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The Influence of Trade Openness on the Economic Growth of Former Soviet Union Countries

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Abstract

This paper tries to test the relationship between trade openness and economic growth in Former Soviet Union countries after their independence in 1991.

It has become an article of faith in most economic and political circles that opening up the economy to international trade will produce substantial benefits in terms of greater consumer choice and higher living standards. Higher productivity is expected to be realized through competitive pressure and through opportunity to specialize in production activities where countries have comparative advantage or they can gain from economies of scale.

The paper has investigated the trade regimes in Former Soviet Union countries after breaking apart and has used the statistical data to test the hypothesis that free trade through its special mechanisms positively affects the economic growth of these countries. Because of the lack of sufficient statistical data the Panel data method is used to test the relationship in this cross-country analysis.

Key words: Economic growth, Former Soviet Union Countries, Trade Openness, Trade Liberalization, International trade.

Introduction

The relationship between trade and economic growth has long been a subject of considerable controversy among economists. In the post world war period many economic leaders concluded that protective trade policies stimulated growth and import substitution policies were widely adopted by developing countries. By the 1980 however country specific and general cross-

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country analysis had demonstrated the failure of the import substitution approach and consequently export-oriented policies were widely adopted.

The new interest in the determinants of economic development has reinforced the debate on openness and growth. In the neoclassical model developed by Solow (1956) and others technological change is exogenous unaffected by a country's trade openness. Yet the "new growth theory" suggests that trade policy affects long run growth through impact on technological change. In these models of growth, trade openness provides a situation to import inputs, which mbodies new technology, increases the effective size of market facing producers, raises the return to innovation and affects a country's specialization in research – intensive production.

New growth theories however do not predict that trade will unambiguously raise economic growth. Increased competition could discourage innovation by lowering expected profits. Grossman and Helpman point out that intervention in trade could raise long run growth if protection encourages investment in research – intensive sector for countries with an international advantage in these kinds of goods. Since the theoretical literature does not provide a clear answer, empirical work is needed to help resolve the debate.

This paper uses the openness measure to test the association between openness and growth in 12 Former Soviet Union (FSU) countries during the time period 1991-2001. Although the correlation across different countries between openness and economic growth is not always strong, there is generally a positive association between growth and the measures of openness in different countries. The strength of the association depends on whether the specification uses cross section or panel data (which combines both cross-section and time-series).

Patterns of International Trade in FSU countries

FSU countries trade and production prior to independence

Under the system of central planning FSU countries had developed different trade patterns. Some of them, mostly European FSU countries – Russia, Belarus and Ukraine - had developed a diversified and extensive

industrial base with many assembly industries.[1] Such countries had a GDP per capita above other Commonwealth of Independent States (CIS) countries. On average the population of these countries enjoyed higher living standards than ones in other regions.

Some other countries, mostly located in Central Asia[2] and Caucasus[3] under the central planning system were specialized in producing agricultural products and minerals. These countries had lower GDP per capita with lower living standards.[4]

The trade between FSU countries before their independence was mostly inside the Union and under the rules of central planning government. The same currency unit – soviet rouble - and government regulations made these countries dependent on each other in trade. In fact all industries were dictated to produce what, how much and to whom the products must be exported. No comparative or absolute advantage was used as a guidance what they should produce and what they should export and import.

In the early 1990s after starting liberalization all CIS countries experienced substantial output decline. The smallest total decline of more than 16% was registered in Uzbekistan, while the largest decline was seen in Georgia, where GDP decreased by more than 75% (Table 1).

Of course, external liberalization cannot take all the blame for this output performance. External liberalization was only a small part of the multi-faceted process of transition from the planned to market economy, which CIS countries embarked on in the early 1990s.[5] This process involved the reduction of the role of the state in all areas of the economy, not only in external relations. Some

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1- Kanova M., Souza L.V., "Trade and Growth under limited Liberalization", Tinbergen Institute, Discussion Paper, 2002.

2- Central Asia region includes Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan.

3- Caucasus region includes Azerbaijan, Armenia and Georgia.

4- Gylfason T., "Resources, Agriculture, and Economic Growth in Economies in Transition", Center of Economic Studies (CES), Working Paper, No. 313, Munchen University, Germany, July 2000.

5- Hare P., Bevan A., Estrin S., Stern J., "Supply Responses in the Economies of the Former Soviet Union", Center for economic reform and transformation (CERT), Heriot-Watt-University Edinburgh, December 2000.

Table 1: Transition Economies: Output Performance, 1989-1998

CEE [1] Countries	Output decline to lowest level, 1989=100	Years in which output was lowest	FSU Countries	Output decline to lowest level, 1989=100	Years in which output was lowest
Albania	39.9	1992	*Armenia*	65.1	1993
Bulgaria	36.8	1997	*Azerbaijan*	63.1	1995
Croatia	37.7	1993	*Belarus*	36.9	1995
Czech Republic	15.4	1992	*Estonia*	36.4	1994
Hungary	18.1	1993	*Georgia*	74.6	1994
Macedonia	46.6	1995	*Kazakhstan*	40	1998
Poland	13.6	1991	*Kyrgyz Republic*	50.4	1995
Romania	26.7	1992	*Latvia*	52.8	1993
Slovak Republic	24.7	1993	*Lithuania*	40.8	1994
Slovenia	20.4	1992	*Moldova*	66.3	1998
			Russia	45.1	1998
			Tajikistan	74	1996
			Turkmenistan	59.5	1997
			Ukraine	63.8	1997
			Uzbekistan	14.4	1995
Memorandum Items:					
All Countries in Transition	41.8				
All CEE	28				
Baltics[2]	43.3				
Other FSU	54.4				

Source: International Monetary Fund, International Financial Statistics, World Economic Outlook, IMF.

1- Central and East European countries.
2- Baltics countries include Estonia, Latvia and Lithuania.

countries were affected by military conflicts at the beginning of the transition, and it is those countries which experienced the deepest decline.

