to 29,3 in 2003 and in 2005 decreased to 27,7[4]. We may state that this level of exports' concentration by goods is adequate and if it were not for the excessive concentration of wines on the eastern markets the situation of Moldova would have been very good from the perspective of exports' diversification by products.

Although the energy products still hold the important share of imported goods in Moldova, the general structure of imports has significantly changed, becoming less concentrated around the energy products. Thus, the weight of energy products shrank from 45.5% of the total value of imports in 1995 to 21% in 2007. Only 5 out of the first 15 imported products in 1995 were present on the list of the first 15 imported products in 2007 and the rest were new products which advanced during the years of 2000.

[3] The data on the disaggregated exports at 4 digits level for the analysis of structural changes were provided by Mr. Alexandru Culiuc, currently Ph.D. at the Harvard University, who is currently conducting a similar analysis available at http://www.culiuc.com/archives/2008/02/agriculture3.phtml.

[4] The Herfindal indexes are used for evaluating the concentration level of exports, the degree of competitiveness on the market, etc. The named index is calculated: $H = \sqrt{\sum_i^n (\frac{x_i}{X})^2}$, where x_i – USD value of the exported good - *i*, X – total value of exports. Closer this index is to 1, more concentrated are the exports of the analyzed country.

Table 2 First 15 exports of the Republic of Moldova, disaggregation of 4 digits level, thousands USD

	1995		1999		2003		2007	
	Description	Value	Description	Value	Description	Value	Description	Value
1	Grape wines (including fortified), alcoholic grape muss	112140,7	Grape wines(including fortified), alcoholic grape muss	99343,2 =	Grape wines (including fortified), alcoholic grape muss =	215159,7	Grape wines (including fortified), alcoholic grape muss	106251,2 =
2	Liqueur, spirits and undenatured ethyl alcohol	59881,6	Tobacco unmanufactured, tobacco refuse	31998,6 ↑	Raw hides and skins of bovine, equine animals	34213,9 ↑	Safflower, sunflower and cotton-seed oil, fractions	49332,2 ↑
3	Solid cane or beet sugar and chemically pure sucrose	58906,5	Fruit and vegetable juices, not fermented or spirited	17324,3 ↑	Safflower, sunflower and cotton-seed oil, fractions	27732,3 ↑	Fruit and vegetable juices, not fermented or spirited	48778,0 ↑
4	Fruit and vegetable juices, not fermented or spirited	48178,7	Nuts except coconut, brazil & cashew, fresh or dried	16804,1 ↑	Liqueur, spirits and undenatured ethyl alcohol	25347,8 ↑	Gypsum, anhydride, gypsum plaster	45361,9 ↑
5	Meat of bovine animals, frozen	27760,4	Maize (corn)	13327,2 ↑	Apples, pears and quinces, fresh	22344,0 ↑	Glass bottles, flasks, jars, phials, stoppers, etc	39418,0 ↑
6	Cigars, cigarettes etc, tobacco or tobacco substitute	24468,1	Women's, girls suits, jacket, dress, skirt, etc, wove	12002,5 ↑	Nuts except coconut, brazil & cashew, fresh or dried	21890,0 ↓	Nuts except coconut, brazil & cashew, fresh or dried	38709,7 =
7	Apples, pears and quinces, fresh	19176,1	Meat of bovine animals, frozen	11907,8 ↑	Fruit and vegetable juices, not fermented or spirited	21711,5 ↓	Sunflower seeds	29705,6 ↑
8	Tobacco unmanufactured, tobacco refuse	15542,2	Sunflower seeds	11604,0 ↑	Men's or boys suits, jackets, trousers etc not knit	21575,0 ↑	Hot rolled bar, rod of iron/steel, in irregular coils	26752,8 ↑
9	Pumps for liquids	13598,4	Glass bottles, flasks, jars, phials, stoppers, etc.	9574,6 ↑	Women's, girls suits, jacket, dress, skirt, etc, wove	20152,1 ↓	Liqueur, spirits and undenatured ethyl alcohol	25217,3 ↓
10	Wheat and meslin	12706,0	Wheat and meslin	9551,6 =	Maize (corn)	16664,2 ↓	Apples, pears and quinces, fresh	22272,5 ↓
11	Maize (corn)	12323,2	Solid cane or beet sugar and chemically pure sucrose	9056,1 ↓	Meat of bovine animals, frozen	16497,4 ↓	Solid cane or beet sugar and chemically pure sucrose	20597,5 ↑
12	Glass bottles, flasks, jars, phials, stoppers, etc	12135,9	Men's or boys suits, jackets, trousers etc not knit	8957,2 ↑	Gypsum, anhydride, gypsum plaster	14150,6 ↑	Uncoated paper and paperboard	19702,2 ↑
13	Copper, copper alloy, waste or scrap	11556,0	Men's, boys overcoats, capes, wind jackets etc, woven	8400,8 ↑	Footwear with uppers of leather	12092,2 ↑	Vegetables, prepared /preserved, not frozen/vinegar	14072,6 ↑
14	Safflower, sunflower and cotton-seed oil, fractions	10536,7	Liqueur, spirits and undenatured ethyl alcohol	7094,1 ↓	T-shirts, singlet and other vests, knit or crochet	12053,4 ↑	Copper, copper alloy, waste or scrap	13794,7 ↑
15	Tomatoes prepared, preserved, not in vinegar	9679,0	Meat of swine, fresh, chilled or frozen	7024,9 ↑	Sunflower seeds	11772,2 ↓	Trunks, suit-cases, camera cases, handbags, etc	12084,0 ↑
	Total exports	745527,2		428121,4		775876,2		845843,2
	% first 15 out of the total exports	60,2		64,0		63,6		60,5

Note: The arrows show the direction of the merchandise's change of position on the list in comparison with the last analyzed period, the sign „=" shows that the position has not changed.

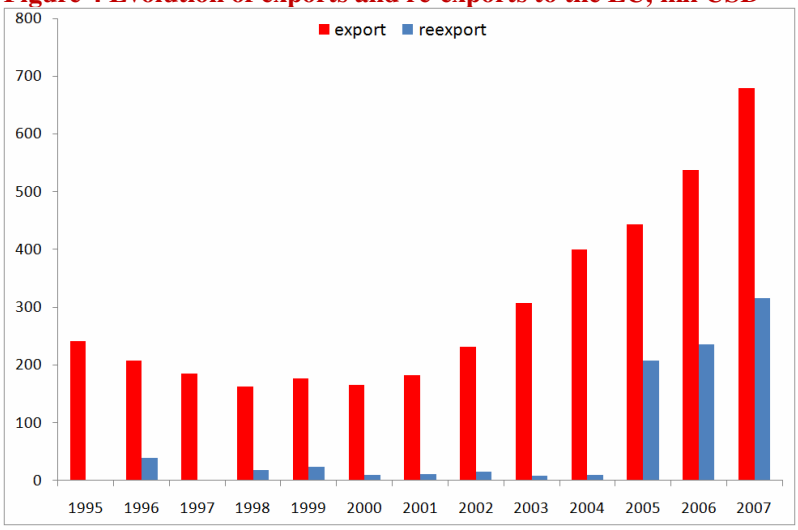
Source: Comtrade and the computations of the authors

EU – Moldova Trade Developments

The volume of the foreign trade of Moldova with EU evolved impressively during 1995-2007, although the structural disequilibrium (exports vs. imports) is as significant as in the case of the foreign trade in general. Exports to the EU-15 rose during the named period by 4,1 times and registered the most rapid and steady evolution in comparison with other geographical destinations: CIS-west – by 1,1 times, CIS-Caucasus & Central Asia – by 3.2 times, EU-10 – by 2.9 times , EU-2 – by 1.9 times and „other countries" – by 3.3 times. Also the imports from EU-15 rose dramatically by 8.2 times, being competed only by the imports from „other countries" (which rose by 17.4 times). For comparison purposes, the imports from EU-10 rose by 4 times, from EU-2 – by 5.7 times and a slower growth was registered by the imports from the CIS – by about 2,3 times.

