Russia's Transition Toward the World Economy: Is There a Market Mechanism?

by
Padma Desai, Columbia University

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Is There a Market Mechanism?*

Padma Desai
Gladys and Roland Harriman Professor
of
Comparative Economic Systems
Columbia University

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Abstract

By the end of 1993, the unified and freely convertible ruble on current account represented a major step in Russia's foreign exchange management. The monetarist model adopted here (which gives a robust estimate of the real exchange rate) suggests that the impact of the gap between cash supply and cash demand (in the next month) on the real ruble-dollar exchange rate (for the period beginning July 1992) was small. Perhaps this parametric value reflects the restrictions on foreign exchange transactions, and the intervention of the Central Bank of Russia (CBR) in the Moscow Interbank Currency Exchange (MICEX) which determines the exchange rate.

In contrast to the unification and current account convertibility of the ruble, progress during 1992-1994 in the foreign trading arrangements was halting. Export trading was hobbled by export quotas, licensing and passport surveillance. There were no quantitative restrictions on import activity which nevertheless was subjected to steadily rising import tariffs (evidently calculated to counter the impact of the appreciating real ruble). The estimates of the trade equations suggest that the real exchange rate had no impact, ceteris paribus, on export performance but it influenced import flows. The changing pattern of Russia's trade, both in terms of (export-import) commodity composition and orientation, has to be judged in the context of the asymmetrical impact of the exchange rate on that pattern.
The literature on the various aspects of Russia's transition to an open market economy is substantial. In fact, no aspect of the process has been left outside the scope of scholarly inquiries or the watchful scrutiny of governmental and multinational agencies. In particular, the impact of the uncontrolled inflation on the exchange rate, the continuously changing trade and foreign exchange arrangements, the structure and orientation of Russia's trade with the post-Soviet states and the rest of the world—all this and more has been analyzed thoroughly. From this perspective, there is little to add to the existing material on the process of Russia's trade and financial interaction with the outside world as it moves toward a stable, market economy.

The focus of this paper is different. It starts from the available information on and policy changes in the exchange rate, foreign trade and institutional arrangements (in Section I), describes Russia's foreign trade performance with regard to its pattern and orientation (in Section II), and then develops a model (in Section III) for estimating the ruble-dollar real exchange rate. Import demand, export supply and net export equations in which the observed real exchange rate (with a lag) is used are also presented here.

The estimates (in Section IV) of the monetarist model of the exchange rate determination indicate that the real exchange rate was not very sensitive with respect to the gap in the real cash balances (in a given month) and the demand for real cash in the next month: the estimated elasticity is 0.18. The trade equations (in Section V) suggest that the exchange rate had no role in the emerging pattern of Russia's exports with the non-FSU (Former Soviet Union) countries but that imports were influenced by the exchange rate. In particular, the export control and licensing arrangements with respect to Russia's major exports seemed to have influenced its export performance. On the other hand, imports rose with a steadily appreciating exchange rate despite rising but low average tariffs on imports.

While the results need to be improved, they represent the very first attempt to construct a (monetarist) model of exchange rate determination for Russia and to analyze the role of the exchange rate in Russia's foreign trade performance.

I. THE EXCHANGE RATE, FOREIGN TRADE AND INSTITUTIONAL ARRANGEMENTS

Three aspects are relevant for analyzing Russia's interaction with the world economy during 1992-1994.

The first relates to the policymakers' efforts to dismantle the remnants of the multiple exchange rates which were inherited from the Soviet days. The second is the emerging regime of import and export policies which govern Russia's foreign trade. The institutional arrangements under which the Soviet Foreign Trade Organizations (FTOs) were increasingly replaced by private exporters and importers constitute the final feature.

The Exchange Rate Regime

A variety of exchange rates prevailed in early 1992.²

The Arrangements with regard to Current Account Transactions

Among the major rates were those at which exporters were required to sell foreign exchange earnings and importers could acquire critical items such as food and medicines for centralized imports of the state. Thus, from January to June 1992, exporters could legally keep half of their foreign exchange earnings³ but they had to sell 40 percent to a Republican Hard Currency Fund of the government at the rate of 55 rubles to a dollar and the remaining 10 percent to the Central Bank of Russia (hereafter CBR) at an "official" rate which fluctuated between 120 rubles and 200 rubles to a dollar (Bulletin, p. 78). Importers on the other hand were reimbursed by the government at varying rates for the foreign exchange they spent for importing essential imports on government account which

² These are discussed in Sutela (1994, p. 13).

³ Foreign exchange may be earned from merchandise exports or services just as it may be spent for importing goods or services or both. Thus, current account activities were not distinguished from merchandise trade in the arrangements.
were subsequently sold to final users at less than their import price. (Details of the scheme are given below.) Clearly, this arrangement penalized exporters, and subsidized imports of critical items.

Foreign exchange auctions, which appeared in Moscow in early 1991, provided alternative dollar sources for importers and sales outlets to exporters. The Moscow Interbank Currency Exchange (MICEX) began trading the dollar once a week on January 8, 1991. Initially, a few banks participated with small offerings and the CBR operated with substantial intervention. The resulting interbank exchange rate, hardly a market rate of exchange, was influenced by limited access of the auctions to enterprises, CBR restrictions and CBR intervention in the auctions.

Despite these limitations, the proliferating currency exchanges opened alternatives for exporters and importers. Having carried out the mandatory surrender at a less than favorable rate, exporters could sell the remaining holdings on the MICEX, or spend them on imports, or deposit them, as required by law, in their resident bank accounts. Importers could buy foreign exchange at the market rate from the MICEX, or at a subsidized rate from the government for importing essential items.

MICEX which was formed as a joint stock company by the CBR, Russian banks and enterprises quickly took over the currency trading of the Soviet Vneshekonombank by April 1991 and soon expanded its activity: it traded dollars on a daily basis beginning September 20, 1993; by the end of 1993, it had 139 member banks none of which however were foreign. More currencies were included over time in its activity.