Literature provides several explanations for the difference in growth patterns of transition economies. According to the first one, countries with a lower initial degree of economic liberalization, a higher dependence on trade within the Council of Mutual Economic Assistance (CMEA) and Union of Soviet Socialist Republics (USSR), and longer years under Communism, experienced more output decrease at the beginning of the transition.[1] So, based on this explanation, it is the shock in terms of trade, followed by barriers to CIS trade, which adversely affected these countries' output.

A second set of explanation states that more active reformers were able to reach the growth path faster.[2] So this strand of literature suggests that trade liberalization and globalization positively affect growth of transition economies. In other words these explanations suggest that trade policies have so far played not a very important role in explaining differences in growth rates of the CIS countries.

Recently, some economists have linked growth patterns in transition countries with the government and the quality of public institutions. According to this explanation, massive and protracted output decline in some CIS countries was caused by the collapse of the governments and inability to create the necessary conditions to promote economic growth. CIS countries, which managed to keep stronger governments, experienced a less dramatic output decline and it was only after the consolidation of governments that the countries started to grow.

Any way all FSU countries declared their independence in 1991 and most of them by 1992 started to pursue distinct policies, including trade policy. This was a great challenge because they lacked institutional tradition and experience in conducting trade with the world outside the USSR. This was while a successful trade policy could strengthen the creditability of the whole transformation process with spillover effects on other policies.

1- Betkowits D.,De Long, D., "Accounting for Growth in Post-Soviet Countries". Pittsburg, PA , University of Pittsburg, 1998.

2- Fischer S., R. Sahay, "The transition countries after ten years", International Monetary Fund Working Papers, February 2000.

FSU Countries Trade after Independence

The Soviet Union was a rather closed economy with a state monopoly on international trade, non-convertible currency and state control over foreign direct investment. Countries which emerged after its disintegration had less regulations of foreign trade, foreign exchange and foreign capital flows. The breakup of the USSR brought about an increase in trade, capital flows and travels of individuals from CIS to non-CIS countries and vice versa, although trade among the CIS countries somewhat decreased.

After becoming independent, countries in the FSU made important strides in liberalizing their trade policies and integrating in the world trade.[1]

Of course while in all CIS countries international trade and capital flows are free to some degree, regulations still exist varying significantly across countries. For example in Belarus, Uzbekistan, and Turkmenistan there is a variety of non-tariff barriers to international trade, state control over production and international trade of a number of goods, restrictions on convertibility of local currency and capital flow controls. These countries have made little progress in integrating to the world economy—and indeed Uzbekistan and Turkmenistan have retrogressed in recent periods.

By contrast, Kyrgyzstan, Georgia, and Moldova are members of the WTO. There are no non-tariff barriers of trade in these countries, and tariffs on imports are very low. Of course, countries, which pursued more active trade policies, were not the most successful in the first ten years of transition.[2]

In between are four countries, Azerbaijan, Kazakhstan, Russia and Ukraine, which have made progress in liberalizing trade but still face a variety of problems that have restrained their full integration in the world trade.

With the breakup of the Soviet Union in the late 1991, all 15 countries started more or less with the same state planning apparatus for the control of international trade. There were two exceptions: the Baltics which had started the

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1- Michalopoulos C., Tarr D., "Trade Policy and Performance among the Newly Independent States", Directions in Development Series, Washington D.C, The World Bank, 1996.

2- Yudaeva K., "Globalization and Inequality in CIS Countries: Role of Institutions", Centre for Economic and Financial Research (CEFIR), December 2002.

reform process a little earlier and Russia which was much better endowed both in human and natural resources than most others.

From this initiating point, the patterns of trade policy soon diverged. The Baltics quickly dismantled the state trading apparatus and started shifting their trade orientation to the European market. At the other extreme were countries like Turkmenistan, Ukraine and Uzbekistan where, state organizations continued to control the bulk of foreign trade. In between were countries like Russia, the Kyrgyz Republic and Moldova, which introduced trade reforms early but retained a significant though declining role for the state in the control of key export commodities.

The critical trade developments during this period were the collapse of trade among the 15 FSU countries and the imposition of export controls on raw materials and energy. Clearly there were large real declines in the volume of trade among the 15 countries during the period (Table 2).

There were several reasons for the decline in trade inside the FSU during the early years of the transition. Probably the most important was the collapse of the payments system.[1] Also some amount of trade, which was clearly non - economical, collapsed due to the introduction of foreign competition; and some declines resulted from conscious shifting of exports of raw materials, especially energy, away from countries in the FSU (which could not pay for), and towards countries in the West. Except for the Baltics, the main policy response to the trade decline at the time was the establishment of a so called "free trade area" for the Commonwealth of Independent States (CIS).

As countries introduced their own currencies, started stabilization programs and initiated broader market oriented reforms, the different trade regimes that are in place today emerged. The transition had several dimensions. First, real appreciation of the currencies occurred for certain periods in some countries. Second, export controls on raw materials and energy were progressively

1- Michalopoulos C., "Payments and Finance Problems in the Commonwealth of Independent States (CIS) ", The World Bank Discussion papers, April 1996.

dismantled. Third, the state trading agreements that attempted to stabilize trade among the CIS countries were progressively abandoned. [1]

Efforts continued however, to strengthen preferential arrangements through, for example, the establishment of a customs union among Belarus, Kazakhstan, the Kyrgyz Republic and Russia (BKKR) in 1996. "Finally, as countries applied for WTO membership, reforms started to be introduced to their trade regimes and FSU countries tried to bring their policies and institutions in line with WTO requirements and obligations".[2]