As a result of the rapid growth of exports, the EU-15 countries in 2007 were the primary destination for 26.5% of the total Moldovan exports, the EU-10 – 6.4% and EU-2 – 17.8%. Overall, the EU-27 held 50.7% of the total Moldovan exports. On the other hand, 45.2% of the total imports in 2007 originated from EU-27. Thus, it may be stated that the EU became the main trade partner of the Republic of Moldova. If the recent (2005-2007) developments are of any guide, this trend will persist in the near future.

Figure 4 Evolution of exports and re-exports to the EU, mil USD



Source: Comtrade

As it is shown in the Figure 4, starting with 2005 the role of the re-exports is growing and they reached almost 50% of the total exports to the EU in 2007. Still, the logical analysis of the statistical data suggests that an important number of these re-exports are wrongly qualified as re-exports and probably until 2005 the re-exports were correctly classified. For example, in 2007 the total value of textiles (group 6 according to the system HS) exported to the EU made up 257.1 mil USD, out of which 236.1 mil USD were qualified as re-exports. Obviously, in this case and also in other cases these may not be qualified as re-exports, but exports of goods which entered the country under the customs' regime of active processing. Considering the unclear origin of the re-exported goods and the confusion created by their customs' classification, further-on it should be understood by exports the gross exports, which include the re-exports.

We can observe a series of interested trends while analyzing the Moldovan exports to the EU-27 (Table 3). The first five destination countries for the exports – Romania, Italy, Germany, Poland, and

UK – represent about ¾ of the Moldovan exports to the EU. Bulgaria and Austria, which in 1995 were among the first five trade partners from the EU in 1995, in 2007 were down to the 6th and 7th positions. On the list of significant trade partners (with more than 3% of the total exports to the EU), during 1995-2007 the fastest growth was registered by the exports to France (by 18 times), Poland (by 16 times), Italy (by 9 times) and UK (by 5.5 times). Still the most robust growth rate displayed Moldovan exports to Belgium, which rose by 91 times (although this country is not a significant trade partner of Moldova, holding only 1.7% out of the exports to the EU). Curiously enough, in certain countries given the geographical proximity and traditional trade relations we would have expected a higher weight of Moldovan exports, these have either remained almost flat(Lithuania, +3,8%), or even declined (Hungary -11 %, Latvia -23%, Estonia -33%).

Table 3 Evolution of exports and re-exports of the Republic of Moldova to the EU countries, million USD

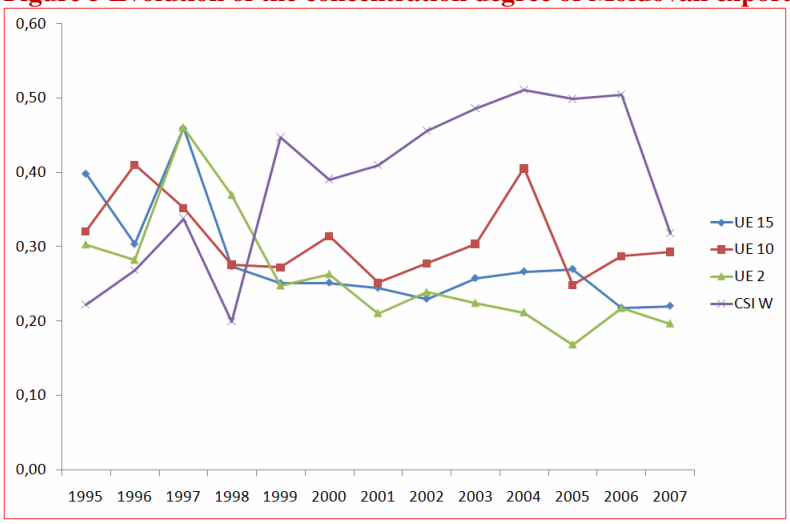
	1995	1999		2003		2007	
	Export	Export	Re-export	Export	Re-export	Export	Re-export
UE-15							
Austria	9,9	10,0	0,5	11,3	1,1	30,9	3,3
Belgium	0,1	1,3	0,4	7,2	0,3	11,2	4,6
Denmark	0	0,1	0,1	0,1	0,0	0,2	0,0
Finland	0,0	0,0	0,0	0,3	0,2	0,0	0,0
France	1,4	6,7	0,8	9,3	0,2	24,8	8,1
Germany	45,4	33,5	3,9	56,2	1,0	86,3	31,0
Greece	2,7	5,8	0,2	3,7	0,1	9,6	0,2
Ireland	0,5	1,7	0,0	0,0	0,0	0,1	0,0
Italy	15,6	25,6	0,9	82,4	1,2	140,2	114,7
Luxembourg	0,2	0,0	0,0	0,0	0,0	0,0	0,0
Netherlands	2,3	2,9	0,1	2,9	0,1	14,4	5,2
Portugal	0,3	0,1	0,0	0,1	0,0	0,2	0,0
Spain	1,6	4,1	0,0	5,3	0,0	1,7	0,2
Sweden	0,1	0,0	0,0	0,0	0,0	0,8	0,0
United Kingdom	6,2	3,8	0,3	5,6	0,0	34,1	26,3
UE-10							
Cyprus	0,9	0,8	0,0	0,9	0,0	1,8	0,0
Czech Rep.	0,7	2,4	0,1	1,5	0,1	5,9	0,5
Estonia	2,3	2,1	0,0	0,7	0,0	1,6	0,0
Hungary	5,7	16,3	7,8	8,0	0,0	5,1	0,4
Latvia	4,6	3,1	0,0	2,5	0,0	3,5	0,4
Lithuania	9,8	3,9	0,3	5,3	0,1	10,2	3,8
Poland	3,0	5,0	2,0	4,5	0,3	48,3	14,7
Slovakia	3,0	1,2	0,1	1,2	0,1	8,9	4,9
Slovenia	0,3	0,6	0,1	2,1	1,3	1,1	0,1
UE-2							
Bulgaria	21,4	5,3	0,7	6,2	0,4	27,3	7,8
Romania	103,6	41,3	5,3	90,2	2,5	211,2	89,4
Total	241,6	177,7	23,5	307,7	8,9	679,3	315,6

Note: for 1995 Comtrade does not show the re-exports;
Source: computations of the authors based on the data of Comtrade

Overall, the trade data show that the exports to the EU have been greatly diversified (the analysis is always performed at the disaggregation level of 4 digits). If in 1995 only 482 types of products were exported, in 2007 the diversification increased to 589. The concentration indexes Hirshman-Herfindal confirm this diversification trend on the sub-regions' level of the EU and on the overall EU level (Figure 5). For comparison purposes, it is necessary to mention that the exports of the Republic of Moldova to the western countries of the CIS (Russia, Ukraine, Belarus) have decreased regarding the number of held positions (from 1049 in 1995 to 731 in 2007) and the concentration index Hirshman-

Herfindal increased from 0,22 in 1995 to 0,050 in 2005, the decrease registered during 2006-2007 was due exclusively to the elimination of wines out of exports as a result of the imposed Russian embargo.

