Chapter 1
Free and Not So Free to Charge: Income Redistribution and Russia's GDP Contraction, 1992-98, and Recovery, 1999-2007

Russia after the end of central planning represents a case study in income redistribution and economic growth. As an empirical rule, GDP growth is negatively related to redistribution of income in all transactions between all agents. All-transactional income redistribution degrades general productive incentives and retards long-term economic growth. State-forced production under central planning, including forced investment and application of technology, partially substituted for productive incentives. In conjunction with incentives for human capital and technology, this substitution enabled moderate long-term economic growth. Metaphorically, one carrot, one stick. The dissipation of central planning in Russia in 1989-90 did not reduce income redistribution and did not create general productive incentives, unlike the end of central planning in China after 1977. Incentives for human capital and technology started to degrade along the way. This conjunction left the economy with neither incentives nor force. GDP started to slide in 1990-91. The great contraction of 1992-98 occurred when liberalization and privatization opened a new channel of income redistribution through trade credit. The recovery of 1999-2007 took place after the partial policy reversal reimposed government controls which inadvertently narrowed this channel of income redistribution.

This chapter reconstructs the empirical regularities of Russia's GDP contraction in 1992-98 and recovery in 1999-2007 in relation to income redistribution. It also compares empirical irregularities associated with spurious factors such as the dynamics of global oil and other commodity prices.

Empirical Regularities and Irregularities, Russia, 1992-2007

Russia's economic policies since the beginning of 1992 added a new channel of broad income redistribution which operates through trade credit. The reconstruction of its mechanism and its evolution will occupy the remainder of this chapter.

Introducing a central empirical regularity

By a way of introduction, figure 1 renders the main empirical regularity of both the great contraction of 1992-98 and the recovery of 1999-2007. The data are reproduced in detail in tables 1 and 2.[1] The figure plots the index of real GDP in 1991-2007 holding the 1991 level as the benchmark 100 percent. The figure compares it with the index which represents a measure of

[1]The latest data are available on the web site of the Russian State Committee on Statistics at http://www.gks.ru/bgd/free/B01_19/IswPrx.dll/Stg/d000/i000330r.htm and http://www.statrus.info/catalog/edition.jsp?id=1821&uid=22, and on the web site of the Central Bank of Russia at http://www.cbr.ru/statistics/credit_statistics/.

inverted income redistribution. The benchmark year is also 1991. The index is truncated between 1991 and 1992 to accommodate its sharp decline in early 1992 due to price decontrol, an inflationary spike, and a multifold decline in the money demand. The composition of the index represents mechanically the ratio of the money stock M2 to the stock of enterprise receivables at each year-end (see the Glossary to this chapter). Accumulation of receivables by the network of enterprises is the central redistributive instrument under Russia's economic system in 1992-2007 using the trade credit channel. This statement can be proven is the sum of various subsidies to the enterprise network through various channels is equal to the amount of receivables, and this proof is forthcoming below. In this case, accumulation of receivables operates as fiscal claims on subsidies from the government and the public, and the stock of receivables does indeed represents the buildup of redistributive claims. The money stock constitutes loanable funds owned by households. Since the stock of receivables embodies income redistribution, the ratio of the money stock to receivables can stand for the inverted index of income redistribution.

The empirical regularity through both the contraction of 1992-98 and the recovery of 1999-2007 is the match of this index with the index of real GDP. This is true for every year for the period of 17 years, for both the downward slope of the contraction and the upward slope of the recovery, and for minor ups and downs. Mechanically, this empirical regularity is possible if the annual growth index of nominal enterprise receivables operates as the deflator of the money stock and GDP. That is, if it carries a broad price index. It will be documented below that this possibility is real. In which case the index of the ratio of the money stock to receivables constitutes the index of the real money stock which matches the index of the real GDP when the change in money velocity is truncated. The nominal mechanics of this empirical regularity are basic, it is the measure of (inverted) income redistribution that makes is interesting and specific to Russia's economic system.

As a broad empirical rule, the greater is redistribution of income, the lower is economic growth and the smaller is income redistribution, the higher is economic growth. An abrupt increase in income redistribution, such as an opening of a major new channel, in conjunction with the abolition of forced production of central planning and with retardation of incentives for human capital and technology, can lead to GDP contraction. Reduction of income redistribution, such as narrowing of its major channel, leads to an economic recovery. This empirical regularity fits Russia in 1992-2007.

Empirical irregularities

Many observers attribute Russia's GDP recovery in 1999-2007 to rising world oil prices. The same rationale can stand for all natural resource and commodity prices. The reasoning for this explanation is the improvement of the terms of trade. In one channel, the rising external demand stimulates domestic production, first in oil, and subsequently through the value-added chain. In an additional channel, the fiscal position of the government improves through higher tax revenues, which reduces inflation, and supports a framework for economic growth. This explanation has an intuitive appeal for short-term economic fluctuations. But it does not constitute a long-term empirical regularity. Even if this explanation worked for the recovery in 1999-2007, it would be specific for the recovery and would not account for the great contraction of 1992-98. But this

explanation cannot account for the recovery in 1999-2007, either.

Figure 2a indicates that the profile of global crude oil prices in constant terms and the index of Russia's GDP in 1991-2007 may resemble a correspondence. Taken by periods, prices fell from 1991 to 1998 and increased in 1999-2007, and Russia's GDP contracted and recovered during the same periods. This correspondence is spurious. It disappears if the steep rise in crude oil prices in 2004-2007 is truncated. Figure 2a shows that real oil prices in constant 2006 dollars fluctuated widely around $27 per barrel in 1991-2003. Figure 2b shows that real oil prices in constant terms also fluctuated around $27 per barrel during 18 years in 1986-2003, including the last four years of moderate economic growth under central planning, 1986-1989, the mild contraction in 1990-91, the great contraction in 1992-98, and the first four years of the recovery, 1999-2003. Annual fluctuations of oil prices and GDP growth do not correspond during both periods of contraction in 1990-98 or 1992-98 and the recovery in 1999-2007. Oil prices increased in 1995-1996 when GDP continued to slide. Oil prices declined in 2001 and 2002 when GDP continued to recover.

More important considerations point to the lack of empirical regularity or even a correspondence between world oil prices and Russia's economic growth even for one period, that of GDP recovery in 1999-2007. Figures 2a and 2b demonstrate that neither the demand channels nor the supply channels that should transmit the impact of world prices to economic growth were operating. Crude oil prices started to recover in 1999 after the Asian crisis. Russia's GDP also started to recover in 1999. But neither Russia's export revenues from oil, natural gas, and in total on the demand side (see figure 2a and table 3) nor oil and natural gas output on the supply side (see figure 2b) recovered in 1999. Russia's GDP recovery started in 1999 without oil output rise, without natural gas output rise, and without export revenues increase from either of them and in total.

GDP recovery accelerated in 2000 which saw a 10 percent growth and continued rapidly in 2001-2002 and oil output also increased, along with other products in the economy, but natural gas output declined and, most importantly, export revenues from each of these commodities and total export revenues increased only in 2000 and remained flat in 2001-2002 as global energy prices declined. In all, the trigger of the economic recovery in 1999 and the entire rapid economic recovery in the first five years, 1999-2003, have no indication for being attributed to the rise in global oil and other commodity prices. Finally, the rapid appreciation of world oil prices in 2004-2007 in constant terms and the corresponding more than twofold increase of Russia's oil export revenues and total export revenues was not accompanied by an acceleration of GDP growth rates which fluctuated in 2003-2007.

Absence of an empirical regularity on these scores corresponds to the cross-national data in figure 3 on the GDP dynamics both among major global oil exporting economies and among former Soviet states, oil exporters and oil importers alike.

Figure 3a documents the heterogeneous economic performance of the six major petroleum-exporting countries around the world in 1992-2007. In Russia and across countries, it is uncorrelated with oil price fluctuations. Figure 3b illustrates how economic recovery synchronized in Russia, Ukraine, Kazakstan, and other former Soviet states, both net oil exporters (Russia,

Kazakstan, Azerbaijan) and importers (Ukraine, Belarus, Moldova). The oil factor was neither necessary (viz., Ukraine) nor sufficient (viz., Venezuela) for economic recovery and growth in the early 2000s. The oil connection abstracted from the economic system and policy is specious.

Russia's economic recovery raises a more fundamental, flammable, and incendiary issue than oil. Figure 4 illustrates it. In Russia and similar post-central plan economies, liberalization and privatization coincided with the great economic contraction in 1992-98. Partial de-liberalization and de-privatization in Russia, starting with mandated repatriation of export revenues, coincided with economic recovery in 1999-2007. This chapter will address this theme at the end. It will discuss how the impact of economic freedom and of private property rights institutions is ambivalent with respect to income redistribution, general productive incentives, and long-term economic growth. It depends on the economic system. If it entails freedom from income redistribution, it is the freedom to create new wealth, and it is eminently productive. If it coincides with freedom to redistribute income from the government, firms, and households, it suppresses productive incentives and economic growth. Government restriction of such freedom, e.g., in China or in Russia after 1998, fosters economic performance.

Socialism from Below: Third Party Billing

To start with a quick frame of reference, one can view Russia's economy as third party billing. X sells products to Y and charges Z. This operation is familiar on the sectoral scale in U.S. health care services and higher education. Health care providers charge insurance companies or the government. State colleges charge student tuition to the state government. Buyers receive products for free and don't economize on quantity and prices. Sellers can overcharge for their products when the third party pays. This incentive structure is responsible for rapidly rising health care costs and tuition. Vernon L. Smith thus summarized this systemic market distortion:

> Here is a bare-bones way to think about this situation: *A is the customer, B is the service provider. B informs A what A should buy from B, and a third entity, C, pays for it from a common pool of funds*. Stated this way, the problem has no known economic solution because there is no equilibrium. There is no automatic balance between willingness to pay by the consumer and willingness to accept by the producer that constrains and limits the choices of each.[2]

After the abolition of central planning, a novel system of third party billing evolved in Russia. It is national in scope and runs from below. Enterprises bill the government and the public.

Aggregate third party billing

Figure 5 and box 1 join forces on the next pages to explore step-by-step how this novel

[2]Vernon L. Smith, "Trust the Customer!" *The Wall Street Journal*, March 8, 2006, p. A20.

system had adapted and how it operates. In essence, enterprise X sells goods and services to enterprises Y and Z, receives some payments, and implicitly charges the unpaid balances to the government. Enterprise Y sells goods and services to enterprises Z and X, receives some payments, and implicitly charges the unpaid balances to the government. Enterprise Z sells goods and services to X and Y and to retailers, receives some payments, and implicitly charges the unpaid balances to the government. Circularly, all enterprises except retailers, various services, and outliers charge the government. In practice, enterprises X, Y, and Z issue invoices to buyers and receive payments over time. As in the universal practice of trade credit, sales and their invoices precede payments. (See the Glossary for definitions). In accounting terms, the balances of the amounts invoiced net of payments constitute the outstanding balances of accounts receivables, or simply receivables. In most economies, the outstanding balances of receivables are paid by buyers. In Russia and similar countries, enterprises charge these balances to the government and the public at large, take the subsidy, and then pay each other. Enterprises Z, Y, and X take the subsidy and pay X, Y, and Z with public funds. This unique subsidy is taken, not given, charged, not solicited.

The monthly data in figure 5 cover the period 1992-97 and truncate in 1998, for both presentation and substantive reasons. This was the period of the unfettered operation of aggregate third party billing, before enterprise freedom to charge the government was restricted. Herewith a brief preview. When invoices outgrow payments, enterprises amass the balances of receivables. Enterprise income winds up to a great extent in receivables instead of cash. For many enterprises, receivables exceed net income. Enterprises increase payables—do not pay bills—lest their net cash flow turn negative. Tax arrears supplement payment arrears, especially for industries where receivables exceed payables. Enterprises appropriate taxes withheld from workers and collected from consumers, which they do not remit to the government. The government cannot enforce full tax remittance when enterprise bank accounts are drawn down. Tax non-remittance on a national scale rules out government crackdown, seizing assets, or bankruptcy for it will wipe out the tax base. The government is forced to monetize tax remittance and enterprise payments (even if the government monetizes its budget deficit, itself due to tax non-remittance, the money is fungible). The banks transmit monetization through credit for payments, roll over and expand this credit.

Figure 5 highlights a regular empirical match between receivables and the subsidy they enforce. It shows how over time the outstanding balances of enterprise receivables match the sum of (1) tax non-remittance and (2) monetization multiplied through the banking system (approximated as the domestic money balances M2). These are the two principal channels of the subsidy wrung from the government. They sum up into a self-enforceable subsidy. The simple point of figure 5 is that the government and, ultimately, the public are forced to pay the enterprise bill.

The difference of aggregate third party billing

The national scale, across industries and enterprises, shifts third party billing towards the government and the public (households, consumers) as the ultimate payers. In the supply chain over the stages of processing, every enterprise is both buyer and seller of products, and most enterprises, except retailers, various services, etc., issue invoices. The national scale aggregates third party billing and enables the entire enterprise network to charge the government and the public at large

(households and consumers) for its outstanding receivables.[3]

This marks the basic difference between sectoral and aggregate third party billing. The former is voluntary and contractual. The latter forges a symbiotic bond in which enterprises take the initiative and the government is forced to pay.[4] This feature is unique and extreme. Aggregate third party billing charges from enterprises to the government, that is from below to above (in economic terms, it is endogenous). The subsidy is taken by the enterprise network from below, not given by the government from above. Ironically, yet evolutionary, this system represents a total socialist economy in reverse, as if central planning flipped topsy turvy. Box 2 depicts this evolution.[5]

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[3]Third party billing on the national scale is unique and extreme. It aggregates (1) various sectoral cases of third party billing and (2) cross-sectoral subsidies between enterprises and industries through the mechanism of trade credit. The latter between individual sectors redistributes income from sellers to buyers without billing the government. See Robert A. Schwartz and David K. Whitcomb, "Implicit Transfers in the Extension of Trade Credit," in Kenneth E. Boulding and Thomas F. Wilson, eds., *Redistribution Through the Financial System: The Grant Economics of Money and Credit* (New York: Praeger Publishers, 1978), pp. 191-208. Aggregate third party billing, wherein the government is the third party, extends cross-sectoral subsidies to total industry cross-sectoral operations. This creates the national scale of income redistribution from the government to the enterprise network.

[4]In the taxonomy borrowed by social sciences from biology, this represents parasitic symbiosis. Symbiosis means cohabitation of different and dissimilar organisms. The taxonomy consists of three types of symbioses: 1) mutualist, that is, mutually beneficial for survival, e.g., bees and flowers, flowers provide nutrients to bees, bees pollinate flowers; 2)commensual, that is, one organism benefits and the other is neither helped nor harmed, e.g., birds and trees; and parasitic, in which one organism corrodes, consumes, and destroys the other. See Kim McQuaid, *Uneasy Partners: Big Business in American Politics, 1945-1990* (Baltimore: Johns Hopkins University Press, 1994), p. XV and *passim*. In view of the fiscal default of August 1998, due to tax non-remittance by and subsidies to the enterprise network, the latter's relation with the government constitutes a parasitic symbiosis.

[5]All post-central plan economies northwest of China in the 1990s and even evolving central plan economies, such as Yugoslavia in the 1960s and the 1970s, exhibited this system. See Laura D. Tyson, "Liquidity Crises in the Yugoslav Economy: An Alternative to Bankruptcy?" *Soviet Studies* 29, no. 2 (April 1977): 284-295; P.T. Knight, "Financial Discipline and Structural Adjustment in Yugoslavia: Rehabilitation and Bankruptcy of Loss-Making Enterprises," World Bank Staff Working Papers, no. 705 (Washington, D.C.: The World Bank, 1984); Guillermo A. Calvo and Fabrizio Coricelli, "Credit Market Imperfections and Output Response in Previously Centrally Planned Economies," in Gerard Caprio, David Folkerts-Landau, and Timothy D. Lane, eds., *Building Sound Finance in Emerging Market Economies* (Washington, D.C.: The International Monetary Fund and the World Bank, 1994), pp. 257-294; Guillermo A. Calvo and Fabrizio Coricelli. "Inter-Enterprise Arrears in Economies in Transition," in Robert Holzmann, Janos Gacs, and George Winckler, eds., *Output Decline in Eastern Europe: Unavoidable, External Influence or Homemade?* (Dodrecht, Boston, and London: Kluwer Academic Publishers, 1995), pp. 193-212; Enrico C. Perotti. " A Taxonomy of Post-Socialist Financial Systems: Decentralized Enforcement and the Creation of Inside Money," *Economics of Transition* 2, no. 1 (January 1994): 71-81; Enrico C. Perotti, "Inertial Credit and Opportunistic Arrears in Transition," *European Economic Review* 42, no. 9 (November 1998): 1703-25; Fabrizio Coricelli, *Macroeconomic Policies and the Development of Markets in Transition Economies* (Budapest: Central European University Press, 1998), pp. 52-85; Clifford G. Gaddy and Barry W. Ickes, "Russia's Virtual Economy," *Foreign Affairs* 77, no. 5 (September-October 1998): 53-67; World Bank, Europe and Central Asia Region, Energy Sector Unit, "Non-Payment in the Electricity Sector in Eastern Europe and the Former Soviet Union," Technical Paper 423 (Washington, D.C.: The World Bank, 1999); Brian Pinto et. al, "Dismantling Russia's Nonpayments System: Creating Conditions for Growth," The World Bank, *World Bank Technical Paper,* No. 471 (Washington: The World Bank, 2000); and, Brian Pinto et. al., "Give Macroeconomic Stability and Growth in Russia a Chance: Harden Budgets by Eliminating Non-Payments," *Economics*

Central planning integrated a uniform assembly line. Individual enterprises acted as the floor shops on the assembly line of forced production under government output quotas. This was a veritable nation-enterprise. This system necessitated aggregate third party paying. Whenever enterprise Y under-produced output or overspent inputs, lost income, run into a negative net cash flow problem, and missed the due date to pay its bills to enterprise X, the government financed enterprise Y to enable it to make payments to X. The government then punished enterprise Y for failing central plan output and input quotas. This financing of payment arrears (dubbed in the literature as the soft budget constraint) represented an automatic credit line. It served the government to enforce an uninterrupted flow of output, forced exchange, and forced delivery on the vertical assembly line from X to Y and to enforce performance of Y. Third-party paying was from above, from the government to enterprises (in economic terms, exogenous). It was the government means to enforce forced production/exchange/delivery under central planning. It was thus a unique forced subsidy from the government. Like in making foie gras, it was the force-feeding of immediate production units in order to increase output quotas.[6]

Abolition of central planning could come in various ways. The government could phase-out the inherited nation-enterprise by phasing-in the new-entrant market sector and thus shrinking the share of the old state sector in GDP. China chose this strategy bypassing liberalization and privatization of the preexisting state sector. Russia opted for liberalization of transactions and privatization of preexisting enterprises. This strategy subsumed the abolition of central planning. Inadvertently, it enabled the inherited assembly line of enterprises to adapt into a subsidy-extracting network. Individual enterprises (more exactly, owners and managers) were free to join within the subsidy network or survive and perish without.

The enterprise network adapted aggregate third-party paying into aggregate third-party billing. This amounted to socialist devolution of fiscal and monetary authority from the government to the enterprise network. Aggregate third party billing empowers the network to enforce its own subsidy from the government and the public. In effect, the enterprise network collects a tax from the public. This subsidy and this tax is one and the same, to wit, the tax subsidy. It represents the parallel taxation of the public by the enterprise network. One can dub this new economic system Enterprise Network Socialism.[7]

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of Transition 8, no. 2 (2000): 297-324; and, Michael S. Bernstam and Alvin Rabushka, *Fixing Russia's Banks* (Stanford: Hoover Press, 1998), pp. 28-33, 69-71, 84.

[6]This treatment of the soft budget constraint under central planning is opposite to the standard literature which views the government as the benevolent and weak-willed dictator unable to commit himself to not subsidizing enterprises. See Janos Kornai, Eric Maskin, and Gerald Roland, "Understanding the Soft Budget Constraint," *Journal of Economic Literature* 41, no. 4 (December 2003): 1095-1136. This view is inconsistent with the very fact that he is able to keep forced production. The standard view fits individual and sectoral bailouts in Western and developing economies, a species systemically different from central planning.

[7]A quick taxonomic distinction. Aggregate third party billing (1) is collective, all-encompassing, not of sectoral special interests; (2) entails a subsidy taken from below, not given from above; endogenous, not exogenous; (3) works automatically, not through the political process; and (4) subsidy extraction is cost-free to enterprises, does not involve spending resources of time, effort, and money. On each of these four counts aggregate third party billing is opposite to

How a mechanism operates often tells why it exists and how it came into existence. The evolution from central planning to Enterprise Network Socialism transpires from that the inherited national assembly line, not scattered sectors or enterprises, can enforce third party billing from below. This approach dissects what had evolved historically as an adaptive operation of learning by doing. The next pages follow box 1 and figure 5 in laying out this operation step-by-step.

Step 1. Surcharge

Step 1 is the easiest for enterprises to undertake and the hardest for observers to see and to explicate. It reveals itself through a chain of empirical observations. They compare the operation of accounts receivable in the U.S. and Russia. The U.S. data merely exemplify the standard practice of trade credit in market economies and serve as a benchmark to highlight Russia's difference. The stock of accounts receivable in figure 5 and in various subsequent figures and the flow of receivables in the flows of funds in tables 4 and 5 list nominal values in current dollars or rubles. To eliminate the influence of inflation, several diagrams of figure 6 deflate nominal receivables and plot real receivables in inflation-adjusted values.[8] This decomposition of various indices of nominal receivables into the indices of real receivables and the price index in figures 6 and 7 opens a Pandora's Box—not for the U.S. data obviously, but for Russia's.

- Observation 1. Separation

The first observation may seem to be blase and trivial. Figure 6 contrasts two patterns of trade credit, in the U.S. and Russia. To define these patterns, figure 6 juxtaposes the annual indices of nominal or real receivables in 1991-2007 and the annual indices of real GDP. The latter serve as reference points.[9] Figures 6.1 and 6.2 compare the indices of nominal receivables in current rubles or dollars in the U.S. and Russia against GDP growth. Figures 6.3 and 6.4 offer a sharper picture with real receivables in inflation-adjusted dollars or rubles on the same backdrop of GDP

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what the literature calls rent-seeking. Also, the above point (2) indicates that aggregate third party billing charges from below, endogenously, and is thus opposite to what the literature calls the soft budget constraint, which is operationally third party paying. The latter can be total under central planning or sectoral in many other economies (e.g., bailouts), but it streams from above, is exogenous in all cases. These are the taxonomic systemic differences between aggregate third party billing under Enterprise Network Socialism and various other species of socialism (income redistribution). Ignoring these systemic differences leads to wrong diagnostics which begets wrong policies.

[8]The Consumer Price Index (CPI) is used as the deflator in figures 6 and 7. The choice of an appropriate deflator is a complicated specialist issue beyond the scope of this work. The Producer Price Index (PPI) might have been more pertinent for deflating receivables but in Russia this index is available for industrial output only, which constitutes about one-third of GDP. For completeness, the CPI is used and, for consistency, it is used for both Russia and the U.S. Another option is the GDP deflator. Unlike the CPI, it includes prices of exports, which makes it less appropriate for this exercise, and excludes prices of imports, which makes it more appropriate. Further research may try alternative deflators. The choice of the deflator does not affect empirical findings beyond figures 6 and 7.

[9]They are converted from annual rates of growth of real GDP.

growth.[10]

Receivables in the U.S. exhibit a cyclical pattern with short lags.[11] Receivables increase during the years of economic growth and decline during recessions and their aftermath. Receivables declined even during and after a short recession of 2001 which lasted two intermittent quarters, was dwarfed by growth in other quarters, and thus did not show in the annual data. In 1991-2007, the same pattern holds in both nominal (figure 6.1) and real, inflation-adjusted terms (figure 6.3).

Nominal receivables show the same cyclical pattern as real receivables when inflation is low, specifically, when the rate of inflation is lower than the annual indices of real receivables. When inflation is higher, its contribution to nominal receivables exceeds the decline of real receivables during recessions. This makes nominal receivables deviate from the cyclical pattern. Figures 6.5 and 6.6 illustrate this condition. They juxtapose indices of nominal or real receivables with the indices of real GDP growth and also with the annual price index in the U.S. in 1971-1984.[12] Real receivables in figure 6.6 exhibit a pronounced cyclical pattern. It holds consistently through several intervening intervals of economic expansion and contraction with rising and falling real receivables, respectively. The cyclical pattern of real receivables is the same in 1971-1984 and in 1991-2007. The indices of nominal receivables in figure 6.5 offer a mixed relationship with the growth of real GDP because nominal receivables are a composite variable subject to the inflation bias. At the same time, the indices of nominal receivables exhibit the lack of any regular relationship with the annual price index. This point will resurface during the next observation.

In Russia in 1991-2007, receivables display an idiosyncratic pattern. Both nominal and real receivables in Russia in figures 6.2 and 6.4 show the absence of any regular relationship with real output, with productive economic activity. Nominal receivables increased massively during the

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[10]Only figure 6 and the discussion around it alternate nominal and real receivables. The rest of the figures, tables, and discussion employ nominal receivables in current rubles or dollars. The qualifier 'nominal' is dropped for brevity except in figure 6 and the surrounding discussion.

[11]The sophisticated literature on the cyclical pattern of trade credit in the U.S. covers many complexities omitted here. See Mike Bukhart and Tore Ellingsen, "In-Kind Finance: A Theory of Trade Credit," *American Economic Review* 94, no. 3 (June 2004): 569-590; Robert A. Schwartz and David K. Whitcomb, "Implicit Transfers in the Extension of Trade Credit," pp. 191-208, especially pp. 197-199; Raymond Fishman and Inessa Love, "Trade Credit, Financial Intermediary Development, and Industry Growth," *Journal of Finance* 58, no. 1 (February 2003): 353-374; Mitchell A. Petersen and Raghuram G. Rajan, "Trade Credit: Theory and Evidence," *Review of Financial Studies* 10, no. 3 (Fall 1997): 661-691; Arthur Laffer, "Trade Credit and the Money Market," *Journal of Political Economy* 78, no. 2 (April 1970): 239-267; and a pioneering article by Allan H. Meltzer, "Mercantile Credit, Monetary Policy, and Size of Firms," *Review of Economics and Statistics* 42, no. 4 (November 1960): 429-437. What this literature treats as counter-cyclical adjustments of trade credit we view as lags of cyclical fluctuations. But this is a matter of interpretation of the same facts. See footnote 14 below.

[12]The choice of the period 1971-1984 is both substantive and presentational. Substantively, it is the period of the highest U.S. inflation in the recent decades since the annual data on receivables are available. The choice of the specific years, 1971-1984, is a matter of presentation. They start 20 years before the observation period 1991-2007.

great contraction of 1992-1998 and continued to increase moderately in 1999-2007.[13] These increases correspond closely to increases in the annual price indices in figure 7.1. This leaves real receivables vis-a-vis real economic activity in figure 6.4. **The indices of real receivables lack any relationship with the indices of real GDP.** Real receivables saw increases during the years of the great contraction of 1992-98 except 1993 and 1998 and declined or held unchanged during the years of the recovery of 1999-2007 except 2006-2007. The pattern that arises here is detachment of real receivables from economic activity. Output declines and recovers but real receivables exhibit no participation in or reaction to production and sales. Trade credit and productive activity walk their own separate paths as if they operate on different planes of existence, detached from each other. Russia exhibits a unique pattern of separation of trade credit from production and sales.

- Observation 2. Alignments

The path of real receivables in Russia in figure 6.4 is not only detached from output but, with the exception of the years 1991 and 1996, nearly stagnant. The year 1991, when real receivables fell significantly during contraction, similarly to the cyclical pattern, ended the previous economic system. It was the last year of central planning passing away, before liberalization of transactions and privatization of productive assets commenced in 1992, and its pattern is different. 1991 is included in figure 6 and other documentation for comparison only. The year 1996 when the index of real receivables shows a spike is an evidential outlier. It may be a statistical error[14] or a genuine

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[13]There was an extraneous reduction of nominal receivables in August-September 1992 due to the clearing (settlement) conducted by the Central Bank. Consult the Glossary for definitions and description.

[14]The index of real receivables is a mechanical result. It derives from dividing the index of nominal receivables by the price index. It is thus sensitive to the price index in a given year. In 1996, the Russian State Committee on Statistics changed its methodology of calculating the Consumer Price Index (CPI). It replaced the basket of goods and services on which the CPI is based, replaced the so called "old basket" with the "new basket." A series of empirical studies found that the value of the new basket which started to serve as the baseline for CPI estimates was lower by 1.5 times than the value of the old basket (see Moscow Institute of Electronics and Mathematics, Laboratory of Econometric Studies, V. Zhikharev et. al., "How to Measure Living Standards," at http://www.rau.su/observer/N05_99/5_15.HTM). If this estimate is correct, the price index in 1996 was understated by 1.5 times and the index of real receivables is overstated in figure 6.4 by the same 1.5 times. Then the spike of 1996 in figure 6.4 is an error. Indirect evidence leads to a similar conclusion. GDP deflator was 1.5, implying the inflation rate more than twice as high as 21.8 percent rise of the CPI (Russian State Committee on Statistics, *Rossiiskii Statisticheskii Ezhegodnik 2004*, Moscow, 2004, pp. 627, 303). If one views the price index in Russia as inflationary expectations embodied in the growth of nominal receivables, in the consistent relationship illustrated in figure 7.1, the inflation rate of 21.8 percent in 1996 is low in comparison with the growth of nominal receivables by 91 percent in that year. If one rather views the price index in Russia as a lagged response to money growth, the latter was higher in the reference period than 21.8 percent. The monetary aggregate M2 increased by 70.4 percent from July 1995 to July 1996, if one looks for the six-month lag, by 53.6 percent from October 1995 to October 1996 if one looks for the three-month lag, and by 30.6 percent from January 1996 to January 1997 if one discounts any lag, at the time of GDP decline of 3.6 percent. (The data derive from the Central Bank of Russia, various releases). If one abstracts of the differences between the CPI and GDP deflator, to reconcile these numbers with the CPI in 1996, the velocity of money circulation must have declined by 10 to 30 percent (the demand for money balances increased by 12 to 45 percent) in 1996. This might be plausible because disinflation was rapid or not plausible because inflation was still high. This is a technical issue which remains unclear. The empirical impact of the 1996 outlier is limited to decomposed relationships between real receivables and economic growth (figure 6.4) and between nominal receivables and the price index (figure 7.1). This does not affect the composite relationships between nominal

exception, for reasons unknown, from an otherwise narrow stable range around unity. Clipping the 1996 data from the path of real receivables charts a trend through 1992-2007 spanning the gap of 1996. All fluctuations in 1992-1995 and 1997-2007 are minor, random, and cancel each other over time. The index of real receivables actually hovered around unity and was stable within a narrow range. **The indices of real receivables are nearly invariant to GDP decline or growth. Real receivables in Russia seem to align with the index equal to unity, which implies zero growth of real receivables over time.**

Figure 7.1 displays the complementary part of this relationship during the same period 1992-2007. It shows that the separation pattern in Russia closely relates, indeed matches on the annual basis, the path of nominal receivables with the price index. Minor annual fluctuations which deviate from this match move randomly. A closer match of the two indices smooths over time and forms a continuous relationship. This continuous relationship is consistent with the indices of real receivables hovering around unity and converging towards it. **Tautologically, if the index of real receivables hovers around unity, the index of nominal receivables must align with the price index.** Figure 7.1 documents the latter alignment.

The outstanding stock of nominal receivables in the U.S. increased from $1,033.1 billion in 1990 to $2,405.6 billion in 2005, that is, by the factor of 2.33. The Consumer Price Index increased by the factor of 1.51 in 1990-2007. The real (inflation-adjusted) growth of receivables was 2.9 percent per annum. GDP in chained 2000 dollars increased from $7,112.5 billion in 1990 to $10,841.9 billion in 2004, that is, by 2.9 percent per annum. Extending this exercise to the 25-year period 1980-2004 yields the average growth rate of about 2.9 percent per annum for real receivables and 3.0 percent for real GDP. Going back 50 years and covering the period 1955-2004, gives annual growth rates of GDP at 3.2 percent and real receivables at 3.3 percent.[15]

The cyclical pattern of trade credit in the U.S. in figure 7.2 bears no regular relationship between nominal receivables and price indices. The lack of their relationship showed also in 1971-84 in figure 6.5. This dissociation is mechanically consistent with the alignment of growth of real receivables with the growth of real GDP.