Table 2: ***Indices of import and export of the FSU Countries in% (1991-2000)***

Former Soviet Union Countries	*1991*[3]		*1992*		*1994*		*1996*		*1998*		*1999*		*2000*	
	Exports	*Imports*	*Exports*	*Imports*	*Exports*	*Imports*	*Exports*	*Imports*	*Exports*	*Imports*	*Exports*	*Imports*	*Exports*	*Imports*
Armenia	100	100	9	7	8	9	10	21	8	22	8	19	11	21
Azerbaijan	100	100	22	16	10	13	9	16	9	18	14	18	25	20
Belarus	100	100	19	21	14	18	31	42	39	51	32	40	40	51
Estonia	100	100	16	21	33	52	53	100	82	154	76	128	96	158
Georgia	100	100	5	10	5	8	6	17	6	22	7	15	10	18
Kazakstan	100	100	35	34	33	26	60	31	55	32	57	27	93	37
Kyrgyz Republic	100	100	8	12	9	9	13	23	14	23	12	16	13	15
Latvia	100	100	14	18	19	25	24	42	31	66	29	61	31	66
Lithuania	100	100	13	19	21	35	34	65	42	95	31	81	40	86
Moldova	100	100	10	14	12	14	17	23	14	22	10	12	10	16
Russia	100	100	45	43	52	39	70	46	59	44	60	30	85	34
Tajikistan	100	100	9	7	23	25	37	30	28	32	33	30	37	31
Turkmenistan	100	100	10	35	34	39	26	30	14	39	18	34	38	42
Ukraine	100	100	20	19	28	30	39	49	34	41	31	33	39	39
Uzbekistan	100	100	14	15	24	23	40	41	34	27	31	30	26	31

Source: IMF, Direction of Trade Statistics 1994-2000.

Michalopoulos &Tarr 1991-1993.

1- Michalopoulos C., Tarr D., "Trade Policy and Performance among the Newly Independent States", Directions in Development Series, Washington D.C, The World Bank, 1996.

2- Michalopoulos C., "WTO accession for countries in transition", World Bank, 1997.

3- The year 1991 is the last year of Soviet Union.

The very sharp declines in trade among the FSU countries in the early part of 1990s, appear to have been partly reversed later on, even in the Baltics—as trade channels and some financing were reestablished.

Table 3 shows some clear patterns emerging in the direction of trade for various countries and groups. First, there is a group of countries which includes the Caucasus countries which shifted their trade orientation away from the FSU and towards the rest of the world early on and continued to increase their dependence on foreign markets and sources through the period.

Table 3: FSU Countries Trade with the World (except FSU) as a Proportion of Total Trade, 1991-1998 in %

Former Soviet Union Countries	*1991*		*1993*		*1996*		*1998*	
	Exports	*Imports*	*Exports*	*Imports*	*Exports*	*Imports*	*Exports*	*Imports*
Armenia	1.8	15.0	19.0	54.2	36.9	74.9	56.5	76.1
Azerbaijan	5.1	15.1	40.5	27.9	49.4	73.6	47.3	69.6
Belarus	6.7	8.8	19.2	18.8	26.4	29.2	11.9	18.1
Estonia	1.3	6.4	57.4	72.8	61.0	79.7	73.0	77.0
Georgia	0.5	9.1	42.9	51.5	37.9	73.7	51.2	70.8
Kazakhstan	7.6	13.1	32.8	26.2	42.4	36.2	48.6	38.5
Kyrgyz Republic	0.4	15.5	28.4	22.9	21.9	37.4	44.5	55.9
Latvia	2.1	9.9	48.2	49.2	52.5	62.4	62.3	65.1
Lithuania	3.6	7.1	42.8	30.4	43.2	61.7	65.5	64.9
Moldova	2.8	10.6	37.4	28.4	23.7	41.8	33.8	52.9
Russia	32.8	35.1	73.6	75.8	77.4	76.4	74.7	76.0
Tajikistan	10.9	13.9	69.0	65.4	54.9	41.6	34.5	32.2
Turkmenistan	2.3	14.4	40.0	46.1	32.2	68.9	72.2	36.5
Ukraine	14.6	15.6	52.6	33.8	48.7	47.2	63.1	56.0
Uzbekistan	8.4	12.7	41.3	36.5	54.5	54.7	43.7	62.6
Former Soviet Union	20.1	22.2	62.4	56.9	66.9	64.5	64.9	63.8

Source: IMF, Direction of Trade Statistics 1994-1998.

Michalopoulos &Tarr 1991-1993.

Second, there is another group, which includes Kazakhstan, the Kyrgyz Republic, Moldova and Ukraine which increased their dependence on trade with the rest of the world somewhat less rapidly, but also quite steadily. Then there is Uzbekistan and Russia which increased their dependence on trade with the rest of the world until 1996 but reduced it later. Finally, Belarus is a case totally different: its share of trade with the rest of the world was less in 1998 than in 1991.

Trade Policies of FSU Countries in the Late 1990s

Throughout the 1990's the Baltics and countries of the FSU pursued efforts to introduce market oriented reforms as well as to stabilize their economies with different intensity and with varying results. An effort is made here to summarize the trade policy stance of the fifteen countries. The discussion is organized in terms of political titles and we have attempted to identify common themes as well as specific issues of importance in each individual country.

I. The Role of State Trading,

Any discussion of trade policy in previously centrally planned economies must start with a discussion of the residual role of state trading entities whose operations may introduce distortions in trade. Progress on this issue depends basically on two factors: the extent of market liberalization; and the existence of the so-called "strategic" commodities the control of which is for one reason or another important to the government.

Considerable progress has been made on these issues in most countries. The Baltics have liberalized their regimes completely, so have a number of other countries, including the Kyrgyz Republic, Georgia, Armenia and Moldova—all of which are not major exporters of energy and raw materials. Some progress also has been made in countries like Russia where there is only modest specific state involvement

The countries in which the state controls the significant elements of the export sector are Uzbekistan (cotton), Azerbaijan (oil), Tajikistan (aluminum), Turkmenistan (gas and oil) and Belarus (because of the lack of progress in

privatization in this country). The state trading activities in these countries are also the main remaining instruments for regulation of exports.[1]

II. Tariff and Non-Tariff Measures on Imports,

Broadly speaking tariffs in most countries do not provide a large degree of protection, although there are, of course, significant variations by country and sector. The Baltics, Armenia, Georgia and the Kyrgyz Republic, for example, have low average tariff rates with relative little dispersion, with agriculture being protected more than manufactures.