In fact, MICEX was soon followed by several currency exchanges by banks, among them the the St. Petersburg Currency Exchange (SPCE), the Urals Interbank Currency Exchange (UICE) in Yekaterinberg, the Siberian Interbank Currency Exchange (SICE) in Novosibirsk, the Asian-Pacific Ocean Interbank Currency Exchange (APCE) in Vladivostok and the Rostov Interbank Currency Exchange (RICE) in Rostov-on-the-Don. The frequency of auctions and the number of currencies traded increased over time. However, the regional markets remained segmented because the local credit markets were underdeveloped and domestic settlements were slow. The CBR intervenes in each market with dollars with a view to keeping the regional dollar-ruble exchange rates in line with the MICEX rate.
A major change was introduced in these arrangements by the government of Acting Prime Minister Gaidar when, on July 1, 1992, it introduced measures to unify the exchange rate for current account transactions. Furthermore, the exchange rate of the ruble in terms of the dollar was allowed to vary and followed the quotations, twice a week, of the MICEX.

A critical implication of a flexible exchange rate for the exchange rate determination model (which is specified in Section III) is that the exchange rate is influenced by policy-driven decisions with regard to the level of money supply in the economy. Since the observed exchange rate is thus endogenously determined, it is used with a lag as an instrumental variable for estimating the export supply and import demand equations for Russia (which are reported in Section IV).

While the new arrangements marked the first step toward a unified and market exchange rate, the 50 percent surrender of export earnings continued. Accordingly, exporters were required to sell 20 percent of their foreign exchange in the market through authorized commercial banks and 30 percent to the CBR (and not to the government) at the market rate (and not at the unfavorable fixed rate of 55 rubles to a dollar). (Furthermore, the export transactions were subject to export quotas and licensing as will be discussed below.)

Progress toward a unified exchange rate, however, was absent on importing activity. Organizations, which imported critical items, among them food products, medicines, industrial raw materials and machinery, at MICEX rates of exchange sold them to domestic traders or final users (of the machinery, for example) who paid these organizations in foreign exchange (or the equivalent amount in rubles) which fell short by 20 to 80 percent of the prices at which they were imported from abroad. The importing organizations were reimbursed in foreign exchange from the off-budget, hard-
currency fund of the government. The subsidization of imported items at varying rates implied the use of multiple exchange rates.

Changes occurred on all fronts in 1993 and continued in 1994. From June 1, 1993, MICEX auctioned currencies five days a week thus providing daily quotations of the ruble-dollar exchange rate. The CBR's reference exchange rate which is currently published twice a week is based on the closing rates of the Tuesday and Thursday MICEX auctions and comes into effect the following day. From July 1, exporters were required to surrender half their export earnings directly to the market through their banks. Despite this compulsory surrender requirement, the repatriation of foreign exchange earnings continued to be a major concern of policymakers. With a view to closing the gap between the declared value of an export contract to the customs authorities and the export earnings deposited in commercial bank accounts, the CBR and the Customs Committee introduced a passport system requiring exporters to record details of export transactions (from January 1, 1994 for "strategically important exports" (hereafter strategic exports) and from March 1, 1994 for all exports. Strategic exports are defined below.) Finally, the variety of exchange rate coefficients applicable to imports were abolished in December 1993.

Thus, a flexible, current account convertible and unified exchange rate was in place in Russia at the start of 1994. However, capital account transactions for residents and nonresidents, individuals and corporate entities continued to be restricted. (These arrangements are in place currently.)

Arrangements with regard to Capital Account Transactions

Take residents first.

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5 The CBR administers exchange control regulations and monitors the foreign currency transactions of authorized commercial banks. The repatriation of the foreign exchange based on the surrender requirements is enforced by authorized commercial banks.
Citizens were allowed to open foreign exchange accounts and deposit foreign exchange (which they could buy from authorized foreign exchange bureaus operating in large cities) in resident banks. They could also buy foreign exchange from such banks for legitimate transactions such as repaying a foreign debt. Bona fide documents were necessary for the purpose. A person could take out any amount of foreign bank notes on presenting a certificate from an authorized bank to the customs authorities about the origin of the funds. Residents travelling abroad could also take out a maximum of 500,000 rubles in bank notes. Foreign bank accounts by Russian citizens were allowed only during their stay abroad. Otherwise, they must get permission from the CBR for the purpose.

Next, resident corporate entities—enterprises, for example—needed to acquire a license and approval from the CBR in order to borrow abroad. An additional license from the Ministry of Finance was necessary if the foreign loan required a guarantee from a state agency. Enterprises were not allowed to keep accounts in foreign banks, including in branches of Russian banks, without CBR authorization.

Finally, Russian commercial banks which had a general foreign exchange license did not require a license to borrow abroad or maintain a foreign account, or import and export foreign currency, bank notes, bonds and securities. In fact, these banks could carry out all these transactions for other authorized banks.

Detailed rules existed also for foreign exchange transactions by nonresidents.

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The CBR currently issues three types of licenses to Russian commercial banks. An internal license allows a bank to deal in foreign exchange transactions such as opening a foreign exchange bureau inside Russia and open a correspondent account abroad in banks of the former Soviet Union such as Moscow Narodny. A limited license allows a bank to open up to six correspondent accounts and deal in up to six currencies. A general license allows a bank to carry out all foreign exchange transactions including portfolio investments.
Nonresident individuals were allowed to take out rubles purchased in Russia with foreign exchange. They could also freely convert their income into foreign exchange.

Restrictions abounded with respect to corporate nonresidents. They could take out foreign exchange in their possession which they brought in. However, if they earned foreign exchange earnings from service activities such as consulting or from provision of shipping and insurance, they could transfer the earnings abroad after having converted half of the hard currency into rubles (which they might keep in their "T" accounts in an authorized Russian bank. In other words, foreign exchange earnings of nonresident suppliers of invisible items on current account were subject to the surrender requirement just as the earnings of resident exporters were.) Beginning September 1, 1994, corporate nonresidents were allowed to use their "I" account with a Russian bank freely for buying and selling foreign exchange for investment activity. However, foreign investment itself was restricted in Russia (besides being deterred by legal uncertainties and a chaotic securities market): foreigners could not own a bank; they needed a license for owning and exploring Russia's natural resources. They could not own land.