Figure 5 Evolution of the concentration degree of Moldovan exports to the EU and west-CIS



Source: computations of the authors based on the data of Comtrade

What exports Moldova to the EU? Textiles have about 31% weight in the overall exports, these being supplied especially to the EU-15 (places 1 and 2). On the third place are fruits, in particular the nuts, followed by the processed fruits and namely juices, which are mainly exported to Austria and Germany. Finished shoes and the unfinished parts of shoes hold 5,7% and are exported specially to Romania for sale or finishing. In the last years the products out of steel and iron registered an increase, in 2007 holding 5% in the overall exports to the EU and they were mainly directed to the countries that joined in 2004.

Table 4 allows following the dynamics of the first 15 exports of the Republic of Moldova to the EU-27. It may be noticed that the first 15 exported goods in 1995 are still present within the first exports of 2007. Out of the list of exported goods (not only the first 15) practically vanished, such products as beef and pork meat, the dairy (mainly due to the inability to respect the European standards of food and health security by the Moldovan producers). In 1995-2003 the wines have lost a number of positions in the top of main Moldovan exported products and their value decreased by 3 times, from 18,6 mil USD in 1995 to 6,2 mil USD in 2003. In 2006-2007 the exports registered an exponential growth (of almost 17 mil USD) and the Moldovan producers were seeking for opportunities of trade on the European markets rather than on the Eastern ones. Their success on the European markets (practically the most competitive ones on the global level) will depend on their ability to attract the European consumers through an optimal correlation of price-quality and through a finest differentiation strategy against other producers from the new emerging countries.

Table 4 First 15 exports of the Republic of Moldova to the EU-27, disaggregation of 4 digits level, thousands USD

1995		1999		2003		2007	
Description	**Value**	**Description**	**Value**	**Description**	**Value**	**Description**	**Value**
Fruit and vegetable juices, not fermented or spirited	35118	Nuts except coconut, brazil & cashew, fresh or dried	15010	Raw hides and skins of bovine, equine animals	29292	Fruit and vegetable juices, not fermented or spirited	41668
Solid cane or beet sugar and chemically pure sucrose	25834	Women's, girls suits, jacket, dress, skirt, etc, wove	10763	Nuts except coconut, brazil & cashew, fresh or dried	19351	Nuts except coconut, brazil & cashew, fresh or dried	41287
Meat of bovine animals, frozen	23414	Aluminum waste or scrap	9622	Women's, girls' suits, jacket, dress, skirt, etc, wove	18466	Men's or boys' suits, jackets, trousers etc not knit	35718
Grape wines (including fortified), alcoholic grape muss	18255	Men's, boys' overcoats, capes, wind jackets etc, woven	8100	Safflower, sunflower and cotton-seed oil, fractions	17730	Women's, girls' suits, jacket, dress, skirt, etc, wove	33740
Copper, copper alloy, waste or scrap	9613	Grape wines(including fortified), alcoholic grape muss	7750	Men's or boys' suits, jackets, trousers etc not knit	14607	Safflower, sunflower and cotton-seed oil, fractions	27717
Meat of bovine animals, fresh or refrigerated	6482	Fruit and vegetable juices, not fermented or spirited	7520	Fruit and vegetable juices, not fermented or spirited	14352	Footwear with uppers of leather	25103
Electrical energy	6470	Solid cane or beet sugar and chemically pure sucrose	7281	Footwear with uppers of leather	11541	Hot rolled bar, rod of iron/steel, in irregular coils	22910
Raw hides and skins of bovine, equine animals	5981	Medicaments, therapeutic, prophylactic use, in dosage	6102	Babies garments, clothing accessories, knit or crocheted	8676	Women's, girls' overcoats, capes, wind jackets etc, wove	21342
Aluminum waste or scrap	5350	Trunks, suit-cases, camera cases, handbags, etc	5688	Solid cane or beet sugar and chemically pure sucrose	8548	Glass bottles, flasks, jars, phials, stoppers, etc	20360
Safflower, sunflower and cotton-seed oil, fractions	4902	Sunflower seeds	5650	Women's, girls' overcoats, capes, wind jackets etc, wove	8106	Insulated wire and cable, optical fiber cable	17526
Milk and cream, concentrated or sweetened	4386	Raw hides and skins of bovine, equine animals	5324	Trunks, suit-cases, camera cases, handbags, etc	7279	Trunks, suit-cases, camera cases, handbags, etc	17448
Cigars, cigarettes etc, tobacco or tobacco substitute	3858	Women's, girls' overcoats, capes, wind jackets etc, wove	5112	T-shirts, singlets and other vests, knit or crochet	7170	T-shirts, singlets and other vests, knit or crochet	17301
Liqueur, spirits and undenatured ethyl alcohol <80%	3645	Meat of bovine animals, frozen	4132	Jerseys, pullovers, cardigans, etc, knit or crochet	6991	Grape wines(including fortified), alcoholic grape muss	16988
Men's or boys' suits, jackets, trousers etc. not knit	3508	Copper, copper alloy, waste or scrap	3889	Men's, boys' overcoats, capes, wind jackets etc, woven	6806	Women's, girls' blouses & shirts, knit or crochet	16510
Bovine or equine leather, no hair, not chamois, paten	3307	Jerseys, pullovers, cardigans, etc, knit or crochet	3834	Glass bottles, flasks, jars, phials, stoppers, etc	6666	Sunflower seeds	15299
Carpets, woven, not tufted, flocked	3291	Wheat and meslin	3510	Maize (corn)	6259	Copper, copper alloy, waste or scrap	13795
Nuts except coconut, brazil & cashew, fresh or dried	3141	Maize (corn)	3263	Grape wines(including fortified), alcoholic grape muss	6224	Gypsum, anhydride, gypsum plaster	12737
Molasses from the extraction or refining of sugar	3116	T-shirts, singlets and other vests, knit or crochet	3107	Track suits, ski suits and swimwear, other garments	5329	Men's, boys' overcoats, capes, wind jackets etc, woven	12688
Live swine	3051	Men's or boys' suits, jackets, trousers etc not knit	3062	Hot rolled bar, rod of iron/steel, in irregular coils	5095	Women's or girls' blouses, shirts and shirt-blouses	12103
Men's, boys' overcoats, capes, wind jackets etc, woven	2643	Birds eggs, in shell, fresh, preserved or cooked	2519	Electrical energy	4181	Jerseys, pullovers, cardigans, etc, knit or crochet	11993

Source: Comtrade and the computations of the authors

Major changes in the exports of Moldova to the EU

From the analytical point of view it is very interesting to observe how the value of different Moldovan products on the EU markets has changed. All the products may be divided in three major groups: „super new" (the export of which grew significantly), „falling stars" (the export of which reached the zero level, but started with high values in the 1990's) and the new products (or those products which were not on the list of exported goods during the analyzed period, however today they hold relatively significant values). In all of the cases the disaggregation is effected at the 4 digits level and the results are shown in the Tables 3 – 5.