The tariff schedules for Belarus, Russia and Kazakhstan are very close to the Russian tariff schedule, because of the proposed customs union among these countries. In all these countries, there is a variety of technical barriers to trade and a tendency for ad hoc policy-making.

The Baltics and countries of the FSU also do not use extensively traditional non-tariff measures such as licensing and quotas to control imports, except for the products controlled for health and safety reasons, environmental protection etc. Several countries however, notably Belarus, Turkmenistan, Uzbekistan and most recently Ukraine, have used foreign exchange controls to limit imports in the context of balance-of-payments problems.

III. Trade Preferences,

The Baltic countries in trade preferences as well as in many other areas, have taken a very different course from the rest of the countries in the FSU. From the beginning of the transition period their orientation was away from the FSU countries and towards Europe. So these countries signed the European Agreement of trade preferences.

The other FSU countries initially signed a free trade arrangement (FTA) in the CIS context in 1992. This was followed by a number of other agreements the most important of which to the present is the customs union agreement noted earlier by Belarus, Kazakhstan, the Kyrgyz Republic and Russia (BKKR).

1- Michalopoulos C., Tarr D., "Trade in the New Independent States", Studies of Economies of Transition No.13, Washington D.C, The World Bank, UNDP, 1998.

In summary, the conclusion of the analysis is that FTAs and customs unions among the CIS members are likely to be inimical to the future trade and growth prospects for participating countries. This is in part because of the trade diversion costs entailed, but also, and perhaps most importantly, because such arrangements tend to lock in place production based on outmoded technology and central planning.[1]

IV. Market Access Issues,

When 15 countries emerged from the dissolution of the Soviet Union, they inherited the adversarial trade relationship. The path of the Baltics continued to diverge from that of the other countries. The signature of the Europe agreements provided them with preferential access to most important markets in Western Europe. On the other hand, the remaining countries continued to face less favorable market conditions than most of their competitors in the European and US markets.

It should be underscored that as many of these countries' exports to OECD markets consisted of energy and raw materials, which are not significantly protected, supply side constraints rather than market access conditions were more important for overall export performance. There are significant problems, however, in specific export sectors, for example metals, textiles, chemicals, and processed food, some of which have their origin in the cold war and the aftermath of central planning.

The problems with market access of these countries arise in part because they are not members of the WTO. But in large part, the problems stem from the fact that FSU countries are still being designated as "non market economies" in the determination of antidumping and, in the case of the European Union (EU), also for safeguard actions.

V. WTO Membership and Accession,

FSU countries continued to face less favorable market conditions than most of their competitors in the European and US markets. This involves

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1- Michalopoulos C., Tarr D., "The economics of custom unions in the commonwealth of independent states", World Bank, April 1997.

primarily anti-dumping actions, the most common means of protection in the late 1990's; and to a some extent, safeguard actions.

"Indeed, there is evidence that both anti-dumping investigations and the imposition of "definitive" antidumping duties is much more common against non-WTO members, especially if they are designated "non-market economies".[1]

WTO membership is important for a number of reasons: first, because membership promotes the establishment of the legal framework and market based institutions in support of international trade that were absent under central planning; second, because WTO membership provides better guarantees for market access; and third, because the WTO has established a binding dispute settlement mechanism, which, at least so far, has proved effective in adjudicating trade disputes.

When judged by policy measures taken during the 1990s, most of the CIS countries can also be viewed as globalizers. By 2002 only one country, Turkmenistan, has kept pervasive state control over international trade, and massive restrictions on convertibility of foreign exchange. Two other countries with massive government intervention in international trade activities and a nontransparent foreign exchange regime are Uzbekistan and Belarus. All other countries have convertible currency and almost no government control over trade flows. Some countries, such as Kyrgyzstan, Georgia, and Moldova, have already become members of the WTO and have very low level of tariff protection. Liberalization of foreign trade policy by the CIS countries was accompanied by an increase in trade flows with non-CIS countries. At the same time, intra-CIS trade dropped drastically. Nowadays, most of the CIS countries are quite open both in terms of trade policy and trade flows.

In the Soviet Union, the national currency was non-convertible, while national currencies of most of the CIS countries are convertible now. The inflow of foreign capital to the Soviet Union was prohibited or at least strongly regulated by the state on a case-by case basis. The first steps to liberalize FDI inflow were taken as early as the last years of the USSR, with most of the CIS countries liberalizing the FDI regime even further.

1- Michalopoulos C., "WTO accession for countries in transition", World Bank, 1997.

Some legal obstacles to inflows of FDI still exist in most CIS countries, but these obstacles are usually not higher than in countries which have been very successful in attracting FDI recently, such as China.

