Trade and Growth under Limited Liberalization

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"Trade and Growth under Limited Liberalization: The Case of Belarus"

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Abstract: This paper studies the connection between trade and growth in the context of a partial and inconsistent liberalization process in a specific Eastern European country in transition towards market economy, namely, the Republic of Belarus. The analysis of the country trade patterns during the USSR period and the years since independence revealed that unlike its close neighbors (the Baltic States and Poland) Belarus did not succeed in changing the commodity or the geographical structure of its trade. It is almost a good representation of reality to say that *Belarus trades with Russia*. The assessment of the rationale for the closer integration with Russia and the impact of this process on Belarus growth led us to the conclusion that the integration in the form of a non-exclusive Free Trade Area and within the framework of a wider set of international connections rather than the move towards a Customs Union (and a Union State) with Russia would be a more optimal policy for Belarus. This conclusion is supported by the results of country-specific growth regressions and of a counterfactual "free trade experiment" via a small CGE model. This paper is partially based on the work by the Authors for the World Bank Global Development Network (GDN) Research Project *"Explaining Growth in the CIS Countries"*.

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Introduction

The *stylised* pattern of post-reform growth of a transition economy is characterised by a sharp initial fall followed by recovery and growth.[3] Although the trajectory of Belarusian growth indeed has the expected U-shape (see Figure 1), there are some peculiarities about both its declining and increasing parts.[4] The output of Belarus recovered relatively early, if compared to other CIS countries, and the observed high rates of the *officially* recorded economic growth in 1996-1998 were in contrast to the negative or very low growth rates in most CIS countries.[5] The only other exception was Uzbekistan, and since that in both Belarus and Uzbekistan this, by no means, was due to the progress in transition reforms, these cases somewhat challenged standard transition paradigm, and were even called "puzzles".[6]

One of the explanations for Belarus growth is that it had been achieved largely due to the trade and para-fiscal transfers from Russia.[7] In this paper we try to test this hypothesis, and we also aim to assess whether Belarus will be better of if instead it attempts a different, wider pattern of international integration.

The paper is organized as follows. It starts with the brief description of Belarus trade prior independence (Section I). Changes in commodity and geographical structure of Belarus trade since independence are analyzed in Section II. In Section III trade regime and trade-related policies are described. Section IV is dealt with the discussion of the rationale of the movement towards closer integration with Russia. Results of the country-specific growth regression are presented in Section V. And, finally, in Section VI, results of a counterfactual "free trade experiment" via a small CGE model are provided. The paper concludes with some policy recommendations.

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[3]For a stylised description of the general post transition "U-shaped" growth trajectory, see Havrylyshyn at al., 1998, and Fischer and Sahay, 2000.

[4]In fact, it looks more like S-shaped.

[5]However, substitution calendar years for years in transition shows that although during "transition time" Belarus indeed experienced an average rate of growth above that for the CIS as a group, it growth performance is substantially worse relative to truly comparable countries (i.e. the Baltics), see Bakanova at al., 2001.

[6] See, for example, Havrylyshyn and Wolf, 1999, Fischer and Sahay, 2000, IMF, 1999.

[7]On the domestic side, an expansionary policy stimulated demand/consumption and production –regardless of costs- by state-owned enterprises, on the basis of tightening of administrative control over all economic activities, was the main responsible for the observed growth rates.

I. Belarus trade prior to independence

Under the system of central planning, the Belarusian Soviet Socialist Republic (BSSR), being previously a predominantly agricultural area, had developed a diversified and extensive industrial base, with many assembly industries. The share of Belarus in the USSR output of many complex industrial products was far in excess of its population share.[8] The share of industry in GDP reached 49% in 1990: for the FSU (Former Soviet Union), only the Armenian figures were higher.[9, 10]

In spite of substantial differences in estimates for income levels in the pre-transition period (either in PPP or in current USD), it is safe to conclude that Belarus had had a GDP per capita in PPP terms well above almost all other CIS - Commonwealth of Independent States - countries (only the Russian level was somewhat higher), and broadly comparable with the Baltics (Estonia, Latvia and Lithuania) and the CEECs (Central and Eastern European Countries). On average, the population of the BSSR enjoyed higher living standards than the ones in most other regions of the FSU, which was partially due to a rate of growth during 1985-1989 above the USSR average.[11]

As a consequence of its industrial development, Belarus was highly dependent on trade in general, and on trade with other republics of the USSR in particular. Thus, total and intra-regional (inter-republican) trade accounted for, respectively, 47.3% and 41.0% of Belarus GNP - the highest figures not only for CIS, but also for the Baltics and CEECs.[12] Having been one of the most industrialized and economically developed republics of the FSU (alongside the Baltic States), Belarus was a net contributor to its budget, transferring more than comparatively larger states, like Ukraine. At the same time, taking into account

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[8]See Odling-Smee, 1992, Table A2, p.52.

[9]See, De Melo at al. (1997). We must point out that National Statistics data on the composition of GDP by branches differ from the ones in the De Melo at al., 1997, ibid.

[10]As described in the World Bank study on Belarus (1997), the industrial sector in Belarus was "concentrated in industries such as automobiles, electrical and mechanical engineering and chemicals. At the breakup of the USSR, Belarus was left with about 2,000 republican level industrial enterprises, highly vertically integrated, many of which served the all-union markets as well as markets in Eastern Europe....A few large enterprises, accounting for only 15% of all units, controlled 60% of production. Products were heavily biased towards capital and energy intensive heavy industry, and many focused on electronics, optics, and transport equipment for the military. Management skills in finance, sales and marketing were limited - financial management and marketing decisions were commonly handled from Moscow" (p.31).

[11]For brief overview of Belarus economic position relatively to other CIS prior independence see, World Bank, 1997, ibid.

the price-setting mechanisms of the FSU (overpriced "soft goods", such as foodstuffs, manufactured products and services, and underpriced "hard goods", mostly raw materials, making, therefore inter-republican trade a channel of indirect income transfers in addition to direct budgetary ones), Belarus was classified as a "double recipient", by both importing underpriced energy resources and by exporting overpriced industrial goods.[13]

Both the geographical and commodity pattern of Belarus trade were highly distorted. According to calculations based on gravity models, after the adjustment to market economy conditions, the combined share of the FSU should not exceed 25% of Belarus total trade (against 87% in 1989), and the share of Russia alone should not be more than 10% (52% in 1989).[14] However, some very important factors are not captured by gravity models: isolation from Western markets, common business culture, similar consumer preferences, common infrastructure - all that is usually labeled as *"Soviet Legacy"*.[15] Historically and culturally, Belarus has been *the* closest to Russia among all FSU republics, and an alteration of centuries of historical traditions might take a long time. Therefore, although the redirection of Belarus trade from Russia towards the West is an imperative for Belarus, its structural dependence from Russia on both exports and imports side can significantly hold back this process.[16]

Bakanova at al. (2001) shows that, prior to independence, Belarus actual trade pattern (as measured by indices of Revealed Comparative Advantages - RCA) had no correlation with the expected one, based on the measure of international competitiveness (measured by Domestic Resource Costs ratios - DRC), both in Belarus trade with other USSR republics and with the rest of the world.[17] Therefore, during the transition the task was

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[12]Michalopoulos and Tarr, 1995, p.15.

[13]See Orlowski, 1993 and 1995.

[14]Gros and Dautebande, 1992. In EBRD (1999), the predicted share of <u>all</u> transition economies in Belarus trade is 11%, whilst the one of the EU is 60%.

[15]For example, already existing pipelines could make it preferable for Belarus to continue import of natural gas and oil from Russia, rather than search for alternative suppliers in the world market. These factors were highlighted by Lücke (1995).

[16]Of course, this is heavily dependent on the policy pursued by the Belarusian authorities.

[17]For this computations the following data-set was used: 110-sector input-output tables for 1987 (the latest year for which such disaggregated input-output tables are available for Belarus) and trade and price ratios data from Tarr,1993. "Domestic Resource Costs" (DRC) ratios, which compare the opportunity costs of domestic production to the value added it generates, were computed. For a given activity j: **DRCj=(DCj)/IVAj**. DRCs are considered as measures of effectiveness and international competitiveness of domestic production and are used as indicators of comparative advantages. Also, indices of "Revealed

much more complicated than simple redirection of trade flows: the commodity pattern of trade also had to be changed substantially. At the same time, the potential costs to Belarus from the disruption of trade links with the rest of the FSU were estimated as 52.9% NMP (Net Material Product) - the highest amongst the fifteen republics.[18] Belarus terms-of-trade losses due to moving to the world prices in the inter-republican trade were estimated in range of 29-31% GDP.[19]

Belarus declared its independence in 1991, and, since 1992, it started to pursue distinct policies, including trade policy. This was a great challenge given absence of institutional traditions and experience in conducting trade with the world outside the USSR. At the same time, successful trade policy could have strengthened the credibility of the whole transformation process, and had spillover effects on other policies. Equally, the success of trade policy depends upon the general progress in transition reforms and macroeconomic environment.