The limited foreign exchange activity by residents and nonresidents, individual and corporate in a world of Hobson's choice on capital account transactions suggests that the ruble was not freely convertible beyond current account transactions. Since capital could not move freely in and out of Russia, the equilibrating impact (on the exchange rate) of real interest rate differentials by inducing the

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7 Nonresident corporate entities at present can operate accounts with authorized Russian banks for servicing their export-import activities (the so-called "T" accounts) or for financing their investment activities (including purchase of stocks of Russian privatized companies) from the "I" accounts. Foreign banks can also operate correspondent accounts in Russia.
flow of funds in desirable directions can be assumed to be absent. In other words, the real interest rate differential does not feature in the money demand equation in our model for estimating the exchange rate. (Following the familiar Cagan formulation, however, the expected rate of inflation is introduced in the money demand equation.)

Finally, which currency was used by Russia for trade payments and for debt settlement (including rescheduling and accumulation of arrears) depended on the group of countries under consideration. (These practices also continue to the present day.)

A useful distinction emerged in this context between Russia’s dealings with countries of the Former Soviet Union (FSU) and the remaining but important, non-FSU countries. Thus, all transactions with non-FSU countries (except those covered by special agreements with the former CMEA and with developing countries) were conducted in freely convertible currencies (such as the dollar). Next, trade payments and debt settlements by private traders and trading organizations among FSU countries were conducted in freely convertible currencies, or rubles, or the national currency of the state in question. The correspondent accounts of authorized banks were used for the purpose. The central banks of the FSU states including the CBR also maintained correspondent accounts which were used to carry out bilateral, inter-governmental transactions; these accounts were not to be used to settle balances multilaterally. Finally, foreign trade payments were settled with members of the former

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8 This is not to minimize the critical need for the emergence of a positive real interest rate in Russia which began to appear in 1994.

9 Non-FSU countries include the OECD market economies, the (former) CMEA and developing countries.

10 On July 25, 1993, the CBR under the stewardship of Viktor Gerashchenko demonetized all pre-January 1993 ruble notes. The substantial ruble surplus which the CBR held with the FSU central banks was subsequently revalued via agreements among the banks. Following the Russian currency reform, all post-Soviet states except
CMEA on the basis of contractual agreements with the major exception of oil and energy exports by Russia on centralized government account (to be explained below) which had to be paid by the importer in hard currency.

**The Foreign Trade Regime**

A major challenge facing Russia's policymakers with respect to foreign trade arrangements was to shed the restrictive features of the Soviet planned economy. Another issue was to narrow the gap between the trading arrangements which differed at the start between non-FSU and FSU group of countries.

**Non-FSU Export Arrangements**

Russia's export regime of its main exports from early 1992 to end of 1994 was marked by quotas, licenses and export taxes which were gradually relaxed during the period. Moreover, strategic goods could be exported only by special exporters.¹¹

**Export quotas:** Export quotas prevailed on several commodity groups (including fuels, ferrous and nonferrous metals, basic chemicals) in 1992; the arrangements under which they operated became

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¹¹ Barring a couple of exceptions noted below, all strategic commodities were subject to quotas and licensing. The list of strategic items included all energy and petrochemical products, electric energy, nonferrous metals, alkaline and alkaline earth, cellulose, hard and soft wheat, soya and soft flower seeds, unmethylated ethyl alcohol, fish, crabfish and caviar, timber, nitric and phosphoric fertilizers, and raw diamonds. Of these, nitric and phosphoric fertilizers and diamonds were not subject to quotas and licenses. Strategic goods constituted up to 70 percent of Russia's exports.
elaborate and bureaucratized as the year advanced. The new scheme which came into force on January 1, 1993 laid down the methods of working out and enforcing four types of subquotas.

The Ministry of Economy predicted non-FSU exports of each of the strategic commodities by calculating their domestic production at the start of the year and subtracting from it domestic consumption and the claims of the FSU states based on their needs and current agreements.

In the next step, export subquotas were allocated to four groups.

The first claimant was the Ministry of Finance which needed adequate foreign exchange to carry out its hard currency obligations and finance imports of essential items under the Centralized Import Scheme. Under the Centralized Export Scheme of subquota allocation, the ministry received the foreign exchange from licensed exporters who bought the items from the domestic market and exported them on its behalf. These special exporters received a fee of 5 to 7 percent of the export proceeds. The special exporter licenses were auctioned to bidders who offered to pay in advance the amount of foreign exchange (guaranteed by an authorized commercial bank) to the ministry.

The next set of subquotas was sold via auctions to enterprises which needed foreign exchange for importing hightech items.

Joint ventures received automatic subquotas up to the full amount of their projected production levels.

Finally, some regions, for example Tatarstan, received export subquotas based on agreements with the federal government.

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12 These excluded transport costs. The special exporters were also exempted from paying export taxes on a portion of their noncentralized export subquotas.
The regime of export quotas which restricted exports came under severe pressure in 1993 as
the ruble appreciated in real terms via-a-vis the dollar. (The developments in the ruble-dollar exchange
rate are discussed below.) In fact, it was no longer necessary to maintain export quotas in order to
protect domestic consumption because the appreciating ruble reduced the relative competitiveness of
export sales (at given foreign prices) to domestic sales. As a result, export quotas on a number of
commodities such as timber, fertilizers, coal and meat products were removed in June and November
1993. From January 1, 1994, 12 commodity groups including oil and oil products, gas, electric energy,
some ferrous metals and food products were retained in the quota list. The Presidential decree of May
23, 1994 announced the abolition of all export quotas and licenses but in a later reversal, they were
retained to the end of the year for crude oil and petroleum products, and for aluminum and textiles (to

In any case, centralized export subquotas continued to diminish over time: they accounted for
33 percent of total exports in 1992, 30 percent in 1993 and only 15 percent in the first half of 1994
(Bulletin, p.77). Oil export quotas (which are combined with domestic price controls on oil), and oil
subquotas under the centralized export scheme continue to be a contentious issue between the Russian
collectors and the IMF. As argued immediately below, the centralized export subquotas provide an
implicit export tax (in dollars measured approximately as the difference between the higher foreign
price and the lower domestic price) to the federal budget.