Table 4: FDI in % of GDP in some globalizers and CIS countries

Country	*FDI in % of GDP*		*Country*	*FDI in % of GDP*		*Country*	*FDI in % of GDP*
	Avg.80s.	*Avg.90s.*		*Avg.80s.*	*Avg.90s.*		*1994-1999*
Argentina	0.7	2.4	*Ivory Coast*	0	0	*Armenia*	4
Bangladesh	0	0.1	*Jamaica*	0.2	3.6	*Azerbaijan*	16.2
Benin	0.1	0.8	*Jordan*	0.9	1.2	*Belarus*	0.8
Brazil	0.7	1.5	*Malaysia*	3.2	4.7	*Estonia*	4.2
Burkina Faso	0.1	0.5	*Mali*	0.2	1.1	*Georgia*	3.5
Cameroon	1.2	0.1	*Mexico*	1	2	*Kazakhstan*	5.8
Central Af.Rep	0.6	0.2	*Nepal*	0	0.2	*Kyrgyz Republic*	3.3
China	0.5	4	*Nicaragua*	0	4.4	*Latvia*	4.7
Colombia	1.3	2	*Pakistan*	0.3	0.8	*Lithuania*	4.5
Costa Rica	1.4	2.9	*Paraguay*	0.3	1.4	*Moldova*	2.7
Dominica	2.6	8.6	*Peru*	0.1	2.9	*Russia*	0.8
Dominican Rep.	1	2.7	*Philippines*	0.6	1.6	*Tajikistan*	1.1
Ecuador	0.5	2.5	*Rwanda*	1	0.2	*Turkmenistan*	3.6
Egypt	2.7	1.2	*Thailand*	1	2.4	*Ukraine*	1
Ethiopia	0	0.7	*Uganda*	0	1.7	*Uzbekistan*	0.5
Haiti	0.4	0.2	*Uruguay*	0.5	0.6		
Hungary	0	4.1	*Venezuela*	0.2	2.2		
India	0	0.4	*Zambia*	1.7	3.4	*Avg. for CIS*	3.55
Indonesia	0.4	0.9	*Zimbabwe*	0.1	1.3	*Avg. for Baltics*	4.46

Sourc: Dollar and Kraay (2001), EBRD (2002)

Nonetheless, in terms of attracting foreign direct investment, the achievements of the CIS countries were quite modest by standards of transition economies (Table 4). In 2000 and 2001 net average FDI inflows to these countries were 3.2% and 3.1 % of GDP respectively. This is, of course, much higher than the average for developing countries, but substantially lower than

5.5% and 4.9%, observed in countries of Central-Eastern Europe, and Baltics, and even lower than 3.9% and 5.0% registered in South-Eastern European countries. What is even more worrisome, however, is that most of FDI has gone to oil and gas of rich Kazakhstan, Turkmenistan, and Azerbaijan, while FDI inflows to countries poor in natural resource have been quite insignificant.

As we have seen so far the former Soviet Union countries from the independence till the present days behaved differently with the trade patterns. The preliminary conclusion that can be drawn from the whole review of trade regimes in these countries is that those of them that adopted freer trade regimes could more successfully integrate into the world trade system and benefit from it in terms of better technology and quicker recovery from production declining.

The countries that have done best are those who have pursued their reform agenda most consistently. They are also those who seemed from the start the most committed to the reform. In mitigating the output decline Uzbekistan is an exception, a country that has done relatively little reforming. Belarus is another country where the pattern of output is not very different from that of more successful reformers, but reform has been, at best, slow.[1]

But what we are interested to investigate is how contemporary growth models can explain the relationship between trade openness and economic growth in these countries. Can we conclude that countries with more free trade regimes grow more quickly than others?

To do so we should first have a short review of the growth models.

New Growth Models (the Model of Endogenous Growth)

There has been a long tradition of appealing to dynamic gains to justify trade optimism. Such gains can be associated with capital accumulation, with external economies of scale, with learning by doing or with technological transfer. There has been a tremendous upsurge of interest in formal economic modeling of long run growth over past ten years, typically under the labels of "new growth model" or "the theory of endogenous growth".

1- Fischer S., R. Sahay, "The transition countries after ten years", International Monetary Fund Working Papers, February 2000.

The essential factor of supply-side models of economic growth is the accumulation of factor of production, generic capital that might consist of machineries, buildings and infrastructure and can also consist of human skills and knowledge. Any policy which affects the private returns to capital accumulation, for example taxation, affects rates of growth.

Romer, Lucas, Barro and others have extended the neo-classical growth modeling of investment decision by a forward looking, rational agent to clarify the conclusion that are required for long –run growth to occur.

The riving force of all these models is the capital accumulation. "By building up stocks which increase productivity capacity and using that enhanced capacity to further build up stocks, it may be possible that incentives to continue investing are sufficient to generate continuous growth".[1] It is important to distinguish between three principal forms of capital:

- physical capital, produced by investment in equipment and structure;
- human capital generated by education and training and learning by doing;
-disembodied knowledge or blueprints generated by research and development;

It is also useful to distinguish between three different sort of technological interactions:

Flexibility in the production of final goods – the extent to which capital can be substituted for fixed factor of production such as labor and natural resources. Models based on production flexibility follow the tradition of the Solow –Swan model and are usually compatible with perfect competition.

Feedback in the accumulation of capital – the extent to which the stock of capital reduces the cost of generating further capital. Feedback models are often used in neo-Schumpeterian framework, where new goods and new ideas provide further goods and further ideas and they typically involve temporary monopolistic power.

Spillover in the production of final goods – the stock of capital owned by one producer affects the productivity of other producers. The idea is that the productivity of fixed factors such as labor may be enhanced by spillover benefits from the capital accumulation of other agents. There are several features of investment which may produce such spillovers. The public good qualities of

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1- Dowrick S., "Openness and growth", Australian economic review", 1994.

knowledge are the prime example, suggesting positive spillovers from R&D or from learning by doing.

The contribution of the Trade to growth

There are numerous channels through which openness to trade, and in particular exports, might improve the prospects for growth. Traditional theories of trade under perfect competition have always indicated that trade can enhance allocative efficiency and welfare in the economy as a whole by allowing resources to be transferred from import-substituting activities into ones in which countries have a comparative advantage.

Recent advances in trade and growth theory also stress the importance of imperfect competition, economies of scale, product diversity and the spread of ideas and organizational techniques across international borders.

Exporting is typically associated with an expansion in the size of the potential market facing the firm. Higher demand may thus allow an expansion in production and the exploitation of economies of scale, particularly in small countries or capital intensive activities in which the minimum efficient scale of production is large relative to the size of the home market.