II.   Trade patterns in 1992-2000

An analysis of Belarus trade during the period 1992-1994 is complicated by the limited accuracy of the available data. Belarus trade statistics as a sovereign state had been collected since 1992, but insufficient funding and lack of experience held back the introduction of new methodologies and appropriate procedures of data collection.[20]

With some caution, it is possible to distinguish the following features of Belarus trade during the period 1992-1994. First, maintaining considerable volumes of exports and

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Comparative Advantages" (RCA) were computed, with a breakdown for 2 trade zones, as $RCAij=(Xij-Mij)/(Xij+Mij)$, where i is country and j is commodity. Ranking the industries by RCAs and DRCs and calculating Spearman rank correlation coefficients by zone, the rank correlation coefficients between DRCs and RCAs are -0.05 and 0.08 for inter-republican and extra-republican trade respectively. The results were checked by computing indices of "Contribution to Trade Balance", $CTB_j=(1000/(X+M))*[(X_j-M_j)-(X-M)*(X_j+M_j)/(X+M)]$, where j is commodity, X and M - total value of the country exports and imports. This indicator helps to avoid a bias of the RCA, in which any of its specific values can be consistent with any volume of trade. Its outcome was -0.009 and 0.016, respectively. For more results and description of methodology see, Bakanova at al., Ibid.

[18]See Nuti and Pisani-Ferry, 1992, table 4.

[19]See Tarr, 1994.

[20]See, for overview of problems of Foreign Trade Statistics in CIS after the break up of the USSR Belkindas and Ivanova, 1996.

imports in 1992, due to the industrial potential accumulated in previous years and to the fulfilment of contractual obligations still arising from the FSU. This was followed by a sharp fall in trade volumes in 1993, as a result of a number of negative factors of the transition period (the breaking up of production links, increase in price of energy resources[21] and raw materials, etc.). In 1994, the total volume of trade stabilized, but with a substantial reduction in the physical volume of trade with CIS countries.[22]

Since most of data on Belarus trade are available from 1995-1996 and because 1996 is the first year of recovery, we'll concentrate our analysis on the period 1995 onwards.

Belarus is a small open economy with trade turnover accounted for more than 110% on average during the period 1995-2000 (Table 1). In spite of a significant widening of the geography of external trade - Belarus has trade relations with more than 120 countries - CIS countries and, especially Russia, still remained it main trade partners (Tables 2a and 2b). Thus, the share of Russia in Belarus total exports increased from 45.5% in 1995 to 51.0% in 2000 and in exports to CIS countries - from 72.2% to 84.5% during the same period. Even larger -and increasing more rapidly- is the share of Russia in Belarus imports, total and from CIS: 53.3% and 80.6%, respectively, in 1995 and, 65.3% and 92.2%, respectively, in 2000. It is almost a good representation of reality to say that *Belarus trades with Russia*. This differs substantially from directions of trade of Poland, Latvia and Lithuania, even though the latter two countries are similar to Belarus in their level of external energy reliance[23].

A substantial share of Belarus-Russian trade is in *barter* trade (Figures 2a and 2b). The prices and conditions of barter deals differ substantially from the ones in pure monetary transactions.[24]

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[21]Thus, for instance, whilst in 1993 Belarus paid US$21.7 per ton of Russian oil and US$35.7 per 1,000 cubic meters of gas, in 1994 the prices raised to US$57.0 and US$50.0 respectively. At end-March 1999 price for gas for Belarus had been reduced to US$30.6 per 1,000 cubic meters.

[22]We are here referring to physical volumes. The value of Belarus trade with CIS countries had been significantly affected by the combination of high inflation and deterioration in terms of trade.

[23]The figures for Latvia, Lithuania and Poland in 1999 are, respectively, 53,77%, 46,51% and 64.97% from its imports come from the EU (imports from Russia, overwhelmingly energy related: 10.51%, 20.00 and *5.82%*), while 62.55%, 50.11% and 70.56% from its exports go to the EU.

[24]Which constitutes even another problem that any researcher faces in analysing Belarus trade in total, and with Russia in particular.

The commodity structure of Belarus trade did not changed substantially between 1996 and 2000 (Tables 3a and 3b). The major export categories are transport vehicles, machines and equipment, mineral products, textiles and chemicals products (64.9% and 66.7% of total exports in 1996 and 2000 respectively), whilst the major import categories are mineral products, machines and equipment, chemical products, products of food production and non-precious metals (78.9% and 77.9% of total imports in 1996 and 2000 respectively). Nevertheless, the commodity structure of Belarus trade differs across two trade zones: CIS and non-CIS ("rest of the world" - ROW). Thus, whilst in exports to non-CIS countries the major categories are chemicals (in which fertilizers are the most important items) and mineral products (refinery products), exports to CIS countries are, to a large degree, represented by capital goods (machinery and transport equipment). On the imports side, major import categories from non-CIS countries are chemical products (including pharmaceuticals) and machinery. Imports from CIS countries are clearly dominated by mineral products (crude oil and gas): 44.9% and 43.6% of total imports from CIS, in 1996 and 2000 respectively. Since Russia is the major CIS partner, the commodity structure of Belarus trade with CIS in total reflects that with Russia, though if we take Russia alone, the dependence upon imports of energy resources becomes even more evident: 57.5% and 47.0% of total imports from Russia in 1996 and 2000 respectively.

To sum up, Belarus, unlike its close neigbours - Poland, Latvia and Lithuania - did not succeed either in reorientation towards non-CIS markets or in re-structuring the commodity pattern of its trade. This is attributed not only to the failure in designing and implementation a new trade policy, but also to the general macroeconomic environment.

III.   Trade regime and trade-related policies

Belarus trade regime has been changed substantially in the years since independence. By mid-1995 Belarus had achieved some progress in the liberalisation of its trade and foreign exchange system. This was reflected in the EBRD transition indicator for these area of reform: by mid-1995, Belarus had progressed to "2" (some liberalisation of import and/or export controls; almost full current account convertibility), but afterwards it was rolling

back to "1" [25] (widespread import and/or export controls; very limited legitimate access to foreign exchange). Some positive developments in the monetary and foreign exchange policy in 2000 led to the upgrading of the Belarus position in this area to "2-" by mid-2000. On average, Belarus transition indicators fell from 2.1 in mid-1995 to 1.5 in mid-2000.[26]

On the exports side, commodity coverage by quota and/or licensing is determined by ecological, health and cultural reasons (for example, industrial waste, precious metals, antique) and by obligations according to international regulations (for example, textiles, which are subject to the EU quotas, or mineral fertilisers, which are subject to the EU anti-dumping duties). Also, for some products, the licensing is imposed to ensure their supply to domestic market (for example, wastes and scraps of black and colour metals). Export duties had been abolished by the end of 1996, but were reintroduced at the end of 1999, under the pressure of Russia: export duties are now applied to some raw materials that are important categories of Russian exports, first of all, mineral oil products, which constitute 95% of all goods subject of export duties in Belarus.

On the imports side, there are licencing requirements for some products as well as an import ban for hazardous wastes. In 2000 special provisions for the imposition of safequard measures, such as anti-dumping duties, were introduced. Import duties are relatively moderate, both on average (by different estimates, the weighted average import tariff of Belarus in 2000 was in the 8.6-10.2% range) and in terms of their dispersion across commodity groups (from 0%-100%, the highest rate, 100%, is applied only to certain spirits: if do not take this group into account, than the dispersion will be significantly less, 0%-30%).[27] Moreover, due to privileges granted to certain importers, the collection rate is even less than the average tariff (less than 7% in 2000).

A Free Trade Agreement signed in April 1994 between FSU countries (except the Baltics) had provided Belarus with zero tariffs in trade with CIS. Belarus also had applied different principles in levying VAT on goods imported from CIS and non-CIS: the origin principle

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[25]Which effectively means back to the very beginning, since the EBRD scale starts from "1".
[26]EBRD Transition Report, various issues.
[27]However, like in most other countries, there is an "escalating" tariff structure, so that effective protection is higher than can be seen from the nominal tariff rates.

for the former and the destination principle for the latter. The situation had been gradually changed and recently the same principle (the destination principle) is applied for levying VAT on imported goods from both trade zones.

From this brief overview of the tariff structure it is possible to conclude that the tariff structure itself does not exhibit any significant biases, and that Belarus trade regime can be considered as rather open. Major constraints to trade are related to domestic policies, and, first of all, to foreign exchange policy, price controls, domestic trading monopolies, entry barriers for private businesses, etc. Although the multiple exchange rate system (characterized by an overvalued official exchange rate, several "black" and "grey" currency markets with high premium upon the official rate(s), scarcity of foreign exchange and its rationing) had been abandoned in September 2000, and some positive changes in relation to price controls had been observed recently (under the IMF Stuff Monitoring Programme - SMP), there has been very little progress in terms of privatisation and structural reforms. Business regulations are opaque, unpredictable and discourage private initiative. The state still is heavily involved in all economic activities. Not surprisingly, for the period 1992-2000 the cumulative FDI inflow per capita in Belarus is about *USD 120* - one of the lowest figures among all European transition economies.[28] Some recent attempts at re-initiating reforms can bring positive results only if the liberalisation of foreign exchange market (starting from a devaluation of the overvalued exchange rate) and macroeconomic stabilisation will be backed by sound fiscal policy and further structural reforms aimed at private sector development. This is clearly what the experience of other transition and developing economies teaches us.[29]

IV.   (Re) integration with Russia

A fundamental factor in Belarus trade regime is its integration with Russia. In 1995 Belarus signed an " Agreement on Customs Union Creation" with Russia. Since than the integration process has been very uneven, but it has accelerated since the end of 1999,

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[28]The figure is even less - about USD 30 - if we subtract from the total cumulative FDI inflow, Russian FDI related to a single project, the construction of the gas pipeline "Yamal-Western Europe".
[29]See, for example, Tarr and Shatz, 2000.

when an agreement was achieved about the creation of a "Union State" with the Russian Federation.