For the identification of the „super new" products we took as a reference point the year 1996 (i.e., the period before the entrance into force of the GSP and the Russian financial crisis) and as a comparison we took the year 2006 (considering that in 2007 there was a major drought which significantly affected the Moldovan exports). The exports below 50 thousand USD were excluded from the computations in 2006, as well as those goods which in 1996 were not exported. The results are shown in the Table 5, including the goods which export grew the fastest. It is not surprising that among the most dynamic exports to the EU-15 are the textiles, although the most unexpected is to notice on the same list the export of trailers, measurement devices, electronics, plastic products, toys, paper and cardboards. This shows that the Moldovan producers have the tendency to be on those market niches where the regulations on industrial security, health and food security are less restrictive.

Namely the products which are under more restrictive regulations represent an important part of the group of „falling stars" of Moldovan exports. This group includes products which registered a significant fall, though in the middle of the 1990's they had important values on the exports to the EU-10 and the EU in general. As it is shown in the Table 6, the deepness of the fall on the EU-15 markets is less important, as the exports to the named countries were less significant during the middle of the 1990's. In case of the countries of the EU-10 and the EU-2 it is mainly noticed the fall of exports of meat, ethyl alcohol, dairy, and articles of asbestos-cement. Thus, we can observe here an absolute and not relative lost of market niches.

Within the category of the newly exported products on the EU markets surprisingly may be noticed such „non-traditional" positions for Moldova, as articles of the steel industry and prefabricated concrete, and tractors (without mentioning such exotic products for the Moldovan economy as the tea (H0-0902) or the electrical batteries (H0-8506), see more detailed data on the Table 7). The products of the textile industry are exported to all of the three sub-regions and it may be noticed the progresses made by the Moldovan producers along the value-chain. An important part of the newly exported products on the European markets originate from the Eastern regions of the Republic of Moldova, which after being registered by the customs authorities in Chisinau, they obtained the right of exporting in a common regime on the named markets. It is noticed the remarkable growth of exports of products of the steel industry to the Central and Eastern European markets (EU-10). Namely, the bars and rods of metal (code HO-7213), which exports' value reached 21,6 mil USD in 2006. Although in 2007 the exports of the named products to the EU-10 registered a decrease, this reduction was more than compensated by the growth of exports to Romania and Bulgaria.

Table 5 „Super new" products exported to the EU markets

EU-15			EU-10			EU-2		
Code	Description	Growth rate, times	Code	Description	Growth rate, times	Code	Description	Growth rate, times
H0-8716	Trailers and non-mechanically propelled vehicle nest	1968,1	H0-6204	Women's, girls suits, jacket, dress, skirt, etc, wove	438,2	H0-2710	Oils petroleum, bituminous, distillates, except crude	3136,7
H0-9028	Gas, liquid or electricity supply or production meter	738,1	H0-9031	Measuring or checking instruments nest	142,6	H0-9401	Seats (except dentist, barber, etc chairs)	2664,2
H0-6102	Women's, girls overcoats, etc, knit or crochet	602,5	H0-9403	Other furniture and parts thereof	128,2	H0-0806	Grapes, fresh or dried	834,2
H0-8543	Electrical machinery and apparatus, nets	487,1	H0-4407	Wood sawn, chipped lengthwise, sliced or peeled	102,2	H0-9503	Other toys, scale models, puzzles, etc	788,5
H0-5603	Nonwovens textiles except felt	298,2	H0-6203	Men's or boys suits, jackets, trousers etc not knit	89,7	H0-8422	Machinery for dish washing, bottle washing, filling	581,7
H0-3923	Containers, bobbins and packages, of plastics	139,0	H0-9503	Other toys, scale models, puzzles, etc	28,0	H0-1806	Chocolate and other foods containing cocoa	497,7
H0-8544	Insulated wire and cable, optical fiber cable	123,8	H0-2009	Fruit and vegetable juices, not fermented or spirited	25,1	H0-1704	Sugar confectionery, non-cocoa, white chocolate	440,5
H0-6210	Garments made up of felt or coated fabric	121,4	H0-1704	Sugar confectionery, non-cocoa, white chocolate	23,6	H0-4805	Uncoated paper and paperboard nest	314,6
H0-1905	Baked bread, pastry, wafers, rice paper, biscuits, et	63,6	H0-7010	Glass bottles, flasks, jars, phials, stoppers, etc	16,4	H0-4905	Printed maps, charts and atlases	284,8
H0-7326	Articles of iron or steel nest	55,5	H0-0409	Honey, natural	14,1	H0-1206	Sunflower seeds	246,5

Source: computations of the authors based on the Comtrade data

Table 6 „Falling stars" products exported to the EU markets

EU-15			EU-10			EU-2		
Code	Description	Value in 1996, USD	Code	Description	Value in 1996, USD	Code	Description	Value in 1996, USD
H0-7403	Refined copper and copper alloys, unwrought	228068	H0-0203	Meat of swine, fresh, chilled or frozen	3417217	H0-0201	Meat of bovine animals, fresh or chilled	3388071
H0-5101	Wool, not carded or combed	202749	H0-2207	Ethyl alcohol, non-denatured and > 80%, or denatured	1160954	H0-2207	Ethyl alcohol, non-denatured and > 80%, or denatured	1073909
H0-1512	Safflower, sunflower and cotton-seed oil, fractions	186645	H0-0402	Milk and cream, concentrated or sweetened	1045793	H0-8450	Household, laundry-type washing machine, washer-drier	288100
H0-2106	Food preparations, nes	164432	H0-6811	Articles of asbestos-cement & cellulose fiber cement	482192	H0-8602	Rail locomotives, diesel, steam, locomotive tenders	267478
H0-8702	Public-transport type passenger motor vehicles	150000	H0-5101	Wool, not carded or combed	440078	H0-2803	Carbon (carbon blacks and other forms of carbon, nes)	264437
H0-9999	Commodities not specified according to kind	120000	H0-7404	Copper, copper alloy, waste or scrap	296271	H0-8704	Motor vehicles for the transport of goods	254220
H0-2309	Animal feed preparations, nes	92107	H0-7216	Angles, shapes and sections of iron or non-alloy steel	251473	H0-1107	Malt	235811
H0-3501	Casein, caseinates & casein derivatives, casein glues	91942	H0-1801	Cocoa beans, whole or broken, raw or roasted	136850	H0-4102	Raw skins of sheep or lambs	234484
H0-8108	Titanium, articles thereof, waste or scrap	54869	H0-8450	Household, laundry-type washing machine, washer-drier	119331	H0-4101	Raw hides and skins of bovine, equine animals	218663
H0-4102	Raw skins of sheep or lambs	51402	H0-4103	Raw hides and skins except bovine, equine, sheep	112594	H0-8507	Electric accumulators	204708