Non-FSU Export taxes: These export taxes which were introduced in January 1, 1992 changed
frequently over the years in their rates and coverage of commodities. As domestic supply prices
continued to move up (because of rising costs and production shortfalls), the profit margin from export
sales at a given exchange rate and world price declined; the real appreciation of the ruble further cut
into the earnings. As a result, the export taxes were reduced steadily on all commodities except crude oil for which it was 30 ECU per metric ton on September 1, 1994 compared to 26 ECU on January 1, 1992. For the same period, it went down per ton from 24 ECU to 5 ECU on natural gas, 51 ECU to 30 ECU on diesel fuel, 30 ECU to 3 ECU on nitrogenous fertilizers, 45 ECU to 8 ECU on timber, 215 ECU to 12 ECU on stainless steel, 500 ECU to 10 ECU on aluminum and 2000 ECU to 640 ECU on nickel (Bulletin, p. 75, Table 3.3.9). But note that the centralized exports on government account were exempt from explicit export taxes. They were however subject to an implicit export tax because the federal budget automatically earned the difference (excluding special exporters' commission and transport costs) between the foreign price and the domestic price of oil (which was regulated and was about 40 percent of the world price toward the end of 1994).

To sum up, the Russian export trade regime edged forward from early 1992 to less extensive export quotas, lower export tariffs and fewer taxed items. Did this imply that market incentives of sorts were beginning to operate in Russia's export performance? Not really. Export quotas on major items comprising 70 percent of exports continued through 1993; quotas on oil and oil products, constituting about half of exports, continued till the end of the period under consideration here. Their exports were determined by the residual amounts which were left after domestic consumption and claims of partner countries (covered by special agreements) were met. The rest of the exports where price incentives could play a role were constrained by market disruptions, and rising domestic costs which could not be offset fully by the declining export taxes considering the constraints of given foreign prices and an appreciating ruble. The exportable surpluses which emerged from declining outputs after (declining) 13 Export taxes are specific rather than ad valorem because tariff revenues would be difficult to calculate with constantly changing domestic prices and exchange rates (Bulletin, p. 75).

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domestic use was met were sold abroad.\textsuperscript{14} It was as though the supply-constrained Soviet regime of residually planned exports untouched by foreign demand and the real exchange rate was still in place. This conundrum is explored via the export supply equation with respect to non-FSU markets in Section IV.

\textbf{Non-FSU Import Trade Regime}

By contrast, the import trade regime, while marked by higher and more diversified tariffs across commodities, created incentives for domestic demand and relative prices to operate.

Russia's import trade arrangements continued to be free from quotas and licenses throughout the period. Moreover, there were no import duties between January and July 1, 1992 because the entire import tariff levies of the former Soviet Union were abolished on January 15. Subsequently, the tariff rates were differentiated by commodity groups and by source.

For example, the basic rate of 5 percent of July 1 1992 was raised to 15 percent on September 1992. Nonessential items such as alcohol, cars and TVs were subjected to rates varying from 15 to 25 percent as before. There were no duties on food and medicines.

A new tariff scheme came into force on July 1993: food, medicines, medical equipment, children's clothes and other "socially important" items were exempt from duties.\textsuperscript{15} "For other goods, the basic tax rate varied from 5 per cent (intermediate goods, metals, transport equipment) to 15 per

\footnotesize{\textsuperscript{14}In fact, there were frequent complaints that Russia was dumping aluminum, nickel and fertilizers in world markets.}

\footnotesize{\textsuperscript{15}More items were subsequently exempted from import duties, among them, imports of gas and oil-extracting equipment for the relevant enterprises, some imports by joint ventures, and centralized imports. Note that centralized imports were not only duty free but were sold to final users at varying rates of subsidies which were finally abolished in December 1993.}
cent (capital goods, consumer durables). The highest rate applied to strong alcoholic drinks (100 per cent)." (Bulletin, p. 75). The simple average tariff resulting from these arrangements was 8.1 percent.

At the same time, the tariff schedule was differentiated by import source. The basic rate (of 5 percent) applied to countries (their number increased over time) with the Most Favored Nation (MFN) status; half the basic rates applied to imports from developing countries and twice the rates to the remaining countries.

Increasing protectionist pressures appeared from the agricultural sector and some industries at the start of 1994 as the ruble continued to appreciate in real terms. The new schedule of levies with 17 bands which came into force from July 1, 1994 had an average duty rate of 12.5 percent. Food products, which were previously duty free, were taxed at the rate of 15 to 20 percent. The rates were raised on a whole range of manufactured and investment goods.

Finally, imported goods among them hard liquors, cars, furs, leather goods and several consumer goods were subjected to excise taxes and a value added tax of 20 percent beginning February 1, 1993.

In effect, the policymakers sought to counter or weaken the impact of the appreciating ruble on imports by successive hikes and selective differentiation of import tariffs. The possibility of a connection, ceteris paribus, between the real exchange rate and real imports is explored in the import demand equation of Section IV.

Trade Arrangements with FSU States

How did the arrangements of export quotas, licensing and taxes and of import tariffs which prevailed in Russia's trade with non-FSU countries differ from those which emerged in Russian-FSU trade?
Indeed, by early 1993 the export regimes, marked by export quotas, licensing and tariffs, resemble those that prevailed with non-FSU countries; imports were exempt from tariffs (but were subject to VAT and excise taxes). Russia had trade agreements with the Central Asian Republics and Kazakhstan, and with Azerbaijan and Armenia which specified these features; similar agreements were signed with Ukraine in February 1994 and with Georgia in May.