The major economic motivations for closer integration with Russia, and their short and long-run impacts can be summarised as follows.

Benefits (already obtained and/or expected)

- Subsidies in a form of supply of energy resources at below-market prices[30];

- Barter trade and barter payments for energy resources;

- Privileged access to the Russian market for Belarusian goods;

- FDI attraction with an eventual perspective to supply the Russian market.

Medium- to Long-term impact on growth and development

- Fears of cuts in supply of gas and oil due to the arrears;

- Commercialisation of Russian energy sector is already imposing a constraint -and will impose it further- on subsidising Belarus through below-world price for gas, and also through the acceptance of goods for arrears: this will reduce the demand for some Belarusian goods and will also increase substantially the costs of production and reduce the competitiveness of Belarusian goods *in the absence of restructuring*;

- Barter deals are not always on terms favourable for Belarus;

- Such a high concentration of trade is dangerous, as the Russian crisis of 1998 clearly demonstrated; although the recovery in Russia was beneficial for Belarus trade and growth, the aftermath of this crisis is different from that in 1996: this time, the Russian recovery seems to be based on a recovery of its "real sector", with Belarus losing price competitiveness on Russian markets, when compared to the Russian domestic industries helped by the real devaluation of the Ruble;

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[30]According to the World Bank estimates, the implicit subsidy received by Belarus from imports of Russian gas in 1999 vary from 5% (if Belarus were to pay the same priceas Ukraine) to 16% of its GDP (if the world price had to be paid). However, this calculations do not take into account the fact that transit fees for the transport of Russian gas and oil through Belarusian territory are more than 4 times lower than what is charged by the Baltics and more than 2 times lower than what is charged by Ukraine (not to mention the general static and dynamic losses from subsides, arising from the distortion of the information content of prices, resulting in a less than optimal allocation of existing factors and in a distortion of the signs to invest and accumulate new factors of production).

- The trade diversion effect from economic integration with Russia might be significant for Belarus, which can also effect negatively the competitiveness of Belarusian industries (forced to use inputs from Russia instead that from more efficient suppliers).

To sum up, there are substantial "pros" and "cons" of Belarus integration with Russia. For Belarus, Russia is a "large country" (even if its GDP now is less than half of the one of Federal Republic of Brazil, and more than a dozen times smaller than the EU GDP), so a "common trade policy" for Belarus effectively means the adoption of Russian trade policy, though the industrial policy priorities of the two countries are different.

It is our prior that integration in the form of a non-exclusive Free Trade Area with Russia, and within the framework of a wider set of international connections is clearly more in the long-run interest of Belarus than the move towards a Customs Union. However, the decision about the scope and the depth of economic integration with Russia is influenced by not only economic rationale but also by political considerations.

V. Country-Specific Growth Regressions for Belarus

The availability of high frequency data for Belarus led us to decide to engage in a country specific estimation. For the GDP series, we use the nominal monthly series for the period 12:1993 to 12:2000 (see Figure 3). The very exponential shape of the curve on that figure indicates the seriousness and persistence of a high inflationary environment in Belarus. Figure 4 shows the monthl*y* real (the IPPI series was used as a GDP deflator) and de-seasonalised GDP series. As can be seen from it, the nadir in terms of GDP was reached in December 1994.

Trying to "map" a traditional growth regression[31] to a single country setting is not an intuitive exercise. First, the interpretation of some of the parameters in its standard

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[31]"Growth regressions" are, as a rule, generated by variations of a "classical" Barro specification (see Barro, 1991), with what amounts to a simple traditional Cobb-Douglas production function, in the form $Y_t = A L_i^{\alpha} K_i^{1-\alpha}$, plus a set of *conditional* indicators – institutional set-up, initial conditions, macro stabilization, etc- which are assumed as differently relevant to specific sets of countries and periods.

formulation is fundamentally linked to cross-country differences, where in a country-setting the only dimension of variation available is the time one, secondly, some of the yearly data used on the cross country estimations is not available on a national level at a higher frequency (for instance, reform indices, a usual additional regressor used for transition countries, are only available on a yearly basis, as is the -already patchy- data on investment), which leads to a situation where the modeler sometimes has to find *proxies for proxies variables*.

Nevertheless, within these confines, we tried as much as possible to match sets of indicators that should represent factors of production, macroeconomic stabilisation and level of reform within the series available to us.

A) Factors of production:

i)   WRISA-Wages (wage real index deseasonalised - source: BET[32]): an imperfect proxy for L^{33} (*w*). No similar alternatives are available for K^{34}.

B) Stabilisation:

i)   CPISA-Inflation (source: BET): the monthly variation of the consumer prices index;

ii)   GSA-Government deficit (source: BET): government deficit as a GDP share.

c) Reform:

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[32]BET is for TACIS project *Belarus Economic Trends*.

[33]Another alternative would be the unemployment series: unfortunately, according to the available series, Belarus, in the middle of what –in spite of all the efforts from the Belarusian government- has to be seen as a considerable productive adjustment (within series falls of up to 30% of GDP are accompanied by virtually *zero* changes in an extremely low official unemployment series), fluctuated from an initial value of 1.4% to a final one of 2.1%, and it was 4.0% -i.e., below any reasonable guesses for NAIRU in a market economy- at its peak. Not surprisingly, such a series is not significant if used in regression analysis.

[34]An alternative –given the limited privatization, the close to absence of foreign direct investment, the limited extension of a domestic financial system to channel any available private savings to private investment, all resulting in a private sector share of GDP by 2000 of a mere 20%- would be to use the monthly series of net profits from government owned enterprises as a proxy of the investment flow that aggregated, discounted and deducted of depreciation, forms the capital stock (and, actually, an annualized net profit monthly series is not that different from the existing yearly investment data as a share of GDP for Belarus). This series will indeed be used by us in our analysis, but as mainly as a measure for reform.

i) GFIRMS-Number of state-owned firms (source: BET): series of the number of state-owned firms, both profitable and non-profitable, can be used as an indication of the reform efforts from the part of the government[35];

ii) (GPSA-GLSA)-Losses and profits of state-owned firms (source: BET): the aggregate *results* of the state-owned productive sector, as a share of GDP, are also used as a measure of the "command economy"-type of distortions present at the economy[36];

iii) IPSA-Industrial production index (source: BET): as is known, a "command economy" implied, among other things, a degree of productive distortion often proxied by some measure of "over-industrialisation", therefore, a reduction of such index could be seen an a proxy for efficiency gains[37].

Additionally, we used measures of net external trade (exports minus imports) in GDP terms for both exchanges with the Russian Federation (XRU-MRU) and the European Union (XEU-MEU)[38]. The results are presented in Table 4a[39].

Wages are non-significant but have an intuitive positive sign, inflation is significant and has the expected negative sign (we posited a three-month lag in its effects on GDP), as is government deficit. Jointly, they would indicate that a reduction of inflation by 1% together with a similar reduction of the public deficit would increase GDP by almost 6% (over 80%

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[35]As a remark, the number of SOEs rises throughout our sample period, from 7,709 to 11,410, but their average size decreases, since this was actually a process of "unbundling" economic groups. So, in principle, the sign of this coefficient is indeterminate: a large state sector should be negative for growth, but the "unbundling" may indicate a certain degree of economic reform, which would be positive for growth.

[36]Concerning this item, its aggregate value falls from over 40% to 20% of the GDP within the sample.

[37]This is far from being a perfect measure, since the aggregate index may hide substantial sub-sector changes that might reflect an adjustment process, which would be a source of growth. For Belarus, the level of the index itself changes little from the beginning to the end of the sample, from 100 to 95.4 -with considerable variation in between, but an analysis of Input-Output tables for the period 1993-1998 reveals considerable intra-sector changes within industry, with light sectors, like "Food Production" growing from 5% of the total to 23% by the end of this period, overtaking "Machinery", which, in the same period, falls from 30% to 22% of the total industrial GDP. See Figure 5.

[38]The source of this data was the IMF/DOTS. Belarus trade with Russian (not taking into consideration implied trade subsides or para-fiscal transfers) actually has an average *net negative* result for Belarus of – 10% of its GDP throughout the sample (and close to 20% in 2000).

[39]A "competitiveness" dummy was also used, defined as a measure of real exchange rate, calculated as the nominal exchange rate (source: IMF/IFS), deflated by the IPPI and CPI BET indexes series. None of this measures was significant, and signs were counter intuitive. The probably explanation for this is that this "exchange rate" was actually a composite of non-market ones: the system of administratively-set multiple exchange rates was only abandoned in 2000.

of this gain would come from fiscal consolidation). The number of state-owned firms is significantly positive, but with a small coefficient, which may be seen as an indication that the positive effects of the "unbundling" slightly outweighs the maintenance of a large number of SOEs, while our other measure of reform, the net balance of the publicly-owned productive sector, is both significant and has the expected negative sign. The production index is significant and positive, which may be also seen as an indication of some productive restructuring. Finally, we have the net GDP effects of trade with Russia and the EU (we posit a three month lag on its effects, but different specifications do not change the results): none of them is significant, the coefficients have extremely high values of non-intuitive interpretation, but the signs conform to our priors: trade with the EU affects growth *positively*, while trade with Russia affects it *negatively*[40].

We added a dummy for the "Customs Union Treaty" with the Russian Federation (and Kazakhstan and Kyrgyz Republic), established in January 1995-1996, and for the "Union Treaty" signed with Russia in April 1997 (BRURU, coded as 0, 1 and 2), and a second dummy for the "Russian Crisis" of August 1998 (RC, taking vales of 0 and 1)[41].