Box 3 in the top matrix summarizes the contrasting alignments over time. Under the cyclical pattern of trade credit in the U.S., growth of real receivables aligns with growth of real output. Tautologically, growth of nominal receivables aligns with growth of nominal output. Under

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receivables and the combined subsidy (figure 5 and similar subsequent figures 13 and 14) and between economic growth and nominal receivables acting as a deflator of money balances (figure 1). That is, this does not affect central, principal relationships.

[15]See sources in figure 6.3. These estimates are crude and serve as an illustration only. They rely on disparate deflators because the real GDP data from National Income and Product Accounts apply the GDP deflator but real receivables, to be consistent in the comparative context with Russia's measures, are deflated by the CPI. This problem can be avoided if one compares growth indices of nominal GDP and nominal receivables. Still, a rigorous test of this regularity (the growth of output aligns with the growth of receivables) requires numerous multi-period combinations at various intervals. It is beyond the theme and the scope of this book.

the separation pattern in Russia, real receivables stagnate within a stable narrow range and growth of nominal receivables aligns with price increases. The next observation is mechanical. Receivables are balances of invoices net of payments. It is price increases in invoices in excess of payments that make up these balances in Russia and make receivables grow in alignment with the price index.

- Observation 3. Invoicing

Box 3 and figure 8 explore this mechanical connection. It is depicted in the lower half of Box 3 and its side bars.

Mechanically, trade credit is the same everywhere since its inception. Two mechanical points of reference apply to both the cyclical and the separation patterns. They apply to each seller and to the economy as a whole. They apply in both nominal and real terms held consistently.

1. Invoices precede payments in the overlapping flows of invoices and payments.

2. Receivables constitute the balances of invoices net of payments. Receivables increase when invoices exceed payments. Receivables decline when payments exceed invoices.

This decomposition shifts focus from receivables to invoices as the source of empirical alignments. It is what is **in** in invoices when they exceed payments and make up an increase in the outstanding balances of nominal receivables. **It can be output growth in current prices under the cyclical pattern in the U.S. Or it can be price increases per se under the separation pattern in Russia.** This decomposition makes both patterns mechanically consistent in the same mold.

Under the cyclical pattern in the U.S., the mechanics transpire in real terms. When the economy contracts and sales decrease, new invoices are smaller than past invoices. Payments on past invoices exceed new invoices. The outstanding balances of receivables decline. When the economy expands and sales increase, new invoices are greater than past invoices. New invoices exceed payments on past invoices. The outstanding balances of receivables increase.[16] This is how, mechanically, in the long run real receivables grow at the rate of growth of real output.[17]

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[16]This cyclical pattern of trade credit contains a paradoxical lag. When spending tightens, payments decelerate. This is cyclical. But decelerated payments mean that even if new invoices are smaller than past invoices, new invoices may exceed current payments, and receivables continue to increase in the beginning of recessions. When spending expands, payments accelerate. This is cyclical. But accelerated payments mean that even if new invoices are greater than past invoices, current payments may exceed new invoices, and receivables decline in the beginning of recoveries (e.g., in 2002; see figures 6.1 and 6.3). The paradox of this lag is that because payments are cyclical, receivables look counter-cyclical in the very short run. But there is no counter-cyclical pattern here because this relationship is intermittent and the lags are periodic, temporal, and discontinuous. They do not extend beyond the beginnings of recessions and recoveries and dissipate thereafter. The literature discovered the lags but mistook them for a counter-cyclical pattern in the very short term. See footnote 9 above.

[17]The constraints and incentives behind these cyclical mechanics in a market economy such as the U.S. will be addressed shortly, in the next observation 4 on collection of payments and in step 2 on payment arrears.

Under the separation pattern in Russia, the mechanics transpire in nominal terms. New invoices raise prices and exceed past invoices valued at the previous price level. Price increases make up the excess of new invoices over payments on past invoices. When spending grows (the government never failed to print money) and payments increase, enterprises raise prices higher so that new invoices exceed payments on past invoices almost continuously. Sometimes it takes a month or two for price increases in invoices to catch up with spending growth and payment acceleration. Of the 156 months during the period 1992-2004, here were 16 months when nominal receivables declined slightly for one month or more, including twice for two months and once for three months in a row, but their growth resumed at an accelerated pace afterwards.[18] Over time, in the overlapping flows of invoices and payments, invoices not only exceed but continuously outgrow payments by price increases. This is the underlying mechanical meaning of the empirical observation in figure 7.1 that the outstanding balances of nominal receivables grow at the rate of price increases.[19] In short, all price excesses are in invoices.

These mechanics and their interpretation in the next observation may seem to be overwrought, obscure, picayune, and distant from real life. Three pages later they will return to real life. They will connect figure 7.1 with the central theme in figure 1. They will connect price excesses in invoices over payments with the pendulum of the Russian economy in 1992-2007.

- Observation 4. Collection

Figures 8 and 5 hint, perhaps indicate, what strategies of U.S. firms and Russian enterprises stand behind their invoicing mechanics. One strategy makes possible the growth alignment of real receivables with real output in the U.S.. The other strategy, in Russia, makes possible the alignment of the indices of nominal receivables with the price index (which holds real receivables nearly stable). These strategies are summarized in the left and right side bars in Box 3. They compare how and when (and hence why) invoices exceed payments by output growth in the U.S. and by price increases in Russia.

Figure 8 plots the ratio of nominal receivables to GDP in 1990-2007 in the U.S. (figure 8.1) and in Russia (figure 8.2). Annual growth rates of real GDP serve as reference points. Since this ratio normalizes nominal receivables by GDP, it eliminates the influence of inflation. By itself, this measure merely supplements the findings already observed. The U.S. data in figure 8.1 infer that

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[18]Apart from a slight drop in December 1997, most of these minor declines in nominal receivables occurred after the policy reversal of September 1998, in December 1998, December 1999, January 2000, December 2000, July 2001, October 2001, December 2001, January 2002, December 2002, May, July, November, and December 2003, January 2004, and December 2004. The data come from various releases of the Russian State Committee on Statistics and the Central Bank of Russia, e.g., http://www.cbr.ru/analytics/Rus0505r.pdf . These fluctuations can be observed in figure 13 which plots the entire history of nominal receivables during the 156 months of 1992-2004. The two months of mechanical reductions in August-September 1992 mentioned in footnote 11 are not included in the above count but are plotted in figures 5 and 13.

[19]The constraints and incentives behind these mechanics follow in the next observation and the next step. Earlier, the sections on aggregate third party billing on pages 2-4 introduced how this mechanical process started.

(1) the ratio of nominal receivables to nominal GDP fluctuates within a stable narrow range of 17 to 23 percent in a cyclical pattern, hovering around 20 percent of GDP; and (2) therefore, smoothed over time, nominal receivables grow in alignment with nominal GDP. This implies again that real receivables grow in alignment with real GDP. In contrast, the Russian data in figure 8.2 reconfirm that receivables are detached from productive economic activity, the paths of receivables and GDP separate, and nominal receivables fluctuate randomly and widely between 18 and 46 percent of nominal GDP during contraction and recovery. But the ratio of receivables to GDP can be employed more usefully. It can serve as a proxy variable to explore different invoicing strategies.

As a measure, the ratio of receivables to GDP in figure 8 can stand as a proxy for the average collection period. This is a key variable under all patterns of trade credit. As the Glossary describes, the average collection period, also called the collection ratio or days sales outstanding (if one can pronounce that), is the ratio of nominal receivables to daily sales on trade credit. It usually calculates as the ratio of receivables to annual sales (or receipts) times 365 days. It reports how many days of unpaid sales (the balances of receivables—of invoices net of payments) are outstanding to collect the balances.[20] The average collection period may be longer than what is sustainable. It is lengthier than a business can survive in the cash flow sense, pay its bills to suppliers and creditors, wages, and taxes, without going bankrupt. This is a vital (deadly) measure.

Figure 8.1 demonstrates the U.S. pattern. The ratio of receivables to GDP, the proxy for the average collection period, holds within a narrow stable range. The cyclical pattern of fluctuations is also visible. If the average collection period is short and stable, fluctuating cyclically within a narrow range, firms optimize cash flow. This means that sellers would let invoices exceed payments in alignment with output growth and not by sheer price increases.

One can apply the conversion procedure described in the footnote below to the data in figure 8.1. This yields the average collection period decreasing from 29 days in 1990 to 27 days in 1992-

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[20]The ratio of receivables to GDP in figure 8 is roughly proportional to this average collection period on the national scale. The numerator, the outstanding balances of accounts receivable, is the same. The denominators, GDP vs. gross sales over the stages of processing of total industry output, usually exhibit a stable relationship (with minor random deviations and a slowly changing secular trend). The GDP series are readily available. Consistent series on gross sales on trade credit need to be estimated. For the U.S. one can calculate the data on gross receipts of taxpaying firms minus retail sales plus receipts of non-profit health and educational organizations and unincorporated farms. See U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States 2004-2005* (Washington: USGPO, 2005), pp. 483 (incomplete aggregate receipts), 484 (retail receipts), 105 (receipts of the health sector), and 530 (farms receipts). For Russia one can use the data on total gross receipts and subtract retail sales and add farms sales. See Russian State Committee on Statistics, *Rossiiskii Statisticheskii Ezhegodnik 2003* (Moscow, 2004), pp. 578-579 (aggregate sales and retail sales), p. 406 (agriculture), and previous statistical annuals for prior years. Figure 8 takes a shortcut and uses the ratio of receivables to GDP as a proxy variable for the average collection period. The data lends only crude conversion. Applying the adjustments mentioned above, the volume of trade credit sales can be estimated as about 2.3 times higher than GDP in the U.S. and 1.6 times higher in Russia. The difference is due to much higher specialization and the much greater number of firms (and hence transactions) per unit of GDP in the U.S. The ratio of receivables to GDP can be divided by these factors and multiplied by 365 days to approximate the average collection period. These conversion factors for the U.S. and Russia are sufficiently stable. Hence the patterns of the average collection period by proxy in the U.S. and Russian data in figure 8 are unaffected by how accurate are these factors for each country and relative to each other.

1994, rising steadily with GDP growth to 37 days in 2000, and then gradually shortening to 31 days in 2003 and going up to 32 days in 2004. This is consistent with the pattern which *Encyclopedia Britannica* cites to typify trade credit in market economies.[21] This is indeed the strategy of cash flow optimization: short collection periods, stability of payments collection, a narrow range, and a cyclical pattern.

Firms in the market economy strive to optimize their cash flow. This operation includes managing accounts receivable, that is, collecting payments and gearing invoices to payments collection. The average collection period is one of the major signs of the viability of the firm and a key indicator of its market valuation and credit worthiness. It literally pays to optimize the average collection period. Simpler yet, the firm cannot survive on income on the accrual basis alone. It is not sustainable. In brief, if its buyers do not pay their bills for a lengthy period (payments are in arrears), while the firm duly pays its bills within the due period, its net cash flow may run negative. When net cash flow is persistently negative, firms may face bankruptcy and no one would lend to them, or no one would lend them and firms may face bankruptcy, whichever sequence unravels.[22] Most firms issue invoices in a cyclical pattern in order to receive payments within the due period and thus hold a manageable balance of receivables from the cash flow standpoint. Figure 8.1 implies that sellers make invoices exceed payments and increase the balance of receivables in alignment with output growth. They do not raise prices to make invoices exceed payments and expand the balances of receivables. Figures 6.5 and 7.2 testify to that in the U.S.

Figure 8.2 demonstrates the Russian pattern. The same procedure as above yields that the average collection period more than doubled from 24 days in 1991 to 51 days in 1992, shortened to 45-46 days in 1994-95 only to lengthen to 63 days in 1996, 66 days in 1997, and to a whopping 104 days in 1998. Then a reversal, down to 69 days in 1999 and 54 days in 2000 and gradually to 44 days in 2003 and 40 days in 2004. The last column of table 1 reproduces an incomplete series of the direct data derived by the Russian State Committee on Statistics from enterprise records. It reveals an even higher length of the average collection period (Days of Sales Outstanding, or DSO). This indicator rises from 68 days in 1995 to 99 days in 1996 to 136 days in 1997, and 122.8 days in 1998. The reversal comes between 1998 and 1999. The average collection period declines to 93.7 days in 1999, 74.5 days in 2000, 67.8 days in 2001, 64.0 days in 2002, 59.2 days in 2003, 55 days in 2004, and 61 days in 2005.

If the average collection period is lengthy and fluctuates separately from output, enterprises maximize nominal receivables subject to how much subsidy they expect to enforce in lieu of payments. They make invoices exceed payments to that end by price increases which amass the balance of receivables. It is this practice that undergirds the alignment of receivables and price indices in figure 7.1. It also indicates that the causation in figure 7.1 goes from growth of

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[21] *Encyclopedia Britannica* in the article "Business Finance," section "Accounts Receivable," summarizes that the ratio of receivables to sales in U.S. manufacturing ranges between 8 and 12 percent, yielding the average collection period of approximately one month (around 36.5 days, to be exact).

[22] The next step (Step 2, two pages below) explicates these accounting, incentives, and constraints in detail.

receivables (indeed from invoices) to price indices, not vice versa.

The mechanism of this subsidy extraction was introduced on pages 2-3 and in figure 5. Figure 5 demonstrates how during the period from 1992 to 1998 the outstanding balances of receivables matched over time the sum of various subsidy channels, such as tax non-remittance and monetization multiplied through the banking system. This mechanism became more complicated in 1999-2007, but the pattern remained within, of which later. The next steps through Box 1 and its accompanying figures 9 to 15 explore and document the mechanism of this subsidy extraction in detail.

- Observation 5. Indexation

The final observation of step 1 is straightforward, if unconventional. Box 3 summarizes it at the bottom. Optimization of cash flow in the U.S. implies that firms index invoices to payments and through them to spending in the economy (that is, to the combined changes in the money supply and the velocity of its circulation). In the process, output and prices increase or decrease in one or another combination between them in the cyclical pattern. This indexation to payments and ultimately to spending does not let invoices exceed payments by separate price increases. That would expand the balance of receivables and undermine cash flow optimization. This is not sustainable. Firms could not survive thus.

In Russia, enterprises maximize nominal receivables by making invoices outgrow payments via price increases. This implies that, as they increase prices to make up the balances of nominal receivables, enterprises index invoices not to payments and hence not to spending. They index invoices to fiscal targets—how much subsidy enterprises expect to enforce. They learn by doing, by trial and error, as described earlier (see pages 2-4 above), and learn continuously over time, what these fiscal targets are. Those who learn survive and socialize the experience on the national scale. This is the collective survival of the fittest.

Ultimately, enterprises index invoices to fiscal expectations. In this pattern, price increases are detached from spending. Excess of invoices over payments, which is made up of price increases, is detached from spending. Fiscal expectations bypass current spending (money times velocity and their combined changes) and generate inflationary expectations directly[23], through price increases

[23] A burgeoning literature inaugurates a new wave, which its practitioners call "the fiscal theory of the price level." It is possible that the Russian experience may fit as a special case with its own systemic particulars (the subsidy from below) and mechanics (trade credit). Only specialists in this innovative, sophisticated, and extremely technical (not to say inscrutable) field can adjudicate if their approach is what explains the Russian case. The present authors believe so, but a true test would require substantial modeling and econometric analysis, beyond the scope of this book. Of a large body of literature, one can list only a few references here. Thomas J. Sargent and Neil Wallace, "Some Unpleasant Monetarist Arithmetic," *Federal Reserve Bank of Minneapolis Quarterly Review* 5, no. 3 (Fall 1981): 1-17; Kiminori Matsuyama, "Endogenous Price Fluctuations in an Optimizing Model of a Monetary Economy," *Econometrica* 59, no. 6 (November 1991): 1617-1631; Eric M. Leeper, "Equilibria Under Active and Passive Monetary and Fiscal Policies," *Journal of Monetary Economics* 27, no. 1 (February 1991): 129-147; Michael Woodford, "Price Level Determinacy Without Control of a Monetary Aggregate," *Carnegie-Rochester Conference Series on Public Policy* 43 (December

in invoices in outgrowth of payments. These are self-fulfilling inflationary expectations. They materialize in the outstanding balances of receivables.

The simplest way to describe this procedure is to view price increases in invoices as a price surcharge added to the prior price listed in past invoices. This is a third party surcharge, to be billed to the government and the public at large (households, consumers) in pursuit of the subsidy.[24] One more inference which may seem outlandish but, on reflection, fits. Since this subsidy is collected (see figure 5 again), the price surcharge in invoices constitutes a special tax levied by enterprises on the government and, eventually, on consumers and households. It acts like a quasi-value-added tax on sales over the stages of processing. It is quasi and not genuine value-added tax in the national income accounting sense because this tax is additive on enterprise fiscal expectations, not multiplicative at a preset rate. Hence it applies equally to output with the positive and the negative value-added.[25] Which makes this unique tax from below (the endogenous tax) especially distortionary for, on top of income redistribution, it finances and perpetuates value subtraction.

The relevance of these tedious observations comes to the fore with a quick reality check. It is the confluence of figure 1 and figure 7.1. Figure 1 relates the pendulum of Russia's GDP in 1992-2007 to the index of the ratio of money balances to receivables. Figure 7.1 relates the index of receivables and the price index. Since the index of receivables merely embodies price surcharges in the balances of invoices in excess of payments, which makes the two indices match, the index of the ratio of money balances to receivables in figure 1 acquires real-life meaning. It stands for the real money balances deflated by the price increases in excess invoicing, in pursuit of the subsidy. Fiscal expectations of the subsidy generate self-fulfilling inflationary expectations, namely surcharged invoices. They materialize in the outstanding balances of receivables in figure 7.1, whence they are transplanted as the denominator in the index of the money balances to receivables in figure 1.

Figure 1 relays how these inflationary expectations embodied in receivables interact with nominal spending (the money supply times the velocity of money circulation). They outgrow nominal spending and contract real money balances in 1992-98. When fiscal (and hence inflationary) expectations subside in 1999-2007 and the index of receivables decelerates, nominal

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1995): 1-46; Joydeep Bhattacharya and Joseph H. Haslag, "Monetary Policy Arithmetic: Some Recent Contributions," Federal Reserve Bank of Dallas, *Economic and Financial Review* (Third Quarter 1999): 26-36; Charles T. Carlstrom and Timothy S. Fuerst, "The Fiscal Theory of the Price Level," Federal Reserve Bank of Cleveland, *Economic Review* 36, no. 1 (Quarter I, 2000): 22-32; Lawrence J. Christiano and Terry J. Fitzgerald, "Understanding the Fiscal Theory of the Price Level," Federal Reserve Bank of Cleveland, *Economic Review* 36, no. 2 (Quarter II, 2000): 3-38; John Cochrane, "Money as Stock: Price Level Determination with No Money Demand," National Bureau of Economic Research, *NBER Working Paper* no. 7498 (January 2000).

[24]Surcharge and surcharged invoicing seem to be the best terms to express this unique, perhaps ineffable process. Other terms can include overcharge, overbill, overinvoice, overdraft invoicing, excess invoicing. The term surcharge is mechanical, value-neutral, and contains marginal (additive) and fiscal connotations.

[25]The persistence and extent of the negative value-added, or value subtraction, in the Russian economy will be discussed later in this chapter.

spending outgrows receivables. Real money balances recovered in 1999-2007.

When the real money balances contracted in 1992-98, real output (GDP) contracted in alignment. When the real money balances recovered in 1999-2007, real output (GDP) recovered in alignment, given the idle supply capacity after the great contraction and improved incentives. Less subsidy extraction, less socialism, more production.

Step 2. The payment jam

What happens when receivables amass? One can internalize the problem by setting up and running a business on this page. Then tables 4 to 6 aggregate this case and apply it to Russia.

Suppose revenues (gross sales, receipts) are $100,000, expenses $85,000, and net income $15,000. At the end of the period, the outstanding balances of receivables were $9,000, of trade payables $6,000, and of taxes payable $3,000. Receivables constitute 9 percent of sales, implying 33 days of the average collection period. Depreciation aside, if total (trade and tax) payables are equal to receivables, net cash flow is equal to net income (the Glossary provides definitions).

Suppose in the next period businesses surcharge invoices. In nominal terms, revenues and expenses double, trade payables triple, taxes payable increase by one-third, and receivables grow sixfold. Revenues are $200,000, expenses $170,000, and net income $30,000. The outstanding balances of receivables are $54,000, of payables $18,000, and of tax payables $4,000. The average collection period jumped to 99 days (54000/200000 x 365). Its counterpart, days payables outstanding, rose to 39 days (18000/170000 x 365). In both cases, all wages have been paid off.

The flow of receivables (its increment) during the period was $45,000, the flow of trade payables $12,000, and the flow of taxes payable $1,000 . These are the four numbers to reckon with: net income is $30,000, the flow of receivables, $45,000, the flow of trade payables, $12,000, and the flow of tax payables $1,000. In the cash flow sense, net income less receivables is -$15,000. This is a minus sign, not a dash. This is the income yet to be collected while the cash gap widens. The flow of trade payables and tax payables compensates for this gap but incompletely.

Net income	$30,000
Minus Accounts Receivable (flow)	$45,000
Plus Accounts Payable (flow)	$12,000
Plus Taxes Payable	$1,000
Equals Net Cash Flow	-$2,000

This is a minus sign. Net cash flow turns negative. With negative net cash flow, this business has no cash profit for its owners. Moreover, minus $2,000 means $2,000 less than needed to pay the bills of the period. If the dynamics of negative net cash flow persists, this business cannot pay all its bills to suppliers, lenders, the government, and workers in the due period. It draws on cash balances in the bank and runs them down. This is not sustainable. If no financing flows in and creditors (suppliers, lenders, or the government) call in the debts owed them, this business is bankrupt.

The same calculations apply to the aggregate economy, the U.S. in table 4 and Russia in tables 5 and 6. They will enter the discussion shortly. Meanwhile, let us try to save the above business. Mechanically, there are four potential responses to the problem of negative net cash flow:

reduce receivables, obtain outside financing, increase trade payables, and increase tax payables.

- Potential responses

(1) One can reduce receivables by factoring them (selling at a discount to factor agencies) or by altering the invoicing strategy towards cash flow optimization described above. Factoring can help occasionally, not continuously. It has no economic rationale continuously for it amounts to deflating invoices after inflating them. In the long run, it is efficient to alter the invoicing strategy and stop surcharging invoices. This solves the problem once and for all. But this is a secular matter of economic system, policy, incentives, and choices. It is beyond mechanics.

(2) One can obtain outside financing by borrowing and/or issuing equity. Both are problematic when net cash flow is negative. The net discounted present value of a profitless business is zero. Financial markets measure earnings on the cash, not accrual, basis. Negative earnings per publicly offered share on the cash basis do not sell shares. Borrowing increases future payables (interest and principal). It cannot be a sustainable solution to the negative net cash flow problem. Bank lending in this situation on a national scale is risky beyond the banking system. Banks may rollover non-performing loans to business running negative cash flow but this is terminal. Potential non-performing loans expose banks themselves to insolvency and jeopardize the deposit base. Furthermore, borrowers' failure to make interest payments in due intervals may cause liquidity frictions and bank panics, with subsequent spillovers to the monetary system and the economy at large. Only a continuous government subsidy can induce continuous lending, credit rollover and extension under these conditions.

(3) One can increase trade payables. Initially, negative net cash flow does not halt operations because the business can draw on the money balances in the bank and dispose of other assets. After cash balances and other assets are run down, bills cannot be paid in full within the due period. Payables fall into arrears. Thus this business does automatically increase trade payables when its net cash flow turns negative. This happens by default. Unpaid bills automatically increase the outstanding balance of payables. Payment arrears (increased trade payables) turn net cash flow non-negative. Suppose in the example in the box on the previous page, payables quadrupled instead of tripled. Days payable outstanding rose to 52 days (24000/170000 x 365). Net cash flow from operations increased to $4,000 (30000 - 45000 + 18000 + 1000). Receivables became aged (88 days in the example in the box above), payables are in arrears (52 days), and operations can continue and even earn positive net income in cash. (Consult the Glossary for definitions of accounts receivable aging, aged receivables, and related terms). Increasing trade payables helps trade debtors in the short run. This practice can last as long as trade creditors can and will sustain aging and accumulation of their own receivables. Eventually, on a broader scale, trade creditors may find themselves in the same box on the previous page. Their own flow of receivables may exceed net income and net cash flow may turn negative. If and when trade creditors call in the debts owed them, bankruptcy arrives.

(4) One can increase taxes payable. The business can stop or delay paying corporate income or profit tax. For quick cash, it can stop or delay remitting payroll and income taxes withheld from

workers and value-added or sales taxes collected from consumers. This is illegal. If the government can enforce tax remittance and tax payments, it will, and this business will be no more.

- Actual observations

The same considerations apply to national economies. Tables 4 and 5 compile the annual flows of funds of nonfinancial firms or enterprises in the U.S. and in Russia in 1992-2003.[26] Table 6 converts the Russian data into the statement of cash flows to sharpen the point.

The U.S. data in table 4 flatly rule out negative net cash flow arising from the amassment of receivables. In accordance with the cyclical pattern of trade credit, the flow of receivables was negative during the years of economic slowdown (the years with some quarters of recessions). Most importantly, net income of firms exceeded the annual flows of receivables by about an order of magnitude on the average during 1992-2003. The flows of receivables slightly exceeded the flows of trade payables.[27] There were no payroll arrears to register in the national statistics. The flows of taxes payable were on the average less than one percent of net income and signified regular tax liabilities in the process of payment. The flows of receivables exceeded the sum of the flows of trade and tax payables. This difference, to be subtracted from net income in calculating net cash flow, is minuscule in comparison with net income itself. In all, net cash flows were on par with net income after minor adjustments for the flows of receivables and trade and tax payables.

When individual U.S. firms or industrial segments occasionally fell into a negative net cash flow position, like public utilities in California during the electricity crisis of 2001, it was due to under-charged, not surcharged, output prices and to low, not massive, receivables. Negative net income on the accrual basis caused negative net cash flow despite timely cash payments by buyers. Bankruptcies in the U.S. stem from negative net income, not from negative net cash flow. The latter is only a mechanical outcome of the former.

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[26]Russian sources contain two data series on receivables and payables. The broader series includes trade credit between the holding companies and their wholly owned subsidiaries. The narrow series excludes it. All our figures and tables 1 and 2 employ the narrow series. It is more suitable for analytical purposes because internal receivables between the holding companies and their subsidiaries would not influence third party billing and subsidy extraction. Tables 4 and 5 use the broad series because it is more suitable for the complete flows of funds.

[27]This is a mechanical result typical for most economies. Sales to the government and some sales to households (e.g., utilities and communications) are conducted on trade credit. They enter accounts receivable. There are no accounts payable to match because the government and households are not treated as firms in these tables. In Russia, for the same mechanical reasons, receivables exceeded payables in the 1990s. Since 1999, trade payables slightly exceeded receivables in the Russian accounts. This fact is of little consequence but it fits the overall reversal of accounts in late 1998. One untested explanation points to government budget surpluses. They started after the Central Bank policy in September-December 1998 mandated repatriation and sales of foreign exchange revenues by exporters. This version of capital controls (of outflows, not inflows) liquified enterprise cash balances in the banks, which, in turn, empowered the government to enforce tax remittance by enterprises and run budget surpluses. The latter, in their own turn, enabled the government to pay its bills to enterprises for various supplies within the due period. This reduced receivables across industries without affecting payables. In a chain reaction, it then decelerated both payables and receivables, but the combined result was that the outstanding balances of payables still exceeded those of receivables.

Russia's data in tables 5 and 6 imply that net cash flow was bound to turn negative in 1992-1998 for all or at least some industries. This did not happen because of the amassment of payables, both trade payables and tax payables. To highlight this observation, figure 5 pulls the receivables data hidden in line item 10 of the flows of funds in table 5 and lists it directly under the data on net income in the statement of cash flows in table 6. Ditto for the data on trade payables and tax and payroll payables.

The flows of receivables exceeded net income in 1994, 1996, 1997, and 1998 for the entire economy. The flows of receivables were almost as high as net income in 1992, 1993, and 1995. Given disproportional distribution of receivables in relation to net income by industries, the flows of receivables significantly exceeded net income for many enterprises and in a number of industries. Those were primarily the net trade creditor industries such as fuel energy, electric power, engineering (machine building), construction, and transportation.[28]

Recall from table 4 that in the U.S. the flows of receivables constitute about 10 percent of net income. In Russia during 1992-97, the flows of receivables exceeded net income by 25 percent; in 1992-98, by a factor of 2.7.[29] Since 1999, net income steadily exceeded the flows of receivables by a factor from 1.6 to 2.9. Thus over the period 1992-1998, net income of Russian enterprises wound up in receivables, not cash. In terms of cash, net income of Russian enterprises was negative. They were able to operate entirely on cash from trade payables and taxes payables left **not** paid, which compensated for cash **not** received from receivables.

The flows of trade payables roughly corresponded to the flows of receivables. The flows of tax payables, that is, tax arrears and tax non-remittance, grew so fast that they caught up with net income in 1996. The flows of tax non-remittance constituted a whopping 85 percent of net income over the period 1992-1998 (474.5 and 561.3 billion rubles, respectively). Recall that the flows of taxes payable hover around one percent of net income of U.S. businesses. Tax non-remittance supplemented trade payables in counter-balancing receivables. This applies especially to net trade creditor industries referenced above (fuel energy, electric power, engineering, construction, and transportation), whose receivables exceeded payables. Tax non-remittance was a major source of positive net cash flow which enabled enterprises to render net income (profits) in cash.

- The chain reaction

One man's receivables are another man's payables. Money is fungible. These two basic propositions explicate that maximization of receivables (subject to the expected subsidy) was the source of the amassment of trade payables and that tax arrears supplemented payment arrears. As

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[28]For the distribution of the balances of receivables and payables by industrial sectors see, e.g., Russian State Committee on Statistics, *Rossiiskii Statisticheskii Ezhegodnik 1997* (Moscow, 1997), p. 538; Russian State Committee on Statistics, *Rossiiskii Statisticheskii Ezhegodnik 2000* (Moscow, 2000), p. 536.

[29]Alternative dates are used for comparison because net income in 1998 was negative. The point holds with and without inclusion of 1998.

noted earlier, the average collection period expanded from 24 days in 1991 to 51 days in 1992, shortened to 45-46 days in 1994-95 only to lengthen to 63 days in 1996, 66 days in 1997, and to a 104 days in 1998. It reversed to 69 days in 1999 and 54 days in 2000 and gradually decreased to 44 days in 2003 and 40 days in 2004. The direct official data in the last column of table 1 cite the rise from 68 days in 1995 to 99 days in 1996, 136 days in 1997, 122.8 days in 1998, and a reversal to 93.7 days in 1999 with the subsequent decline to 74.5 days in 2000, 67.8 days in 2001, 64 days in 2002, 59.2 days in 2003, 55 days in 2004, and 61 days in 2005.

Since 1992, accounts receivables became and remained past due, or aged. Their counterpart is payment arrears. Days payable outstanding measure the average payment period (or non-payment period, as it were) the same way as the average collection period measures the unpaid length of receivables. Days payables outstanding doubled from 17 days in 1991 to 36 days in 1992, increased gradually to 55 days in 1996 and 61 days in 1997, and leaped to 102 days in 1998. A downward reversal started slowly afterwards, 72 days in 1999 and 56 days in 2000 and gradually shortened to 45 days in 2003, and 40 days in 2004. Since 1992, payables were in arrears.

Receivables amassed due to surcharged invoices generate payables that fall into arrears. It follows from the above discussion that maximization of receivables increases payables on two intertwined counts.

1. First, when receivables amass among sellers, trade payables amass among buyers. Aged receivables generate payment arrears.

2. Second, sellers themselves delay payments and thus increase payables and turn them into arrears to compensate for cash shortfalls when receivables take up the bulk of their net income.