Institutional Arrangements

The elaborate system of export quotas and licensing was operated by several ministries. Thus, the Ministry of Economy calculated the production and consumption (including the needs of FSU states which were covered by special agreements), and the potential exportable surpluses to non-FSU destination of the strategic commodities which were subject to quotas and licensing. The centralized export subquotas of these items were worked out jointly by the Finance and Economy Ministries. Quotas for non-energy products were auctioned by the Ministry of Foreign Economic Relations. Export subquotas which were auctioned to enterprises enabling them to earn foreign exchange to import technologies and knowhow were issued by the Operational Issues Committee of the Government.

The special exporters who implemented the quotas of strategic commodities were registered by the Ministry of Foreign Economic Relations which eliminated old members on grounds of bad performance and invited fresh blood to energize the scheme. The situation was rife for distributing largesse in return for bribes. Their number declined to 497 on August 1, 1994 from 800 at the end of

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16 Items which were exported on the basis of intergovernmental agreements were exempted from export taxes.
1993. From July 1, 1994 quotas and licenses were replaced by registration of export contracts with the Ministry of Foreign Economic Relations. The special exporters were to be abolished as of January 1, 1995. As late as March 1995, that decision was not implemented. It was difficult to get rid of the system of topheavy and selective decision making in which ministry bureaucrats, managerial elites and trade groups participated to their mutual benefit. The arrangements lacked market incentives and promoted corruption.

II. THE RESULTS

The regime of the unified ruble exchange rate which was made convertible for current account transactions and was allowed to fluctuate in terms of the dollar influenced its nominal and real value. As already noted, the policymakers' "exogenous" decision to incur budget deficits and finance them via borrowing from the CBR and currency emission contributed to the exchange rate movements by aggravating domestic inflation. The exchange rate was thus influenced by the overpowering macroeconomic outcomes of budgetary (and monetary) policies. The purpose of the monetarist model of Section III is to incorporate the impact of the adjustment of money demand to the exogenous money supply on the ruble dollar exchange rate.

Similarly, the substantial production declines in the economy (especially in the export industries including oil) and the structural output shifts influenced the overall non-FSU and FSU trade balances and the direction and composition of Russia's foreign trade. Thus, the evolving export and import trade regimes (described earlier) contributed to the changes in the external trade balance and its structure in the midst of domestic turmoil in the economy. It is difficult to incorporate fully these disturbances in the economy in the export supply and import demand equations of Section III. For example, the declining domestic production and consumption of oil and other export commodities (among them
minerals and metals) generated different amounts of exportable surpluses for the period under consideration. However, appropriate monthly measures of domestic supply constraints are hard to construct.

The ruble-dollar exchange rate, nominal and real, took the full brunt of the policymakers' domestic macroeconomic agenda. These exchange rate movements are discussed immediately below followed by an analysis of Russia's non-FSU trade balance and its changing trade structure and orientation.

The Ruble-Dollar Exchange Rate

The connection between the monthly, ruble-dollar exchange rate, the money supply and the price level (here measured in terms of the Russian Consumer Price Index, CPI) is a richly explored theme. The high correlation between the nominal exchange rate and the money supply (appropriately lagged) suggests a monetary model of the ruble-dollar exchange rate determination. The data of the nominal exchange rate, the ruble money supply, and the Russian CPI are used in Section IV for estimating the real ruble-dollar exchange rate in a model in which the monthly change in the ruble-dollar exchange rate depends on the impact of the adjustment of the real demand for cash during a month to its available supply in the previous month.

The significant features of the monthly, nominal and real exchange rates, all too well-known, are that the nominal exchange rate, defined as rubles per dollar, depreciated throughout the period (Appendix Table 1) whereas the real exchange rate depreciated from July to November 1992 and appreciated steadily thereafter till the end of 1994 (Appendix Table 2). The steady appreciation of the ruble resulted from the CBR's deliberate and measured intervention in the MICEX (and other
exchange) auctions aimed at keeping the rate of decline in the nominal value of the ruble below the domestic inflation rate.

Turning next to the important issues in Russia's trade performance, they are its trade balances with the Non-FSU and FSU trading partners, and the changing composition and orientation of its trade.

Non-FSU Exports and Imports: Size and Pattern

Russia's Non-FSU exports declined from $71.1 billion in 1990 to $44.3 billion in 1993; imports also declined sharply from $81.8 billion to $26.8 billion. As a result, the net trade balance turned from a negative $10.6 billion to a positive $17.5 billion.

As for the trade balance with FSU states, it registered a sharp positive increase from 6.7 billion rubles in 1990 to 5.2 trillion rubles in 1993.

It is however difficult to aggregate these two balances and arrive at a definite picture of Russia's overall trade balance with the outside world. This exercise presents insurmountable conceptual problems which are discussed below.

Conceptual problems of Aggregating non-FSU and FSU Trade Data: Four conceptual issues arise in working up a consolidated account of Russia's balance of payments position with the outside world.

The first issue is whether Russia can settle its net, overall debtor position with the non-FSU group by using its net creditor position with the FSU trading partners. The net non-FSU debtor situation was sustained through 1992-1994 by debt relief provided by official and private creditors

17 Despite formidable problems, these trade balances are aggregated at a market exchange rate in Bulletin (p. 71) revealing exports of $264.7 billion in 1991 which declined to 57.7 billion in 1993 and imports of $209.8 billion which fell sharply to $17.1 billion! Purchasing-power-parity-based estimates are also provided there.
rather than by flow of private investment. In fact, this support which was estimated at $59 billion in 1992 and 1993 consisted of $27 billion in bilateral and multilateral official loans, $15 billion in debt relief, and $17 billion in debt rescheduling. By contrast, the net debtor position of the FSU states with Russia was increasingly reflected in accumulated arrears of interstate and interenterprise liabilities owed to Russia. These were settled with credits from the Russian budget (CBR credits to FSU partners were discontinued from July 1993), settlement of some debts (with the Baltic States) in hard currency, trade agreements allowing rescheduling of debts and future barter deals.