Source: computations of the authors based on the Comtrade data

Table 7 Newly exported products to the EU markets

EU-15			EU-10			EU-2		
Code	Description	Value in 1996, USD	Code	Description	Value in 1996, USD	Code	Description	Value in 1996, USD
H0-7213	Hot rolled bar, rod of iron/steel, in irregular coils	2996450	H0-7213	Hot rolled bar, rod of iron/steel, in irregular coils	21637402	H0-1201	Soya beans	1800643
H0-9406	Prefabricated buildings	2255021	H0-6403	Footwear with uppers of leather	10516092	H0-6110	Jerseys, pullovers, cardigans, etc, knit or crochet	1292497
H0-6107	Men's, boys underwear, nightwear, etc, knit or crochet	1684914	H0-7214	Iron/steel bar, only forged hot-rolled drawn, extrude	4313411	H0-5107	Yarn of combed wool, not retail	831770
H0-8701	Tractors (other than works, warehouse equipment)	1487456	H0-6402	Footwear nes, with outer sole, upper rubber or plastic	2729534	H0-2304	Soya-bean oil-cake and other solid residues	589106
H0-7214	Iron/steel bar, only forged hot-rolled drawn, extrude	861941	H0-1507	Soya-bean oil, fractions, not chemically modified	1986428	H0-1507	Soya-bean oil, fractions, not chemically modified	575250
H0-8465	Machine tools for wood, cork, bone, hard plastics, et	566459	H0-8212	Razors and razor blades (including blanks in strips)	1220394	H0-0902	Tea	485269
H0-4106	Goat or kid skin leather, without hair	531202	H0-9404	Mattress supports, mattresses, bedding	1127691	H0-2105	Ice cream and other edible ice	445770
H0-6404	Footwear with uppers of textile materials	350905	H0-6210	Garments made up of felt or coated fabric	893689	H0-6105	Men's, boys shirts, knit or crochet	395050
H0-8483	Shafts, cranks, gears, clutches, flywheel, pulleys et	308922	H0-8506	Primary cells and primary batteries	768731	H0-3925	Plastic articles for use in construction nes	387235
H0-8535	Electrical apparatus for voltage over 1 kV	302994	H0-8433	Harvesting, produce cleaning and grading machinery	733082	H0-2206	Fermented beverages nes (e.g. cider, perry, mead)	237465

Source: computations of the authors based on the Comtrade data

Gravity model approach to the Moldovan exports

Description of the Gravitational model and the econometric meaning of the model

The gravitational approach to the trade flows represents an important empirical tool in the analysis of the tendencies and performances of the international trade. This approach was developed by Tinbergen in 1962[5]. The gravitational model was developed on the basis of the theory of gravitation of Newton according to which the gravitational attraction between two entities is proportional to the product of their weights divided by the square distance between the gravitational centers of the latter. At the same time the trade flows between the analyzed two countries are in a direct relation to the product of „economic weights" of the named trade flows expressed by the GDP and also in an indirect relation to the distance between the gravitational centers of the latter. Thus, the economic gravitational equation for the trade flows between the country i and j in the year t is as follows:

$$M_{ijt} = c\frac{PIB_{it} * PIB_{jt}}{D_{ij}^2}$$

Where, i and j are indexes of the respective countries, t – time index, c – the constant of proportionality, and

M_{ijt} - bilateral trade flows between the country i and j in the year t;

PIB_{it} - GDP of the country i in the year t;

PIB_{jt} - GDP of the country j in the year t;

D_{ij}^2 – Square distance between the capital cities of the country i and j;

The classical gravitational model, which uses the overall trade flows among each state of the analyzed group, represents a more exact estimation of the trade flows as it uses the changes in the demand and supply, and also other factors which have an important impact on the trade flows simultaneously in all the states. Still, more recent studies use only the unilateral flows between one state and its trade partners when analyzing the foreign trade of the named country[6].

For a more precise approach to the trade flows, besides the primary variables of the gravitational model, additional variables are used which represent the international trade facilities or barriers. The use of trade regimes as independent variables in the econometrical estimation of the gravitational model is a relatively recent phenomenon which has developed along with the diversification of the trade regimes.

Considering the main goal of the study to assess the impact of trade agreements on the Moldovan exports, the estimated function of exports is defined as follows:

[5] Tinbergen Jan, 1962. Shaping the World Economy: Suggestions for an International Economic Policy
[6] Selami Xhepa, Mimoza Agolli, 2004. Albania's Foreign Trade through a Gravity Approach

$$log(X_{ijt}) = \alpha_0 + \alpha_1 \log(X_{ij,t-1}) + \alpha_2 \log(Y_{it} * Y_{jt}) + \alpha_3 \log(SIM_{ijt}) + \alpha_4 \log(D_{ij}) + \alpha_5 \log(N_{jt}) + \alpha_6 CSI + \alpha_7 EU + \alpha_8 FTA_{jt} + \alpha_9 GSP_{jt} + \alpha_{10} GSPplus_{jt} + \alpha_{11} HOT + u_{ijt}$$

where:

X_{ijt} - Moldovan exports to the country j in the year t (overall exports and overall exports except alcoholic beverages – please see a more detailed explanation in the description part of the data);

Y_{it} - GDP of the Republic of Moldova in the year t;

Y_{jt} – GDP of the country j in the year t;

SIM_{ijt} - similarity variable of the GDP of the Republic of Moldova and that of the country j in the year t (see the formula in the next section);

D_{ij} - distance between the capital city of Moldova and the one of the country j;

N_{jt} - population of the country j in the year t;

CSI - binary variable equal to 1 for the CIS member countries and 0 for others;

EU - binary variable equal to 1 for the European Union member countries in the year t and 0 for others;

FTA_{jt} - binary variable equal to 1 for the free trade regime granted to the Republic of Moldova by the country j in the year t and 0 for others;

GSP_{jt} - binary variable equal to 1 for the Generalized System of Preferences granted to the Republic of Moldova by the country j in the year t and 0 for others;

$GSPplus_{jt}$ - binary variable equal to 1 for the Generalized System of Preferences Plus granted to the Republic of Moldova by the country j in the year t and 0 for others;

HOT - binary variable equal to 1 for the border countries of the Republic of Moldova;

u_{ijt} - error

Therefore, the estimated export function widens the spectrum of the gravitational model by controlling other factors as well, as facilities or export barriers. The main interest of this study is about the trade agreements extended by the trade partners.

Data and sample

The employed variables for the gravitational estimation of Moldovan exports are as follows:

- ***Total annual exports and total exports except alcoholic beverages*** of the Republic of Moldova. Traditionally, the gravitational model estimates the total exports of a country. Nevertheless, due to the peculiarity of Moldovan exports which were affected by factors that may not be included in the export function, the exports were estimated without the alcoholic beverages. The imposed embargo by the Russian Federation in 2006 on the import of Moldovan wines has significantly diminished the

total exports and contributed to the change of the geographical structure of exports without causing any change to the variables included in the econometric function of exports. Due to the fact that in 2005 the wines represented the mainly exported product by the Republic of Moldova (25% of the overall exports) the consideration of wines within the model would cause important distortions. In the descriptive statistics (Table 8) it is noticeable that the average deviation is less significant for the exports which do not include wines. In the annex there are shown the results of the estimated overall exports of the Republic of Moldova using the same export function. Data of Moldovan exports were obtained from the National Bureau of Statistics and are shown in current prices in thousand USD.

- ***Last year exports*** are included in the equation for observing the trend of economic relations and assessing the impact of the historical trade relations on the exports. According to the results of the studies of different samples it is expected to obtain a positive coefficient of this variable.
- ***GDP of the Republic of Moldova and the GDPs of the importing states*** are used as a direct measure of the economic weight of the named countries. This includes indicators which show the export potential of a country and the import potential of its partners. Due to the fact that the trade is an interactive phenomenon, the GDP of the considered countries is also an interactive process; however the use of the Moldova's GDP and of the importing country as separated variables in the estimated equation does not essentially change the results and does not influence the statistical significance of other factors of the regression. All the exports are shown in thousand USD in current prices and the GDP of each country as well. Another variable that characterizes the import potential of the importing countries is the ***population***, in million inhabitants. GDP and the population of sample countries were obtained from the World Economic Outlook Database (IMF).[7]
- ***Similarity variable***[8] shows the degree of similarity between the economic size of two countries. This index is calculated as follows:

$$SIM_{ijt} = \left[1 - \left(\frac{GDP_{it}}{GDP_{it} + GDP_{jt}}\right)^2 - \left(\frac{GDP_{jt}}{GDP_{it} + GDP_{jt}}\right)^2\right]$$

Thus, the coefficient varies between 0 and 0.5. The value 0.5 shows equal GDPs of the partner countries and a value which tends to zero shows a small degree of similarity between the partner countries. The general assumption is that more developed countries are trading more with the countries with a high level of similarity. The values of the level of similarity show that Moldova exports less to the countries with a high level of similarity, i.e. with a GDP level more or less equal to that of the Republic of Moldova. The descriptive statistics of the GDP shows that the Moldovan exports are oriented towards the countries with a higher GDP level than that of Moldova, which is not surprising for such a small economy. A higher degree of divergence between the countries tends to reduce the exports and increase the imports to the named country.