A critical mass of payment arrears and aged receivables creates a payment jam. This is a situation on the brink of cessation of operating activities. A marginal increase in payment arrears improves the cash flow position of buyers but worsens the cash flow position of sellers to the point where their net cash flow runs down to zero.[30] They, in turn, have to increase their payment arrears to stay afloat. But this worsens the net cash flow position of their respective sellers and runs it down to zero. One can extend this exercise in rounds through the flow of funds until operating activities of some clusters of enterprises cease. This is a chain reaction.

There is a recourse. Enterprises can maximize tax arrears, tax non-remittance.

Step 3. Third party payables

One can think of trade payables as second party payables. Most enterprises except retailers, various services, etc., are both sellers of output and buyers of inputs. In the flow of funds over the

[30]This situation especially affects net creditor industries listed above but export revenues mitigate it for the crude oil and natural gas industries.

stages of processing, sectoral increases in payment arrears unleash a chain reaction of cash flow shortfalls. Tax arrears, in contrast, can be viewed as third party payables. They harm the cash flow position of the government, reduce revenues and increase the budget deficit, which, in turn, delays government procurement payments, ages receivables of government suppliers, and hurts their cash flow position. But the government can sell bonds and/or print money to finance its budget deficits.

Tax non-remittance and expected monetization not only offer enterprises a supplemental strategy of improving their cash flow position. They also constitute a pure subsidy.[31] This is why enterprises which maximize profit in cash terms must maximize tax non-remittance.

Other third party payables include payroll arrears. Enterprise owners and managers treat them similarly to tax arrears but accumulate them to a lesser extent, if they want to maintain their core labor force. We include payroll arrears in tables 5 and 6 but omit them from diagrams because of their relatively small size. The operational word is relative. By the end of 1998, payroll arrears constituted 3 percent of GDP, a significant income transfer from workers to enterprise owners and managers.[32] Unfortunately, their size is still insufficient to be visible in diagrams due to the much larger size of other variables such as the outstanding balances of receivables, tax non-remittance, and monetary aggregates.

Tax non-remittance is separate from tax evasion. It adds to tax evasion. Tax non-remittance is explicit and recorded. Enterprises withhold payroll and income taxes from workers and collect value-added and sales taxes from consumers. After that, enterprises impound part of this tax collection. In addition, they impound and do not remit their corporate income or profit tax which is also collected from households—consumers, workers, and shareholders. In short, tax non-remittance is explicit confiscation of the tax base.

Table 7 documents that the outstanding balances of tax arrears in Russia rose from 0.6 percent of GDP in 1992 to 18 percent of GDP in 1998 and then reversed and declined to 2.2 percent of GDP in 2004. The outstanding balances of taxes payable in the U.S. ranged between one and 1.5 percent of GDP.

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[31]See Mark E. Schaffer, "Government Subsidies to Enterprises in Central and Eastern Europe: Budgetary Subsidies and Tax Arrears," in David M.G. Newbery, ed., *Tax and Benefit Reform in Central and Eastern Europe* (London: Center for Economic Policy Research, 1995), pp. 115-144; Mark E. Schaffer, "Do Firms in Transition Economies Have Soft Budget Constraints? A Reconsideration of Concepts and Evidence," *Journal of Comparative Economics* 26, no. 1 (March 1998): 80-103; Michael S. Bernstam and Alvin Rabushka, *Fixing Russia's Banks*, pp. 29-34, 69-71; Brian Pinto et. al, "Dismantling Russia's Nonpayments System: Creating Conditions for Growth"; and, Brian Pinto et. al., "Give Macroeconomic Stability and Growth in Russia a Chance: Harden Budgets by Eliminating Non-Payments," pp. 297-324.

[32]We list managers on par with owners because, in Russia, state-owned enterprises did not remit profits or dividends to the government and, in terms of accrual of net income, qualified as private property of managers. One can also add state managers such as ministers of nuclear energy, rail roads, etc. State enterprises also partially qualified as private property of managers in terms of exclusive control of the disposal value of net assets (equity). The existence of assets stripping of state enterprises effectively disqualifies the government as the owner. From this perspective, privatization of productive assets in Russia in the 1990s was nearly universal.

Figure 9, panel 1 plots the relationship between tax non-remittance (the balances of tax payables, tax arrears) and the outstanding balances of receivables. This relationship is direct, strongly correlated, and consistently proportional.

The balances rather than flows are employed to smooth short-term lags between these variables without arbitrarily choosing a particular lag. The data are monthly from January 1992 through July 1999. This choice of dates takes Russia from the beginning of liberalization of transactions through the great default of August 1998 and twelve months of its aftermath. The reversal of policies, of which shortly, occurred in September-December 1998, and economic recovery started in 1999, but many empirical structural relationships of 1992-98 between receivables, tax non-remittance, and monetization maintained their momentum. Later on, figure 15 will extend the same bivariate regressions as in figure 9 through the end of 2007. It will cover the entire period 1992-2007 and show the actual reversal of some of the relationships since mid-1999. Meanwhile, to give a pointer, all panels of figure 9 contain an arrow which points to January 1999 when the new policy (of which, again, shortly) was fully installed.

The bivariate ordinary least squares regression in panel 1 shows that most observations except the last months of 1997 fit the regression line closely. The functional form is quadratic, to check for possible acceleration, deceleration, and non-monotonic concavity and also to be consistent with other polynomial regressions in figure 9. But it is almost identical with the linear regression plotted with the same data in panel 1A of figure 9.[33] Both regressions account for 99 percent of the variation between receivables and tax non-remittance.

These panels do not prove that amassment of receivables causes tax non-remittance. Correlation is not a causality. But no proof of a one-directional causality is necessary. On the contrary, the relationship between the balances of aged receivables and tax arrears form a feedback loop as depicted in arrow 2 and the sequence of arrows 8 and 1 in the flow chart in figure 5. Enterprises maximize receivables subject to expected subsidy (fiscal expectations), while tax non-remittance is part of this expected subsidy in the data plotted in figure 5. An increase in tax non-remittance raises subsidy expectations and stimulates surcharged invoices (arrow 8 in the flow chart in figure 5) which build up aged receivables (arrow 1 there). In turn, amassment and aging of receivables render net cash flow negative without an automatic increase in trade payables and supplemental maximization of tax non-remittance (arrow 2 in the same flow chart). Figure 9, panel 1 offers evidence for these relationships in both directions and for the entire feedback loop.

Under the payment jam, on the margin, the government cannot enforce tax remittance in full. All fiscal instruments are blunted. (It took the Central Bank of Russia to invent a sharp one in late

[33]Panels 1A to 3A in figures 9 and 15 replicate the same data as panels 1 to 3 in the linear functional form. The comparison checks if the polynomial regressions were used for a better fit, given the complex dynamics of the data under changing policies, or were selected to manipulate the data for the benefit of the authors' hypothesis. The linear regressions distinguish when they find the same relationship as the polynomials but a weaker fit and when they do not fit at all due to the reversal of policy followed by the reversal of relationships between key variables. This tedious background comparison of statistical tests serves the principal intention of this work to discover, not to advocate.

1998 and reverse the situation, but of this in due course). Of the possible menu of enforcements, one can think of fines and penalties, sequestration of enterprise money balances in the bank, lien and seizure of assets, placing in receivership, forced bankruptcy, prosecution of owners and managers, and any other legal or fiscal recourse. During 1992-98, especially in 1996-98 when tax non-remittance exacerbated, the government tried, or at least tried to apply, all of these measures. They temporarily improved tax remittance by individually targeted enterprises, for a few months, but had all failed over time.

On the national scale, the effect of enforcements was even smaller. Of the 156 months of 1992-98, there were only six intermittent months (December 1994, June and September 1995, December 1997, and June and December 1998) when the balances of tax arrears slightly declined, never two months in a row, and their build up resumed thereafter. On the national scale, under the payment jam, when enterprise X had to remit more taxes, it had to simultaneously reduce payments to enterprise Y, which then reduced its own remittance, netting little, if anything, for the government enforcement effort.

Not that the government did not try. Not that it was soft or weak-willed. Rather, it was impotent. Piling up fines and penalties could not induce payments when, as table 7 shows, tax arrears in 1992-98 were growing unabated anyway. The data in table 7 suggest why sequestration of enterprise money balances in the banks was not workable. Tax arrears were outgrowing enterprise money balances rapidly in 1992-98. Already in 1994, the ratio of money balances to tax arrears fell to two. The government had to seize 50 percent of enterprise money balances to discharge tax arrears. But then the payment jam would have deteriorated, payments shifted to barter, and the tax base severely undermined. After 1994, even that sequestration was not possible. In 1995, tax arrears were equal to enterprise money balances. The government could hypothetically seize bank accounts and thus close down operations throughout the economy, but it did not. The government could apply this measure to selected enterprises as a deterrent to all, but it was not credible exactly because it could not have been applied to all or many, for reasons just stated. Since 1996, the sequestration option evaporated altogether when tax arrears significantly exceeded enterprise money balances.

Lien and assets seizure, placement in receivership, forced bankruptcy, change of ownership, changing the form of ownership, prosecution of owners and managers, etc., are overlapping measures. In practice these measures meant re-nationalization. Apart from political constraints,[34] re-nationalization of enterprises and replacement of managers could not enforce tax remittance without changing incentives throughout the economic system. This implies no change without preventing surcharged invoices and accumulation of receivables. Both privately owned enterprises

[34]The government whose claim to existence was liberalization and privatization, could not re-nationalize enterprises and remain in power. Moreover, tax non-remittance was similar among enterprises which were de jure state-owned fully or partially (e.g., in oil, natural gas, electric power, and other industries) and also among profit-making government agencies (nuclear energy, rail roads, etc.). Re-nationalization of state-owned enterprises is absurd even under the Russian economic system. In sum, the government could not seize assets because it either already owned them, slated them for privatization, or just privatized them.

and those owned de jure by the government acted in the identical mode within the same network. Different ownership, different owners, and different managers could not change the underlying systemic incentives. They indeed did not when the government made such changes from time to time in various industries.

Overall, under the payment jam, on the margin, any fiscal crackdown could improve tax remittance in specific sectors in the short run but jeopardize the flow of payments across the economy and the tax base in the long run. A major attempt to enforce tax remittance would have substituted additional payment arrears for tax arrears. A spillover effect through the flows of funds across industries would have brought down the net cash flow positions of net creditor enterprises and industries. This would have halted economic activity and wiped out the tax base.

The government options were between partial tax remittance by enterprises and the loss of the tax base. The options of the enterprise network were between partial tax remittance to the government (that is, maximization of receivables and the subsidy subject to fiscal constraints) and unpredictable consequences otherwise. Both the government and enterprises chose partial tax remittance. They were continuously engaged in the game of chicken over the **extent** of tax remittance, not over its completeness. As a rule, the government blinked.

This symbiotic arrangement worked for both until it engendered the great default of August 1998, of which shortly. The situation reversed in late 1998 after the Central Bank mandated repatriation and domestic sales of foreign exchange revenues. This reduction of capital outflow rapidly increased enterprise money balances (see table 7). This, in turn, enabled the government to enforce more tax remittance in 1999-2000 in the flow sense, slow down the buildup of tax payables, and even reverse the trend and draw down the outstanding balances of tax arrears since 2001. This time, the enterprises blinked, first specific exporters, then the export sector at large, and, eventually, the entire enterprise network.

Step 4. Third party debt transfer

Figure 10.1 extends this exploration to one of the consequences of surcharged invoicing, maximization of receivables (subject to expected subsidies), and tax non-remittance. It links tax non-remittance to government debt in terms of bonds. The monthly plot starts in January 1995 and ends in August 1998 when the government repudiated its bonds and defaulted.[35] The two curves converge in 1995-96, slightly diverge in 1997, when debt accelerated relative to tax arrears, and converge again ruble for ruble in 1998. They reach the same amount of about 430 billion rubles at the time of the default. One can conclude that in the absence of tax non-remittance, which is a revenue shortfall, and barring additional spending, there would have been no need to issue bonds. The default of August 1998 would not have happened.

A revenue shortfall due to tax non-remittance created additional budget deficit which needed

[35] A detailed analysis of the history and mechanics of Russia's default of 1998 is in Federico Sturzenegger and Jeromin Zettelmeyer, *Debt Defaults and Lessons from a Decade of Crises* (Cambridge: MIT Press, 2006), pp. 91-113.

financing. All other sources of budget deficit being equal and another source of financing, monetization, being also equal, the government had to issue bonds to finance this additional budget deficit. That is, the government had to securitize tax non-remittance.

Tax non-remittance is a pure subsidy. It is a transfer of income from workers and consumers to enterprise owners and managers. In the flows of funds, it is also a transfer of income from the government as the recipient of tax revenues, to the enterprise network. It is a subsidy because it would have been the same amount if all taxes were remitted and the equivalent outlay given to enterprises.

The only difference with the latter case is that the subsidy via tax non-remittance is taken, not given. This subsidy is forced onto the government in the symbiotic arrangement discussed above. The government was then forced to securitize the tax non-remittance subsidy. Figure 10.1 merely illustrates this point.

Enterprise arrears were billed to the government via tax non-remittance and then charged to bond-holders when the government defaulted. This is a two-stage third party debt transfer.

Figure 10.2 broadens the theme of third party debt transfer. It shows that from 1994 until early 1998 the outstanding balances of receivables matched ruble for ruble the balances of total government debt such as bonds and money balances.[36] The claims of the enterprise network on the government subsidy, which is what receivables are, matched the aggregate government debt. can observe in figure 10.2 that the growth of surcharged invoices, congealed in the stock of receivables, accelerated over time in 1994-98, except for the second half of 1997, and exploded in the first half of 1998. The growth of government debt moved along the same trajectory, but slowed down in the first half of 1998. Thus came the time when the government could no longer place additional bonds to cover the growing tax subsidy and its commensurate true budget deficit. There is always an upper bound at which the public is willing to hold government bonds. After this upper bound has been reached, a default occurs in one or another form, usually an implicit default, when the government prints money to monetize the debt.[37]

The government could print money and substitute one form of debt, bonds, with another form, money. That option was not feasible because the Russian government ran a pseudo-fixed (pegged) exchange rate, and printing more money would have crashed the currency even before the devaluation of August 1998 (simultaneously with the default on domestic government debt). An early devaluation would have led foreign and domestic bondholders to dump bonds. This, in turn,

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[36]They diverged on the eve of the default of August 1998 (figure 10.2 plots August 1998 as a separate observation point on par with annual points in previous years). Accumulation of receivables accelerated at that point. If one believes in rational fiscal and monetary expectations with perfect foresight, one can infer that enterprises expected the default, currency devaluation, and subsequent monetization and thus expanded their subsidy claims in advance.

[37]For a brilliant theoretical discussion see Thomas J. Sargent and Neil Wallace, "Some Unpleasant Monetarist Arithmetic," Federal Reserve Bank of Minneapolis, *Quarterly Review* 5, no. 3 (Fall 1981): 1-17.

would have left the government no other option but more monetization. Replacing the bulk of the bond stock with freshly printed money would have led to more than a mere hyperinflation—to a complete loss of currency, the tax base, and the ability to spend, when the population would have shifted to dollars as the currency of choice and abandoned rubles. The real choice was between repudiating government bonds before, or at the same time with, devaluation, and government abdication and chaos.

Empirically, figures 5, 10.1, and 10.2 are consistent. The balances of receivables correspond separately to the sum of government subsidy and the sum of government debt. The former sum consists of tax non-remittance and the monetary aggregate M2. The latter sum consists of government bonds and the monetary aggregate M2. Since the outstanding balances of tax arrears and government bonds grew in alignment, the figures are consistent. Third party debt transfer is the other side of the coin of aggregate third party billing.

Step 5. Forced monetization

A striking feature of panel 2 of figure 9, which also shows in figures 5 and 10, is that tax non-remittance and the money stock M2 were long-term complements and short-term substitutes in 1992-99. They grew in tandem at the same long-term rate and at different short-term rates. In 1992-95, money grew faster than tax non-remittance. In 1996-98, at a time of rapid bond financing of budget deficits, tax non-remittance grew faster than money. Since late 1998, money growth accelerated again relative to that of tax non-remittance. The semi-concave, semi-convex curve in panel 2 of figure 9 fits the close correlation between the balances of tax arrears and money balances on identical scales. The third degree polynomial formula accounts for 98 percent of the variation of monthly observations. Most observations are on or close to the regression line.

A linear regression in panel 2A of figure 9 accounts for 90 percent of the variation. Linearization of this relationship between tax non-remittance and the money balances makes vivid their long-term convergence in 1992-99. To wit, **they grew together ruble for ruble smoothed over time in the long run, substituting for each other ruble for ruble in the short run,** as if they were fungible in the fiscal pool. And they were indeed, via endogenous determination at the margin, in the continuous–daily and hourly–process by trial and error. At the margin, enterprises increase receivables by $1 and increase tax non-remittance by $1 and they wait. If no additional $1 in credit follows, they stop increasing receivables. If $1 in credit expansion follows to reduce $1 in tax non-remittance (to increase tax remittance by $1), enterprises increase receivables by the next $1 and increase tax non-remittance by $1, and so on. This is why there was ruble-for-ruble substitution in tax non-remittance and the money stock during this period. It is not because the government decides ex ante to split the subsidy 50-50 between the channels of tax non-remittance and credit, but because the endogenous enterprise behavior at the margin leads to this outcome. Enterprises do not split the subsidy 50-50 by different channels on purpose. They are indifferent concerning the composition of the subsidy, because a ruble is a ruble. But their behavior within the systemic mechanism achieves this split and the ruble-for-ruble substitution between channels of the total subsidy.

Arrows 4 and 5 in the flow chart in figure 5 capture this long-term and short-term feedback

loop. It is not surprising that the government monetized budget deficits created, among other sources, by tax non-remittance—hence the plus sign from non-remittance to money. It is also not surprising that monetization dissipated the payment jam and reduced tax non-remittance in the short run—hence the minus sign from money to tax non-remittance. But figure 10.1 suggested that bond receipts roughly matched tax non-remittance, which looked like their financed budget shortfalls from tax non-remittance. Why this double coincidence between money growth and tax non-remittance and between bonds and tax non-remittance?

There is no double indemnity. The government does not finance the fiscal cost of tax non-remittance twice, by issuing bonds and money. Recall the short-term trade-offs between money growth and that of tax non-remittance in panel 2 of figure 9 and other figures. When the money supply increased more, tax non-remittance increased less, and vice versa. One suggestion reconciles all the above observations. Under the payment jam, on the margin, **a ruble of bonds financed a ruble of tax non-remittance and a ruble of money growth financed a ruble of tax remittance**. There was more subsidy than even a reconstructed budget would tell,[38] roughly a double amount.

Consider a hypothetical case of total tax revenues transmitted through enterprises (no personal income tax and other taxes paid directly by households, no non-tax revenues).

Option 1: Tax non-remittance is 50 percent of taxes withheld and collected. Budget expenditures are equal to the total tax levy. The budget deficit, equal to 50 percent of expenditures and 100 percent of revenues, is securitized and monetized. Suppose there is an even split in financing budget deficits between bonds and seigniorage, 25 percent of expenditures each. Monetization of budget deficits requires direct seigniorage ruble for ruble.

Option 2: The government gives enterprises a subsidy in the amount of 25 percent of taxes withheld and collected. This subsidy consists of 12.5 percent of this amount in currency printed by the Central Bank and transmitted to banks for enterprise credit and 12.5 percent multiplied through the banking system by a factor of two and extended to enterprises as credit (for simplicity, we leave aside the issue of reserve requirements). For this, enterprises must remit, and the government can enforce this remittance, 25 percent of taxes withheld and collected in addition to the 50 percent in the first option. The official budget deficit, equal to 25 percent of expenditures and 33 percent of revenues, is securitized. The difference between the two options is that the combined fiscal cost is 50 percent of expenditures in the first case and 37.5 percent of expenditures in the second case.

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[38]The official budget numbers are of little use until and unless Russian fiscal accounts, especially for 1992-98, are reconstructed. Due to revenue offsets, which were treated as cash on the revenue side but were not accounted for on the expenditure side, the budget deficit was understated by about 5 percent of GDP in various years. Quasi-fiscal subsidies from the Central Bank to enterprises were not accounted for. Foreign and domestic borrowing was treated as revenues, not financing. Sale of liabilities such as bonds was treated as sale of assets on the revenue side. The list can go on and on. In all, the debt accounts do not match the fiscal flow accounts by a wide margin. The government part of net domestic assets on the balance sheet of the Central Bank, the amounts of publicly held government bonds, and foreign debt raised in 1992-98 do not match cumulative budget deficits in 1992-98. The default of August 1998 buried these discrepancies for posterity.

The subsidy via tax non-remittance and the combined subsidy via tax non-remittance and financing additional tax remittance are the same. If one counts, as the practice of Western economies suggests, the entire money stock as implicit government debt, the debt created by both options is also the same. Still, the second option is preferable because (1) the government can print less money and because (2) it gives the government more flexibility and more instruments to enforce tax remittance on the margin under the payment jam. This prevents extra non-remittance and bond financing.

Factor (1) was especially important under the fixed exchange rate in 1995-98. It helped postpone devaluation. Factor (2) was especially important because it minimized or at least limited the bond issue at any point in time and stretched out over time. This helped postpone the default.

To recapitulate, tax non-remittance forces bond financing of the resulting budget deficits. It forces government debt and leads to a default. The government is interested to delay this eventuality. It enforces tax remittance as much as it can under the payment jam. When this fails, the government monetizes tax remittance. **That is, the government pays enterprises to remit taxes they impounded**. In other words, the government subsidizes the amounts that would have become tax non-remittance but has thus become tax remittance. There is a ruble for ruble trade-off evidenced in the data in figure 9, panel 2 and other figures.

This secondary subsidy via monetization is forced onto the government by the first subsidy via tax non-remittance. Forced monetization of tax remittance is merely preferable to rapid default and devaluation. Greater tax non-remittance can push bonds to the upper bound beyond which they cannot be placed and can induce direct seigniorage, ruble for ruble, of budget deficits. As before, the government and the enterprise network were engaged in the game of chicken, this time over monetization and tax remittance rather than over tax non-remittance.[39]

Figures 11 and 12 illustrate the fiscal mechanics of imminent monetization in any economy with unsustainable budget deficits and forced monetization under Enterprise Network Socialism in Russia. The readers familiar with the Sargent-Wallace framework will find these figures self-explanatory.[40]

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[39]The game of chicken is there because three extreme outcomes are not feasible. (1) It is not possible for the government to enter into an implicit contract with enterprises to monetize total remittance. The government cannot enforce this contract, cannot enforce total remittance when enterprises could recreate the payment jam by simply surcharging invoices greater. (2) It is not feasible for the government to monetize total aged receivables and payment arrears and dissipate the payment jam, because enterprises will stop producing about 99 percent of output and still receive subsidies for one percent output by surcharging invoices to high heaven. (3) It is not feasible for enterprises to raise non-remittance to 100 percent of withheld and collected tax revenues because the next government will end Enterprise Network Socialism. After the policy reversal of late 1998, mandated repatriation and sale of foreign exchange revenues increased enterprise money balances and eased the payment jam. This enabled the government to enforce tax remittance, started to dissipate tax non-remittance, and made the government a much stronger actor in the game of chicken.

[40]Thomas J. Sargent and Neil Wallace, "Some Unpleasant Monetarist Arithmetic," *Federal Reserve Bank of Minneapolis Quarterly Review* 5, no. 3 (Fall 1981): 1-17 and the concomitant literature in footnote 21. A detailed application to Russia is in Nicola Melloni, Market Without Economy: The 1998 Russian Financial Crisis (Stuttgart/

Step 6. Credit transmission, extension, and rollover

Banks transmit, extend, and roll over credit to enterprises on the basis of the monetary base created by the Central Bank during monetization of tax remittance. They multiply monetization of tax remittance through re-intermediation between enterprises. Credit is issued for payments, not for investment. This proposition was covered and documented at length in the addendum to Chapter 4 of *From Predation to Prosperity*, "Fixing China's Banks, not Russia's."[41] When inflation is high **and** nominal interest rates are low, and hence real interest rates are highly negative, credit rollover and extension represent a pure subsidy.

Credit transmission follows automatically from monetary expansion but goes nearly exclusively to the enterprise network, not to other agents, because tax non-remittance is the collateral for the rollover of credit. Thus the network is self-reinforcing and the tax subsidy to the network is self-enforceable. New entrants cannot practice tax non-remittance and cannot compete for subsidized credit because of their position outside of the network. They are not part of the preexisting supply chain and the payment flows. The government can enforce their tax remittance because it can shut them down without revenue loss spillovers.

Step 7. Aggregate third party billing pays. The self-enforceable tax subsidy

Various trade-offs between tax non-remittance and monetization of tax remittance, followed by credit rollover and extension, wind up in the self-enforceable subsidy. Tax non-remittance and monetization multiplied through the banking system sum up to the outstanding balance of receivables. Figure 5 demonstrated a close match in 1992-98 between enterprise subsidy claims through surcharged invoices, embodied in the balances of receivables, and the subsidy they force from the government through tax non-remittance and monetization.

Continuous short-term trade-offs between tax non-remittance and the money balances in the game of chicken between the government and enterprises (see again figure 9, panel 2) make the subsidy self-enforceable. Fiscal expectations to which enterprises index invoices in pursuit of the subsidy become self-fulfilling. At the same time, long-term complementarity between tax non-remittance and the monetary aggregate as subsidy components makes the subsidy self-reinforcing over time until the policy reversal downgrades it.

This self-enforceable subsidy can be called the tax subsidy not only because it finances tax

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Hannover: Ibidem-Verlag, 2006). In this application, the Russian government became entrapped into the double constraint of (what it tried to be) a tight monetary policy and (what it turned out to be) a loose fiscal policy vis-a-vis enterprises. These policies were inconsistent and led to inflationary outcomes that were postponed (or mitigated) through issuance of a large amount of government bonds to finance the fiscal deficit. Although the timing was influenced by the declining oil prices and the Asian financial crisis and its contagion, the main cause was domestic.

[41] http://www.russianeconomy.org/predation/pdf/ch4add.pdf

remittance and the fiscal costs of tax non-remittance. Also, when enterprises surcharge invoices they levy a tax over the stages of processing. The price surcharge in invoices which ends up in the balances of receivables is ultimately a tax on consumers and households. On top of that, it is the taxpayers who bear the cost of the subsidy through inflation and fiscal defaults. By forcing government subsidy, the enterprise network ultimately taxes the public at large.

The mechanism of the self-enforceable tax subsidy on the edge of a payment jam is automatic. Let us consider various possible situations. We will observe the convergence of their results to the same initial position in a full circle:

1. Suppose the government undertakes a partial crackdown to enforce tax remittance. It forces selected enterprises to remit full current tax liabilities or taxes past due. The government succeeds at that. Affected enterprises automatically reduce payments to suppliers in the same amount. The latter automatically reduce their tax remittance in the same amount.[42] Losses are equivalent. The government gains nothing.

2. Suppose the government conducts a large or an across-the-board complete crackdown on tax non-remitters. Payments between enterprises seize up and a chain reaction of shipment stoppages and supply breakdowns begins. Large suppliers of energy, fuel, and other resources halt supplies to non-paying customers. The tax base narrows quickly. The government may face greater incremental losses of revenues due to output contraction than incremental gains from forced remittance of taxes.

3. Suppose the government starts selective bankruptcies. The government could readily achieve this. All requisite bankruptcy laws had been on the books. The government could enforce them. Selective bankruptcies reduce payments to suppliers who, in turn, reduce their tax remittance and increase their tax subsidy in the same amount. The government gains nothing in the short run and narrows the tax base for the future.

4. Suppose the government reduces Central Bank credit to enterprises for remitting tax revenues. Enterprises increase tax non-remittance ruble-for-ruble of foregone monetization. They lose the modest multiplier that the banking system creates when it makes credits and opens deposits on the basis of newly printed money. For this reason, their tax subsidy declines. But the government gains nothing even if enterprises lose part of the subsidy.

5. Suppose the government increases Central Bank credit to enterprises for remitting tax revenues. This increases payment between enterprises and tax remittance to the government.

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[42]Political connections do not matter in this exercise. Suppose the government targets the less politically connected enterprises. They increase tax remittance and reduce payments to suppliers, getting more inputs without paying. This does not worsen their financial position. Suppose better politically connected enterprises escape the government wrath of tax enforcement. They receive smaller payments from their buyers and increase the self-taken tax subsidy in the same amount. Their financial position does not improve. On the edge of the payment jam, political connections turn out to be fungible and their benefits socialized.

But this does not constitute a special gain for the government because it could just as well issue bonds in the same amount and sell them to the Central Bank or simply arrange direct Central Bank credit to the government.

6. Suppose the government increases tax rates or levies new taxes. This reduces the free (after-tax) cash flow of enterprises and their mutual payments, either directly or indirectly, through declining consumer demand. Then enterprises increase tax non-remittance. The government may end up with little or no revenue gains.

7. Suppose the government reduces regular expenditures, outside of the tax subsidy, in order to compensate itself for lost tax remittance and to reduce the budget deficit. This is possible up to a point—until the point is reached when enterprises provide inputs for which they are not paid to parties that have lost government payments. These may be the military, non-profit organizations (schools, hospitals, etc.), and households that use public utilities. Then enterprises collect the tax subsidy from the government in the amount of unpaid supplies.

8. In addition to self-enforcement of the tax subsidy, an automatic is also at force. Self-enforcement of the tax subsidy limits what the government can do. An automatic regulation limits what enterprises can do. Suppose enterprises increase tax non-remittance, and take a higher tax subsidy than they need for payments. In this case, they have more free cash flow and higher money balances to increase payments to suppliers and mitigate the payment jam. After that, the government can enforce more tax remittance without jeopardizing production flows and future tax flows. An increase in the current tax subsidy reduces the future tax subsidy by the same amount.

It follows that fiscal policy and monetary policy are powerless under this fiscal system. This conclusion is simply another way of saying that the tax subsidy is self-enforceable and self-regulating in the payment jam, on the edge of halting production and tax revenue flows. If the government deviates or enterprises deviate in the very short run from the level of the tax subsidy under a given level of receivables, the above mechanism quickly enforces the equalization of the cumulative amounts of receivables and the tax subsidy.

Figures 13 and 14 break out of the 1992-98 time frame and extend the same relationship through the entire period of 1992-2007. Figure 13 uses the linear scale and figure 14 the logarithmic scale. Panel 1 of each figure plots the monetary aggregate M2 as a proxy for the monetary component of the subsidy. Panel 2 plots M1 for reference because it includes only demand deposits and excludes saving deposits, which may closer correspond to payments. The linear scale enables us to show tax non-remittance and the monetary aggregate M2 as interacting components of the subsidy. But because of high inflation in the early 1990s, the linear scale makes the data before 1994 invisible. The logarithmic scale demonstrates that the postulated relationship held since the beginning of 1992. It took only the first three months of 1992 for receivables to explode and outgrow the inherited and rapidly inflating nominal money stock. But the logarithmic scale presents only the sum of the two principal channels of the subsidy without their itemization. It also understates the divergence between the variables which started in 2002 and expanded during 2002-

2007.

Tax non-remittance slowed down in 2000-2001 and started to decline steadily in absolute terms since October 2001. The new policy initiated by the Central Bank which we mentioned earlier and will attend to shortly started to take effect. Most importantly, due to this policy we lost the monetary component of the subsidy variable. The part of the monetary base created through purchases of repatriated foreign exchange revenues does not represent a subsidy, at least not completely.[43] It is no longer possible to monitor the self-enforceable subsidy with simple empirical variables. The subsidy has declined substantially in 2002-2007. In the spirit of figures 5, 13, and 14, one can estimate the claim on the subsidy as the ratio of the annual flows of receivables to GDP. This is not an actual subsidy which may be collected with a short lag but an annual claim on this subsidy. Figures 5, 13, and 14 show that this subsidy had been always extracted, at least until 2002, after which simple empirical evidence becomes blurred.