Russia however could not be regarded as borrowing from one group and lending to another because these debt instruments were not viewed as exchangable by financial markets; even if they were, Russian financial institutions were not sufficiently developed to carry out such a swap.

A similar "nonequivalence" problem arose with respect to goods sold by Russia (with the exception of energy products) to the FSU states. They could not be sold freely at world prices in non-FSU countries because of poor quality and lack of servicing with respect to manufactured items.

Third, the conversion of items sold by Russia to FSU states in rubles into dollars was problematic because of daily shifts in the nominal ruble-dollar exchange rate. The averaging method would seriously influence the estimates.

Finally, the prices charged by Russia till the end of 1993 on energy products sold to FSU states were lower. It was not clear if Russia charged lower prices with a view to giving assistance to an FSU state. In that case, Russia's trade account in oil could be valued at market prices with a capital account entry registering the aid.
In view of these problems, no attempt is made here to aggregate Russia's trade balances with the two groups of trading partners. In any case, monthly data of foreign trade with FSU states are not available.

Clearly, the aggregate non-FSU exports and imports conceal critical shifts in Russia's commodity trade, the destination of exports and the origin of imports. This information is not available on a monthly basis and is briefly described below on the basis of annual features.

The Geographical and Commodity Structure of Russian Trade: 1990-1994

The most significant change in Russia's non-FSU trade took place with regard to the source of imports and the destination of exports. The most dramatic shift occurred in trade with the former CMEA countries: the share in Russia's total exports of these countries dropped from 43 percent in 1990 to 14 percent in January-August 1994. Their share in Russia's imports dropped from 44 percent in 1990 to a mere 8 percent in the first half of 1994 (Bulletin, p. 70). Next, the share of the OECD countries in Russia's declining exports and imports increased: they took 67 percent of Russia's total exports in the first eight months of 1994 compared to 36 percent in 1990. Similarly, their share in Russia's imports went up from 40 percent in 1990 to 69 percent in January-August 1994. Finally, the developing country share in Russia's exports was stable at 12-14 percent but their contribution to Russian imports rose from 10 percent in 1990 to 17 percent in 1994.

Russia had thus managed to forge new trade ties with the developed and developing market economies and away from the former CMEA trade partners.

The commodity composition of Russian trade showed a high concentration of crude oil, natural gas and petroleum products in Russia's exports (46 percent of exports in January-June 1994); in fact, ten commodities accounted for 74 percent of Russia's exports. Thus, exports failed to diversify toward
manufactured goods. By contrast, the commodity composition of imports registered a shift away from machinery imports (which dropped from 44 percent in 1990 to 30 percent in the first eight months of 1994) to a rising share of consumer goods and food items (Bulletin, p. 73).

Russia's trade structure with the non-FSU countries thus changed significantly in commodity composition and orientation. Moreover, this trade was carried out in hard currency under arrangements of a unified, convertible and flexible exchange rate; the export quotas and licenses were progressively relaxed although the passport system, beginning January 1, 1994 put exporters under surveillance. At the same time, import tariff rates were progressively raised and became more diversified.

The critical question to address in the context of these developments is whether the emerging changes in Russia's trade pattern proceeded under market type incentives. In particular, did the trade performance with the non-FSU countries result in response to the real exchange rate and certain other variables such as the growth of real GDP (which ceteris paribus could be expected to influence import demand) or exportable surpluses of oil (which given the foreign demand) could spill into exports?

These questions are rigorously examined via the models presented below beginning first with model for estimating the real ruble-dollar exchange rate.

III. THE MODELS

The Exchange Rate Model

The change in the exchange rate in the model depends on the impact of the adjustment of the demand for money to its supply in the previous period. All the variables in equation (1) are defined in logs and in real terms. If there is excess supply of cash, the exchange rate will depreciate.

\[ (1) \log \epsilon_t - \log \epsilon_{t-1} = \theta [\log(M_{t-1} / P_{t-1}) - \log(L_t / P_t)] \]
Here $\varepsilon_t$ and $\varepsilon_{t-1}$ are the real exchange rates of the ruble per dollar in months $t$ and $t-1$, $M_{t-1}$ and $P_{t-1}$ are the money supply and the Russian price level (in terms of the CPI) in $t-1$, $L_t$ is the nominal demand for money in $t$ and $P_t$ is the price level in $t$.

According to (1), the actual real supply of money in the short run may differ from the real money demand due to slow adjustment. However, note that if the adjustment coefficient equals one, money demand in a given month adjusts to money supply of the previous month completely and the real exchange rate does not change. Also the adjustment will work in a stable model if $0 \leq \theta$.

Next, the real ruble exchange rate $\varepsilon_t$ is defined as

$$\varepsilon_t = \frac{E_t P^*_t}{P_t}$$

where $E_t$ is the nominal exchange rate of the ruble per dollar in period $t$, $P^*_t$ and $P_t$ are the U.S. and Russian consumer price indexes in period $t$.

The real demand for money $L_t$ is defined as follows:

$$\frac{L_t}{P_t} = ky_t \eta e^{-\pi_t + \mu_t}$$

Here the transactions demand for money arising from real Russian GDP, $y_t$ and the price level $P_t$ feature positively because both involve higher demand for cash. $\pi_t$, which is the expected rate of inflation in $t$ represents the opportunity cost of holding cash. For most of the period under consideration here, the nominal rate of interest in Russia (which ideally represents the opportunity cost of holding money) was fixed and was below the extreme rate of inflation. Therefore, the expected rate of inflation is adopted in the model as a measure of the opportunity cost of holding money.