Exposure to greater foreign competition may also generate improvements in exporters' performance, by eliminating organizational inefficiencies, irrespective of whether firms can learn from exporting. The domestic price of tradable goods may also fall, relative to the level it would otherwise have been at, and enhance consumer welfare.

Enhanced allocative and organizational efficiency from trade affects per capita incomes. New theories of trade and growth identify a number of routes through which greater openness might have longer lasting effects on the rate of growth. There are two distinct versions of this approach. In one, all varieties of a good enter a representative consumer's utility function and all are consumed. In the other, final goods are modeled as produced using varieties of intermediate inputs, with increasing returns in the number of varieties used.[1]

1- The models differ in their implications for the types of goods traded. One predicts increasing trade of final goods, whereas the other predicts increasing trade in intermediate goods.

The (non-Ricardian) versions of these models have increasing returns to scale, either because there is a fixed cost associated with the production of each variety, or because there are increasing returns in a number of different varieties of intermediate inputs.

In endogenous growth models such as those proposed by Grossman and Helpman (1991)[1] the generation of new product varieties via trade makes it cheaper and easier to invent new varieties. Exposure to foreign markets might also improve the efficiency of the firm and raise growth either through learning from foreign rivals or through spillovers of technologies and knowledge.

For instance, firms that participate in export markets might gain access to technical expertise regarding product designs and production methods from their foreign buyers. International knowledge spillovers arising from trade or cross-border investment expand the stock of ideas that may be used for research in each country. Successful R&D can then generate growth through expansion in the variety and quality of domestically produced goods and services. Thus the rate of technological progress is endogenous.

However there is no guarantee that trade liberalization will promote growth in such models. "If countries become increasingly specialized in low-tech sectors in which little or no R&D takes place, then resources may be diverted away from the activities that help to promote long-term growth"[2]. Older, unresolved arguments over the need to protect 'infant industries' also suggest that there are circumstances in which the maintenance of trade restrictions might promote long-run performance.

Thus there may be a variety of channels through which exporting could generate improvements in the relative performance of exporting firms. Some of these channels, such as competition, economies of scale, entry and exit and knowledge spillovers, are already known to be general influences on productivity growth. There is a large literature on the relationship between exporting and growth.

1- Grossman G. and Helpman E. "Innovation and Growth in Global Economy", Cambridge, MIT Press, 1991.

2- Pain N., "Openness, growth and development: trade and investment issues for developing economies", National Institute of economic and social Research, 2000.

In this paper we expect trade to influence on the productivity of labor and also presume that with more free trade, countries can increase the productivity of capital (human and disembodied) and consequently affect the growth rate.

Model and data sources

The empirical specification in this paper is derived from a general production function with output (GDP) as a function of capital stock, labor force and technological change. The production function is specified for country i at time t:[1]

$$Y_{it} = A_{it}G(Cap_{it}, Lab_{it}) \qquad (1)$$

Totally differentiating (1), dividing through Y and rearranging terms yields:

$$dlogY_{it} = \frac{dA}{A_{it}} + \alpha_1 dLogCap_{it} + \alpha_2 dLogLab_{it} \qquad (2)$$

Lower case variables dlogY, dlogCap, dlogLab have been transformed into differences of logs of the original variables. Openness measure in the production function affect output through their impact on technological change. The term $\frac{dA}{A_{it}}$ can be rewritten as the sum of three effects:

$$\frac{dA}{A_{it}} = f_{it} + e_{it} + \alpha_3 Open + \alpha_4 dOpen \qquad (3)$$

(1) - f_{it} - a country specific effect which does not change over time;

(2) - e_{it} - a disturbance term. The disturbance term e_{it} reflects unobserved shocks which nevertheless affect the output, which are assumed to be uncorrelated over time. This could include shocks such as weather conditions, changes in the availability of (unobserved) inputs or other effects;

1- Bessonov V., "The problems of production functions in transition economics", Economic Journal, The high Economic School, Moscow, 2000.

(3) - α_3Open - Trade Openness Index. This item represents the static effect of trade openness on economic growth. In Figure 1 this effect can be shown as a shift of trade openness – economic growth interchange curve. By the static effects of trade openness on economic growth we mean the time irrelevant effect of trade openness on growth that can be observed during a special time. Such effects take place once and in a sudden and may not affect it during further period of time.

(4) - α_4dOpen - Trade Liberalization Index. This term is a function of trade policy in country i at time t. This item presents the dynamic effect of trade openness on economic growth. In Figure 1 this effect can be shown as a movement across the trade openness – economic growth interchange curve. By the dynamic effects of trade openness on economic growth we mean the effects of changing in trade openness during the course of time on economic growth. Such effects take place during the time and may affect economic growth persistently.

The assumption of the lack of serial correlation was tested on a country – by- country basis by applying a Durban – Watson test to the residuals.

This yields an estimating equation:

$$dlogY_{it} = \alpha_1 dlogCap_{it} + \alpha_2 dlogLab_{it} + \alpha_3 Open + d\alpha_4 Open + f_{it} + e_{it} \quad (4)$$

The general specification outlined above makes no restriction on returns to scale or the degree of competition. As a result the sum of the input coefficient need not add up to unity. Ann Harrison proved that assumption of constant returns to scale and perfect competition lead to biased estimates of traditional productivity residuals.[1]

GDP growth is calculated as log differences using national account data in 2001 collected by Interstate Statistical Committee of Commonwealth of Independent States. Physical capital stocks were used from the same source.

1- Harrison A, "Openness and growth: a time-series, cross-country analysis for developing countries", National Bureau of Economic Research (NBER), Working Paper No: 5221, August 1995.

All values are transformed into differences of log values with the exception of the openness where both level (for static influence) and changes in openness (for dynamic influence) included as independent variables.