Table 2 estimates that the subsidy claim (and hence the subsequent subsidy) constituted 21.8 percent of GDP in 1992, gradually declined to 13.1 percent of GDP in 1996 and 5.3 percent in 1997, and then increased to 19.8 percent of GDP in 1998. Its gradual decline began from 5.5 percent of GDP in 1999 to 2.1 percent in 2002 and 2003. The claim increased to 2.8 percent in 2004 but this upturn may represent a short-term fluctuation. It is only possible since 2002 to estimate the subsidy indirectly, through the claim via the flow of balances of receivables. If the subsidy dissipated completely, the relationship between nominal receivables and the price index in figure 7.1 and other consistent correlations in figures 6 to 8 would have ceased to hold.

Most importantly, the principal empirical regularity in figure 1 between the balances of receivables and money balances versus contraction and recovery of real GDP continues to hold throughout 1992-2007.

Step 8. The circuit of aggregate third party billing

Step 8 is identical to step 1. Invoices outgrow payments and fall into the balances of aged receivables when enterprises surcharge invoices. They add a third party surcharge to the price, subject to fiscal expectations, and bill the government. Surcharged invoices carry a network tax on consumers and households. Now it is more evident why. The subsidy is self-enforceable under the payment jam created by aged receivables and payment arrears.

Fiscal expectations are self-fulfilling. The feedback from the subsidy to enterprise invoicing activity validates surcharged invoicing activity and stimulates more of it. It stimulates maximization of receivables subject to fiscal expectations.

Arrows 7 and 8 in the flow chart in figure 5 depict the feedbacks from the subsidy

[43]This point does not apply to the monetary base created in 1996-98 through purchases of foreign exchange from international investors who bought Russian bonds. This monetary base financed government debt, although in exchange not for domestic assets (bonds) but for international reserves, and thus monetized tax non-remittance.

components, tax non-remittance and monetization, to surcharged invoices. Panels 1 and 3 of figure 9 test empirical evidence for these feedbacks. Bivariate regressions can indicate causation running either and both ways. The flow of causation from receivables to tax non-remittance and monetization (multiplied by credit transmission) was discussed above. Now, this is a test of **fiscal expectations** stemming from the eventual subsidy to maximization of receivables.

A strong correlation between the balances of receivables and tax arrears in panel 1 was discussed earlier. Panel 3 regresses the monthly balances of receivables in 1992-mid-1999 against the monetary aggregate M2, the second major component of the subsidy. The functional form is quadratic as it offers a better fit. A linear regression between the same variables makes a reality check in panel 3A of figure 9. The polynomial formula in panel 3 accounts for 96 percent of the variation. The linear regression accounts for 92 percent of the variation. Both show a strong positive relationship between the balances of receivables and the money balances. This implies that a mechanical short-term effect, that monetization and credit would dissipate payment arrears and aged receivables, is totally overwhelmed by subsidy expectations. Panels 3 and 3A demonstrate a strong incentive for the subsidy-extracting strategy of the enterprise network. Panels 1 and 1A offer the same finding on the side of the tax non-remittance channel of the subsidy.

This discussion has come full circle. It is convenient to incorporate the fiscal circuit in the flow chart in figure 5 into a general mechanism of Enterprise Network Socialism. This mechanism in Box 4 connects the fiscal circuit of aggregate third party billing with its impact on real output (GDP) and with policy reversals in 1999-2007. The arrows numbered in blue, from 1 to 11, represent the fiscal circuit augmented by the policy forces of 1999-2007. The arrows numbered from 1 to 8 encompass the self-contained and circular system of aggregate third party billing. They retrace the eight steps summarized in Box 1. Arrows 9 to 11 add the policy reversal in 1999-2007, to which the discussion turns below. The arrows numbered in brown, from 1 to 7, incorporate a simplified transmission to real output. Plus and minus signs on the side of the arrows indicate positive and negative relationships between variables.

In the beginning, enterprises maximize receivables subject to the expected subsidy. They index invoices with price surcharges to fiscal expectations. Invoices outgrow payments and—arrow 1, the plus sign—their balances end up in aged receivables. This creates the payment jam and may render net cash flow negative and halt operations across the economy. Under the payment jam—arrow 2, the plus sign—enterprises endeavor non-remittance of taxes withheld from workers and collected from consumers. The government engages in the game of chicken to enforce tax remittance and—arrow 3, the plus sign—has to securitize tax non-remittance, issue bonds. To minimize and limit tax non-remittance and delay the default of on the ever-growing debt the government is forced to monetize additional tax remittance (arrow 4, the plus sign, from tax non-remittance to the money supply and arrow 5, the minus sign, from the money supply to tax non-remittance). Monetization multiplied and transmitted through the banking system to enterprises—arrow 6, the minus sign—dissipates payment arrears and aged receivables in the short run. In the long run, both monetization—arrow 7, the plus sign—and tax non-remittance—arrow 8, the plus sign—as the complementary embodiment of fulfilled fiscal expectations, stimulate surcharged invoices and maximization of receivables.

The entire system of aggregate third party billing sketched in Box 4 is circular, self-enforceable, and self-reinforcing. It had met its match in the policy introduced by the Central Bank of Russia in September-December 1998.

The Reversal of Powers and the Fall of the Freedom to Charge

This is a story of an accidental series of policy decisions with systemic consequences. It is a story of how a peripheral policy of the Central Bank, control of capital outflows aimed at accumulation of foreign exchange reserves, hit the fiscal feedback loop at the core.

In September-December 1998, the Central Bank of Russia initiated a concerted effort to accumulate foreign exchange reserves. The simplest and quickest policy instrument was compulsory repatriation of export revenues. The policy has succeeded over the years in its intended objective. Russia's foreign exchange reserves increased from nearly zero in the late 1998 to nearly $600 billion by mid-2008.

Beyond this specific facet, two issues intertwine. First, this policy shift was flagrantly illiberal. It was an act of de-liberalization in reversal of the policies of 1991-98, an act of imposition of government controls. Second, on the surface, this was a sectoral and peripheral policy. It affected one direction of the flows on the capital account. It imposed control of capital outflows in order to build up reserves. It did not affect capital inflows. It did not touch the current account and international trade. Outside foreign trade, it was not a deliberate fiscal policy or economic growth-related policy. Beneath the surface, however, this illiberal policy shift inadvertently changed the very mechanics of Russia's fiscal system, restoring solvency to the-then bankrupt government. Unexpectedly, this policy launched a rapid economic recovery of 1999-2007 from the bottom of the great contraction of 1992-98.

A policy reversal

In the second half of 1998, the Russian government was, for all practical purposes, bankrupt and dysfunctional. After the great default on domestic debt on August 17, 1998, there was for several weeks a sequence of acting cabinets, none permanent. The President of Russia, the head of state and the chief executive, was nowhere to be found, and the CBS and other Western media reported that he either resigned or was dead. The Central Bank's foreign exchange reserves were almost depleted. In order to rebuild its stock of foreign reserves, in September 1998, the Central Bank started to enforce mandated repatriation and domestic sale of the foreign exchange revenues of exporters. The timing was crucial.

By a sheer extraneous coincidence, interest and principal payments on the external debt of the Russian government, which had been rescheduled several times over the previous seven years, were due in September 1998 and thereafter. Less than a month before this day of reckoning, Russia's domestic bond market was annihilated. On August 17, 1998, the government defaulted on its domestic, ruble-denominated bonds. Simultaneously, it shifted from a crawling peg to a flexible

exchange rate and devalued the ruble by one-third. The currency market responded with a further, rapid and sharp devaluation. When less than a month later the time came to make the foreign currency payment, a bankrupt and illiquid government found that it could not purchase the billions of dollars of foreign currency with its tax receipts in devalued rubles. Whence followed several technical defaults on external debt service.

The government appealed to the Central Bank as the lender of last resort **of foreign exchange**. The Central Bank extended the government a foreign currency loan of $6.7 billion in exchange for a dollar-denominated Russian bond, that is, a promise of the government to repay the bank $6.7 billion in foreign currency. The loan nearly depleted the foreign exchange reserves of the Central Bank and rendered its net international reserves (net of IMF loans) negative.[44] More payments on the government's external debt were coming due and the Central Bank could expect more requests from the government for foreign exchange. Some measures had to be taken quickly lest the news of the Central Bank's foreign exchange void create a panic, further fall of the ruble, and defaults on the government's external debt.

Rapid accumulation of foreign exchange reserves became the Central Bank's top priority, indeed a survival strategy. Its first moves were experimental, by trial and error. As a stopgap measure, on August 26, 1998, the Central Bank enacted a provisional decree "On Introduction of Temporary Restrictions on Operations on the Capital Account by Residents."[45] In extension, on September 1, 1998, the Central Bank enacted an ordinance "On the Rules of Making Payments in Foreign Currencies in the Export and Import Operations by Residents of the Russian Federation."[46] This order was soon countermanded[47] as it was superceded by the next, final decree which locked in the new policy.

On September 11, 1998, the Central Bank issued a new decree which acquired the force of law on the day of its publication, September 16, 1998. The decree represented a seemingly minor and innocuous procedural adjustment to a long-standing regulation that required Russian enterprises to sell 50 percent of their export revenues in foreign exchange for rubles. The new decree carried a subtle (and perhaps a deliberately obscure) bureaucratic title: "On Introducing Amendments and

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[44]For the balance sheet and discussion, see our "How Big Are Russia's Foreign Exchange Reserves?" at http://www.russianeconomy.org/comments/091100.pdf .

[45]No. 328-U, *The Circular of the Bank of Russia*, no. 63 (318), September 2, 1998. All bylaws and regulations of the Central Bank of Russia are published in its official circular, *The Circular of the Bank of Russia* (*Vestnik Banka Rossii*), once to thrice a week except banking holidays. There are four types of regulations: instructions (I), ordinances (P), decrees (U), and telegrams (T). They have the same legal force of a bylaw and differ only in the genre and the method of distribution, which both depend on the length and content of the document. The documents have the date of issuance and the date of publication in *The Circular of the Bank of Russia*, which becomes the official date of being in force. Various secondary sources often mix up these dates. For consistency, we cite the date of issuance in the text and the date of publication in the footnotes.

[46]No. 55-P, *The Circular of the Bank of Russia*, no. 63 (318), September 2, 1998.

[47]*Ibid*.

Augmentations to the Decree of the Bank of Russia 'On the Rules of Mandatory Sale of Part of Foreign Exchange Revenues by Enterprises, Offices, and Organizations via Authorized Banks and the Conduct of Operations on the Domestic Currency Market of the Russian Federation', No. 7 of June 26, 1992."[48] The operating words are "via authorized banks."

Before September 16, 1998, Russian enterprises were obligated to sell 50 percent of their foreign exchange revenues at the market exchange rate, but this foreign exchange could be sold through the Russian banking system. From September 16, 1998 on, mandated sale could only be conducted through designated currency exchanges, the Moscow Inter-Bank Currency Exchange and seven regional exchanges. The adjustment in the regulation halted sales through the banking system and inter-bank sales of foreign exchange revenues.[49]

What's the difference? To put it simply, from September 16, 1998, foreign exchange revenues of Russian enterprises had to be sold **inside** Russia. Foreign exchange had to be brought and wired to Russia to be sold. The new rule meant **mandated repatriation** of foreign exchange revenues, indeed forced repatriation and forced exchange of export revenues. This amounted to an imposition of capital controls on the outflow side of the capital account.[50]

Before September 16, 1998, foreign exchange revenues of Russian enterprises could be sold outside of Russia through correspondent accounts of various Russian banks abroad. They could be sold to subsidiaries of exporters themselves. Exporters could repurchase dollars at the cost of a banking transaction fee and deposit dollars abroad. They sold for rubles, but rubles did not enter their bank accounts in Russia. The preexisting rule mandated 50 percent sale of foreign exchange revenues, not 50 percent repatriation and deposit of ruble-denominated proceeds in enterprise accounts with Russian banks inside Russia. The preexisting rule could not address capital outflow. Most importantly, while foreign exchange revenues of Russian exporters, either sold to subsidiaries or repurchased, were deposited abroad, their money balances with Russian banks remained drawn to low levels. Enterprises could amass billions of dollars abroad while withholding tax remittance from the government in Russia. Due to the low money balances of enterprises and the payment jam, the government could not enforce tax remittance. The monetary authority was compelled both to monetize tax remittance, in order to force enterprises to remit taxes withheld from workers and consumers, and to monetize tax non-remittance, to enable the government to finance the budget

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[48]No 347-U, *The Circular of the Bank of Russia*, no. 66 (321), September 16, 1998.

[49]The legal and institutional part of the story is reconstructed by bits and pieces from various Central Bank instructions and explanations circulated by Russian financial organizations. For a succinct account by one of them see http://www.vergen.ru/archive/docs/full/1999/02/cb1102.html .

[50]Capital controls in developing and newly industrialized economies are usually associated with control of capital inflows. These are, specifically, short-term foreign portfolio investment, which may create currency risks upon quick withdrawal, and foreign bank lending, which may create excessive debt exposure and assets/liabilities misalignments (dollar-denominated liabilities and domestic currency-denominated assets) and thus create domestic bank failures. The type of capital control introduced by the Central Bank of Russia in late 1998 applies to capital outflows only.

deficit. Both tax non-remittance and monetization of tax remittance, which was multiplied by the banking system through credit transmission, summed up as a subsidy to the enterprise network. Figures 1 and 2 illustrate how these fiscal (tax non-remittance) and monetary (monetization multiplied by the banks) components of the subsidy added up in response to accumulation of enterprise receivables.[51]

What was the true rate of foreign exchange sales before September 16, 1998, when the mandated rate was 50 percent of export revenues? It could have been zero except when enterprises themselves needed rubles to reduce payroll arrears and pay wages. The decree of September 16, 1998, raised it from nearly zero to 25 or 30 percent initially, when enforcement was incomplete, to close to 50 percent when enforcement strengthened. The Central Bank enforced its rule strictly through its regional branches by matching foreign trade accounts of enterprises with physical volume and world prices against resulting repatriation and sale of foreign exchange. Commercial banks, even the banks owned and controlled by exporting enterprises, had to cooperate in this process and regularly furnish all the necessary information lest their license be revoked. From September 16, 1998, the new rule was in force. Dollars and other foreign exchange flowed into Russia, were sold for rubles, and deposited in enterprise bank accounts. As the resulting ruble receipts entered enterprise bank accounts, enterprise money balances increased enabling the government to enforce tax remittance. The government's fiscal position started to quickly improve.

Restoring fiscal solvency was not an aim or intention of the Central Bank. The Central Bank did not intend to run fiscal policy, to become the effectual fiscal authority in lieu of the Finance Ministry. All that the Central Bank sought was to bring dollars to Russia so that the bank could purchase them to accumulate reserves. This focus of the Central Bank policy is clear from its next move. On September 28, 1998, the Central Bank issued an ordinance entitled "On the Rules and Conditions for Conducting Trades of U.S. Dollars for Russia's Rubles at the Special Trading Sessions of the Inter-Bank Currency Exchanges."[52] Foreign exchange revenues first had to be sold at special trade sessions of the Moscow Inter-Bank Currency Exchange, with the Central Bank commanding the right of first refusal at those sales. At the same time, this move tightened enforcement of mandated repatriation.

Further tightening was enacted on December 2 and 7, 1998, when the Central Bank closed the foreign exchange resale—and hence repurchase—window between domestic enterprises.[53] Finally, on December 31, 1998, the Central Bank raised the rate of mandated repatriation of foreign

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[51]In hindsight, it is interesting to recall that these issues were already discussed in August 1992, even if in a preliminary mode, due to lack of a lengthy experience and data, by the board of governors of the Central Bank of Russia, including its three concurrent and subsequent chairs, and one of the present authors. See Appendix.

[52]No. 57-P, *The Circular of the Bank of Russia*, no. 69 (324), October 1, 1998.

[53]No. 435-U, *The Circular of the Bank of Russia*, no. 85 (340), December 9, 1998; No. 437-U, *The Circular of the Bank of Russia*, no. 86 (341), December 7, 1998.

exchange revenues to 75 percent of receipts and shortened the operation from two weeks to one.[54] The latter detail was hardly necessary except for intimidation as a means of enforcement.

As the terms of trade for Russian exports improved, reinforced by the rise of world oil prices, the bank reduced the rate from 75 to 50 to 30 to 25 percent.[55] Finally, it came down to zero as the direct fiscal device of export duties could be enforced. It could not be enforced at a time of tax non-remittance because export duties and other tax payments, or rather non-payments, are fungible, and enforcement of export duties would have led to commensurate reductions of remittance of other taxes. Once enterprise bank balances in domestic banks were restored due to a period of mandated repatriation, and complete tax remittance became enforceable, the real enforcement of export duties became possible without reducing remittance of other taxes. Over the course of 1999-2007, the Central Bank fulfilled its objective, increasing its foreign exchange reserves from almost zero to nearly $600 billion by mid-2008. But the unintended fiscal consequences and real economic effects on output went much beyond that.

A reversal from contraction to recovery

The Central Bank printed rubles when it purchased foreign exchange reserves, that is, expanded the monetary base. These increases in the money supply in response to forced repatriation of export revenues produced an effect different from, indeed opposite to, monetization of the buildup in enterprise receivables in 1992-98. Three implications of this Central Bank monetary expansion in 1999-2005 ensued in the following sequence. Let us first describe their transmission mechanism and then submit evidence available in their support.

(1) Enterprise money balances in bank accounts expanded. This reduced the balances of payables and receivables, thereby dissipating the payment jam. This process continued through the flow of funds across enterprises and industries, reversing the chain reaction of payment arrears and aging of receivables.

(2) **Enterprise export earnings started to monetize tax remittance**. The government could enforce tax remittance. The balances of tax arrears slowed down in 1999-2001 and declined significantly since October 2001. Figure 13.1 and table 7 document this trend in detail. This implies that the flow of tax non-remittance started to decline since 1999, that is, tax remittance increased,

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[54]No. 476-U, *The Circular of the Bank of Russia*, no. 1 (345), January 12, 1999. In addition, to reduce currency risks and to strengthen enforcement, the Central Bank on January 10, 1999 reduced the foreign exchange exposure of Russian banks. It reduced open currency positions to 10 percent of each bank's equity capital and established caps on foreign exchange contracts. No. 479-U, *The Circular of the Bank of Russia*, no. 2 (346), January 20, 1999.

[55]It follows that no level of and no increase in world oil prices would have mattered if effective repatriation of foreign exchange revenues was zero. At the same time, the effect of mandated repatriation of foreign exchange revenues was strong already in 1999 even though an increase in world oil prices was modest. This effect strengthened in 2001 and 2002—the balances of tax non-remittance started to decline, see figure 13.1—even though world oil prices declined (see figure2). These considerations indicate that the connection between world oil prices and Russian economic recovery in 1999-2007 is specious if one abstracts from the economic system and policy.

and since October 2001 enterprises started to pay off past tax arrears. Government fiscal accounts reversed from deficits to surpluses.

(3) The link between monetization and the tax subsidy was weakened. Expansion of the monetary base, inasmuch as it was created by purchasing foreign exchange from enterprises, does not represent a subsidy. Only multiplication of money through financial re-intermediation between enterprises, through credit rollover and expansion continued to subsidize the enterprise network.[56] Thus the overall money creation was, to a significant extent, no longer a subsidy. It did not stimulate a continuous major expansion of receivables. It only validated their moderate accumulation.

These effects reduced the actual tax subsidy and fiscal expectations. Accumulation of receivables slowed down, surcharged invoicing slowed down, inflationary expectations subsided. Real money balances started to recover and real output followed suit.

The top row and blue arrows 9 to 11 in Box 4, "The Mechanism of Enterprise Network Socialism," incorporate these effects into the prior framework. They show a new loop through which the reversal of policy shifted the outcomes. Figure 15 presents the data to explore the new developments and reversed relationships. It extends bivariate regressions in figure 9 from 1992-mid-1999 to the entire period 1992-2007. As before, panels 1 to 3 use the polynomial functional forms and panels 1A to 3A test the same data in the linear form.

Panels 1 to 3 show that all principal bivariate relationships reversed from positive to negative some time after 1999. Their curves are non-monotonic concave and decreasing. However, there is an ambiguity concerning panel 3, the regression of the balances of receivables against the money balances.

In panel 1, the balances of tax non-remittance and receivables were positively related before 1999 and some time thereafter, they slowed down together soon after 1999, and tax arrears started to decline thereafter (in October 2001, says figure 13.1), their relationship with receivables turned negative. The polynomial of the third degree accounts for 98 percent of the variation (the quadratic formula accounts for 96 percent of the variation, and the linear regression in panel 1A of figure 15, for 77 percent).

The relationship between tax non-remittance and monetization also turned from positive to negative some time after 1999 in panel 2 of figure 15. The quadratic formula accounts for 74 percent of the variation. Their linear bivariate relationship in panel 2A simply breaks down (adjusted R^2 is 0.26). The quadratic regression in panel 2 implies that monetization started to work to dissipate tax non-remittance. This suggests that forced repatriation of foreign exchange earnings

[56]See the official policy and regulatory overview issued by the Central Bank of Russia on December 26, 2005, "Refinancing (Credit) of Credit Organizations as an Instrument of the Monetary Policy of the Bank of Russia," at http://www.cbr.ru/analytics/standart_system/print.asp?file=refinan.htm . It contains a detailed table on subsidized credit to the enterprise and banking network in 2004 and 2005.

indeed started to monetize tax remittance.

The relationship between the money balances and the balances of receivables in panel 3 of figure 15 became ambiguous. Notice in panel 3 of figure 15 as well as in figure 13.1 that both the money balances (obviously) and the balances of receivables (not necessarily obviously) continued to grow in 1999-2007. But the growth of receivables slowed down significantly relative to money growth. A comparison between the quadratic equation in panel 3 and the linear regression in panel 3A is suggestive. The quadratic formula accounts for 94 percent of the variation, the linear for 78 percent. In Panel 3, the implied shape of the quadratic curve, which represents a better fit, is non-monotonic concave and decreasing. That is, the acceleration coefficient in the quadratic formula is negative and, after a slow down relative to the money supply, the balances of receivables are predicted to decline. Monetization does not significantly stimulate amassment of receivables any more and may even discourage it in the future. However, the polynomial of the third degree which accounts for 98 percent of the variation (not shown in figure 15) and makes the best fit, accords more with the linear regression. They suggest that the relationship between the money balances and receivables remains positive and the subsidy component in monetization persists, just to a lesser degree.

Judging from the data in figures 1, 7.1, and 15, a symbiotic relationship between the enterprise network and the government remains in place, but the positions of power have reversed. The Central Bank snatched fiscal power from the enterprise network. In effect, it started to run fiscal policy and delegated its execution, tax remittance, to the government. The latter started to reinforce its executive capacity to enforce tax remittance by additional crackdowns on the enterprise network, including partial and exemplary de-privatization and re-nationalization. The Central Bank also started to run independent monetary policy—independent, that is, from the enterprise network. This was a major reversal of powers. The enterprise network continues to maximize the tax subsidy, subject to fiscal expectations, but its power to do so significantly diminished. In was no longer as free to charge the government and the public at large in 1999-2007 as it was in 1992-98.

Output Suppression and Recovery

The self-enforceable tax subsidy to the enterprise network enabled the great contraction in 1992-98 after the dissipation of central planning in 1989-91. This contraction was an anomaly in view of the negative value-added typical for central plan economies. A rapid GDP recovery in 1999-2007, after a policy reversal, utilized the preexisting capacity and the embedded growth potential.

Value Subtraction and an Accounting Impossibility of Contraction

Under central planning, the system of forced production (output quotas) and forced delivery between enterprises and industries made prices embody cross-subsidies. Given government priorities, many manufacturing, construction, and agricultural enterprises received subsidized inputs from natural resource enterprises and public utilities. In turn, enterprises in manufacturing, construction, and agriculture produced subsidized output whose market value in world prices would

have been lower than the market value of resource inputs. This means that value was subtracted across industries beyond mining and utilities, that is, in a significant part of the economy. The negative value-added, or value subtraction, is widespread in many economies with cross-industry, cross-sectoral price distortions and cross-subsidies, in both central plan and less developed economies.[57]

Under network arrears and the self-enforceable tax subsidy, cross-subsidies from natural resource enterprises and utilities to downstream industries retain and perpetuate value subtraction. However, the initial value subtraction inherited from central planning carried an invisible growth advantage.

Elimination of value subtraction is in itself value addition, that is, one-time economic growth. Other vast inefficiencies of central planning contained inborn opportunities for efficiency improvements and thus for additional growth. Market prices and incentives automatically eliminate value subtraction and other inefficiencies and should—indeed cannot fail to—generate instant growth. This made the lack of substantial economic growth in Russia and elsewhere, let alone the Great Contraction, impossible on accounting grounds.

Arithmetically, subtraction of subtraction is addition. This means that simply closing down the value-subtracting enterprises and industries and reallocating (initially, simply selling on the world market) resources wasted by them, automatically generates one-time economic growth. Its potential extent was substantial. For example, if the negative value-added constituted 33 percent of the value of resource inputs, its elimination could produce an instant 50 percent growth of real GDP (in constant prices).[58]

From this perspective, even 28 percent growth achieved in Poland in the 1990s, after a big contraction in 1990-92 and a subsequent recovery, can be viewed as a success only relative to Russia

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[57]For a definitive treatment of negative value-added see Ronald I. McKinnon, *The Order of Economic Liberalization. Financial Control in the Transition to a Market Economy* (Baltimore and London: The Johns Hopkins University Press, 1993), pp. 162-186.

[58]A detailed study of input-output tables for Czechoslovakia in 1986 and Hungary in 1987 by Gordon Hughes and Paul Hare found, after adjusting for output quality, that value subtraction amounted to 34.8 percent and 34.6 percent, respectively. Poland exhibited a similar extent of value subtraction. See Gordon Hughes and Paul Hare, "Competitiveness and Industrial Restructuring in Czechoslovakia, Hungary, and Poland," *European Economy, Special Edition*, no. 2 (1991): 83-110. See also Gordon Hughes and Paul Hare, "Industrial Policy and Restructuring in Eastern Europe," *Oxford Review of Economic Policy* 8, no. 1 (1992), pp. 82-104. Value subtraction of around 25 percent can be discerned from the data on the former East Germany, without accounting for output quality. See "Micro and Macroeconomic Adjustment Processes in East Germany," Deutsches Institut fur Wirtschaftsforschung, *Economic Bulletin* 28, no. 4 (Berlin, June 1991), no. 6 (August 1991), no. 10 (December 1991), 29, no. 2 (April 1992), no. 5 (July 1992), no. 9 (November 1992), 30, no. 2 (April 1993), no. 4 (June 1993). If one adjusts for East German data for product quality, the extent of value subtraction should increase and converge with levels in Poland, Hungary, and Czechoslovakia, that is, around 33 percent of the value of inputs. A similar magnitude of value subtraction can be deduced from unpublished Russian input-output tables for 1991, on the eve of price decontrol.

and other depressed economies.[59] Relative to the inherent growth potential, even Poland and Slovenia, let alone other economies northwest of China, were less than successful. A partial explanation of China's success is the advantage of backwardness, the catch-up—the adoption of accumulated Western technological knowledge at low or no cost. An accounting perspective suggests that an even greater advantage is the advantage of wrongheaded industrialization—a one-time jump through eliminating value subtraction. The catch-up requires an effort of investment, training, and application of adopted technology. Even the fastest catch-up takes time. The advantage of wrongheaded industrialization provides effortless growth, with no additional investment and training, at no time—an instant windfall. The more industrially developed a country was under central planning, the more one-time growth windfall it could achieve at no cost. Russia's initial conditions were among the most advantageous on this account.[60]

Elimination of value subtraction and automatic, instant growth were easy not only from an accounting but also from a socio-political perspective. As a matter of fact and accounting, the total subsidy pays not only for value subtraction but also for 100 percent of wages of workers engaged in value subtraction. It is a matter of fact because waged workers, not robots, are working in the value-subtracting enterprises. It is a matter of accounting because value subtracting output is somehow produced. This means that the public pays for the difference between input and output prices (value subtraction per se) and also for wages and profits of producers. These wages and profits are subsidized on top of value subtraction. Therefore, if the market closes down all value subtracting enterprises, the government can tax the public and pay 100 percent of wages to displaced workers for not working and for retraining, and the total subsidy will still be lower than before because value subtraction will not be subsidized. Thus substantial, instant, one-time economic growth can be achieved without making workers financially worse-off, at about zero social cost, indeed with a social gain.

Not only was the great contraction not a necessary part of transformation, the opposite is true: The great contraction was structurally impossible as a matter of accounting. Economic expansion immediately after the end of central planning was a historical windfall and a missed opportunity.

A uniform view of contraction and recovery

Recall figures 1 and 7.1 to the witness stand. They reveal what happens to the supply side in the world of aggregate third party billing. Incentives are mixed. They combine maximization of

[59]For a broad and detailed discussion of the causes of the great contraction across many post-central plan economies see Robert A. Mundell, "The Great Contractions in Transition Economies," in Mario I. Blejer and Marko Skreb, eds., *Macroeconomic Stabilization in Transition Economies* (Cambridge and New York: Cambridge University Press, 1997), pp. 73-99.

[60]Paradoxically, from this perspective, even the end of Russia's subsidization of Eastern Europe and the former Soviet Republics with underpriced energy must have helped economic growth in both Russia and its former beneficiaries. Input pricing at world levels should have eliminated value-subtracting, not value-adding, output, and thus contributed to growth, not contraction.

real profit from production and maximization of redistributed income, specifically maximization of the tax subsidy from surcharged invoicing.

Given technological possibility and existing capacity, production is bolstered by real spending, that is, mechanically, real money balances times their velocity of circulation. But real money balances are not independent (exogenous) under Enterprise Network Socialism. Maximization of the tax subsidy operates through maximization of nominal receivables, subject to fiscal expectations.

Figure 7.1 displays how growth of nominal receivables (the balances of invoices in excess of payments) aligns with price increases. Surcharged invoices automatically increase the price level. Fiscal expectations materialize as self-fulfilling inflationary expectations bypassing monetary policy. They contract real money balances. The converse is also true. When fiscal expectations are lowered by aggressive government policy of subsidy cutting (i.e., suppressing enterprise freedom to charge, enforcing tax remittance), real money balances can grow.

One can view the index of the ratio of money balances M2 to receivables in figure 1, as well as later in figures 16 through 19, as a proxy for the index of real money balances.[61] This proxy curve of the index of money balances to receivables in figure 1 shows the pendulum of real money balances on the downward path from 1991 through 1998 and on the upward path from 1998 through 2007. This pendulum corresponds to contraction of real money balances in 1992-98 when receivables outgrew nominal money balances and to recovery of real money balances in 1999-2007 when the course reversed and nominal money balances outgrew receivables.

The movement of this proxy curve of the index of real money balances in figure 1 matches closely the index of real output (GDP) in 1992-2007 starting in 1991 as the benchmark 100 for both indices. Contraction of real money balances in 1992-98 matches the contraction path of real GDP during that period. Recovery of real money balances in 1999-2007 matches closely partial economic recovery since 1999. Minor annual fluctuations of real GDP upward and downward in 1996-98 also match annual movements of real money balances.

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[61]The monetary aggregate M2 stands for nominal money balances in domestic currency. Measures of broad money which include foreign exchange deposits are not relevant for this study. The real value of foreign exchange is not affected by fiscal (subsidy) pursuits and inflationary expectations of Russian enterprises, although the amount of foreign exchange deposits with Russian banks may be so influenced to an unknown extent. Instead of M2 one could employ a narrower monetary aggregate M1 which includes demand deposits and excludes saving deposits. Both are close in Russia because saving deposits are low. The latter constituted about 20 percent of M2 in the 1990s and increased to about 35 percent in 2005 (as opposed to over 60 percent in China). For a detailed discussion see addendum to chapter 4 of *From Predation to Prosperity*, "Fixing China's Banks, not Russia's," especially figure 4. Since savings deposits as a component of M2 (as opposed to large time deposits in M3) are of low maturity and money is fungible, it is more conventional to use M2 in simple, general-purpose studies. Milton Friedman summarized his multi-decade-long experience with the choice of monetary variables: "I use M2 rather than either narrower aggregates, such as the base or M1, or broader aggregates, such as M3, because in prior research I have found M2 to have a more reliable relation to other economic magnitudes than the other monetary aggregates." Milton Friedman, "A Natural Experiment in Monetary Policy Covering Three Episodes of Growth and Decline in the Economy and the Stock Market," *Journal of Economic Perspectives* 19, no 4 (Fall 2005), p. 146.