- ***Distance and the binary variable "common border"*** quantify the transportation costs. The data on distances among the capital cities of the analyzed countries were obtained from the City Distance Tool, in km[9].
- The binary variable ***CIS*** was included into the equation in order to control the effect of the common past with certain states.
- The binary variable ***EU*** is included in the regression due to the specific processes which derive from the analyzed group of countries. The European Union represents a group of countries able to

[7] http://www.imf.org/external/pubs/ft/weo/2008/01/weodata/weoselgr.aspx
[8] Egger Peter, 2002. A Note on the proper econometric specification of the Gravity Equation
[9] www.geobytes.com

create specific conditions for the development of trade relations among the member states and the extra-community countries as well.

- The binary variables for the ***trade regimes***, which are of interest for the current study are as follows: Free Trade Agreement (FTA), Generalized System of Preferences (GSP) and the Generalized System of Preferences Plus granted to the Republic of Moldova beginning with 2006 (GSP plus). As a control variable it is taken the Most Favored Nation (MFN).

Different research studies use additional variables. A frequently encountered variable in the gravitational estimation of trade flows is the common language which facilitates the negotiation process. However in case of the Republic of Moldova this is entirely covered by the CIS variables (for the Russian language) and HOT (for the Romanian language).

Table 8 Descriptive statistics of the variables of the model

Descriptive Statistics	Overall Export (thousand USD)	Overall Export - export of alcoholic beverages (thousand USD)	GDP of the Republic of Moldova (thousand USD, current prices)	GDP of the importing countries (thousand USD, current prices)	SIM	Population (millions)	Distance (km)
Average	18826.22	13995.30	2116308	508079476	0.141	53.1637	2026.381
Median	2807.80	2366.45	1695000	49088500	0.070	10.1755	1412.500
Minimum	1.1	11	1171000	1267000	0.0002	0.651	357.0
Maximum	508778.9	262218.9	4227000	13843825000	0.499	1123.970	7979.0
Standard deviation	52731.35	32450.86	879549.4	1536042225	0.1566	159.1786	1784603
Nr. of observations	546	546	546	546	546	546	546

For the correct estimation of the equation it is necessary to use a balanced panel. Considering this fact, we selected the states to which Moldova has important and constant exports each year for a period of 13 years. Thus, the sample included 42 importing countries of Moldovan products during the period of 1995-2007. (The list of countries is shown in the Annex 1).

Estimation methods

The empirical studies of the gravitational models do not provide a concrete answer regarding the most efficient method of estimating the latter. Taking into account this fact the model was estimated by using three methods: Polled Cross-Section, Fixed Effects and Random Effects. The results of the used methods do not significantly differ, similar variables keeping their statistical meaning (see more details in the Table 9). Corresponding tests were effected for the assessment of results. The Random Effect implies that the individual average effect is framed within the constant term and the error term includes the individual unnoticeable effect. This method is efficient when compared to the Fixed Effect and the Pooled Cross-Section. The tests of specification were effected with the named view: Haussmann Test, Chow Test, Breusch-Pagan LM test.

Table 9 Estimation of the Random Effect. Dependant variable $log(X_{ijt})$, where $X_{ijt} = total\ export - export\ of\ alcoholoc\ beverages$

Dependant variables	Equation 1	Equation 2	Equation 3	Equation 4
Constant term	-2.2452 (1.6427)	-2.1266 (1.7048)	-1.9265 (1.6639)	-2.7100 (0.7128)

$\log(X_{ij,t-1})$	0.7028 (0.0291)*	0.7023 (0.0291)*	0.6979 (0.0294)*	0.7045 (0.0287)*)
$\log(Y_{it})$	-	0.2482 (0.1124)**	-	-
$\log(Y_{jt})$	-	0.2336 (0.0441)*	-	-
$\log(Y_{it} * Y_{jt})$	0.2447 (0.0551)*	-	0.2431 (0.0551)*	0.2690 (0.0311)*
$\log(SIM_{ijt})$	0.0149 (0.0655)	-	-0.0091 (0.0685)	-
$\log(N_{jt})$	0.0506 (0.0451)	-0.0490 (0.0450)	0.0322 (0.0476)	-
$\log(D_{ij})$	-0.4939 (0.0778)*	-0.4952 (0.0775)*	-0.5217 (0.0812)*	-0.5130 (0.0706)*
CSI	0.4483 (0.1190)*	0.4497 (0.1190)*	0.4709 (0.1217)*	0.5418 (0.1045)*
EU	-	-	-0.1153 (0.1041)	-0.1756 (0.0819)**
HOT	0.0369 (0.2252)	0.0393 (0.2249)	0.0144 (0.2257)	-
FTA_{jt}	0.1842 (0.1307)	0.1858 (0.1339)	0.1377 (0.1363)	-
GSP_{jt}	0.0698 (0.1089)	0.0679 (0.1084)	0.0914 (0.1104)	-
$GSPplus_{jt}$	-0.0062 (0.1664)	-0.0009 (0.1684)	0.0485 (0.1725)	-
R squared	0.83	0.83	0.83	0.83
Adjusted R -squared	0.83	0.83	0.83	0.83
Durbin-Watson	2.055	2.054	2.049	2.051
Observations	504	504	504	504

* Significantly at 1% confidence level

**Significantly at 5% confidence level

The export function mentioned in the section „Description of the gravitational model and its econometric meaning" was estimated also for the overall exports of the Republic of Moldova. The obtained results do not differ according to the statistical meaning level and are shown in the annex.

Estimation of results and interpretation

According to the estimations of the previous section the final equation would be:

$$log(X_{ijt}) = -2.71 + 0.7045\log(X_{ij,t-1}) + 0.2690\log(Y_{it} * Y_{jt}) - 0.5130\log(D_{ij}) + 0.5418CSI - 0.1756EU$$

All the statistically significant variables have the expected tendency. Thus, the historical export has the greatest impact on the trade during the subsequent years. This means that once the Moldovan exporters enter a country's market, the exports to this country grow. The omission of the named variable from the regression would result in statistically significant coefficients for the binary variables of interest GSP and GSP+. Still, this would result in an incorrect model, as the exports grew also in the case of the countries that did not change the trade regime with Moldova. This was verified through the Omitted Variables Test – Likelihood Ratio.

The interaction term among the GDPs of the states has the expected sign and it is statistically significant. Thus, the unitary growth in the demand/supply results in the growth of the exports' volume with average 0.26. The similarity variable is insignificant. Nor the population which represents another factor of the supply is significant in the regression. The market growth (demand) in terms of the population does not result in the growth of Moldovan exports on the named markets and this is

explained mainly by the relatively small and limited supply that cannot answer to the growth of demand on the markets where Moldova exports its goods.