In a regression specified as the one above, but with the inclusion of either dummy, they are both significant *and negative*, with very high coefficients of –13 (RC) and –22 (BRURU): if estimated jointly, none is significant. Overall regression results do not substantially change, trade with Russia and the EU is still non-significant, but IPSA then becomes non-significant with both dummies, with a positive sign for BRURU and a negative one for RC[42]. Inflation becomes non-significant, but with the same sign and similar coefficients.

Estimating the regressions only with net trade with Russia, this variable only becomes significant if used together with RC, and with a lag structure of three months, and with a

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[40]Those results are similar to the ones obtained for trade flows from a cross-country estimation for European Transition economies. See Bakanova at al, 2001, Ibid.

[41]Note that both dummies capture the post-August 1998 downturn. A Chow "Breakpoint" test was used to check if there are any structural breaks in the GDP series, and the periods of the treaties are rejected (which squares with the view that Belarus never engaged either in sustained reforms or in an actual attempt to sever its relations with Russia), but a break after the Russian crisis is "borderline" accepted at the 5% level.

[42]There is an intuitive interpretation for these last results: given that Belarus mainly trades with Russia, and that its exports are mostly of industrial products, the fate of its industry is mainly linked to developments in the Russian market, and the dummies are enough to capture this effect.

very high coefficient, -85. Net trade with the EU, on the other side, is positive and significant with both dummies, and has a contemporaneous effect. The remaining results of the regressions are similar (including the loss of significance of IPSA and CPISA). The results of the regression dropping the "net trade" terms and including the dummy for the Association treaties are presented in Table 4b.

A preliminary –and intuitive- conclusion would be that more intense trade relations with larger, more dynamic and diversified economies like the EU could have substantial beneficial effects for Belarus, surpassing the ones that it can reasonably expect to gain from its current "special relationship" with Russia. Countries with similar structures and experiences to Belarus - namely, by the Baltic Republics- graphically illustrate that such gains may be attainable.

VI.   A Small CGE Model for Belarus

Given the results concerning trade flows from our last section, we decided to estimate a small Computable General Equilibrium (CGE) Model for Belarus[43] – the first time, to our knowledge, that such an attempt is made for this country - as a first step in quantifying the effects of a counterfactual "free trade experiment" as an alternative to its current "special relationship" with the Russian Federation, using the framework developed by Devarajan at al (1997). This simple *static* two-sector model will not enable us to study specific industries that may be winners and losers of such a liberalization process[44], but some powerful insights will, nevertheless, be possible. The model was chosen due to its

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[43]A fundamental problem with the use of CGE models (or any type of macro model, as a matter of fact) for transition economies is the fact that the structural features of these economies are not stable, as they are in developed economies. All CGE models calibrate their variables with the use of a "*benchmark equilibrium data set*", which produces values for the intercept and share parameters that, together with the exogenous elasticities, reproduce the actually observed data in the steady state solution of the model, but the very nature of a "transition economy" implies that these countries are not in their steady-state growth path, which may lead to simulation results that are substantially different from the actually observed outcomes. Some "*quasi-dynamic*" modelizations try to solve this problem by "benchmarking" the CGE with two different datasets, one from the transition economy and another from a comparable Western European one –as Breuss and Tesche (see Breuss and Tesche, 1993) do for Hungary, which is complemented with Austrian Input-Output (I/O) data, and Brown at al. (see Brown at al., 1997), do for Czechoslovakia, Hungary and Poland, which are complemented by Portuguese I/O tables- to represent different stages of their development process. We don't deal directly with this question here.

sparse data requirements, because of its relatively easy implementation, of the existence of a established body of literature on its use, and because its parameters have an intuitive interpretation.

Specifically, the model is a version of the so-called "1-2-3" model, which stands for one –home- country, two sectors –a tradable and a non-tradable ones, in the Salter-Swan tradition- and three goods –a domestic consumed good, D, an exported good, E and an imported one, M. The expanded version of the model contains the following economic actors: a domestic producer, a –representative- household, a government that can lay import or export tariffs and domestic taxes (enabling, therefore, the simulation of policy experiments), and the "rest of the world". Both savings and investment, and financial and trade flows are possible in it. Below we make a brief description of the model's constituent blocks and of its respective equations (the following section follows closely Devarajan at al, 1997, ibid).

Note that the CET (Constant Elasticity of Transformation) Function (see equation 1 below, at the "Real Flows" block), where Σ is the transformation elasticity parameter, represents the production possibilities frontier of the home economy, and that, under the absence of intermediate inputs, the fixed X stands for the GDP (also, this "fixed" assumption implies full employment of factors of production). In this set-up, the representative household maximizes utility by using its income (see equation 7 below, at the "Nominal Flows" block) to consume a composite good, made-up of the imported good and the domestic one, in a ratio defined by their relative prices (see equation 14 below, at the "Prices" block), while Φ is the elasticity of substitution (see equation 2 below) of the Armington composite[45].

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[44]The authors are also working on a multi-sector CGE model for Belarus, based on the framework by Condon at al, 1987.

[45]Traditional trade theory deals with inter-industry trade only (i.e., it works under the assumption that domestic and externally produced goods are perfect substitutes). Given that one of the stylized facts of world trade is the substantial and increasing share of intra-industry trade, this is a bad representation of reality. An intuitive way to deal with that is to recognize that domestic and foreign goods are imperfect substitutes, which amounts to a set-up where goods differ *exogenously* to the model, namely, by country of origin. The most common way to do that is to assume a CES -constant elasticity of substitution- functional form aggregation of a consumer good, the so-called "Armington assumption", given by

$$q=[\Gamma^n_{i=1}\Gamma_i X_i^{\Delta}]^{1/\Delta}$$

where q is the Armington composite good, a domestically consumed good X, which is a CES composite

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-The "Real Flows" block of the model encompasses the following equations (all variables are listed in Table 5):

(1) $\bar{X} = \left(E, D^s; \Omega \right)$, the CET Function;

(2) $Q^s = F\left(M, D^D; \sigma \right)$, the Supply of Goods equation;

(3) $Q^D = F + Z + \bar{G}$, the Domestic Demand equation;

(4) $E / D^s = g_2 \left(P^e, P^d \right)$, the Export Share equation;

(5) $M / D^D = f_2 \left(P^m, P^t \right)$, the Import Share equation.

-The "Nominal Flows" block tracks the revenues flows between the agents in the model, and it includes the equations below:

(6) $T = (t^m * R * pw^m * M) + (t^s * P^q * Q^D) + (t^y * Y) - (t^e * R * pw^e * E)$, the Tax equation;

(7) $Y = (P^x * \bar{X}) + (tr * P^q) + (re * R)$, the Aggregate Income equation;

(8) $S = (\bar{s} * Y) + (R * \bar{B}) + S^g$, the Savings equation;

(9) $C * P^t = (1 - \bar{s} - t^y) * Y$, the Consumption equation.

-The "Prices" block includes the following equations:

(10) $P^m = (1 + t^m) * Y * pw^m$, the Import Price equation;

(11) $P^e = (1 + t^e) * Y * pw^e$, the Export Price equation;

(12) $P^t = (1 + t^s) * P^q$, the Sales Price equation;

(13) $P^x = g_1(P^e, P^d)$, the Output Price equation;

(14) $P^q = f_1(P^m, P^t)$, the Supply Price equation;

(15) $R = 1$, the *Numeraire* equation.

Note that the equations of this block are homogeneous of degree zero in prices, that we use a "small country assumption" and that the exchange rate is used as the *numeraire*.

-The "Equilibrium Conditions" block includes:

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good of X_1 and of X_i imports from countries i=2,...,n.

(16) $D^D - D^S = 0$, the Domestic Goods Market equation;

(17) $Q^D - Q^S = 0$, the Composite Goods Market equation;

(18) $(pw^m * M) - (pw^e * E) - ft - re = \bar{B}$, the Current Account Balance equation;

(19) $(P^t * Z) - S = 0$, the Government Budget equation;

(20) $T - (P^q * \bar{G}) - (tr * P^q) - (ft * R) - S^g = 0$, the Budgetary Balance equation.

Note that the equations in this block of the model satisfy "Walras' Law".

-And, finally, the "Macroeconomic Accounting Identities" block:

(21) $P^x * \bar{Q} = (P^e + E) + (P^d + D^S)$, the External Balance Identity;

(21) $P^q * Q^s = (P^m + M) + (P^t + D^D)$, the Internal Balance Identity.

The data

The data used in our simulations was taken from the 45-sector Input/Output matrix produced for Belarus for the year 1998, the most recent available, and complemented by data provided by the BET and from the IMF/IFS and IMF/BOPS (Balance of Payments Statistics) databases.

The benchmark estimation import rate was set at 10%, (which is the roughly the value of average weighted tariff on imports in Belarus), and both the transformation elasticity Σ and the elasticity of substitution Φ are set at 0.6. To test the robustness of our results, we experiment both with alternative tariff rates of 5% and 15%, and with alternative elasticities of 0.2 and 1.5 (the complete results of our simulations are Tables 6a, 6b, and 6c). Intuitively, on the reference run using 0.6 elasticities, free trade increases national welfare, as measured by consumption[46], when compared to the benchmark, by 3.74% (in the 10% tariff scenario), by 1.9% in the 5% tariff simulation and by 5.51% in the 15%

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[46]Note that the variable Y, income, falls in all estimations, but this is a mere nominal effect, caused by the fall in prices induced by the elimination of the tariff wedge between domestic and world prices.

tariff scenario. Equally intuitively, the potential gains from free trade increase with the scale of the distortion introduced by the tariff wedge.