A uniform empirical relationship holds consistently for both contraction and recovery. When the outstanding balances of receivables outgrow nominal money balances, the economy contracts. When nominal money balances outgrow the balances of receivables, the economy recovers. **It is important, in our view, that this is a uniform and unified empirical regularity, with a unified mechanical and systemic explanation behind it.** Nothing is left to ad hoc reasoning. Notice, however, that nothing in the discussion above suggests that this relationship should hold for economic growth beyond recovery from a great contraction under aggregate third party billing. Indeed, the above mechanics and systemic dissection are idiosyncratic and specific to the unique system of Enterprise Network Socialism.

Figure 1 and all prior discussion focused on the impact of subsidy maximization by surcharged invoicing on the real money balances. For simplicity, we abstracted from the independent impact of velocity of money circulation on overall spending in 1992-2007. There were already too many complicated variables to consider and to plot, and velocity (the inverse of the money demand) is one of the most difficult analytical issues which only specialists in that field can handle. But it is, in fact, real spending (money times its velocity), not just real money balances, that is approximated empirically in figure 1. In fact, another figure, figure 16, separates real money balances and shows in full their collapse from 1991 to 1992 from which they never recovered throughout the period 1992-2007.

Only figure 16 relays the meaning and the scope of the explosion of subsidy and inflationary expectations immediately after liberalization of January 1992 and shows how this brought down the real money balances in 1992 to about one-fifth of their level in 1991. Figure 16 plots the same data as figure 1 plus adds the year 1990 for reference. The difference is that figure 16 uses the same full scale for both indices of real GDP and the ratio of money to receivables and does not truncate the scale for the latter index. Figure 1 truncated the index of the ratio of M2 to receivables between 1991 and 1992 and truncated the latter's scale accordingly. By doing so, figure 1 in effect imitated a nearly fourfold increase in the velocity of money circulation in 1992 which did not let real GDP collapse by almost 80 percent on par with the real money balances. Such a rapid increase in money velocity often accompanies episodes of high inflation when the real value of money balances depreciates and money holders reduce their money demand accordingly. Thus figure 1 implicitly incorporates changes in velocity and compares the index of real GDP with a proxy for the index of real spending.

Figure 17 takes a closer look at annual fluctuations in 1992-2007. It uses different scales for the indices of real GDP and the ratio of M2 to receivables to implicitly account for an increase in money velocity in 1992. It adds a flow chart which summarizes the above discussed relationships between surcharged invoices, the price index, nominal money balances, the velocity, nominal spending, real spending, and, ultimately, real output. The left side of Box 4 incorporates this transmission mechanism with other mechanics of subsidy extraction under Enterprise Network Socialism.

Figures 18 and 19 apply the same comparison of the indices of real GDP and the ratio of M2 to receivables to the quarterly data in 1995-2007. The quarterly GDP series before 1995 are not

available. The quarterly comparisons are more sensitive to short-term fluctuations and various lags. Figure 18 plots crude, not seasonably adjusted index of GDP. Figure 19 uses seasonably adjusted data. GDP in the first quarter of 1995, seasonably adjusted, is used as the benchmark 100 value. The quarterly indices of real output and the ratio of money balances to receivables in 1995-2007 do not always closely match. They broadly correspond to each other over time during both the contraction years and the recovery years. The same empirical regularity applies on the quarterly basis smoothed over time: When receivables outgrow money balances, GDP declines. When money balances outgrow receivables, GDP recovers. This persistent empirical rule supercedes short-term fluctuations.

The Ambivalence of Liberalization and Privatization

Aggregate third party billing in Russia in 1992-2007 generated a large degree of income redistribution. Table 2 documents that the self-enforceable tax subsidy alone claimed, on the average, 15 percent of the shrinking GDP in 1992-98. It was around 20 percent of GDP in 1992, 1993, and 1998. This is a **net** transfer from households and consumers to enterprise owners and managers. In the process, this subsidy extraction involved a near-universal **gross** redistribution of national income in the flows of funds. **This gross redistribution of income is more important than net transfer because it is gross, not net redistribution that thwarts productive incentives and fosters counter-productive and predatory behavior.** Enterprise enforcement of the tax subsidy involved at least two accompanying subsidies: (1) price cross-subsidies between industries and (2) subsidization of value subtraction and retention of inefficient operations.

(1) Price increases in surcharged invoices are based on fiscal expectations, not on market signals. Prices always transmit information—a great insight of Friedrich A. Hayek.[62] But information about **what**? It can be information about market value or it can be information about a valuable subsidy. As informational devices, prices are neutral between the two. They are above the fray. Enterprises and industries that can extract greater subsidy through tax non-remittance and monetization of tax remittance, add higher price surcharges to their invoices. Hence, relative prices change differently under fiscal-cum-inflationary expectations than under regular inflation. Which means that decontrolled, **free** relative prices are not **free market** relative prices. Relative prices can be free and redistributive at the same time. Recall that most enterprises, except retailers and various services, are both sellers and buyers of output. Therefore industrial cross-subsidies permeate trade credit many times over in the overlapping flows of surcharged invoices and payments.

(2) Enterprises and industries with relatively high payables and low receivables have a better cash flow position than others. They have to remit more taxes and they extract a lower tax subsidy as a result. But their further tax remittance and hence, in the fungible flows of funds, their trade payables are monetized. Since their payables are greater than their receivables, their subsidy covers not only price surcharges by sellers but also (after allowing for the difference between their

[62]Friedrich A. Hayek, "The Use of Knowledge in Society," *American Economic Review* 35, no. 4 (September 1945): 519-530.

increased prices and those of their sellers) real resources. As a result, on the margin, they obtain effectively additional inputs for free, at public expense. This especially involves inputs of natural resources. As we discussed earlier, natural resource industries are net creditors, their receivables exceed their payables, and hence they benefit from the tax subsidy primarily through the tax non-remittance channel. Users of natural resources are net debtors, their payables exceed their receivables, and hence they benefit from the tax subsidy primarily through the monetization (including bank credit) channel. Subsidization of their inputs in the world of free **and** distorted relative prices enables them to continue to engage in negative value-added production, that is, retain value subtraction. In less egregious cases, this merely subsidizes inefficient enterprises and industries.

Integrating (1) and (2) over the entire flows of funds leads to the conclusion that most transactions under Enterprise Network Socialism redistribute income. The self-enforceable tax subsidy and the accompanying cross-subsidies redistribute income in favor of enterprise decision-makers, namely owners and managers. Otherwise, these subsidies would be of little value to them. These subsidies end up in a **net** transfer from workers to owners and managers (that is, de jure managers and de facto owners).

Figure 20 compares factor income shares in non-redistributive economies such as Western market economies, particularly the U.S. the U.K., and Germany, and Spain, and post-central plan China vs. redistributive economies such as the Soviet union (specifically Russia in 1989 as part of the USSR), post-central plan Russia in 1992 and 2005, Kazakhstan in 2005, and less developed economies, specifically Mexico, Argentina, and Egypt. The examples include free market economies (the U.S., the U.K., and Spain), a non-free market economy in China, a central plan socialist economy (Russia as part of the USSR), a free non-market, socialist economy (Russia under Enterprise Network Socialism), and non-free non-market non-central plan socialist economies of Mexico, Argentina, and Egypt. In the spirit of Arthur C. Pigou, factor income shares approximate convergence or divergence between agents' productive contribution to the economy and their remuneration from the economy. In the tradition of Arthur C. Pigou and in the language of the literature he inspired, it is a comparison between social returns and private returns,[63] or, to put it differently, between returns to the economy and returns to producer and non-producer agents. Under central planning, in Russia as part of the USSR, and in less developed economies wages and agricultural prices were suppressed. Suppressed wages and agricultural prices were the principal source of income redistribution. The enterprise network in post-central plan Russia retained this mechanism in the absence of central planning. Accordingly, the shares of labor income in all these countries were low and the ratio of labor income to capital income was close to 1:1. In non-redistributive Western market economies and in post-central plan China, wages and agricultural prices were commensurate to their market value and hence the ratio of labor income to capital income was about 2:1. This implies about 15 percentage point factor income redistribution. This

[63] Arthur C. Pigou, *The Economics of Welfare* (London: Macmillan and Co., 1929), pp. 135-145, 174-214, 223-227. A compendium of classic articles is Tyler Cowen, ed., *Public Goods and Market Failures: A Critical Examination* (New Brunwick: Transaction Publishers, 1992). See also, Richard Cornes and Todd Sandler, *The Theory of Externalities, Public Goods and Club Goods* (New York: Cambridge University Press, 1996).

is a massive net transfer of income from workers to owners of privatized industries in post-central plan Russia, similar to such transfer in less developed economies and also similar to such transfer to the government as owner of capital in the central plan economies, e.g., the Soviet Union.

Socialism from below, Enterprise Network Socialism, is just as ubiquitous and near-universal as socialism from above, central planning. Decontrolled transactions and privatized assets are not necessarily market prices and market assets. Freedom from government restriction is not necessarily freedom from income redistribution. Free socialism is still socialism, and free near-total socialism which redistributes the bulk of GDP is still near-total socialism. Socialism from below can be just as much socialism as from above. Freedom to charge is merely socialist devolution.

The Russian experience in 1992-2007 opens a new perspective on liberalization and privatization. Their high time in the 1990s coincided with the great contraction of GDP and their partial rollback in 1999-2007 coincided with partial economic recovery. The uniform assembly line inherited from central planning inverted the expected positive effects of liberalization and privatization. This discussion suggests that liberalization and privatization are ambivalent. They can decrease and they can retain (or even increase) income redistribution. Government restriction is also ambivalent. It can increase or decrease income redistribution. In Russia after September 1998, government restriction reduced freedom to charge and hence decreased income redistribution.

The following tables summarize these ambivalent relationships.

The effects of privatization:

Positive	Negative
1. Property rights prevent runs on common resources 2. Ownership of output enables trade 3. Ownership stimulates investment, invention, and innovation 4. Multiple property rights create competition 5. Private property selects the most efficient owners and the most efficient allocation of resources Points 1-3 apply to all types of property rights Point 4 applies to non-state property rights Only point 5 applies to private property	1. In the presence of subsidies from above or from below, privatization of assets permutates income redistribution which suppresses output 2. Under these conditions, selects the most capable subsidy extractors (the corollary of the Coase theorem[64]) 3. Given the subsidy alternative, de-stimulates investment, invention, and innovation

[64]The Coase Theorem states that under market conditions (and provided that assets are easily transferrable), property always ends up in the hands of most productive users. This happens because the most productive users are willing to pay the highest price for a given asset, since it is they who can derive the highest return. Therefore, the initial allocation of property rights does not matter because the most productive users will be the ultimate owners. See Ronald H. Coase, "The Problem of Social Cost," *Journal of Law and Economics* 3, no. 3 (October 1960): 1-44. It follows that even if there was an initial theft of property, the most productive owners will bid it away from thieves and create wealth for everyone. It also follows that under market conditions asset stripping on the part of legal owners is uneconomical: Why strip assets if they can gain more by selling the firm intact to the most productive (and thus highest paying) users? The corollary to the Coase Theorem states that the rationale changes diametrically if the market economy does not exist and income is common while property is private. Then the value of the asset derives not from its market return but from the share of redistribution it entails. After the abolition of central planning and in the presence of the inherited enterprise network, the true asset is access to public income, to the tax subsidy. Property rights, ownership of enterprises provide **privileged access** to common income. Property rights on productive assets become **fiscal property rights** on the tax subsidy. The corollary to the Coase Theorem states thus: Under enterprise network socialism, property always ends up in the hands of most capable predators on public income, masters of redistribution, subsidy extractors, because they are willing to pay the highest price (apply the greatest force and influence). See the introduction of this corollary in Michael S. Bernstam and Alvin Rabushka, *Fixing Russia's Banks* (Stanford: Hoover Institution Press, 1998), pp. 14-15. It follows that stripping productive assets by legal owners is most profitable under these conditions, because it is not from production but from access that they derive their gains. They want to keep the titles to continue to exploit their privileged access to common income and they add asset stripping as a dessert to the main course. It also follows that it matters little how privatization was conducted and what methods were used, which is the subject of a voluminous literature. The best (worst) predators always come on top in the end.

The effects of liberalization:

Positive	Negative
1. Minimizes income redistribution by the government and its disincentives[65] 2. Removes barriers to economic activity set by governmental income redistribution 3. Removes barriers to economic activity set by the government besides income redistribution	1. In the presence of subsidies from below, liberalization enables income redistribution by private and collective predators and thus suppresses output 2. Under these conditions, makes productive activities less gainful and crowds them out 3. Diverts talent to predatory activities

The ultimate question is about the optimal measure, the optimal dosage of government restriction. How much government is optimal? The experience surveyed here and in this book in general suggests: As much as necessary, as little as sufficient to minimize income redistribution.

[65]The one and only productive use of income redistribution is compensation of producers of ideas for knowledge spillovers from invention and innovation. This exceptional case of income redistribution is necessary for technological progress.

Box 1
The Operation of the Total Third Party Billing under Enterprise Network Socialism

One can follow the arrows in the flow chart in figure 5 and proceed step-by-step thus:

Step 1. Trade credit separates from sales and production. Invoices outgrow payments when enterprises add a third party surcharge to the price and bill the government. See figures 6, 7, 8

Arrow 1 in the flow chart leads to step 2

Step 2. The flow of receivables for many enterprises exceeds net income. See tables 4 and 5. They increase payables lest their net cash flow turn negative. Aged receivables increase payment arrears and vice versa. This chain reaction circulates the payment jam across the economy. Enterprises whose flow of receivables exceeds that of trade payables must increase tax payables.

Arrow 2 in the flow chart leads to step 3

Step 3. Enterprises do not remit taxes withheld from workers and collected from consumers. The government cannot enforce full tax remittance, as in the game of chicken. See table 6, figure 9.1

Arrow 3 in the flow chart leads to step 4

Step 4. The government is forced to issue debt, i.e., securitize tax non-remittance. See figure 10

Arrows 4 and 5 in the flow chart lead to step 5

Step 5. To delay the default, the government is forced to monetize budget deficit, to wit, monetize enterprise tax remittance, as in the game of chicken. See figures 11 and 12 and figure 9.2

Arrow 6 in the flow chart leads to step 6

Step 6. Banks transmit, extend, roll over credit, which reduces aged receivables, but see step 8

Step 7. Variable trade-offs between tax non-remittance and monetization of tax remittance, followed by credit rollover and extension, wind up in the self-enforceable subsidy. It sums up to the outstanding balances of receivables. See figures 5, 13, and 14

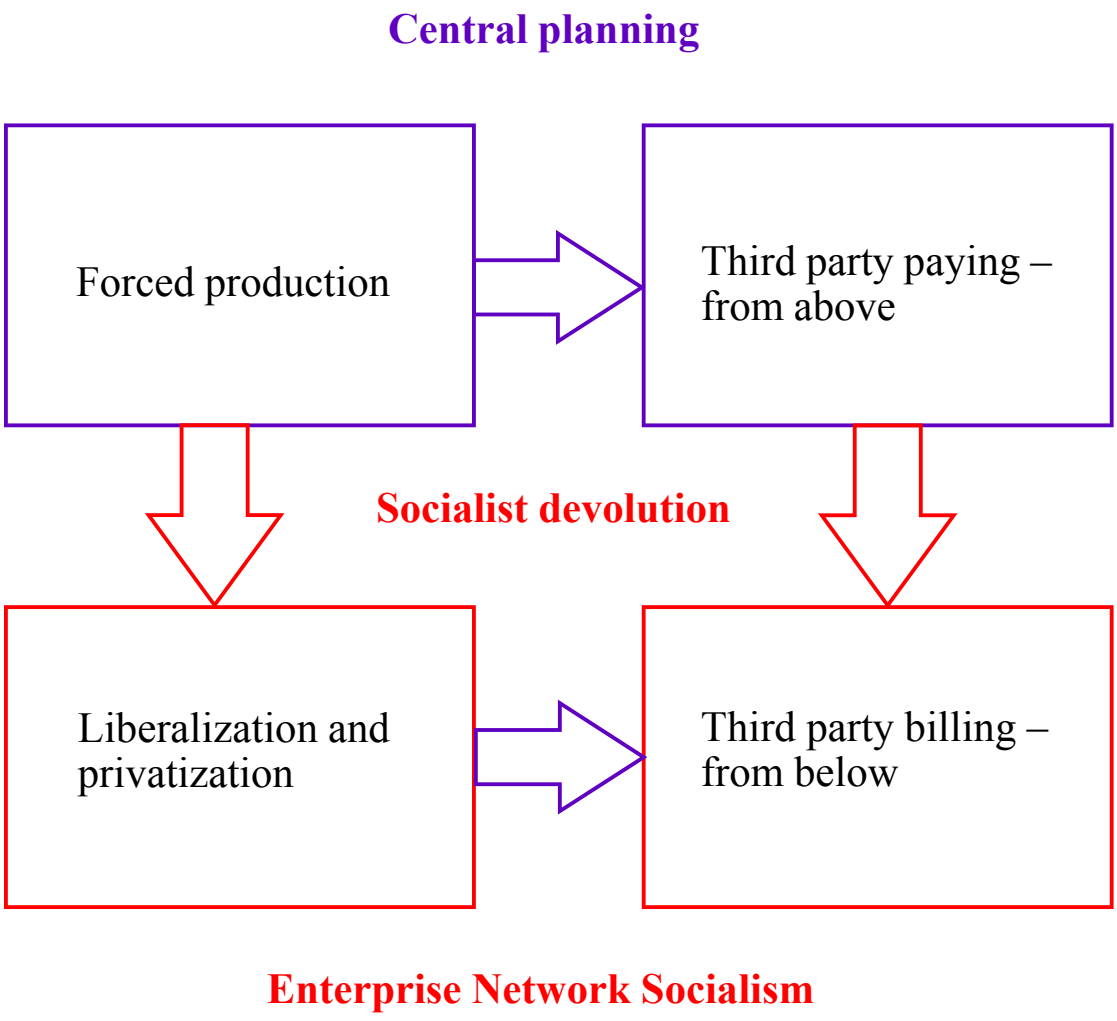
Corollary: A complementary array of cross-industry price subsidies accompanies this subsidy

Arrows 7 and 8 in the flow chart lead to step 8

Step 8, which is identical to step 1. Stimulated by all these components, enterprises surcharge invoices with a network tax to extract the self-enforceable subsidy. See figures 9.1 and 9.3.
Corollary: This system becomes circular and self-reinforcing

BOX 2

THE EVOLUTION FROM CENTRAL PLANNING TO ENTERPRISE NETWORK SOCIALISM



Box 3

Facts and Mechanics of Two Patterns of Trade Credit

Facts

	U.S.: Cyclical pattern	Russia: Separation pattern
Real receivables	Align with growth of real output Figures 6.3 and 6.6	Invariant, stable within a narrow range Figure 6.4
Nominal receivables	Align with growth of nominal output Figure 6.5	Align with price increases Figure 7.1

How can growth of real receivables align with growth of real output? Firms optimize cash flow. The ratio of nominal receivables to GDP is cyclical within a narrow stable range
Figure 8.1

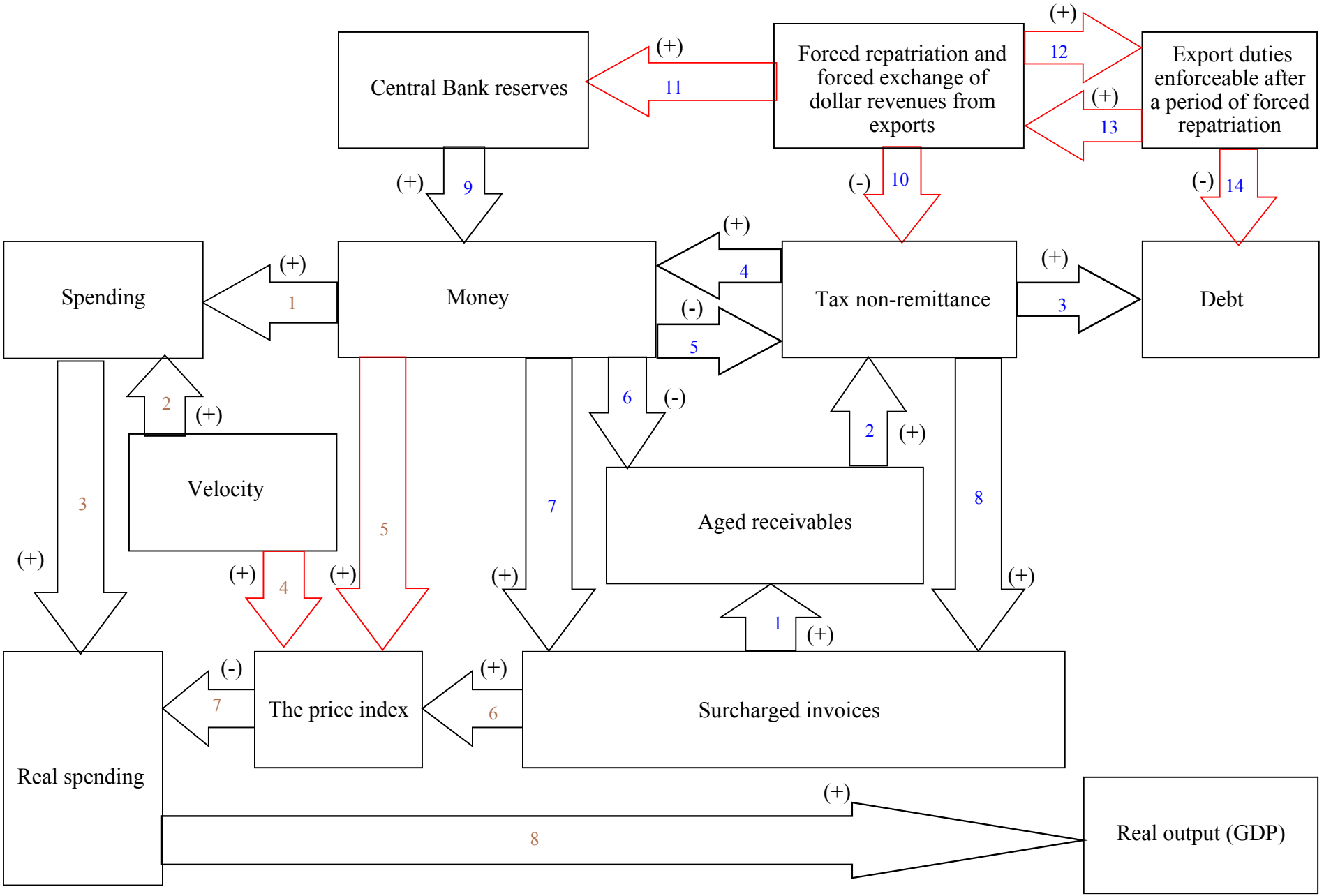
How can real receivables stay invariant, stable? Enterprises maximize nominal receivables by price increases, subject to expected subsidy, which renders real receivables stable. The ratio of nominal receivables to GDP fluctuates.
Figure 8.2

Mechanics

New invoices exceed payments in real terms when output expands; payments exceed new invoices in real terms when output contracts	New invoices exceed payments in nominal terms by price increases. Invoices continuously outgrow payments by price increases
Firms index invoices to payments and through them to spending. Output and prices increase (decrease) in one or another combination	Enterprises index invoices not to payments, not to spending but to fiscal expectations. They add a surcharge to prior prices

BOX 4

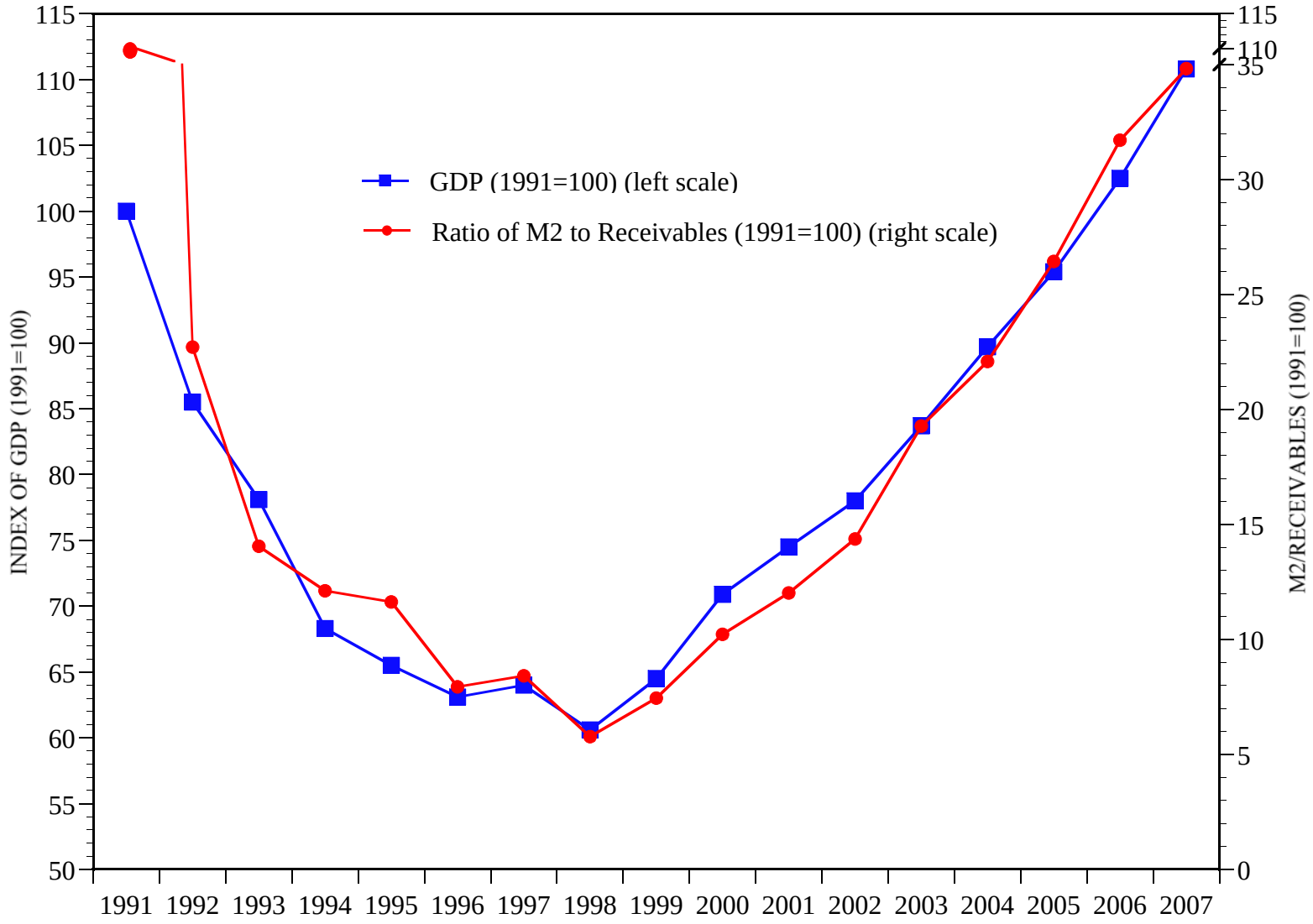
THE MECHANISM OF ENTERPRISE NETWORK SOCIALISM



Note: The red arrows emphasize the relationship which became empirically dominant in 1999-2007

FIGURE 1

INDICES OF GROSS DOMESTIC PRODUCT (GDP) (1991=100) AND OF THE RATIO OF M2 TO RECEIVABLES (YEAR-END) (1991=100), RUSSIA, 1991-2007



Notes: 1. The break in the right scale truncates the index of the ratio of M2 to receivables between 1991 and 1992, which truncates its sharp decline in 1992. Figure 16 presents the full scale.