Trade Openness and Trade liberalization

To make clear the difference between Trade Openness and Trade Liberalization it is necessary to consider Figure 1 representing the trade openness – economic growth interchange curve. This curve shows the relationship between economic growth and trade openness. If we place the measurement of economic growth on the horizontal axis and the trade openness measurement on the vertical axis the static effect of trade openness on economic growth can be shown by the shift of the curve (trade openness – economic growth interchange curve). On the other hand the dynamic effect of trade openness or the effect of Trade Liberalization on economic growth can be described by the movement on the curve (trade openness – economic growth interchange curve).

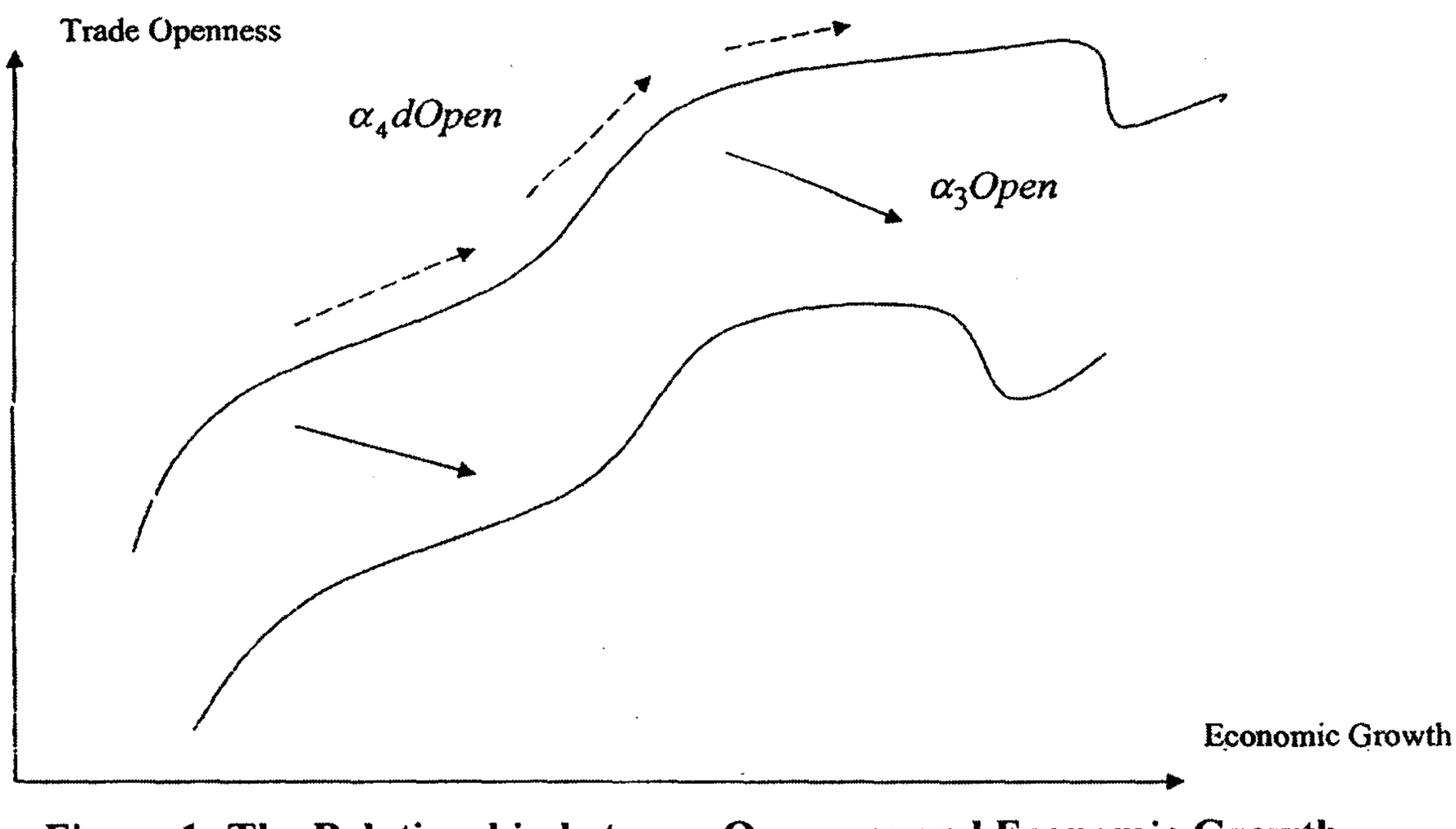

Figure 1: The Relationship between Openness and Economic Growth
(Trade openness – economic growth interchange curve)

Openness index

We use classical index of openness to test the statistical relationship between openness and growth. This measure known also as trade share is defined as the ratio of export plus import to GDP:

$$Open_{it} = \frac{Imp_{it} + Exp_{it}}{GDP_{it}} \qquad (5)$$

Some authors like Low and Suarez tried to correct this index. They observed that openness falls with population and that the relationship between openness and GDP and GDP per capita has a U-shape"[1]. That is for small levels of GDP and GDP per capita, the higher the GDP and GDP per capita the lower the level of openness. For sufficiently high levels of GDP and GDP per capita, the relationship is reversed. However in our case when all Former Soviet Union countries have almost the same level of GDP and GDP per capita, we din not considered necessary to make any correction in openness index.

Data

Before estimating regressions it is useful to give a number of explanations about the used data. The source for investigation of this paper is the Statistical reference called "10 Years of the Commonwealth of Independent States". Following Kushnirsky and for the sake of more precision in measuring productivity changes, we have made a conclusion that physical changes in number of employed people (the physical change in labor force) during the period from 1991 till 2001 is rather meaningless.[2] So we decided to use the changes in real wage of labor force in Former Soviet Union countries to show the changes in labor productivity during that period of time. There was no special problem to find necessary statistical data for capital stock and the

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1- Low, M. Olarreaga, J. Suarez, "Does globalization cause a higher concentration of international trade and investment flow? ", WTO Economic Research and Analysis Division, August 1998.