Turning our attention now to the elasticities, a free trade experiment increases consumption (under 10% tariff rates) by 3.47% with 0.2 elasticities, or by 2.52% with 1.5 elasticities (which again confirms the sensibility of CGE modelizations to the underlying elasticities specifications). A combination of higher tariff (15%) and a mid-range 0.6 elasticity delivers the largest gains from free trade in our simulations, a 5.51% increase in consumption, and a low tariff (5%) with a high elasticity (1.5) delivers the lowest gains, 1.31%.

Finally, we must stress that those are merely the estimated *static* potential gains. The dynamic effects from optimal investment and savings decisions brought about by the world relative prices and access to a much larger market should increase all the values above substantially.

Conclusions

In this paper we tried to describe the current structure and framework of international relations of the Republic of Belarus, which is centred in a very close relationship with Russia, almost to the exclusion of the rest of the globe. We also tried to estimate the growth effects of this current relationship with the Russia Federation, and simulate the effects of alternative frameworks with a simple model. The results of our estimations seem to indicate that the current almost exclusive relationship with Russia is *not optimal from the point of view of Belarusian welfare*.

  As an alternative to "Eastward-biased" policy could be a more balanced one leading to an "Association Agreement" with the European Union (who, due to its size, can be seen as an effective proxy for free trade with the "Rest of the World"), which, after the Enlargement is finished, would be the largest neighbour of Belarus and its natural market. This could bring very substantial benefits for the country, especially if coupled with the acute need in the resumption of the domestic reform and liberalization process.

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Table 1. Belarus: Selected Economic Indicators

	1992	1993	1994	1995	1996	1997	1998	1999	2000
% change over the previous year									
GDP	-9.6	-7.6	-12.6	-10.4	2.8	11.4	8.4	3.4	5.8
Gross Capital investment	-29	-15	-11	-31	-5	20	25	-8	-3
Industrial production	-9.2	-9.9	-19.2	-10.2	4.7	17.6	9.7	10.3	7.2
Agricultural production	-8.5	1.5	-14.4	-2.5	1.5	-5.4	-0.7	-7.2	8.1
Consumer prices	970.8	1190.2	2221	709.3	52.7	63.8	73	293.7	168.6
Producer prices	531	1787	1916	499	33.6	88	72	355.8	185.7
Real household income	-20	16	-9	-27	17	6	19	-3	11
Real wages	-12.4	-6.5	-30.9	-5	5.1	14.3	18	7.3	11.8
Retail sales	-22	-14	-10	-23	31	18	26	11	8
Unemployment rate	0.5	1.4	2.1	2.9	4	2.8	2.3	2.1	2.1
General Government (% GDP)									
Government Balance	n.a.	-1.9	-2.6	-1.9	-1.6	-2.1	-1.5	-2.9	-0.6
Total Revenues	n.a.	54.7	47.9	42.5	41.8	32.1	36.2	36.5	34.9
Total Expenditures	n.a.	56.6	50.5	44.4	43.4	34.2	37.7	39.4	35.5
Balance of Payments (% GDP)									
Current Account	n.a.	-6.6	-10.9	-4.5	-3.9	-5.9	-6.1	-1.7	-1.3
Trade Balance	n.a.	-8.1	-12.0	-6.5	-8.6	-10.1	-9.5	-5.1	-6.6
Exports	n.a.	28.6	61.6	46.8	43.6	55.7	50.0	50.6	54.9
Imports	n.a.	36.1	73.7	53.3	52.2	65.8	59.5	55.8	61.5
External Debt (% GDP)	n.a.	2.7	25.1	14.6	7.1	7.2	7.4	7.9	7.1
Gross official reserves (in months of imports)	n.a.	0.3	0.4	0.8	0.6	0.5	0.5	0.6	0.5
Population, m	10.24	10.24	10.21	10.18	10.14	10.09	10.05	10.02	9.99

Sources: National Statistics, BET, and IMF.

Figure 1. Belarus growth 1991-2000 (% over previous year)
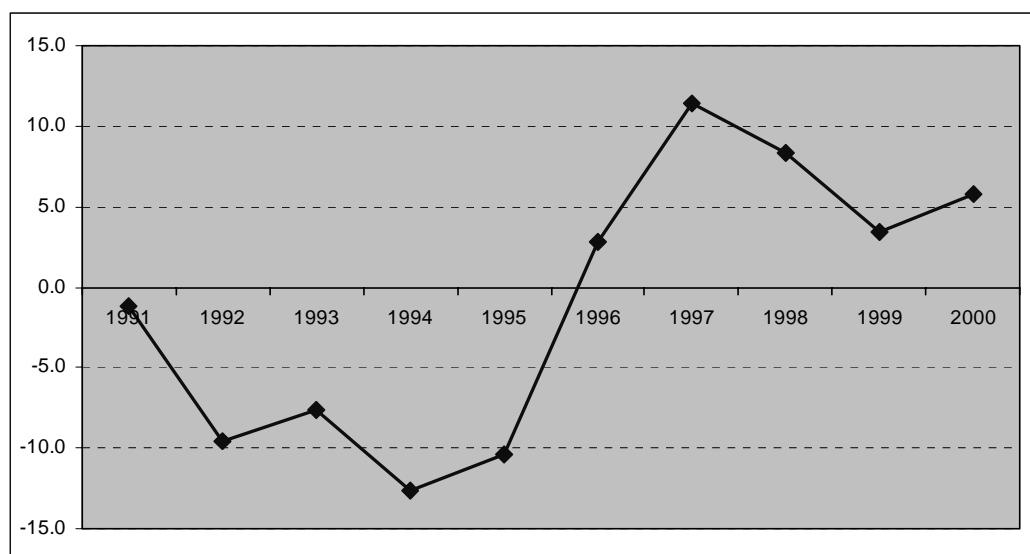
Source: National Statistics.

Table 2a. Directions of Belarus foreign trade 1992-2000: exports to different countries and groups of countries, in % of total

	Exports							
	1992	1994	1995	1996	1997	1998	1999	2000
Total with CIS	66.4	58.8	63.0	66.8	73.1	73.0	61.4	60.3
Russia	40.0	46.1	45.5	53.2	64.7	65.2	54.6	51.0
Ukraine	15.8	9.8	12.6	8.8	6.0	5.5	4.7	7.6
Kazakhstan	3.6	1.0	1.6	1.6	0.7	0.7	0.5	0.3
Moldova	1.7	2.6	1.5	1.3	0.9	0.9	0.5	0.5
Uzbekistan	2.4	0.4	1.2	1.4	0.4	0.3	0.3	0.1
Others	2.9	0.4	0.6	0.5	0.4	0.5	0.7	0.8
Total with ROW	33.6	41.2	37.0	33.2	26.9	27.0	38.6	39.7
EU-15	11.4	14.7	12.0	8.2	6.9	7.3	8.9	9.4
Austria	3.1	0.7	0.4	0.3	0.2	0.3	0.3	0.2
Germany	1.8	6.5	5.6	3.6	3.0	2.8	3.6	3.1
Italy	0.6	1.3	1.3	1.1	0.9	1.0	1.1	1.0
Netherlands	1.2	1.0	1.6	1.2	1.2	1.1	0.9	1.8
AC-10	..	..	16.1	14.0	8.7	9.4	13.9	18.8
Poland	4.5	4.4	5.7	5.9	3.4	2.6	3.5	3.8
Latvia	1.5	1.0	4.1	4.4	1.0	2.4	4.4	6.3
Lithuania	1.6	1.4	3.0	3.1	1.9	2.2	2.9	4.7
China	0.8	1.7	0.6	0.4	1.0	1.4	2.9	1.8
Others	13.8	18.0	11.6	11.2	12.6	11.0	16.0	13.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sources: National Statistics, BET, Authors' calculations.

Table 2b. Directions of Belarus foreign trade 1992-2000: imports from different countries and groups of countries, in % of total

	Imports							
	1992	1994	1995	1996	1997	1998	1999	2000
Total with CIS	75.9	68.2	66.1	65.9	66.8	65.0	64.3	70.8
Russia	52.6	61.1	53.3	50.8	53.6	54.6	56.4	65.3
Ukraine	16.0	4.9	10.2	12.8	11.2	8.7	6.2	4.0
Kazakhstan	2.9	1.1	1.0	0.8	0.7	0.4	0.2	0.5
Moldova	1.2	0.3	0.6	0.7	0.7	0.6	0.7	0.4
Uzbekistan	1.4	0.3	0.7	0.5	0.4	0.4	0.4	0.3
Others	1.8	0.5	0.3	0.3	0.3	0.3	0.3	0.3
Total with ROW	24.1	31.8	33.9	34.1	33.2	35.0	35.7	29.2
EU-15	9.2	19.0	16.7	18.0	16.6	18.2	19.7	15.1
Austria	1.5	1.4	0.8	0.8	0.7	0.7	0.6	0.7
Germany	3.1	11.4	7.6	8.7	8.0	8.9	10.3	6.9
Italy	0.4	0.7	1.5	1.6	1.8	2.1	2.5	2.0
Netherlands	0.7	0.9	1.6	1.7	1.0	1.0	1.2	0.9
AC-10	..	..	10.9	8.8	8.7	9.1	7.5	6.5
Poland	0.5	1.9	3.5	2.8	2.9	3.3	3.2	2.5
Latvia	1.0	0.5	1.0	0.7	0.8	0.7	0.5	0.4
Lithuania	1.5	0.5	2.1	2.2	2.2	2.4	1.5	0.8
China	2.7	4.3	0.4	0.4	0.4	0.5	0.6	0.6
Others	9.2	5.6	10.1	10.0	10.4	10.0	10.2	9.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sources: National Statistics, BET, Authors' calculations.