2. The difference between the scales of the two axes indicates the changes in the velocity of money circulation.

3. The scales are made to align at the origins of both indices at 100 percent.

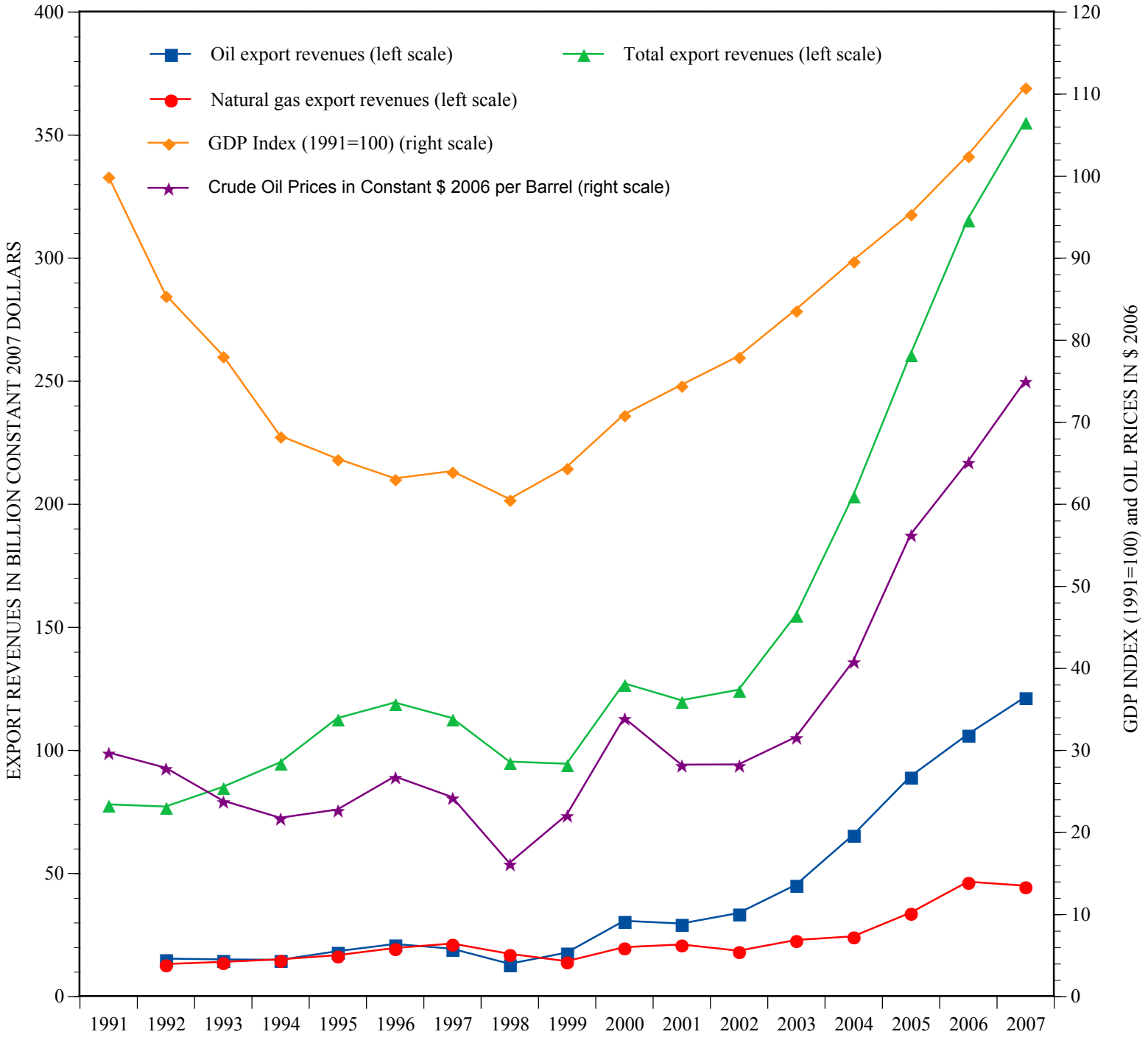
Sources: Gross Domestic Product and enterprise receivables: Russian State Committee on Statistics, various releases

The monetary aggregate M2: Central Bank of Russia, various releases

The data are reproduced in table 1

Figure 2a

THE RELATIONSHIP BETWEEN EXPORT REVENUES AND GDP DYNAMICS, RUSSIA, 1991-2007

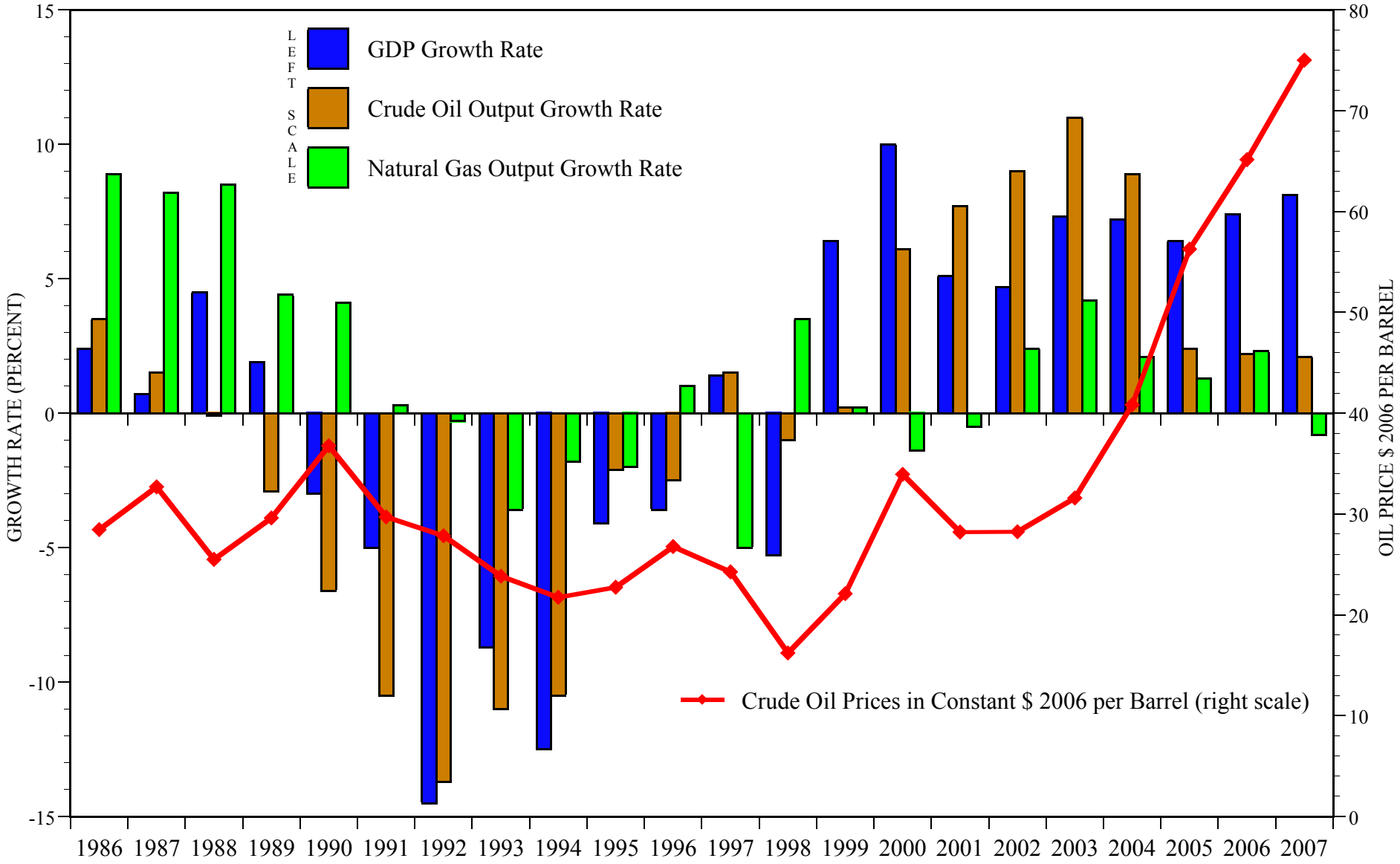


Sources:

1. Total export revenues, 1991: Russian State Committee on Statistics, *Rossiiskaia Federatsiia v 1992 Godu* (Moscow, 1993), p. 50
2. Total, oil, and natural gas export revenues, 1992-2006: Central Bank of Russia, "Statistics", at http://www.cbr.ru/statistics/credit_statistics/
3. GDP index (1991=100): Calculated from Russian State Committee on Statistics, various releases
4. U.S. Consumer Price Index applied to convert export revenue values into constant 2007 dollars: U.S. Bureau of Labor Statistics
5. Crude oil prices in constant 2006 dollars: British Petroleum at http://www.bp.com/productlanding.do?categoryId=6848&contentId=7033471

FIGURE 2b

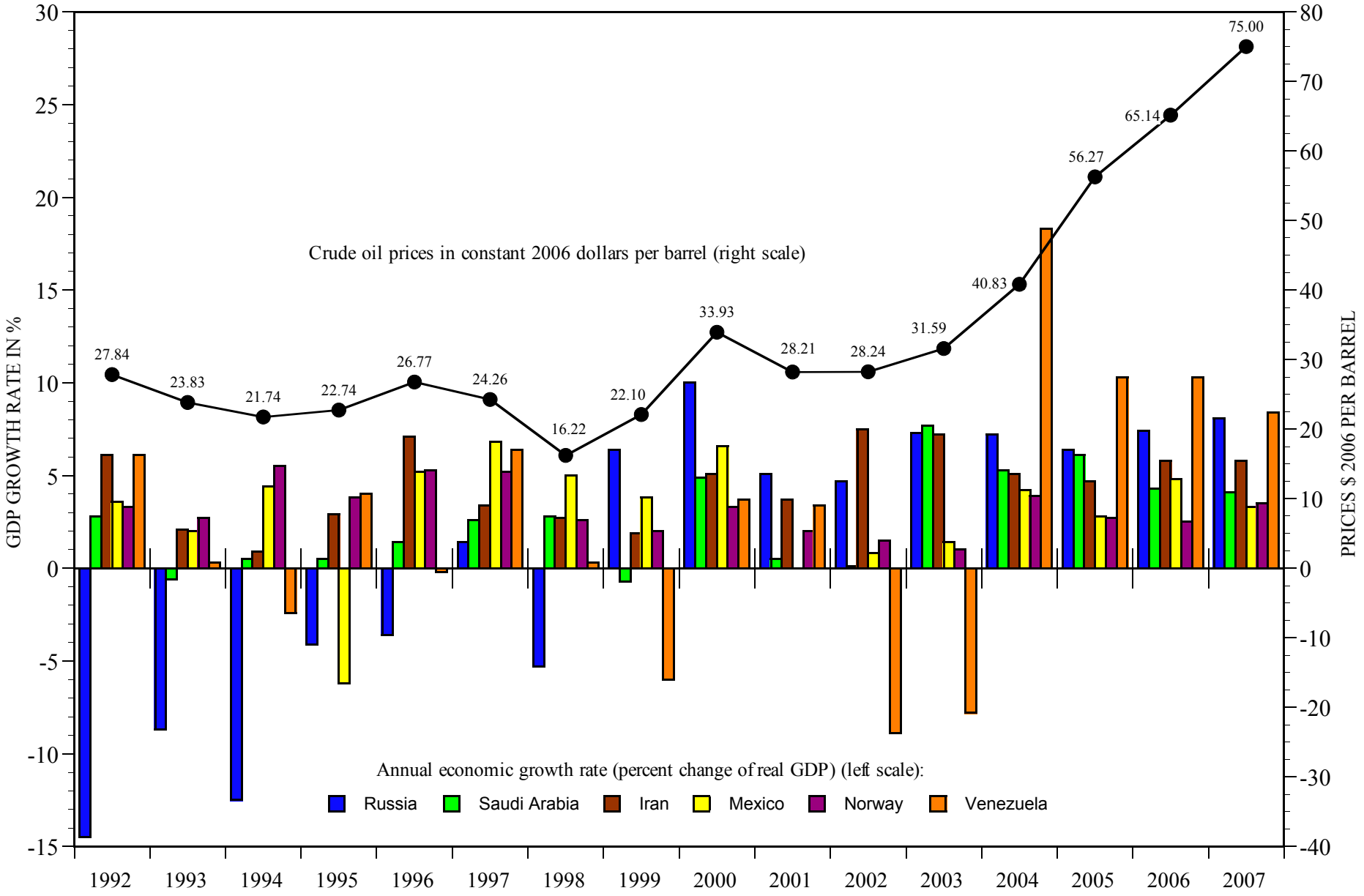
GROWTH RATES OF GDP, CRUDE OIL OUTPUT, AND NATURAL GAS OUTPUT VS. CRUDE OIL PRICES, RUSSIA, 1986-2007



Sources:
Oil and natural gas output: Russian State Committee on Statistics, various releases, and British Petroleum, at http://www.bp.com/productlanding.do?categoryId=6848&contentId=7033471
Crude oil prices in constant 2006 dollars: British Petroleum at http://www.bp.com/productlanding.do?categoryId=6848&contentId=7033471

FIGURE 3a

ECONOMIC PERFORMANCE OF THE SIX GREATEST OIL-EXPORTING COUNTRIES VS. WORLD OIL PRICES, 1992-2007



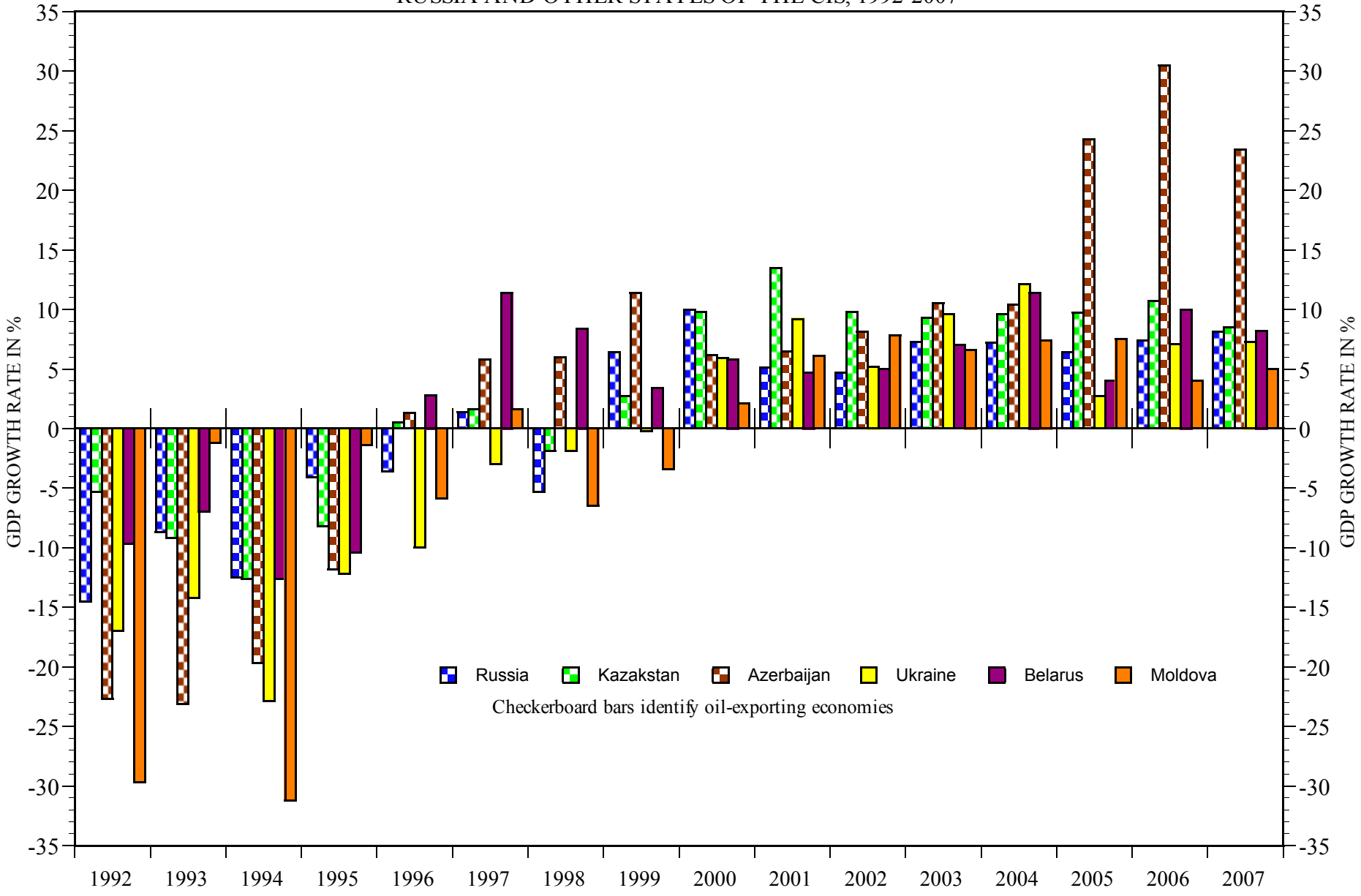
Sources:

GDP growth rates: All countries except Russia: The IMF, World Economic Outlook, October 2000 (for 1992-1995), September 2005 (for 1996-1997), September 2006 (for 1998), April 2007 9for 1999), and April 2008 (for 2000-2007); Russia: Russian State Committee on Statistics, various releases

Crude oil prices in constant 2006 dollars: British Petroleum, at http://www.bp.com/productlanding.do?categoryId=6848&contentId=7033471

FIGURE 3b

ECONOMIC GROWTH RATES OF OIL-EXPORTING AND OIL-IMPORTING COUNTRIES, RUSSIA AND OTHER STATES OF THE CIS, 1992-2007

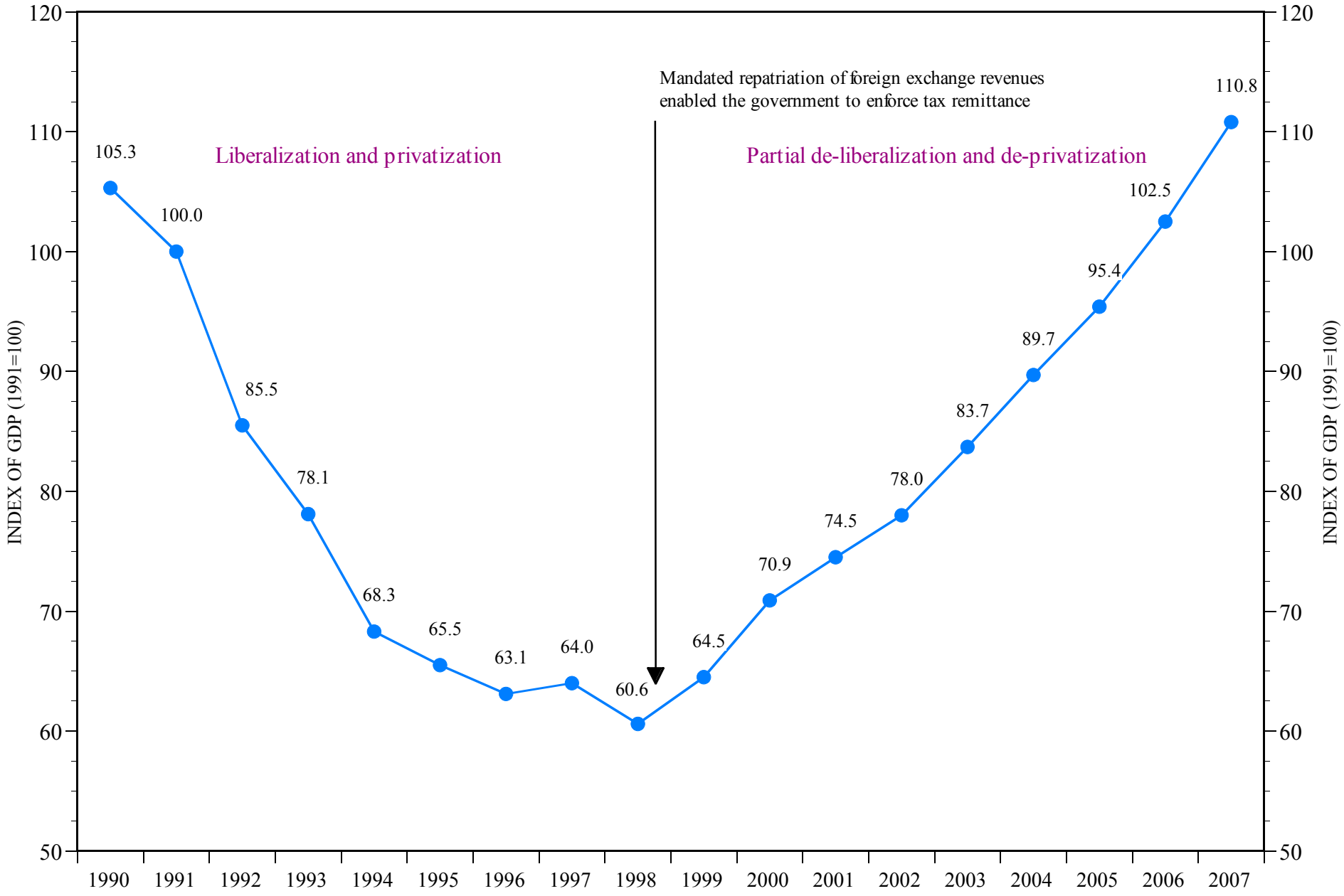


Sources:

GDP growth rates: All countries except Russia: The IMF, *World Economic Outlook*, October 2000 (for 1992-1995), October 2004 (for 1996-1997), September 2006 (for 1998), April 2007 (for 1999), and April 2008 (for 2000-2007); Russia: Russian State Committee on Statistics, various releases

FIGURE 4

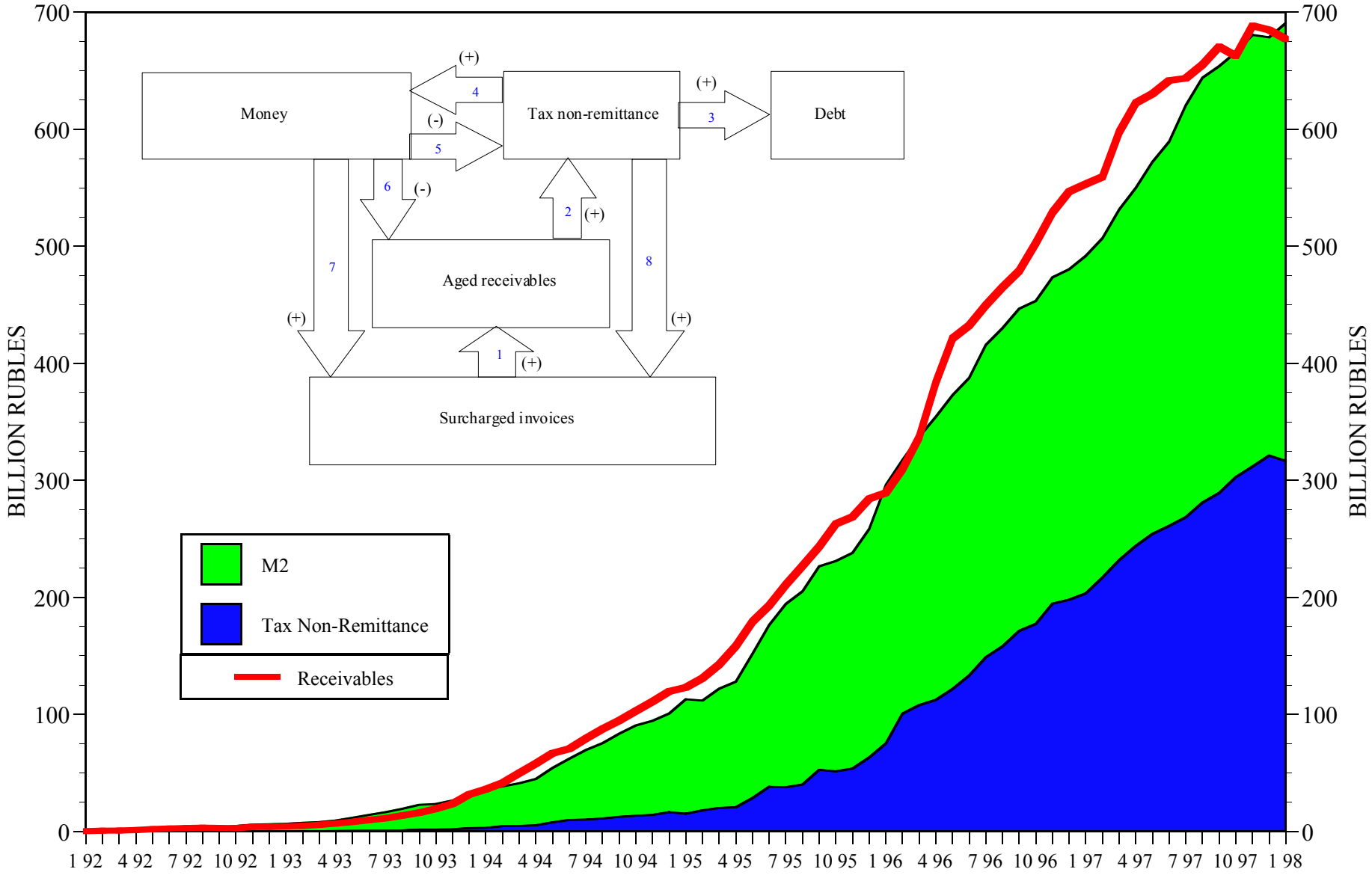
INDEX OF REAL GROSS DOMESTIC PRODUCT (GDP) (1991=100), RUSSIA, 1990-2007



Source: Russian State Committee on Statistics, various releases
The data are reproduced in table 1

FIGURE 5

THE GOVERNMENT AND THE PUBLIC ARE FORCED TO PAY THE ENTERPRISE BILL:
RUSSIA, 1992-1997

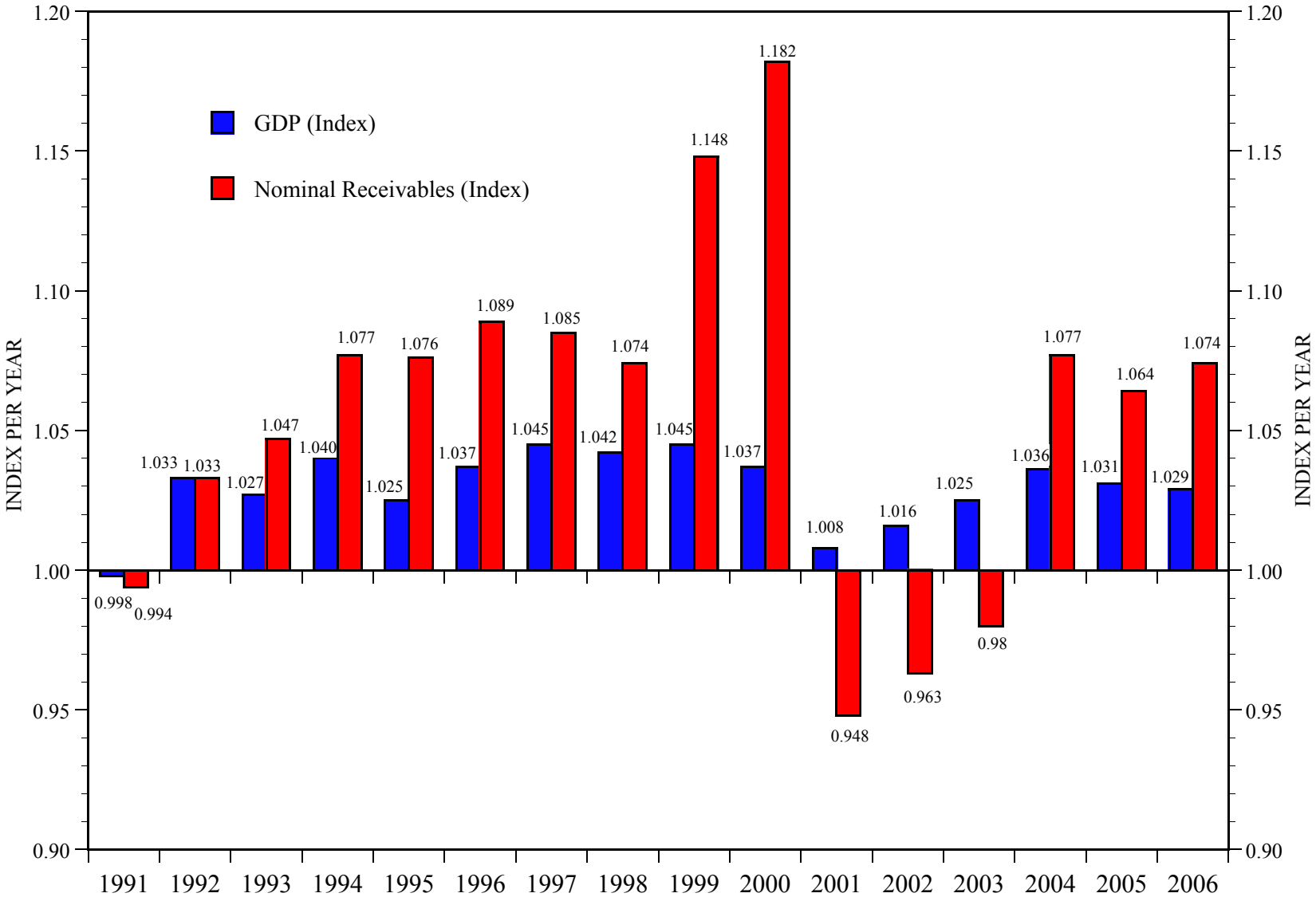


Note: All data are denominated in billion 1998 nominal rubles.

Sources: Receivables and tax non-remittance: Russian State Committee on Statistics.
Money: Central Bank ofRussia.

FIGURE 6.1

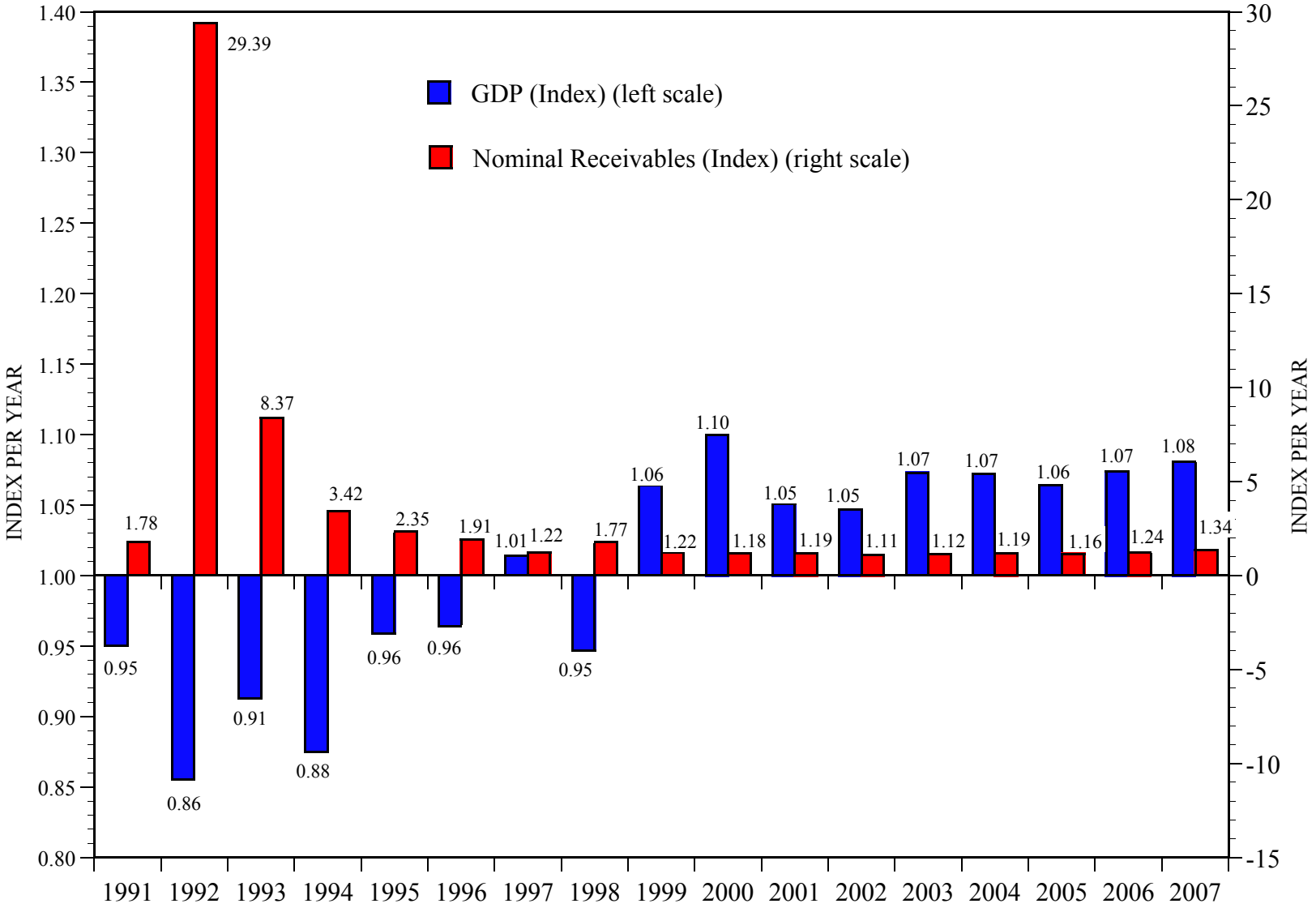
INDICES OF GDP AND NOMINAL RECEIVABLES: U.S., 1991-2006



.Sources: Gross Domestic Product: U.S. Department of Commerce, Bureau of Economic Analysis, at http://www.bea.gov/bea/dn/home/gdp.htm
Receivables: Board of Governors of the Federal Reserve System, The Flow of Funds Accounts of the United States, Table L.101, at http://www.federalreserve.gov/releases/z1/Current/data.htm