2- Kushnirsky F., "A Modification of production function for transition economies", Comparative Economic Studies, Van Cover, 2001.

changes in them in 12 FSU countries during the same time. And we suppose that trade openness affects the economical growth through the mechanisms mentioned above. First, it will increase the productivity of capital (human and disembodied) and consequently affects the growth rate.

Preliminary Regression Results

At first we use the collected data to run 12 regressions. We run one regression for each of FSU countries. We use the GLS method to prevent the auto correlation to affect the results. Table 5 presents the preliminary regression results for 12 countries.

Table 5: ***Preliminary Regression Results for the 12 FSU Countries***

	Country	C	dlog(Cap)	dlog(lab)	Open	DOpen	R^2	DW
1	*Armenia*	-0.152	-0.095	0.122	0.253	0.049	0.952	1.36
2	*Azerbaijan*	-0.082	-0.138	0.089	0.243	-0.126	0.953	2.15
3	*Belarus*	-0.142	0.089	0.023	-0.147	-0.093	0.939	1.92
4	*Georgia*	0.039	0.310	-0.026	-0.263	0.116	0.973	2.57
5	*Kazakhstan*	-0.518	0.454	1.687	0.839	1.489	0.838	1. 42
6	*Kyrgyz Republic*	-0.258	0.145	0.096	-0.346	-0.226	0.881	1.61
7	*Moldova*	0.090	0.177	0.245	-0.100	-0.259	0.865	2.40
8	*Russia*	-0.083	0.180	0.043	-0.118	0.123	0.859	2.52
9	*Tajikistan*	-0.171	0.133	0.027	0.150	0.069	0.943	1.81
10	*Turkmenistan*	0.324	0.064	-0.088	-0.504	0.146	0.928	2.19
11	*Ukraine*	-0.133	0.316	-0.112	-0.133	0.037	0.869	2.66
12	*Uzbekistan*	-0.032	-0.127	0.068	-0.082	-0.089	0.919	2.06

Table 5 indicates that the fixed effect of openness on the economic growth in FSU countries during the 1991 – 2001 in most countries is negative. (This result is observed in 8 of 12 countries). Table 5 also indicates that the liberalization of trade (changes in openness) is positively related with the economic growth in 12 countries during the proposed period of time. (This result is observed in 7 from 12 counties). The whole conclusion that may be drawn from these regressions is that in early years after the independence the 12 FSU countries were affected negatively by the collapsing of economic relationships. But after that FSU countries started to reform their economies and some of them actively joined to the international trade. The trade liberalization (the changes in

trade openness) is positively related to economic growth and this means that, making their regimes freer, FSU countries will grow faster.

It should also be mentioned that during the period from 1991 till 2001 there were positive growth of physical capital stocks and growth in productivity of labor force in most countries.

Panel Estimation

The main advantage of panel data set over simple cross-section (apart from the additional observations and the degree of freedom) is that it enables some control for time-invariant country specifics.

The panel estimation is run using 4 different assumptions about the trade openness and trade liberalization coefficients among 12 FSU countries. These assumptions are as follow:

1- All trade openness coefficients and all trade liberalization coefficients among 12 FSU countries are different;
2- All trade openness coefficients among 12 FSU countries are different but all trade liberalization coefficients are the same;
3- All trade openness coefficients among 12 FSU countries are the same but all trade liberalization coefficients are different;
4- All trade openness coefficients and all trade liberalization coefficients among 12 FSU countries are the same;

Table 6: Panel Estimation for the Effect of Trade Openness and Trade Liberalization on Economic growth.

Independent Variable	Country	Coefficient	t-Statistic	Probability
Index of trade liberalization	All countries	0.074436	1.940377	Q.0550
Index of trade openness	All countries	-0.163247	-3.219085	0.0017
R^2			0.62	
Durbin - Watson			1.74	
F-Statistics			88.39	

The assumption that is necessary to answer our question is the one that assumes that all trade openness coefficients in 12 FSU countries are the same and the entire trade liberalization coefficient in 12 FSU countries are the same. Table 6 presents the results obtained form this regression.

The results show that there is a positive relationship between the trade liberalization in FSU and the growth rate in these countries. It is also apparent from the table, that the relationship between the trade openness and the economic growth is negative. Both trade openness and trade liberalization indices are meaningful. But trade liberalization effect on the growth is very small and it seems that such amplitude can not justify the free trade regime in FSU countries. But it should be mentioned as well that the small effect of trade liberalization on economic growth could be due to limited number of observations and the effect could be shown in future and during the course of time.

Conclusion Remarks

The overall impression from brief survey of existing econometric results is that there are indeed positive relationship between the rate of economic growth and trade liberalization of FSU countries. Opening up FSU economies toward the world economy or taking an outward-oriented economy in these countries indeed caused some of them to growth fast. In this article we found out that positive relationship between trade liberalization index and economic growth in FSU countries indeed exists. But the potential gains of trade liberalization to economic growth are trivial concerning their magnitude for FSU countries and therefore we can state that trade liberalization was not the important determinant of growth path of FSU countries during recent years.

On the other hand we showed that the relationship between trade openness and economic growth is negative. This result is explained by negative influence of collapsing of economic relationships between FSU countries right after the Soviet Union breaking apart. In the early 1990s after starting economic reforms, all FSU countries experienced substantial output decline and consequently their trade experienced dramatic decline.

It seems necessary to state that indexes of trade liberalization and trade openness used to present respectively the dynamic and static effects of trade on

economic growth of 12 FSU countries may have different influences on the results obtained from regressions.

It is also worth to mention that due to the small period of time past from the independence of FSU countries, the positive effects of free trade are not realized yet. The governments of FSU countries can help to realizing the positive effects of trade by providing the financial facilities to the local producers and exporters. It will also make big difference if all government organizations work properly under mechanisms of market economy. Most economists have pointed out to the lack of coordination between organizations in FSU countries. Definitely their harmonized activity can strongly affect the potential for local producers to integrate into world economic system and gain from free trade.

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