The expected rate of inflation is estimated on the basis of a two-period, backward adjustment process as follows:
(4) \( \pi_t = a + b \pi_{t-1} + c \pi_{t-2} \)

b and c are applied as weights to the observed inflation rates in \( t-1 \) and \( t-2 \) to determine the expected inflation rate in \( t \). The estimated, expected inflation series is presented in Appendix Table 1.

Finally, (5) below for estimating the real exchange rate is derived by substituting (3) and (4) in (1)

\[
(5) \log \varepsilon_t - \log \varepsilon_{t-1} = \alpha + \beta \log M_{t-1} / P_{t-1} + \gamma \log(\text{realGDP}) + \delta \log(\text{expected inflation}) + \text{error term}
\]

The series of \( \log \varepsilon_t \) estimated from (5) is presented in Appendix Table 2 and graphed in Figure 1 along with the observed real exchange rate, also defined in log.

The Import Demand, Export Supply and Net Export Trade Models

The observed real exchange rate is used for analyzing Russia's foreign trade performance via three relationships.

At the outset, a few general observations which are relevant in formulating these models which are based on the monthly import and export data from July 1992 to December 1994 are in order. These are presented in Appendix Table 2 and in Figure 2.

A dominant feature of Russia's trade performance of exports (valued f.o.b.) and imports (valued c.i.f.), both in dollars, with non-FSU countries is the systematic peaks and slumps in exports and imports in January and July. The unification of the exchange rate in July 1992, the launching of the elaborate export quotas and licenses in January 1993, the import tariff hikes in July 1993 and July 1994, the start of the passport system for exporters in January 1994 and the abolition of the import subsidies in December 1993—all these seem to get reflected in the sharp discontinuity in the export and
import series in those months. January and July are critical months for changes in the export and import regime in Russia.

It is impossible to incorporate all these features via appropriate dummies in the trade equations. Also, note that the real exchange rate was depreciating during the second half of 1992 after which it steadily appreciates. Again, there was a sharp decline in the trade series in January 1993. Therefore, the estimates of the import demand and export supply equations are based on data from May 1993 (the earlier observations were omitted) and on the use of a dummy from January 1994 representing (the shift in the intercept caused by) the sharp decline in exports and imports in that month.

It is also assumed that Russia's exports are constrained by domestic supply rather than world demand. Monthly oil production is used as a proxy representing supply difficulties. The ideal explanatory variable of supply difficulties in oil and some major items (such as metals and precious stones which contributed 20 and 23 percent of total exports in 1992 and 1993, Bulletin, p. 72) is not readily available. The estimated parameter with respect to oil in the export supply equation was however statistically not significant and was omitted in the final round. Similarly, real GDP which remains more or less constant throughout the period (Figure 3) was removed from the import demand equation.

Finally, the dollar exports are converted into real values by dividing them with a reconstructed monthly international commodity price index. The price indexes of commodities and of fuels (Appendix Table 1) are aggregated by applying weights of 0.45 to the fuel price index and of 0.55 to the commodity price index. (The aggregated price index is stated in Appendix Table 1). Russia's exports of fuels were, on average, 45 percent of its total exports in the past three years. The dollar imports are converted into real magnitudes by dividing them with the CPI of industrial countries (also
presented in Appendix Table 1). This choice is dictated by the increasing share reaching 69 percent in January-August 1994 of developed market economies in Russian imports (Bulletin, p. 70).

The export and import series, both in real terms, and the real net trade balance (exports minus imports) derived from them are presented in Appendix Table 2.

IV. THE EQUATIONS AND INTERPRETATION OF THE ESTIMATES

The import demand, export supply and net export equations are as follows:

(6) $\log(\text{real imp}) = \alpha_1 + \beta_1 \log(\text{real ER}) + \gamma_1 \log(\text{real GDP}) + \gamma_2 \text{DV}_{94} + \omega_t$

(7) $\log(\text{real exp}) = \alpha_2 + \beta_2 \log(\text{real ER}) + \gamma_2 \text{DV}_{94} + \eta_t$

(8) $\log(\text{real NX}) = \alpha_3 + \beta_3 \log(\text{real ER}) + \gamma_3 \text{DV}_{94} + u_t$

The estimates of equations (5) to (8) are presented in Tables 1 to 4.

Take first the estimate of $\beta = \theta$, the adjustment parameter of equation 1. It is low at 0.18 suggesting a small impact of the gap between real cash supply and real cash demand (the next month) on the real, ruble-dollar exchange rate. This result is not surprising. Foreign exchange transactions in Russia continue to be confined to current account activity although note that by September 1994, dollars sold in the MICEX (which determines the exchange rate) had reached 81.8 percent of registered exports for that month (Bulletin, p. 79). More to the point, the CBR intervenes in the MICEX in order to regulate its movement: the real exchange rate is allowed to appreciate within limits so that the tradable sector of the economy is not hurt excessively.

Next take the estimates of the foreign trade equations. If the estimates were to be believed, the parametric values with respect to the real exchange rate suggest that the exchange rate did not influence export performance whereas it did have an impact on import flows. The estimated parameter
in the export equation (Table 3) is statistically significant but has the wrong sign; it is statistically significant in the import demand equation (Table 2) with the correct negative sign. The parameter linking import demand to real GDP was statistically not significant. Therefore, it was dropped from the equation. (Note that the log of real GDP in Figure 3 is constant for the period under consideration.)

The conclusion that the real exchange rate had no impact on export performance carries over in the estimate of the relationship between the real exchange rate and the net positive trade balance defined by real net exports (Table 4). Recall that the system of extensive quotas and licensing on exports during the period supplemented by the passport system for exporters during 1994 rather than the appreciating real ruble seemed to have curtailed exports. As a result, it is difficult to establish a connection between the real exchange rate and the net trade balance. (The sign of the estimated parameter which is statistically not significant is "perverse".)