Figure 2a. Share of Barter exports in Belarus exports, in %
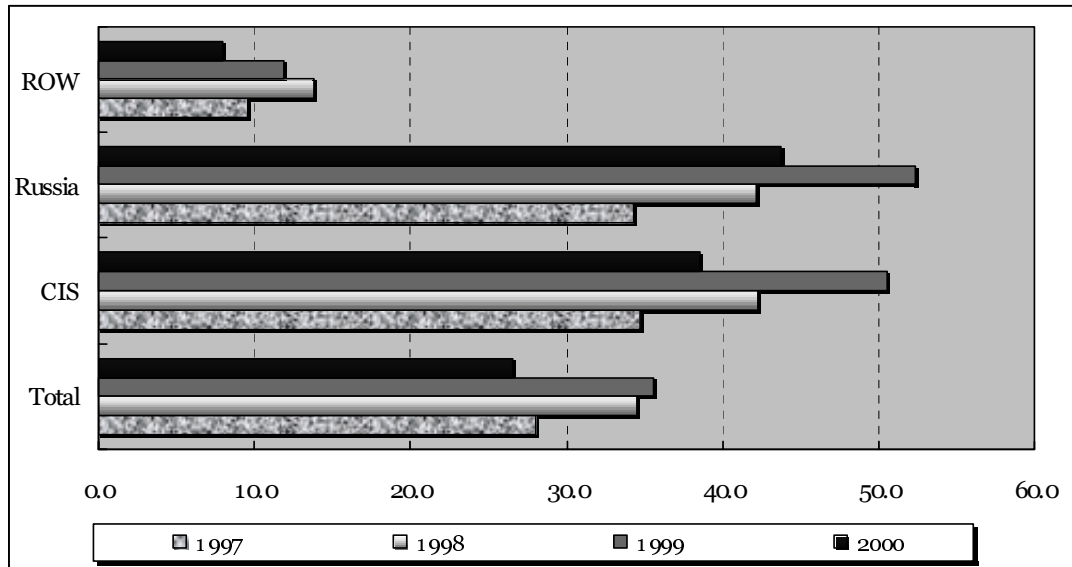
Source: National Statistics.

Figure 2b. Share of barter imports in Belarus imports, in %

Source: National Statistics.

Table 3a. Commodity Structure of Belarus trade in 1996, in % of total

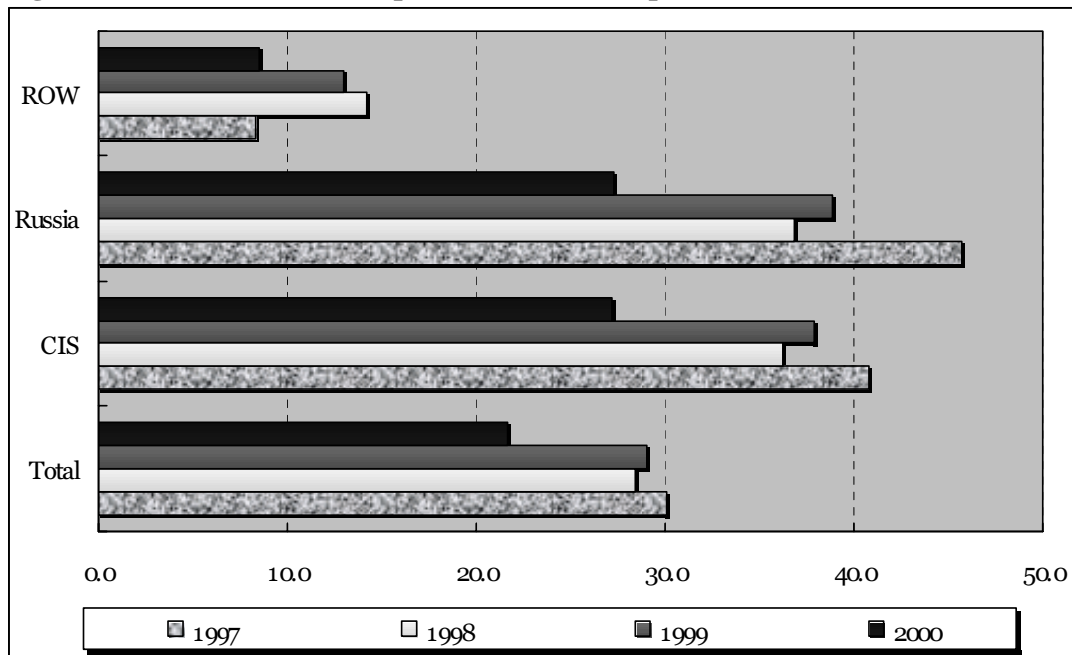|	Exports				Imports			
	CIS	Of which Russia	Non-CIS countries	Total	CIS	Of which Russia	Non-CIS countries	Total
Transport vehicles	17.7	17.0	13.6	16.3	4.0	3.4	4.4	4.2
Mineral products	11.7	11.2	14.3	12.6	44.9	57.5	3.8	30.9
Machines, equipment and mechanisms	17.1	17.2	5.4	13.2	7.5	6.3	23.8	13.1
Textiles	7.5	7.7	17.9	10.9	2.0	1.5	8.6	4.3
Chemical products	5.4	4.7	24.9	11.9	8.0	7.8	14.9	10.4
Products of food production	11.6	12.8	2.9	8.7	10.0	3.4	18.9	13.1
Non precious metals	6.5	6.6	8.2	7.1	14.3	10.7	5.8	11.4
Plastic and rubber	6.9	6.4	2.4	5.4	4.7	4.8	5.6	5.0
Construction materials	3.1	3.4	1.2	2.5	0.9	0.6	1.0	0.9
Wood and wood products	3.1	2.3	3.6	3.3	1.8	2.0	2.8	2.2
Other	9.3	10.6	5.7	8.1	1.8	2.0	10.4	4.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Authors' calculations on National Statistics data.

Table 3b. Commodity Structure of Belarus trade in 2000, in % of total

	Exports				Imports			
	CIS	Of which Russia	Non-CIS countries	Total	CIS	Of which Russia	Non-CIS countries	Total
Transport vehicles	18.5	19.6	7.7	14.2	3.1	3.2	4.1	3.4
Mineral products	10.6	2.1	34.5	20.1	43.6	47.0	1.2	31.2
Machines, equipment and mechanisms	15.5	17.0	3.7	10.8	8.3	8.2	25.4	13.3
Textiles	10.8	12.0	10.3	10.6	2.7	2.5	8.4	4.4
Chemical products	4.8	4.9	20.3	11.0	7.1	6.7	15.4	9.5
Products of food production	10.6	12.0	2.8	7.5	8.5	5.7	22.8	12.6
Non precious metals	6.1	6.7	8.8	7.2	14.2	13.7	4.2	11.3
Plastic and rubber	6.4	7.0	1.9	4.6	3.8	3.9	7.0	4.7
Construction materials	3.3	3.5	1.2	2.5	1.1	1.1	1.4	1.1
Wood and wood products	4.0	4.1	4.6	4.3	3.0	3.2	3.3	3.1
Other	9.5	11.0	4.3	7.4	4.6	4.8	7.0	5.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Authors' calculations on National Statistics data.

Figure 3. Monthly Nominal GDP in Belarus, 1993-2000
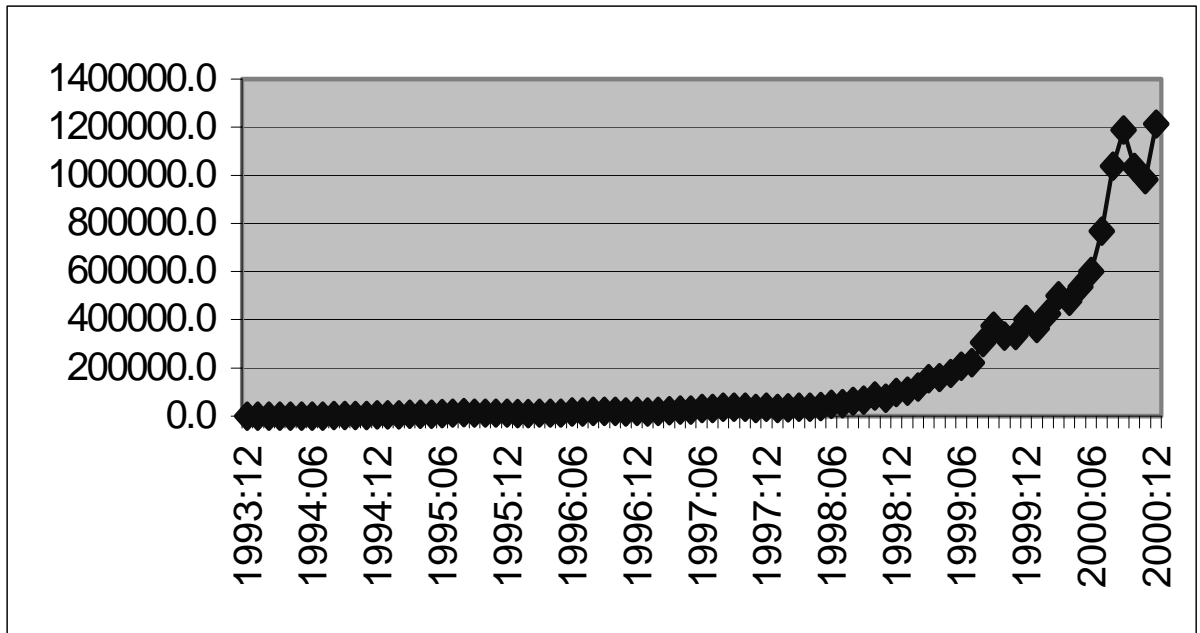
Source: BET.