The distance between the states significantly affects the exports, while the neighboring with Romania and Ukraine is insignificant. This may be explained by the small number of states with which the Republic of Moldova is neighboring. The elasticity of exports to the distance is equal to -0.5.

The binary variable CIS is significant and positively correlated with the exports demonstrating the importance of the common past with the named countries which is characterized by the recognition of the Moldovan products on the corresponding markets and the lack of differences in the sanitary and phytosanitary standards. Meaning, these standards are not significant barriers to the exports to these countries unlike the EU member states. In the enclosed model, where are estimated the overall exports which include the alcoholic beverages, the variable CIS has a greater impact. The binary variable EU becomes significant in the regression once eliminating the variables which characterize the trade regimes. The negative impact may be explained especially by the different sanitary and phytosanitary standards and the high requirements of quality which the domestic producers cannot meet. Moreover, it is possible that with the entrance of new members to the EU, the trade among the member states became more intense at the expense of the trade with the non-member countries. However, in order to test this hypothesis it is necessary to estimate a model with bilateral trade flows among all the countries. Unfortunately this was not possible to do within this study. The equation was estimated including the binary variable COMECON equal to 1 for the states which are part of the named agreement and which represent different historical values of cooperation from those in the CIS. Nevertheless this value proved to be insignificant.

The binary variables of the trade regimes are insignificant. Thus, even the free trade agreement between Moldova and the CIS countries, also the Balkan states (extended agreement in 2005), Romania and Bulgaria has no significant positive impact on the Moldovan exports. Nor the Generalized System of Preferences conducted to the growth of exports to the EU, the named growth being mainly conditioned by the economic growth of the analyzed countries. Further on will be analyzed the causes which did not allow the growth of exports to the EU member-states despite the granted unilateral trade agreements to the Republic of Moldova.

Alternative methods of assessing the impact of free trade agreements on the Moldovan exports

One of the important shortcomings of the estimated model in the previous sections is that the sample countries were not selected randomly, thus the countries to which Moldova has exported for 13 years consecutively were included in the list. This fact may amplify or diminish the effect of certain variables. Thus, in order to test the impact of the trade regimes we estimated several models.

- The gravitational model was estimated also for the sample which includes all the countries to which Moldova had exports during the period of 1995-2007. However, this does not represent a balanced panel and the function was estimated as Pooled Cross-Section. The estimated export function is:

$$log(X_{ijt}) = \alpha_0 + \alpha_1 \log(Y_{it}) + \alpha_2 \log(Y_{jt}) + \alpha_3 \log(D_{ij}) + \alpha_4 CSI + \alpha_5 EU + \alpha_6 FTA_{jt} + \alpha_7 GSP_{jt} + \alpha_8 GSPplus_{jt} + u_{ijt}$$

The results of the estimated model do not differ from the statistical meaning point of view from the results of the previous model and sample countries. The binary variables of the trade regimes granted

by the EU remained to be statistically insignificant, only the free trade agreement is significant at 10% confidence level. The coefficients of variables are greater due to the omission of exports of the previous period.

- For the estimation of the GSP plus effect **the method Diffs-in-Diffs-in-Diffs** was also employed. This model estimates the cause and effect of a „treatment" or an intervention by comparing the differences in the obtained results before and after the change occurred for the affected and non-affected groups. Thus, it was estimated the difference between the growth of exports under GSP+ and which were not under this trade agreement before and after it was enforced in 2006. The estimated equation is the following:

$$\Delta GROWTH_{it} = \alpha_0 + \alpha_1 GSPplus + u_{it}$$

$\Delta GROWTH_{it}$ - it is the difference between the annual growth of exports in 2006 and the annual growth of exports in 2005 $(\Delta GROWTH_{it} = {EXP_{06}}/{EXP_{05}} - {EXP_{05}}/{EXP_{04}})$

$GSPplus$ - the binary variable equal to 1 for the products under GSP+, for which the customs duty was reduced or annulled beginning with 2006. We selected only the products for which the duty was reduced or annulled because many products already were exported under the zero customs duty under the GSP agreement granted to the Republic of Moldova in 1999, meaning that for the named products there was no change for the export conditions.

For the estimation of this model we used the data provided by the National Bureau of Statistics regarding the exports to the European Union disaggregated to 8 digits level. The products under GSP+ are listed in the Annex II of the Council Regulation on the application of generalized preferential duties[10]. The customs duty on the products exported by the Republic of Moldova under the GSP+ agreement was obtained from the Directorate of the European Commission for Tariffs and Customs Union. Thus, the sample comprises 581 observations – products exported by Moldova to 25 countries of the European Union in 2004, 2005 and 2006.

The estimation results show an insignificant statistical coefficient for the GSP+ variable.

$$\Delta GROWTH_{it} = -19.47 + 19.52 * GSPplus$$

(22.69) (24.66)

$$R^2 = 0.013 \qquad N = 581$$

The control for the additional variables in the regression enhances its explanatory power and raises R^2, however the coefficient of the interested variable does not become significant.

Therefore, the unilateral trade agreements granted by the European Union to the Republic of Moldova did not have the expected effect on the Moldovan exports to the EU. In the conclusions part we analyze the causes that did not allow for the full benefit from the trade facilitations extended by the EU.

[10] Council Regulation no.980 as of 2005.

Instead of conclusions: why the trade agreements did not have the expected impact?

During the period of 1995-2007 the foreign trade of the Republic of Moldova had an off-balance evolution. The imports surged, and in 2007 exceeded 2,7 times the value of exports. This growth model developed in the wake of a very long and deep economic crisis and was propped up by the inflows of foreign currencies transferred by the Moldovan immigrants. It is worth mentioning that compared to other emerging countries Moldova attained the least trade expansion (defined as the ratio between the variation of exports and the variation of imports during a certain period).

Despite the unimpressive trade performance there were registered important positive changes in the geographical and products structure of Moldovan exports. In 1995-2007 the exports to the EU-15 increased more than four-fold, to the west-CIS – by 1,1 times, to the CIS – Caucaz/Central Asia – by 3,2 times, to the EU-10 (the countries which joined the EU in 2004) – by 2,9 times, and to the EU-2 (Romania and Bulgaria) – by 1,9 times. As a result, in 2007 the EU became the most important trade partner of the Republic of Moldova compared to other regions.

At the same time, exports to the European markets displayed tendency to diversify and reduce the concentration degree, while the range of products exported on the Eastern markets became less and less diversified. Thus, in 1995 Moldova exported 482 products to the current EU members and in 2007 that number reached 589. Targeting exports to the European markets, where the access is guaranteed only by competitive advantages and not by political preferences or historical ties helped to identify those products for which Moldova has a comparative advantage. Hence, in 2000 a number of new products began to be exported, which in the 1990s' were not exported on the European markets (the products of the electrical industry, steel, plastic products, prefabricated concrete constructions, jerseys, sweaters and other). In the case of other products which were exported in the 1990s', their export increased very much ("super-new – products": trailers, women' suites, oil products, measurement devices, table grapes). However, entering the European markets with new and "super-new" products does not mean a long-term engagement and the Moldovan producers should demonstrate their ability to maintain the exports. Honey, which the European Commission allowed to be imported from Moldova in 2006, is currently again under embargo, as the Moldovan producers were not able to maintain the required safety standards.