FIGURE 6.2

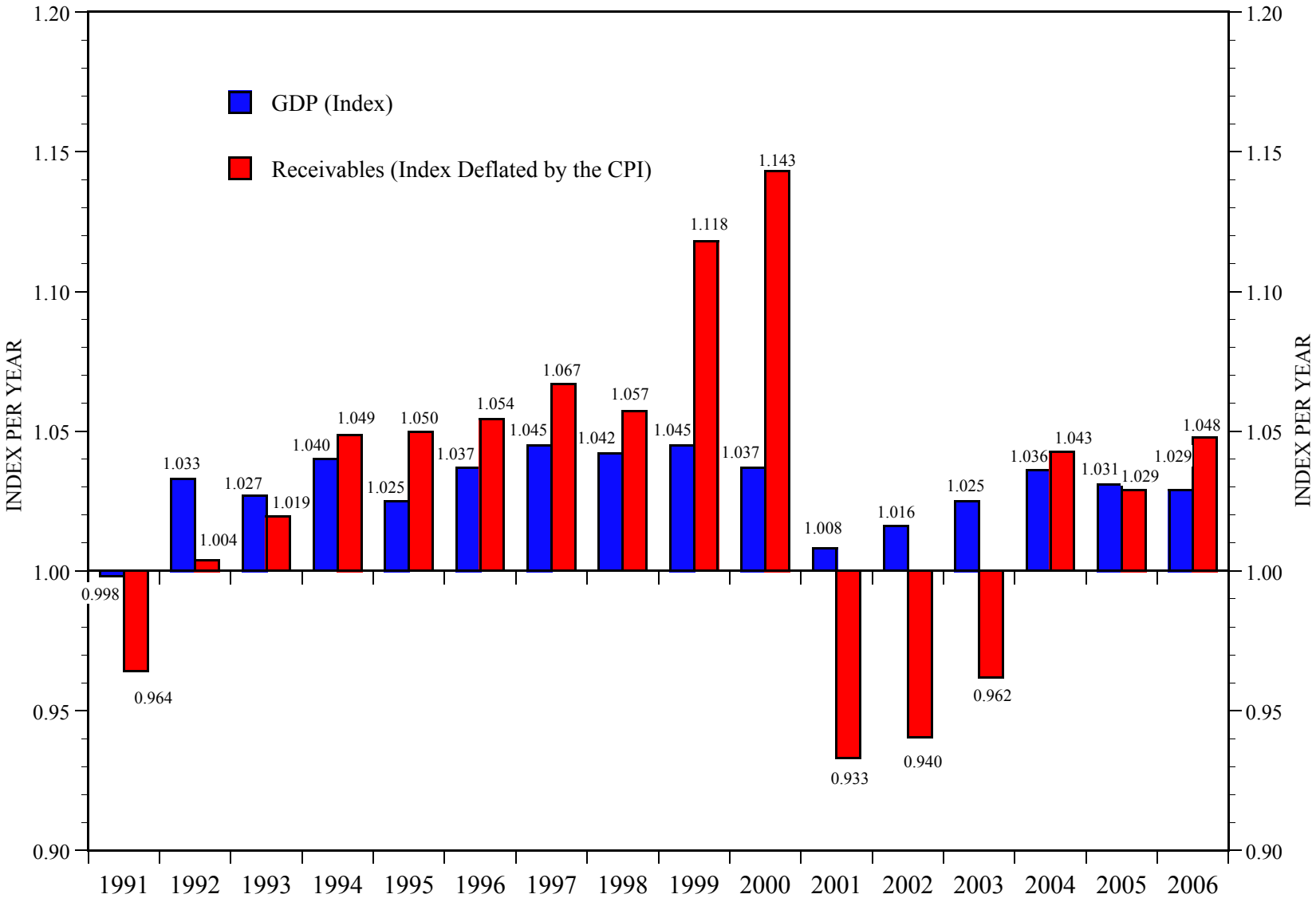
INDICES OF GDP AND NOMINAL RECEIVABLES: RUSSIA, 1991-2007



Source: Russian State Committee on Statistics

FIGURE 6.3

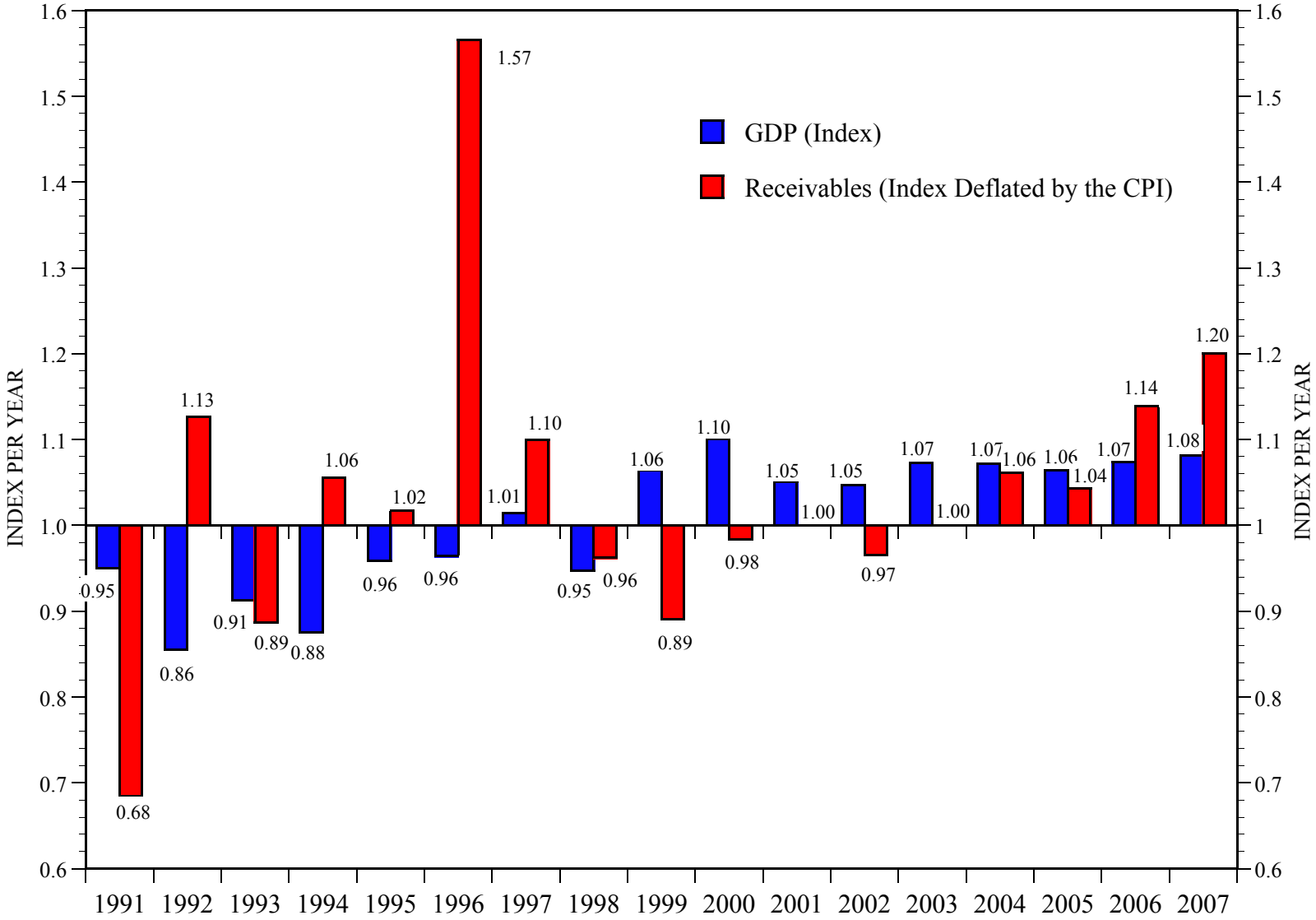
INDICES OF GDP AND REAL RECEIVABLES (DEFLATED BY THE CPI): U.S., 1991-2006



.Sources: Gross Domestic Product: U.S. Department of Commerce, Bureau of Economic Analysis, at http://www.bea.gov/bea/dn/home/gdp.htm
Receivables: Board of Governors of the Federal Reserve System, The Flow of Funds Accounts of the United States, Table L.101, at http://www.federalreserve.gov/releases/z1/Current/data.htm
Consumer Price Index (CPI): U.S. Department of Labor, Bureau of Labor Statistics, at ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt

FIGURE 6.4

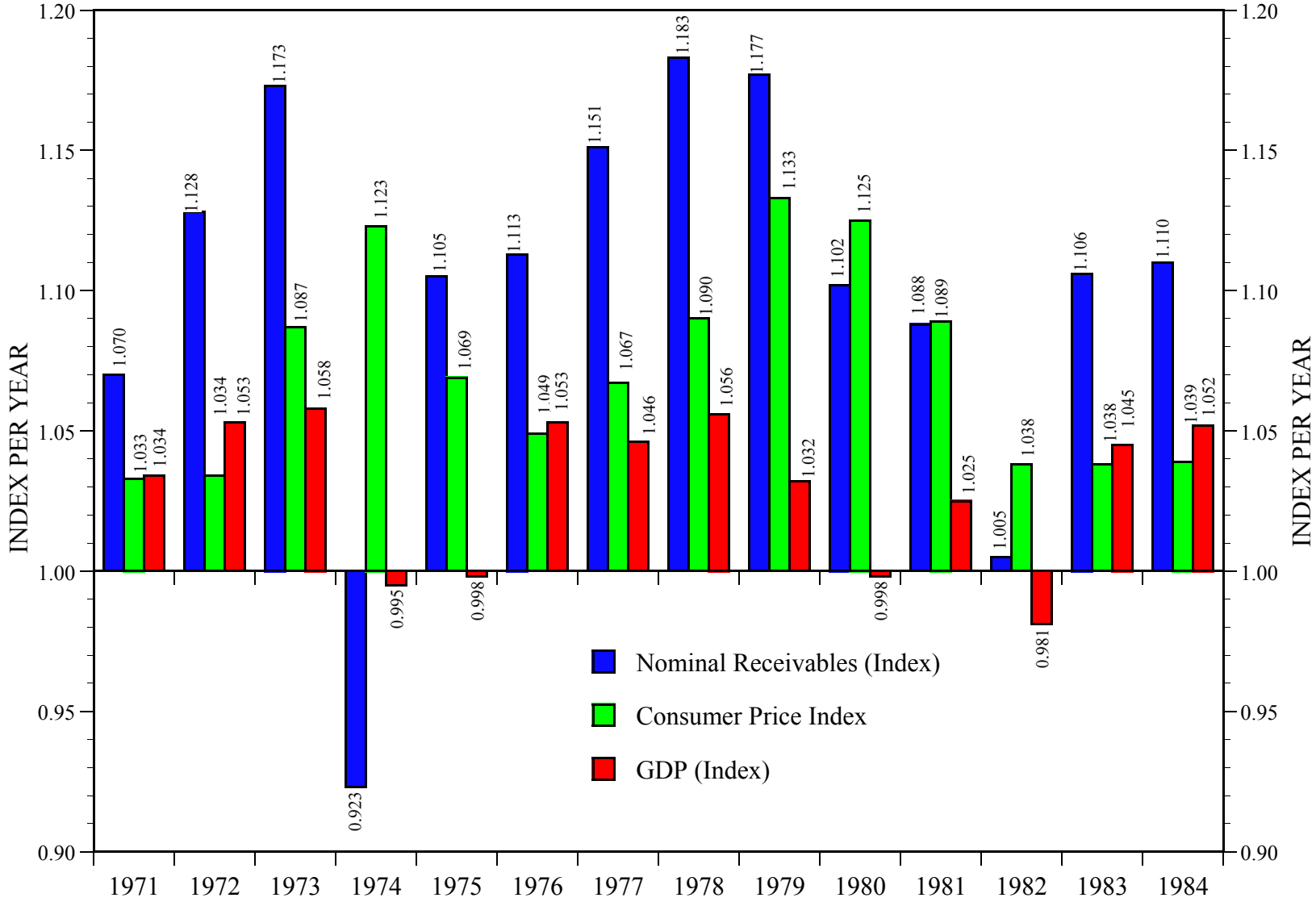
INDICES OF GDP AND REAL RECEIVABLES (DEFLATED BY THE CPI): RUSSIA, 1991-2007



Source: Russian State Committee on Statistics

FIGURE 6.5

NOMINAL RECEIVABLES, CONSUMER PRICES, AND GDP, ANNUAL INDICES: U.S., 1971-1984

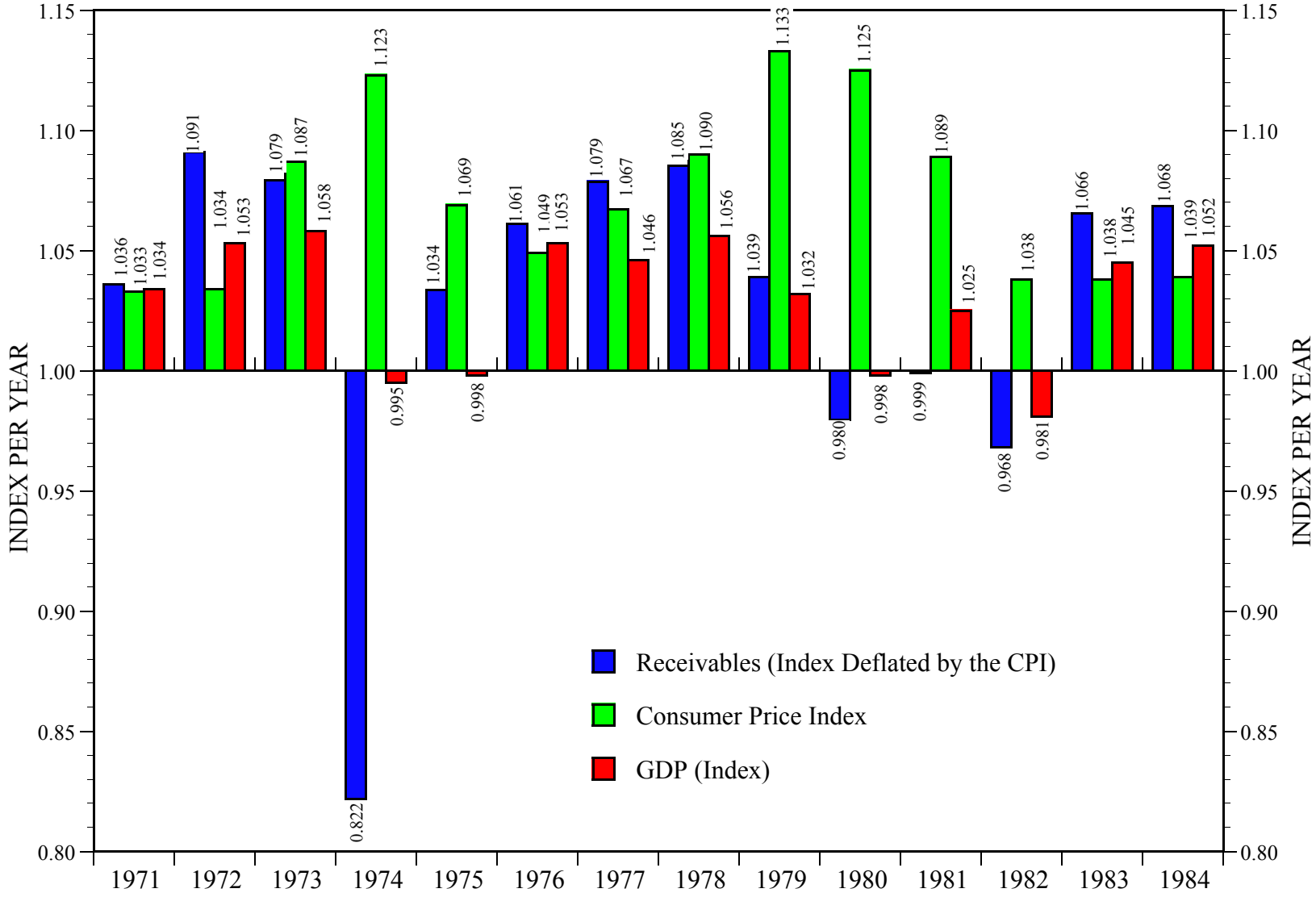


Notes: The index fraction in the price index is the inflation rate. The index fraction in the GDP index represents annual growth rate.

Sources: Receivables: Federal Reserve Board, The Flow of Funds Accounts of the United States, table L.101, various years, at http://www.federalreserve.gov/releases/z1/Current/data.htm
Consumer Price Index: U.S. Department of Labor, Bureau of Labor Statistics, at ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt
Gross Domestic Product: U.S. Department of Commerce, Bureau of Economic Analysis, at http://www.bea.gov/bea/dn/home/gdp.htm

FIGURE 6.6

REAL RECEIVABLES, CONSUMER PRICES, AND GDP, ANNUAL INDICES: U.S., 1971-1984



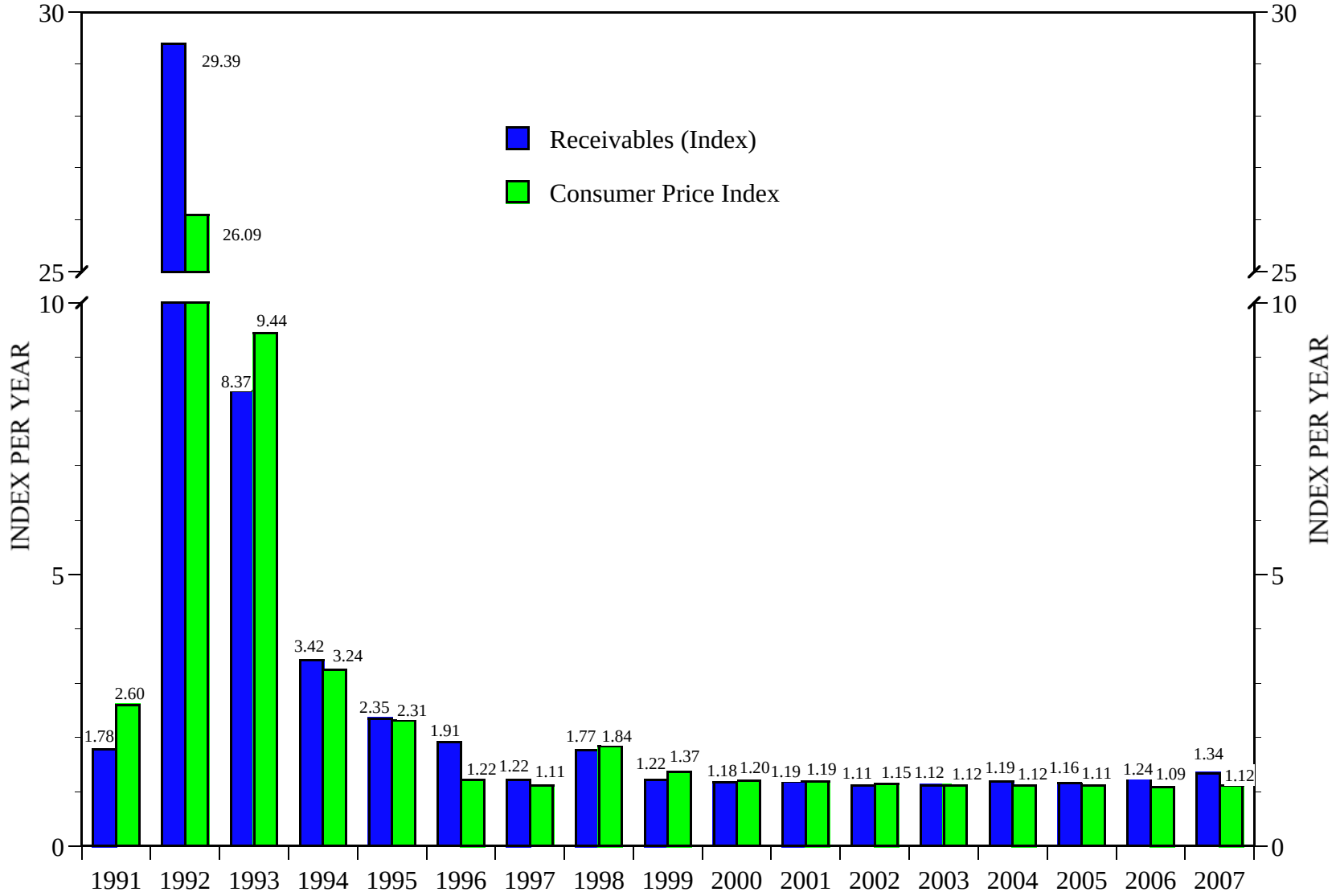
Notes: The index fraction in the price index is the inflation rate. The index fraction in the GDP index represents annual growth rate.

Sources: Receivables: Federal Reserve Board, The Flow of Funds Accounts of the United States, table L.101, various years, at http://www.federalreserve.gov/releases/z1/Current/data.htm
Consumer Price Index: U.S. Department of Labor, Bureau of Labor Statistics, at ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt
Gross Domestic Product: U.S. Department of Commerce, Bureau of Economic Analysis, at http://www.bea.gov/bea/dn/home/gdp.htm

FIGURE 7.1

RECEIVABLES GROW WITH THE PRICE INDEX:

RECEIVABLES AND CONSUMER PRICES, ANNUAL INDICES,RUSSIA, 1991-2007

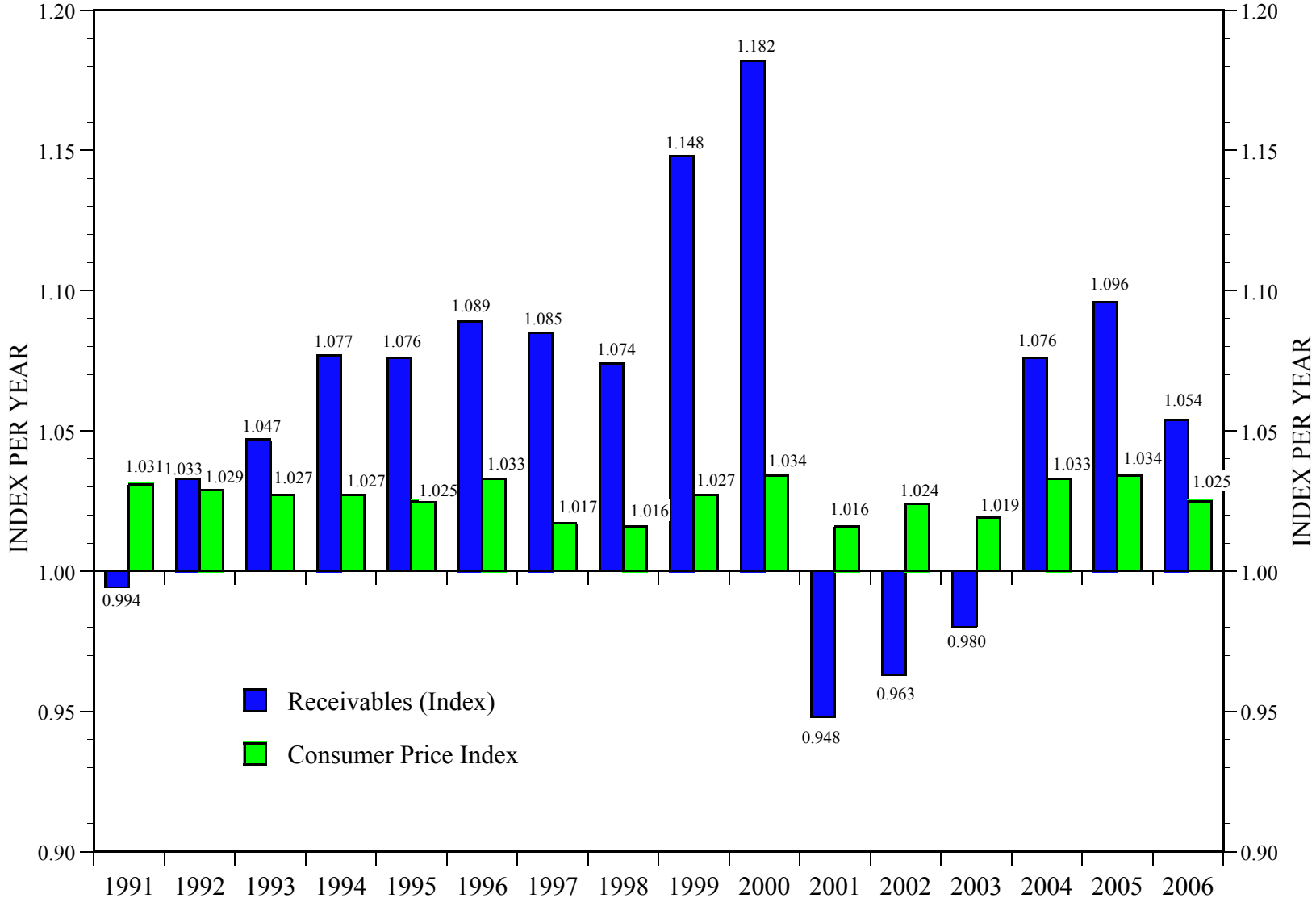


Note: The index fraction of the price index over unity is the inflation rate.

Source: Russian State Committee on Statistics

FIGURE 7.2

RECEIVABLES GROW OR DECLINE WHEN THE PRICE INDEX INCREASES:
RECEIVABLES AND CONSUMER PRICES, ANNUAL INDICES,U.S., 1991-2006

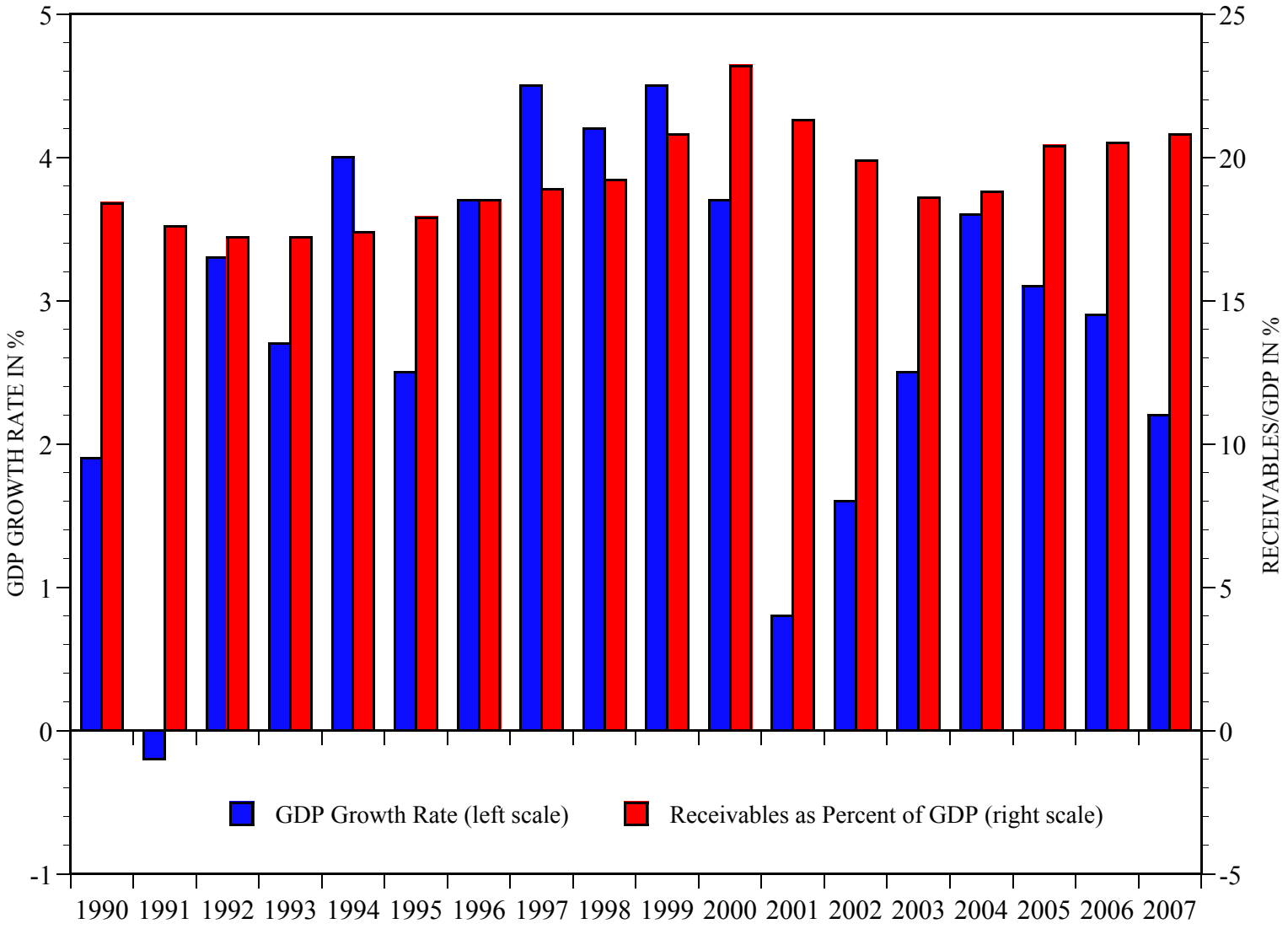


Notes: The index fraction in the price index is the inflation rate.

Sources: Receivables: Federal Reserve Board, The Flow of Funds Accounts of the United States, table L.101, various years, at http://www.federalreserve.gov/releases/z1/Current/data.htm
Consumer Price Index: U.S. Department of Labor, Bureau of Labor Statistics, at ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt

FIGURE 8.1

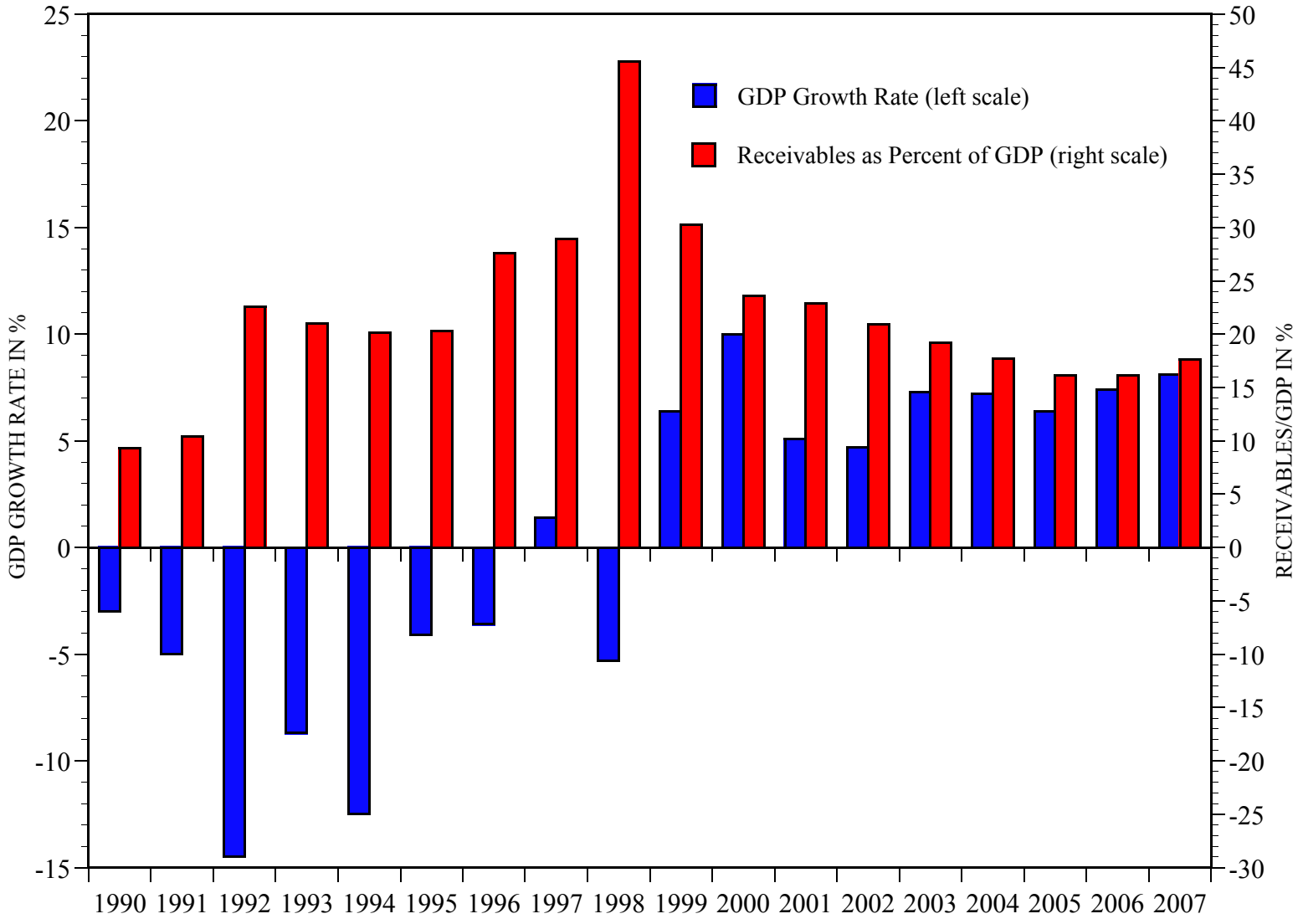
GDP GROWTH RATES AND RECEIVABLES AS PERCENT OF GDP: U.S., 1990-2007



Sources:
Gross Domestic Product: U.S. Department of Commerce, Bureau of Economic Analysis, at http://www.bea.gov/bea/dn/home/gdp.htm
Receivables: Board of Governors of the Federal Reserve System, The Flow of Funds Accounts of the United States, Table L.101, at http://www.federalreserve.gov/releases/z1/Current/data.htm

FIGURE 8.2

GDP GROWTH RATES AND RECEIVABLES AS PERCENT OF GDP: RUSSIA, 1990-2007

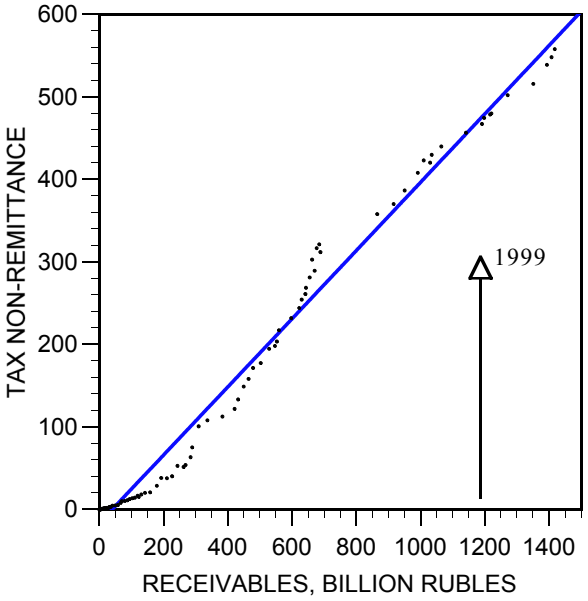


Sources: Gross Domestic Product and enterprise receivables: Russian State Committee on Statistics
The data are reproducedin detail in tables 1 and 2