Figure 4. Monthly Real GDP in Belarus, 1993-2000

Source: BET.

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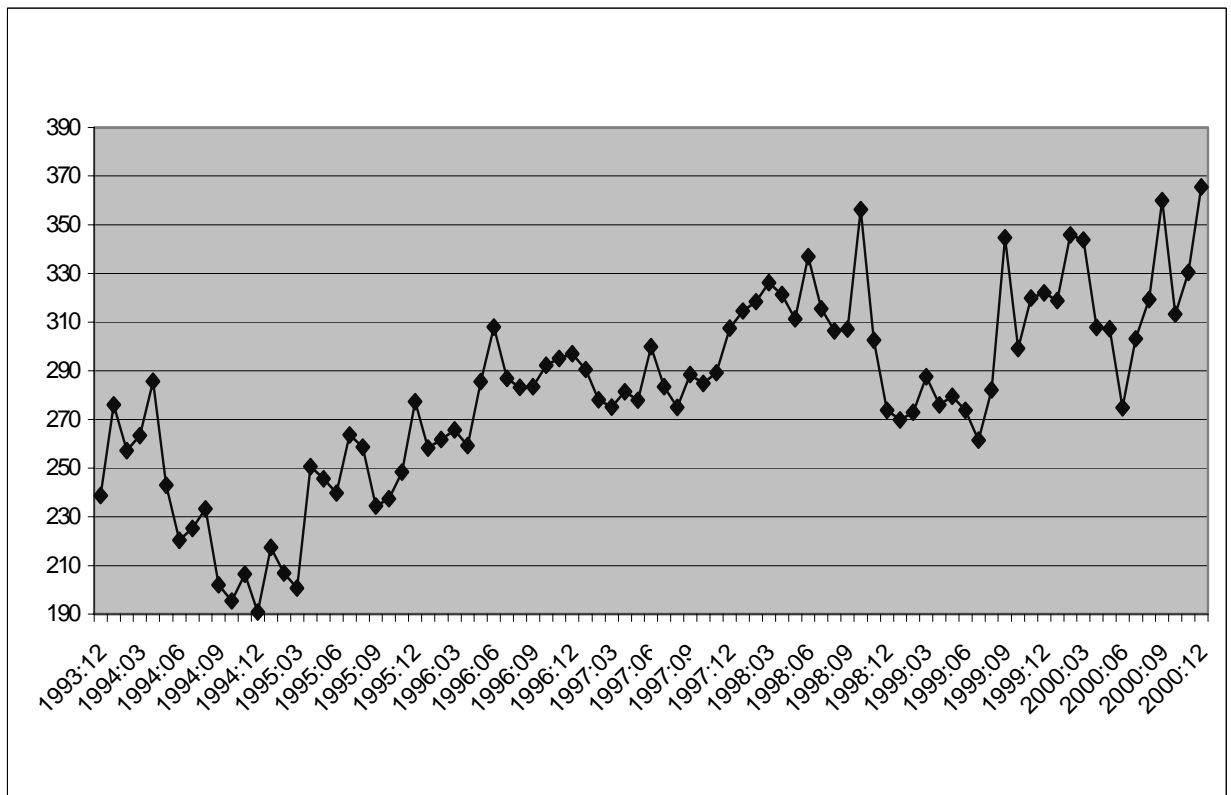
Figure 5. Industry Sector Changes in Share of Total Industry, Belarus, 1993-1998.
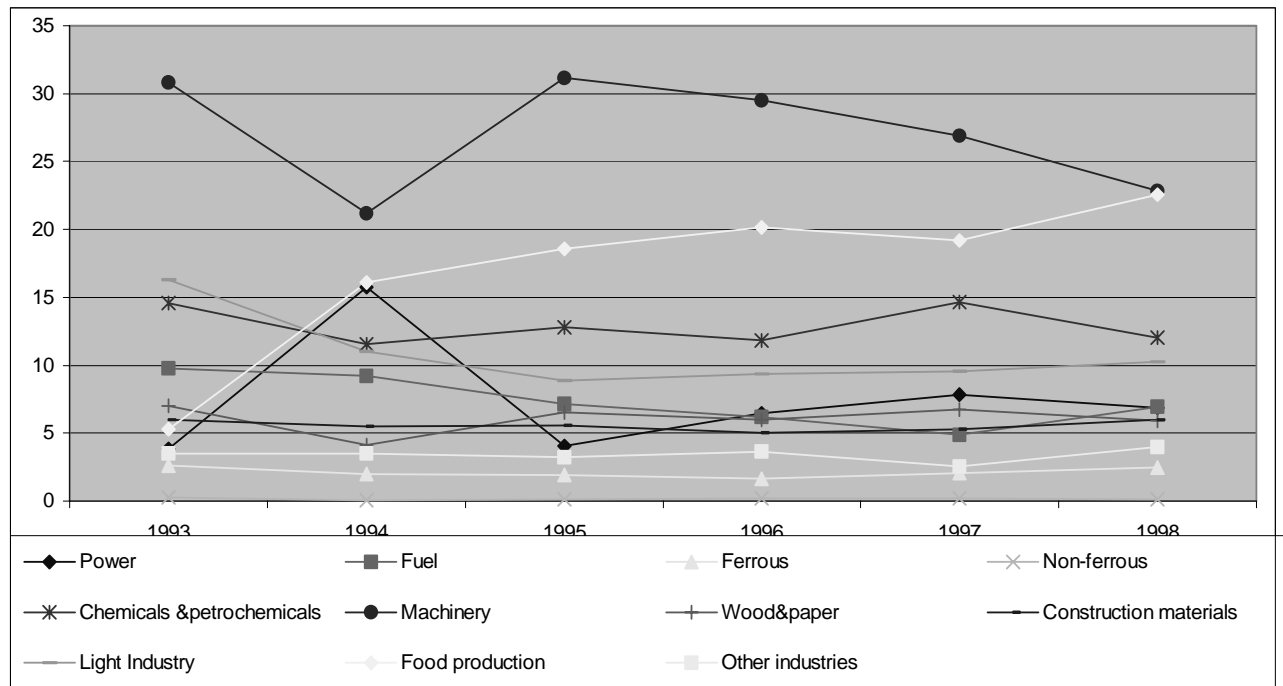
Sources: BET, Authors' calculations.

Table 4a. Regression Results: Growth estimations for Belarus (1)

	Coefficient	Std. Error	t-Statistic	Prob.
WRISA	**14.06123**	**47.64641**	**0.295116**	**0.7687**
CPISA(-3)	**-0.635314**	**0.274181**	**-2.317129**	**0.0233**
GSA	**-5.107566**	**1.229691**	**-4.153535**	**0.0001**
GFIRMS	**0.023595**	**0.002471**	**9.550374**	**0.0000**
(GPSA-GLSA)	**-0.862321**	**0.222992**	**-3.867049**	**0.0002**
IPSA	**0.683083**	**0.299932**	**2.277459**	**0.0256**
(XRU-MRU)	**-71.01265**	**43.12769**	**-1.646567**	**0.1039**
(XEU-MEU)	**122.4078**	**128.3750**	**0.953517**	**0.3434**
R^2	**0.767915**	Mean dependent variable	**281.9891**	
Adjusted R^2	**0.745961**	S.D. dependent variable	**39.31946**	
S.E. of regression	**19.81790**	Akaike info criterion	**8.903516**	
Sum of squared residuals	**29063.45**	Schwarz criterion	**9.138318**	
Log likelihood	**-357.0442**	Durbin-Watson statistic	**1.343148**	

Table 4b. Regression Results: Growth estimations for Belarus (2)

	Coefficient	Std. Error	t-Statistic	Prob.
WRISA	104.4684	45.45414	2.298324	0.0243
CPISA(-3)	-0.492507	0.252056	-1.953957	0.0544
GSA	-2.468205	1.418563	-1.739933	0.0860
GFIRMS	0.029799	0.002557	11.65404	0.0000
(GPSA-GLSA)	-0.925292	0.212837	-4.347427	0.0000
IPSA	0.085006	0.224332	0.378931	0.7058
BRURU	-22.00625	7.877501	-2.793557	0.0066
R^2	0.773806	Mean dependent variable	281.9891	
Adjusted R^2	0.755710	S.D. dependent variable	39.31946	
S.E. of regression	19.43392	Akaike info criterion	8.853417	
Sum of squared residuals	28325.79	Schwarz criterion	9.058869	
Log likelihood	-355.9901	Durbin-Watson statistic	1.359164	

Table 5. List of Variables

	Endogenous Variables			**Exogenous Variables**
E	export good quantity		pw^m	world price of import good
M	import good quantity		pw^e	world price of export good
D^s	supply of domestic good		tm	import tariff
D^d	demand for domestic good		t^e	export subsidy rate
Q^s	supply of composite good		t^s	sales or excise of VAT tax rate
Q^d	demand for composite good		t^y	direct income tax rate
P^e	domestic price of export		tr	government transfers
P^m	dometic price of import good		ft	foreign transfers to government
P^d	producer price of domestic good		re	foreign remittances to private sector
P^t	sales price of composite		$\bar{s}$	average savings rate
P^x	price of aggregate output		$\bar{X}$	aggregate output
P^q	price of composite good		$\bar{G}$	government demand
T	tax revenue		$\bar{B}$	balance of trade
R	exchange rate		at	technical shift term for CET expression
S^g	government savings		Σ	export transformation elasticity
Y	total income		Φ	import substitution elasticity
C	aggregate consumption			
S	aggregate savings			
Z	aggregate real investment			

Table 6a. Estimations with 10% tariff rate.