CONCLUSIONS

The unified and freely convertible ruble on current account represented a major step in Russia's foreign exchange management. The monetarist model adopted here (which gives a robust estimate of the real exchange rate) suggests that the impact of the gap between cash supply and cash demand (in the next month) on the real ruble-dollar exchange rate (for the period beginning July 1992) was small. Perhaps this parametric value reflects the restrictions on foreign exchange transactions, and the intervention of the CBR in the MICEX.

In contrast to the unification and current account convertibility of the ruble, progress during 1992-1994 in the foreign trading arrangements was halting. Export trading was hobbled by export quotas, licensing and passport surveillance. There were no quantitative restrictions on import activity which nevertheless was subjected to steadily rising import tariffs (evidently calculated to counter the
impact of the appreciating real ruble). The estimates of the trade equations suggest that the real exchange rate had no impact, ceteris paribus, on export performance but it influenced import flows. The changing pattern of Russia's trade, both in terms of (export-import) commodity composition and orientation, has to be judged in the context of the asymmetrical impact of the exchange rate on that pattern.
**TABLE 1: The Log-linear Real Exchange Rate Equation**

\[ \log e_t - \log e_{t-1} = \alpha + \beta \frac{\log M_{t-1}}{P_{t-1}} + \gamma \log(\text{real GDP}) + \delta \log(\text{expected inflation}) + \text{error term} \]

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- \(R^2\): 0.3500
- Adjusted \(R^2\): 0.2900
- Durbin-Watson statistic: 1.5556
- Number of observations: 31

Note: The data underlying the equation are stated in appendix table1. The constant term was dropped, since it was statistically insignificant.
TABLE 1: Estimate of the relationship between Inflation, Lagged Inflation and Double-lagged inflation

\[ \text{inf} = a + b \text{inf}[-1] + c \text{inf}[-2] \]

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<td>c</td>
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- \( R^2 \) = 0.6094
- Durbin-Watson statistic = 1.9180
- Number of observations = 35
Figure 1: Estimated and Actual Log of the Real Exchange Rate

Note: The log of the real exchange rate is estimated from equation 1 after dropping the constant term.
Figure 2: Monthly Export and Import Data in Current U.S. Dollars
July 1, 1992: A unified (except for imports), flexible, and convertible ruble for current account transactions was introduced.

January 1, 1993: Export quotas were made elaborate and bureaucratized.

July 1, 1993: Import tariffs with the basic rate varying from 5 to 15 percent were introduced.

December 31, 1993: Multiple exchange rates applicable to imports were abolished.

July 1, 1994: A new import tariff schedule with a higher average rate of 12.5 percent and wider range was introduced.

September 1, 1994: Export taxes were reduced on a number of commodities.

January 1, 1994: The list of commodity groups subject to export quotas was trimmed.

January 1, 1994: A passport system requiring exporters to record details of export transactions was launched.

X and M in the boxes represent policy changes relating to exports and imports respectively.

The monthly export (f.o.b.) and import data (c.i.f.) from July 1992 to October 1994 (used in the estimates) are in billion current dollars. These are reported by Goskomstat (the State Committee on Statistics) in dollars on the basis of information supplied by trading enterprises to Goskomstat's regional offices. Goskomstat's methods conform to international standards for classifying and valuing goods.

The coverage of the reporting enterprises worsened as the trading activity became decentralized especially with regard to imports. In 1994, the collection of trade statistics was transferred to the Customs Committee which supplied the information on imports to Goskomstat. Some cross-border trading activity escaped the coverage of the Customs Committee too.

There are also problems of comparing the trade data from year to year. Exports may occasionally include gold and arm sales and some services; imports sporadically include some services, and items financed with humanitarian aid.

The adjustments to the yearly data carried out on the basis of partner country data and reports provided by representatives of the Ministry for Foreign Economic Relations suggest underreporting of the Goskomstat export and import data although the relative underreporting is smaller for export than for import statistics. Details of the data collection problems and such adjustments are in Bulletin, p. 69.
Figure 3: Trade, Real Exchange Rate and Real GDP data (in Logs)
TABLE 2: Estimate of Import Demand Equation

\[
\log(\text{real imp}) = \alpha_1 + \beta_1 \log(\text{real ER}[-1]) + \gamma_1 \text{DV}_94 + w_t
\]

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\(R^2\) = 0.6730  
Adjusted \(R^2\) = 0.6263  
Number of observations = 17

DV94 = 1 if year \(\geq\) 94; otherwise DV94 = 0.  
First order autocorrelation was corrected using the Cochrane-Orcutt method.
TABLE 3: Estimate of Export Supply Equation

\[
\log(\text{real exp}) = \alpha_2 + \beta_2 \log(\text{real ER[-1]}) + \gamma_2 \text{DV}_{94} + \eta_t
\]

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R\(^2\) = 0.5790
Adjusted R\(^2\) = 0.5188
Number of observations = 17

\(\text{DV}_{94} = 1 \text{ if year } \geq 94; \text{ otherwise } \text{DV}_{94} = 0.\)

First order autocorrelation was corrected using the Cochrane-Orcutt method.
TABLE 4: Estimate of the Relationship between Net Real Exports and Lagged Real Exchange Rate

\[ \log(\text{real NX}) = \alpha_3 + \beta_3 \log(\text{real ER}[-1]) + \gamma_3 \text{DV94} + \nu_t \]

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\(\text{DV94} = 1 \text{ if year} \geq 94; \text{ otherwise } \text{DV94} = 0.\)

First order autocorrelation was corrected using the Cochrane-Orcutt method.

\(R^2 = 0.65422\)
\(\text{Adjusted } R^2 = 0.5911\)
Number of observations | 17

37
### APPENDIX TABLE 1: Monthly Monetary and Financial Data

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**SOURCES**


**REALEXP:** Real exports are computed as EXP/PRICE

**REALIMP:** Real imports are computed as IMP/WRDLCPI

**RER:** Real Ruble/US Dollar exchange rate is computed as ER*USCPI/CPI

**log(RER):** Log of the real exchange rate is computed as log(RER)

**elog(RER):** Expected log of real exchange is computed from equation 1.
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