Besides, there is a number of „falling stars", i.e. products which exports collapsed from important volumes in the 1990s' to very little exports or even null in 2000. Wool, alcohol, lambs' and pork' meat, dairy, laundry machines, rawhide, these are examples of such products.

It is well known that in the past and today the European Union granted trade preferences to the Republic of Moldova for a wide range of products. What was the role of these preferences in the dynamics of the Moldovan exports on the European markets? ***The results of the effected regressions within this study based on the gravitational model of the international trade show that trade agreements extended by the EU to the Republic of Moldova (GSP and GSP+) practically did not have any role in the evolution of the Moldovan exports on the European markets.*** What could be the possible explanations for this situation?

- One explanation stems from the fact that besides the EU other trade partners of the Republic of Moldova (the CIS countries, Romania and Bulgaria until 2007) also offered comparable trade preferences or even more favorable conditions for the Moldovan exports. Considering

that the Moldovan producers and exporters were very slow in identifying new markets and the Eastern markets were „pre-destined" and stable for a long time, this determined a „freezing" of exports on the traditional markets.

- As the applied gravitational model shows, the growth of the foreign demand (estimated by the GDP growth of the partner countries) and of the domestic supply (estimated by the GDP growth of the Republic of Moldova) has a more important role in the exports' growth than that of trade agreements. Although slower than other countries the trade of the Republic of Moldova followed a convergence trend towards a „normal" geographical structure, which is dictated by the fundamental economic variables. Otherwise, it may be assumed that after Moldova will reach the marginal growth of exports determined by the fundamental economic variables, the trade preferences might have a more important role in the foreign trade targeting of the country, yet this may be true for a very small number of products.

- An important part of the Moldovan products hardly enter or even may not enter the European market as they are not competitive enough or do not correspond to the tough food safety standards imposed by the EU. This explains why a range of Moldovan „traditional" products are not competitive and the exports decrease. This is true not only for the exports to the EU-15 countries, but also to the countries which joined the EU in 2004-2007. The most eloquent example is the beef and pork meat that in the 1990s' was exported in high volumes (3,4 mil each in the EU-2 and the EU-10), but in 2006 there were no exports. Besides, the dairy, vegetable oils and animal fats, and canned vegetables' exports decreased essentially.

What are the implications of these conclusions?

The enhancements of the trade agreements offered by the European Union to the Republic of Moldova did not become a stimulus for the Moldovan exports on the EU markets. Otherwise, the trade facilitation is necessary but not sufficient for the robust and competitive growth of exports on the foreign markets, in this particular case, on the European markets. The insignificant impact of changes in the trade agreements highlights important deficiencies in the domestic „economic development" of the Republic of Moldova.

This means that the extension by the EU of the Autonomous Trade Preferences starting with March 2008 should have positive effects on the bilateral trade; however its potential remains not fully explored by the Republic of Moldova. And it is not about quotas established by the EU, but the inability of the Moldovan government to eliminate all internal barriers impeding the increase of Moldovan exports to the European market and the inability of Moldovan producers to increase and diversify the supply.

Ideally, the trade facilitation should lead both to the increase of exports of new products and of traditional but better quality products by the existent industries, as well as by the newly created industries developing in the wake of the trade regime enhancement. However, the creation of new products and new industries implies a review of the reform and economic development policies of our country.

The simplest category to be tackled is the traditional products which should have improved quality. The internal „behind-borders" barriers should be mentioned in the first place. Many issues are raised in the European Union – Republic of Moldova Action Plan: starting with the establishment of the system of traceability of animals, followed by the modernization of safety-control laboratories and soundness and the implementation of monitoring measures of compliance with the SPS measures. A

particular attention is to be paid to the continuation of the customs reform, the simplification of customs procedures and the eradication of corruption in the system.

This study demonstrates that the Moldovan exports to the European markets now include new products. However, these products represent, to a great extent, „lohn" activities or frequently concentrate in „low value-added" sectors or are inherited from the soviet times. Thus, the modification of trade agreements did not bring structural changes or even „revolutionary" changes to the domestic economy. Nonetheless, such progresses become realistic only when new choices within the „development policy" are made and constant progress in the business and investment climate, the modernization of the infrastructure, the investment in the human capital and R&D are ensured. And obviously these actions need more time to materialize in tangible results.

Annexes

Annex 1 List of states included in the sample

Albania
Armenia
Austria
Azerbaijan
Belarus
Belgium
Bulgaria
Canada
Cyprus
Switzerland
Estonia
Russian Federation
France
Georgia
Germany
Greece
India
Jordan
Israel
Italy
Kazakhstan
Kirgizstan
Latvia
Libya
Lithuania
Macedonia
Holland
Poland
Portugal
United Kingdom
Czech Republic
Romania
Slovakia
Slovenia
Spain
USA
Turkey
Turkmenistan
Ukraine
Hungary
Uzbekistan
Vietnam

Annex 2 Specification tests for the selection of the estimation method

Test	Calculated statistical value	Critical statistical value	Chosen method
Haussmann Test (Random vs. Fixed Effect)	70.28		Random Effect
Chow Test (Pooled vs. Fixed Effect)	1.68	8.5	Pooled Cross-Section
Breusch-Pagan LM test (Pooled vs. Random Effect)	5.55	5.51	Random Effect

Annex 3 Random Effect Estimation. Dependent variable $log(X_{ijt})$, where $X_{ijt} = export\ total$

Dependent variables	Equation 1	Equation 2
Fixed term	-1.9065 (1.5933)	-2.6178 (0.6819)*
$\log(X_{ij,t-1})$	0.7080 (0.0289)*	0.7114 (0.0284)*
$\log(Y_{it})$	-	-
$\log(Y_{jt})$	-	-
$\log(Y_{it} * Y_{jt})$	0.2321 (0.0289)*	0.2575 (0.0301)*
$\log(SIM_{ijt})$	-0.0165 (0.0655)	-
$\log(N_{jt})$	0.0194 (0.0456)	-
$\log(D_{ij})$	-0.4808 (0.0780)*	-0.4796 (0.0677)*
CSI	0.6122 (0.1252)*	0.6569 (0.1077)*
EU	-0.1212 (0.0997)	-0.1584 (0.0777)*
HOT	0.0326 (0.2165)	-
FTA_{jt}	0.1021 (0.1304)	-
GSP_{jt}	0.0645 (0.1059)	-
$GSPplus_{jt}$	0.0343 (0.1649)	-
R squared	0.84	0.84
Adjusted R -squared	0.83	0.83
Durbin-Watson	2.11	2.11
Observations	504	504

* Significant at the 1% confidence level

** Significant at the 5% confidence level

Annex 4 Pooled Cross-Section Estimation. Dependent variable $log(X_{ijt})$, where

$X_{ijt} = export\ total - export\ de\ băuturi\ alcoolice$

Dependent variable	Equation 1
Fixed term	
$\log(Y_{it})$	1.4870 (0.0999)*
$\log(Y_{jt})$	0.7372 (0.0467)*
$\log(D_{ij})$	-1.7424 (0.0943)*
CSI	2.0726 (0.2440)*
EU	-0.6959 (0.24373)*
FTA_{jt}	0.4799 (0.2640)***
GSP_{jt}	0.3464 (0.2455)
$GSPplus_{jt}$	-0.3037 (0.3708)
R squared	0.43
Adjusted R -squared	0.42
Durbin-Watson	
Observations	763

* Significant at the 1% confidence level

** Significant at the 5% confidence level

*** Significant at the 10% confidence level