		Σ Φ	0.6 0.6	Tariff 10.0	Σ Φ	1.5 1.5	Tariff 10	Σ Φ	0.2 0.2	Tariff 10
		Benchmark (B)	Free Trade (FT)	Changes: FT/B (%)	Benchmark (B)	Free Trade (FT)	Changes: FT/B (%)	Benchmark (B)	Free Trade (FT)	Changes: FT/B (%)
E	Quantity of the export good	0.3444	0.3508	1.8600	0.2223	0.2357	6.03	0.3956	0.3981	0.63
M	Quantity of the import good	0.4635	0.4708	1.5800	0.3243	0.3395	4.69	0.5219	0.5248	0.56
Ds	Supply of domestic good	0.6545	0.6470	-1.1500	0.9223	0.9047	-1.91	0.5356	0.5337	-0.36
Dd	Demand for domestic good	0.6545	0.6470	-1.1500	0.9223	0.9047	-1.91	0.5356	0.5337	-0.36
Qs	Supply of composite good	1.1174	1.1177	0.0300	1.2687	1.2695	0.06	1.0422	1.0423	0.01
Qd	Demand for composite good	1.1174	1.1177	0.0300	1.2687	1.2695	0.06	1.0422	1.0423	0.01
Pe	Domestic price of export	1.0107	1.0107	0.0000	1.0107	1.0107	0.00	1.0107	1.0107	0.00
Pm	Dometic price of import good	0.9746	0.8860	-9.0900	0.9746	0.886	-9.09	0.9746	0.886	-9.09
Pd	Producer price of domestic good	0.8893	0.8460	-4.8700	0.7874	0.7477	-5.04	1.3883	1.3208	-4.86
Pt	Sales price of composite	1.0029	0.9354	-6.7300	0.8904	0.8343	-6.30	1.3022	1.2165	-6.58
Px	Price of aggregate output	0.9302	0.9019	-3.0400	0.9509	0.9146	-3.82	1.1434	1.1073	-3.16
Pq	Price of composite good	0.9252	0.8630	-6.7200	0.8215	0.7697	-6.31	1.2014	1.1223	-6.58
T	Tax revenue	0.3742	0.3194	-14.6400	0.3662	0.3222	-12.02	0.4552	0.3918	-13.93
Sg	Government savings	0.2307	0.1930	-16.3400	0.2513	0.2215	-11.86	0.2356	0.1941	-17.61
Y	Total income	0.9857	0.9537	-3.2500	1.0002	0.9608	-3.94	1.2154	1.1746	-3.36
C	Aggregate consumption	0.5407	0.5609	*3.7400*	0.6179	0.6335	*2.52*	0.5134	0.5312	*3.47*
S	Aggregate savings	0.3792	0.3351	-11.6300	0.4026	0.365	-9.34	0.43	0.3803	-11.56
Z	Aggregate real investment	0.3781	0.3582	-5.2600	0.4522	0.4374	-3.27	0.3302	0.3126	-5.33

Table 6b. Estimations with 5% tariff rate.

		Σ Φ	0.6 / 0.6	Tariff 5	Σ Φ	1.5 / 1.5	Tariff 5	Σ Φ	0.2 / 0.2	Tariff 5
		Benchmark (B)	Free Trade (FT)	Changes: FT/B (%)	Benchmark (B)	Free Trade (FT)	Changes: FT/B (%)	Benchmark (B)	Free Trade (FT)	Changes: FT/B (%)
E	Quantity of the export good	0.3475	0.3508	0.9496	0.2288	0.2357	3.02	0.3968	0.3981	0.33
M	Quantity of the import good	0.4671	0.4708	0.7921	0.3317	0.3395	2.35	0.5233	0.5248	0.29
Ds	Supply of domestic good	0.6509	0.6470	-0.5992	0.9138	0.9047	-1.00	0.5347	0.5337	-0.19
Dd	Demand for domestic good	0.6509	0.6470	-0.5992	0.9138	0.9047	-1.00	0.5347	0.5337	-0.19
Qs	Supply of composite good	1.1176	1.1177	0.0089	1.2693	1.2695	0.02	1.0423	1.0423	0.00
Qd	Demand for composite good	1.1176	1.1177	0.0089	1.2693	1.2695	0.02	1.0423	1.0423	0.00
Pe	Domestic price of export	1.0107	1.0107	0.0000	1.0107	1.0107	0.00	1.0107	1.0107	0.00
Pm	Dometic price of import good	0.9303	0.8860	-4.7619	0.9303	0.886	-4.76	0.9303	0.886	-4.76
Pd	Producer price of domestic good	0.8679	0.8460	-2.5233	0.7677	0.7477	-2.61	1.3549	1.3208	-2.52
Pt	Sales price of composite	0.9693	0.9354	-3.4974	0.8626	0.8343	-3.28	1.2596	1.2165	-3.42
Px	Price of aggregate output	0.9162	0.9019	-1.5608	0.9328	0.9146	-1.95	1.1255	1.1073	-1.62
Pq	Price of composite good	0.8943	0.8630	-3.4999	0.7958	0.7697	-3.28	1.1621	1.1223	-3.43
T	Tax revenue	0.3470	0.3194	-7.9539	0.3446	0.3222	-6.50	0.4236	0.3918	-7.51
Sg	Government savings	0.2120	0.1930	-8.9623	0.2367	0.2215	-6.42	0.2149	0.1941	-9.68
Y	Total income	0.9698	0.9537	-1.6601	0.9806	0.9608	-2.02	1.1952	1.1746	-1.72
C	Aggregate consumption	0.5504	0.5609	*1.9077*	0.6253	0.6335	*1.31*	0.522	0.5312	*1.76*
S	Aggregate savings	0.3573	0.3351	-6.2133	0.3841	0.365	-4.97	0.4053	0.3803	-6.17
Z	Aggregate real investment	0.3686	0.3582	-2.8215	0.4453	0.4374	-1.77	0.3217	0.3126	-2.83

Table 6c. Estimations with 15% tariff rate.

			0.6	Tariff		1.5	Tariff		0.2	Tariff
		Σ			Σ			Σ		
		Φ	0.6	15.0	Φ	1.5	15	Φ	0.2	15
		Benchmark (B)	Free Trade (FT)	Changes: FT/B (%)	Benchmark (B)	Free Trade (FT)	Changes: FT/B (%)	Benchmark (B)	Free Trade (FT)	Changes: FT/B (%)
E	Quantity of the export good	0.3414	0.3508	2.7534	0.2162	0.2357	9.02	0.3944	0.3981	0.94
M	Quantity of the import good	0.4600	0.4708	2.3478	0.3172	0.3395	7.03	0.5205	0.5248	0.83
Ds	Supply of domestic good	0.6579	0.6470	-1.6568	0.9301	0.9047	-2.73	0.5365	0.5337	-0.52
Dd	Demand for domestic good	0.6579	0.6470	-1.6568	0.9301	0.9047	-2.73	0.5365	0.5337	-0.52
Qs	Supply of composite good	1.1169	1.1177	0.0716	1.2678	1.2695	0.13	1.0421	1.0423	0.02
Qd	Demand for composite good	1.1169	1.1177	0.0716	1.2678	1.2695	0.13	1.0421	1.0423	0.02
Pe	Domestic price of export	1.0107	1.1177	10.5867	1.0107	1.0107	0.00	1.0107	1.0107	0.00
Pm	Dometic price of import good	1.0189	0.8860	-13.0435	1.0189	0.886	-13.04	1.0189	0.8860	-13.04
Pd	Producer price of domestic good	0.9104	0.8460	-7.0738	0.8068	0.7477	-7.33	1.4209	1.3208	-7.05
Pt	Sales price of composite	1.0361	0.9354	-9.7191	0.9179	0.8343	-9.11	1.3445	1.2165	-9.52
Px	Price of aggregate output	0.9439	0.9019	-4.4496	0.9688	0.9146	-5.60	1.1609	1.1073	-4.62
Pq	Price of composite good	0.9559	0.8630	-9.7186	0.8468	0.7697	-9.11	1.2404	1.1223	-9.52
T	Tax revenue	0.4010	0.3194	-20.3491	0.3871	0.3222	-16.77	0.4864	0.3918	-19.45
Sg	Government savings	0.2491	0.1930	-22.5211	0.2652	0.2215	-16.48	0.2562	0.1941	-24.24
Y	Total income	1.0013	0.9537	-4.7538	1.0196	0.9608	-5.77	1.2353	1.1746	-4.91
C	Aggregate consumption	0.5316	0.5609	*5.5117*	0.6111	0.6335	*3.67*	0.5054	0.5312	*5.10*
S	Aggregate savings	0.4007	0.3351	-16.3714	0.4205	0.365	-13.20	0.4545	0.3803	-16.33
Z	Aggregate real investment	0.3867	0.3582	-7.3701	0.4581	0.4374	-4.52	0.3381	0.3126	-7.54