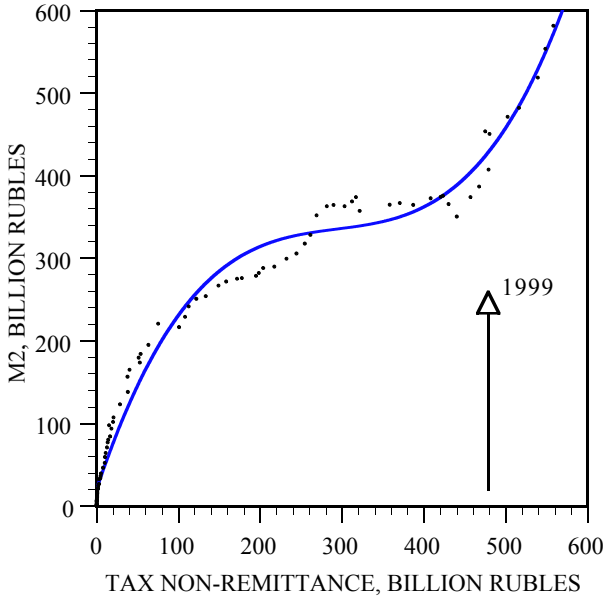
FIGURE 9

PANELS 1-3. TAX NON-REMITTANCE, MONEY STOCK, AND RECEIVABLES, IN BILLION RUBLES, MONTHLY DATA, RUSSIA, 1992--MID-1999

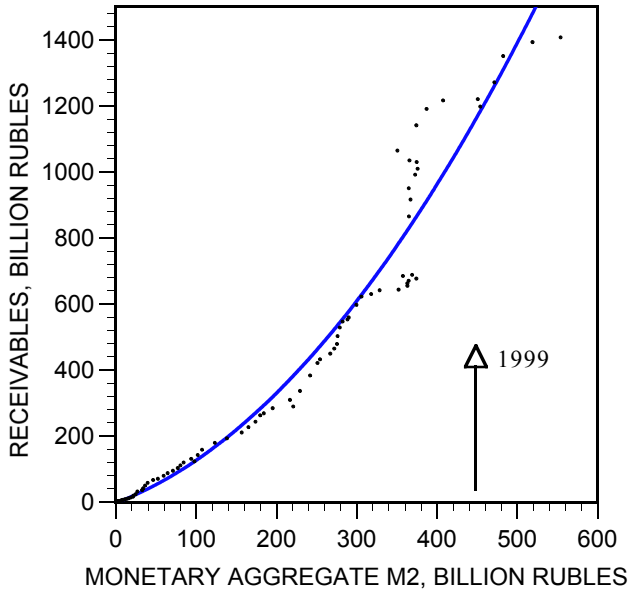
Panel 1. Tax Non-Remittance against Receivables, 1992--mid-1999



Panel 2. Money Stock against Tax Non-Remittance, 1992--mid-1999



Panel 3. Receivables against the Money Stock, 1992--mid-1999



Sources:

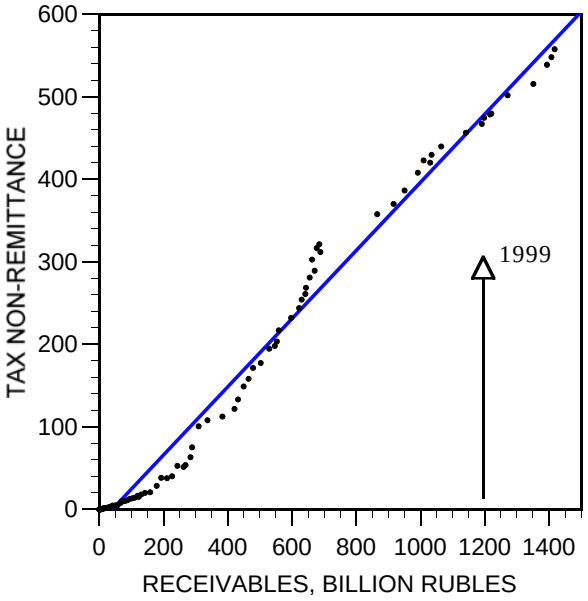
Receivables and tax non-remittance: Russian State Committee on Statistics

Money: Central Bank of Russia

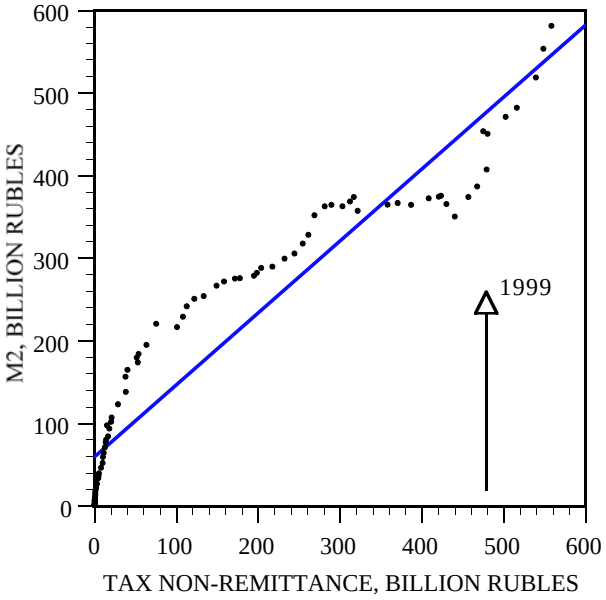
FIGURE 9

PANELS 1A-3A. TAX NON-REMITTANCE, MONEY STOCK, AND RECEIVABLES, IN BILLION RUBLES, MONTHLY DATA, RUSSIA, 1992--MID-1999

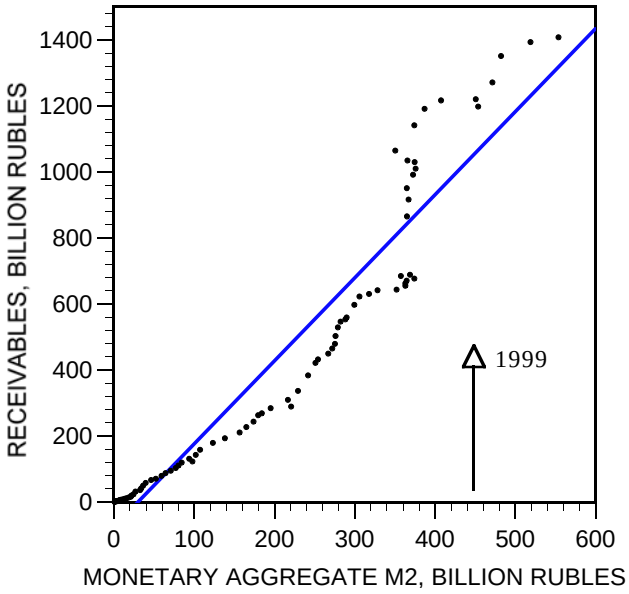
Panel 1A. Tax Non-Remittance against Receivables, 1992--mid-1999



Panel 2A. Money Stock against Tax Non-Remittance, 1992--mid-1999



Panel 3A. Receivables against the Money Stock, 1992--mid-1999



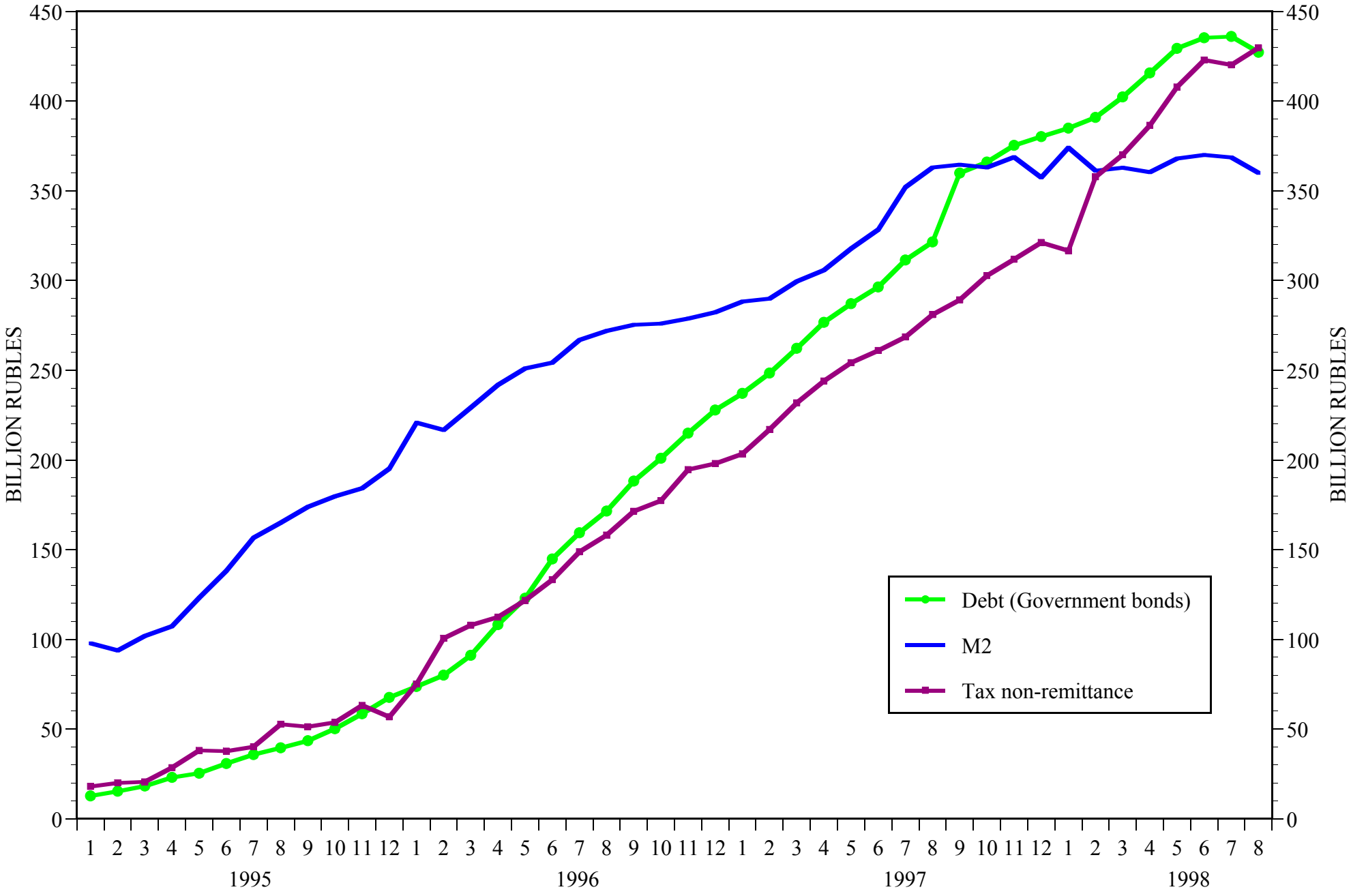
Sources:

Receivables and tax non-remittance: Russian State Committee on Statistics

Money: Central Bank of Russia

FIGURE 10.1

THE ROAD TO THE GREAT DEFAULT: TAX NON-REMITTANCE, MONEY, AND GOVERNMENT BONDS, RUSSIA, 1995-98



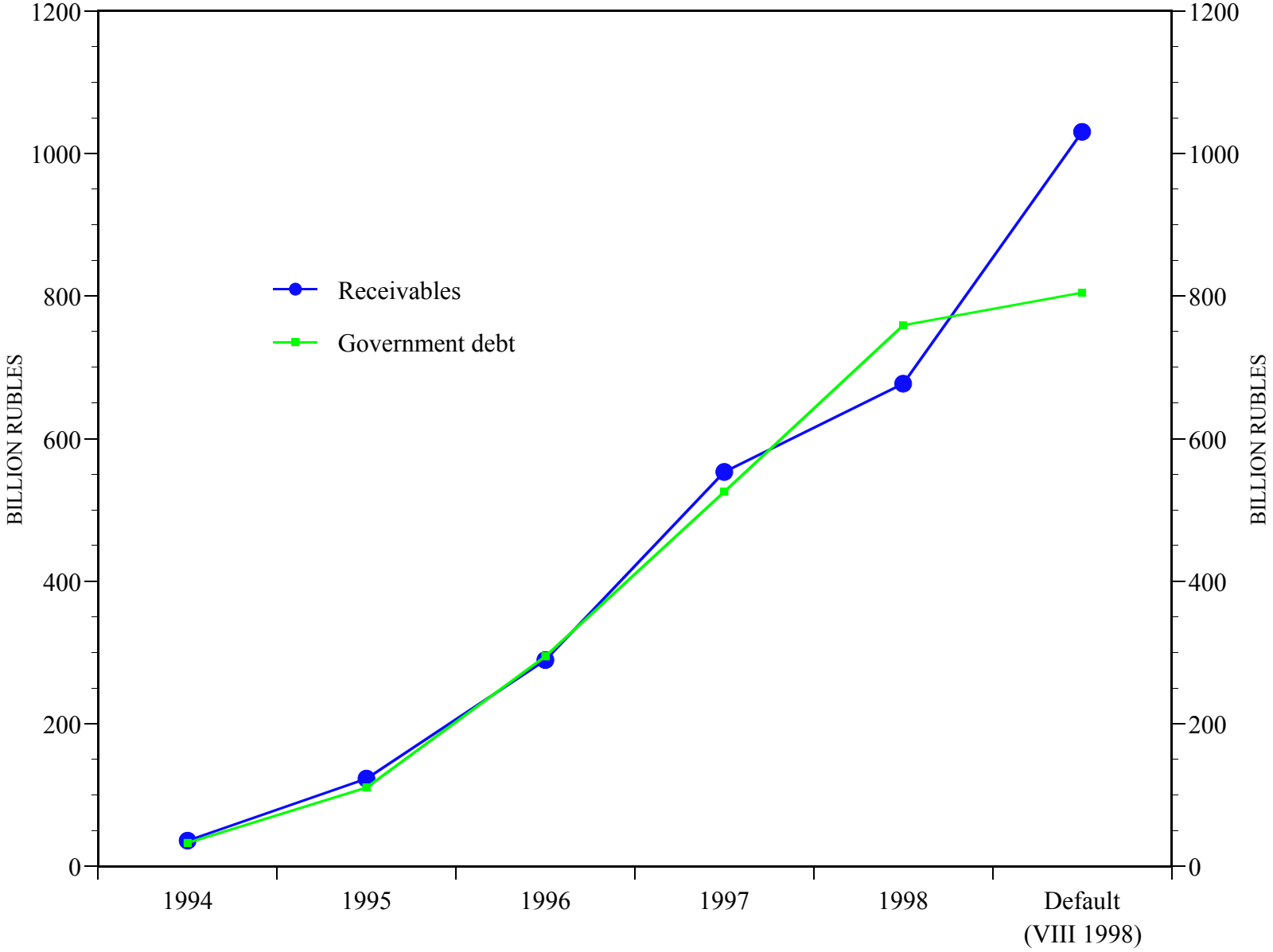
Sources:

Money and government bonds: Central Bank of Russia

Tax non-remittance: Russian State Committee on Statistics

FIGURE 10.2

RECEIVABLES AND GOVERNMENT DEBT, RUSSIA, 1994-98

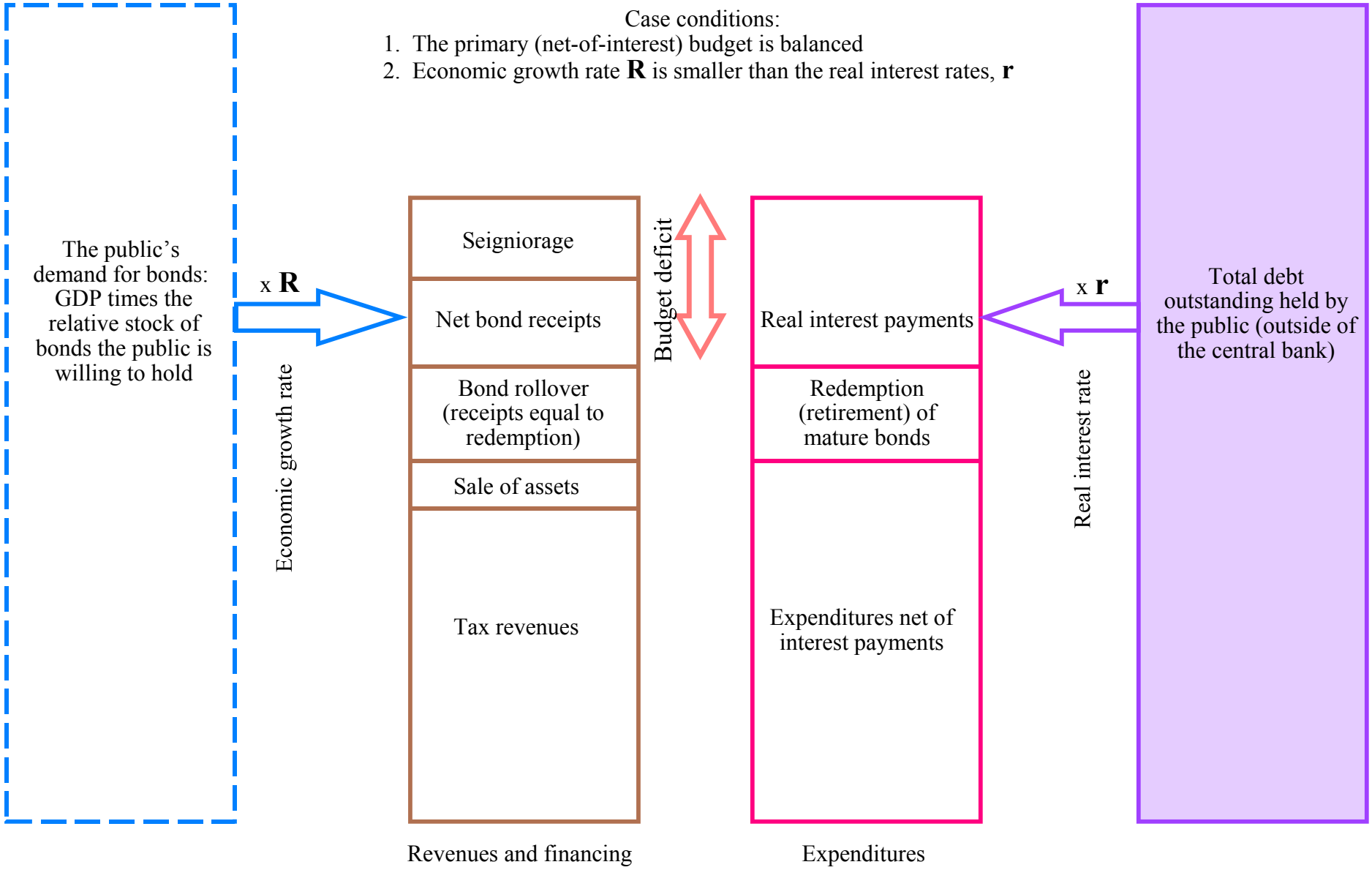


Note: Government debt consists of the money stock M2 and domestic government bonds GKO and OFZ. It does not include other domestic bonds, with less than three-month maturity. The stock of money implicitly includes part of the external debt, which the government sells to the Central Bank, for which the latter prints currency.

Sources: Government bonds and enterprise receivables: Russian State Committee on Statistics

Money: Central Bank of Russia

FIGURE 11
THE CASE OF IMMINENT MONETIZATION OR DEFAULT



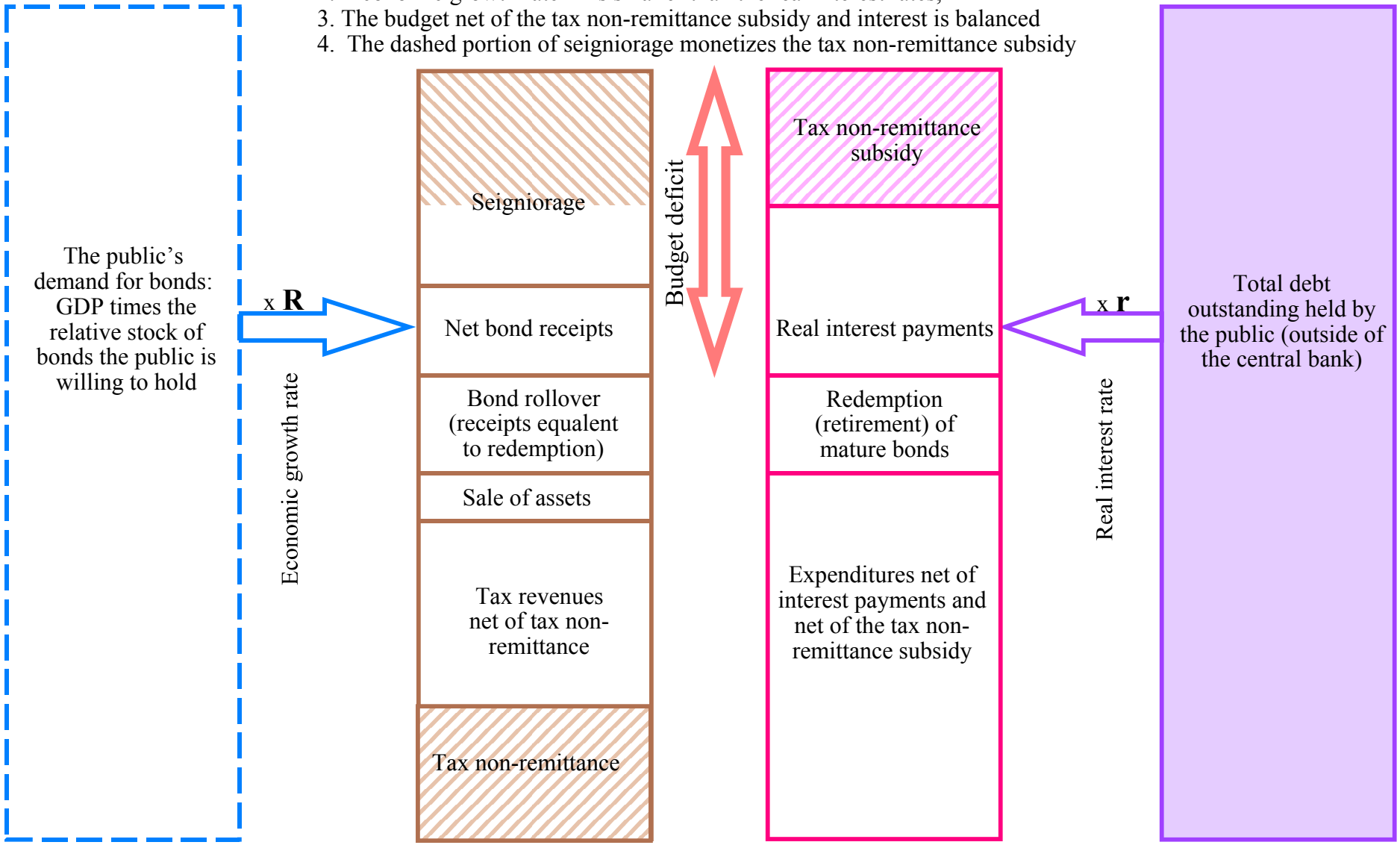
Source: Converted into an accounting presentation from the mathematical model of Thomas J. Sargent and Neil Wallace, "Some Unpleasant Monetarist Arithmetic," *Federal Reserve Bank of Minneapolis Quarterly Review* 5, no. 3 (Fall 1981): 1-17

FIGURE 12.1

THE CASE OF FORCED MONETIZATION OR DEFAULT

Case conditions:

1. The primary (net-of-interest) budget is balanced
2. Economic growth rate **R** is smaller than the real interest rates, **r**
3. The budget net of the tax non-remittance subsidy and interest is balanced
4. The dashed portion of seigniorage monetizes the tax non-remittance subsidy



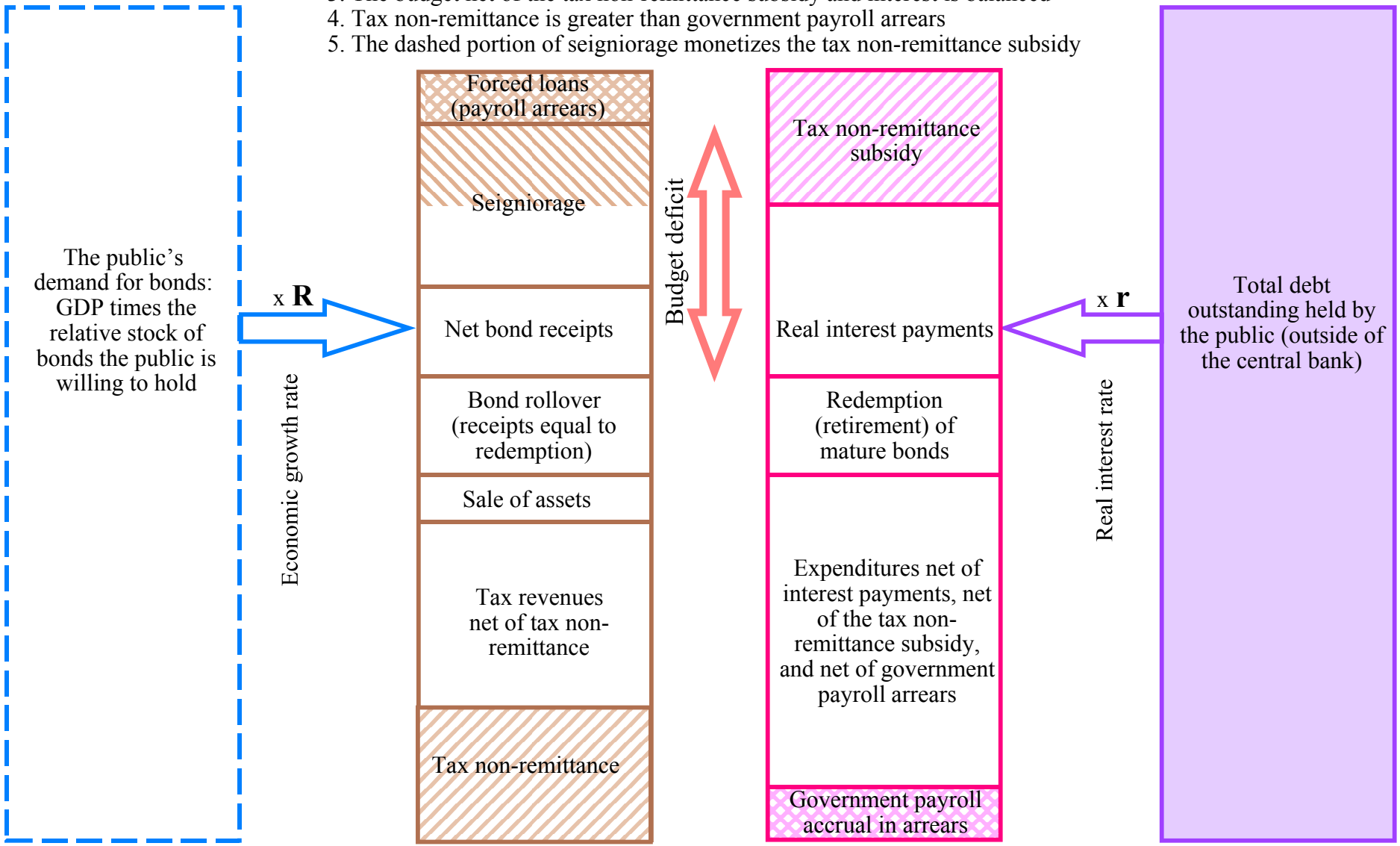
Source: Figure 11 with modifications

FIGURE 12.2

THE CASE OF FORCED MONETIZATION AND FORCED LOANS OR DEFAULT

Case conditions:

1. The primary (net-of-interest) budget is balanced
2. Economic growth rate **R** is smaller than the real interest rates, **r**
3. The budget net of the tax non-remittance subsidy and interest is balanced
4. Tax non-remittance is greater than government payroll arrears
5. The dashed portion of seigniorage monetizes the tax non-remittance subsidy

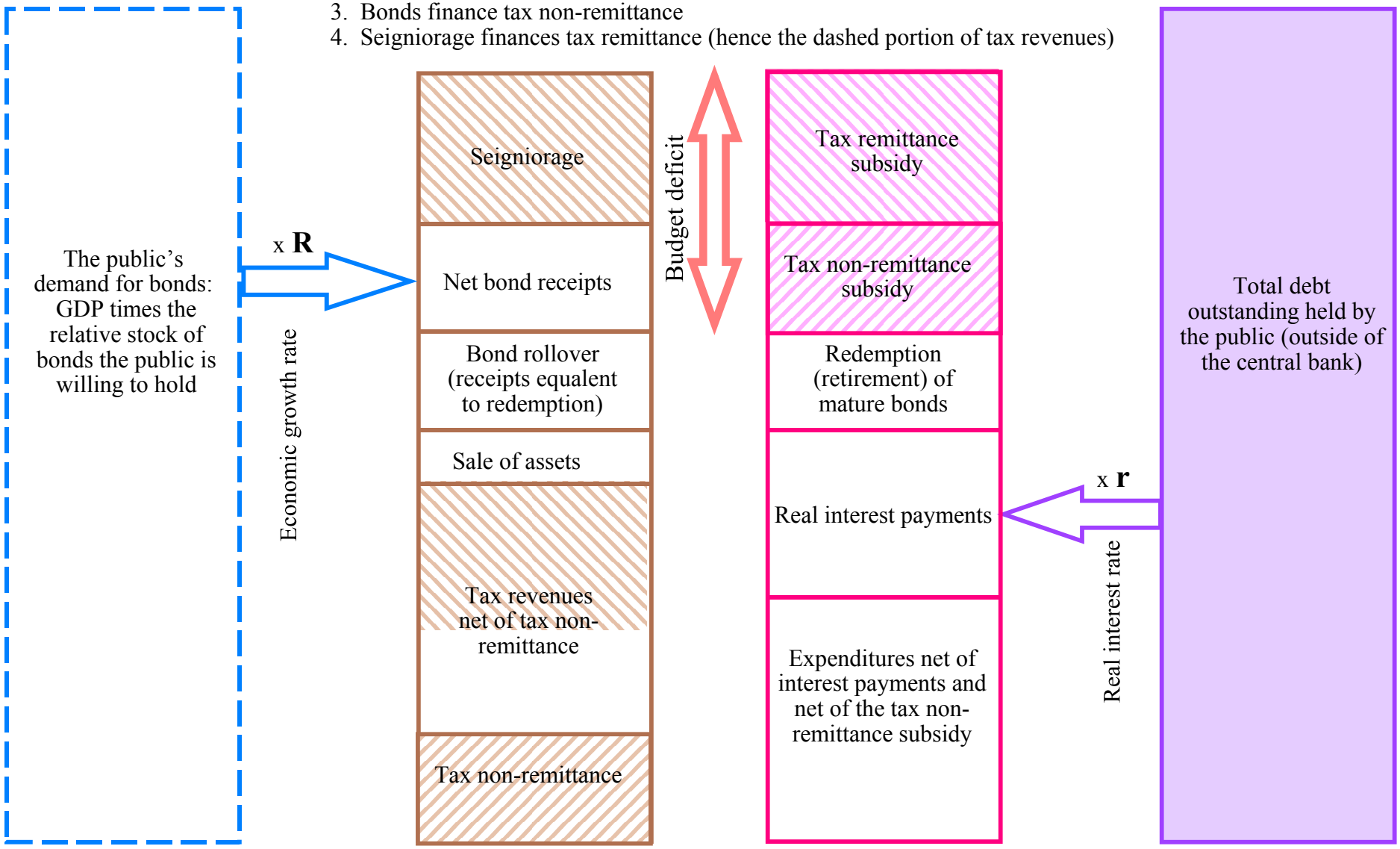


Source: Figure 11 with modifications

FIGURE 12.3.
THE CASE OF FORCED MONETIZATION OR DEFAULT

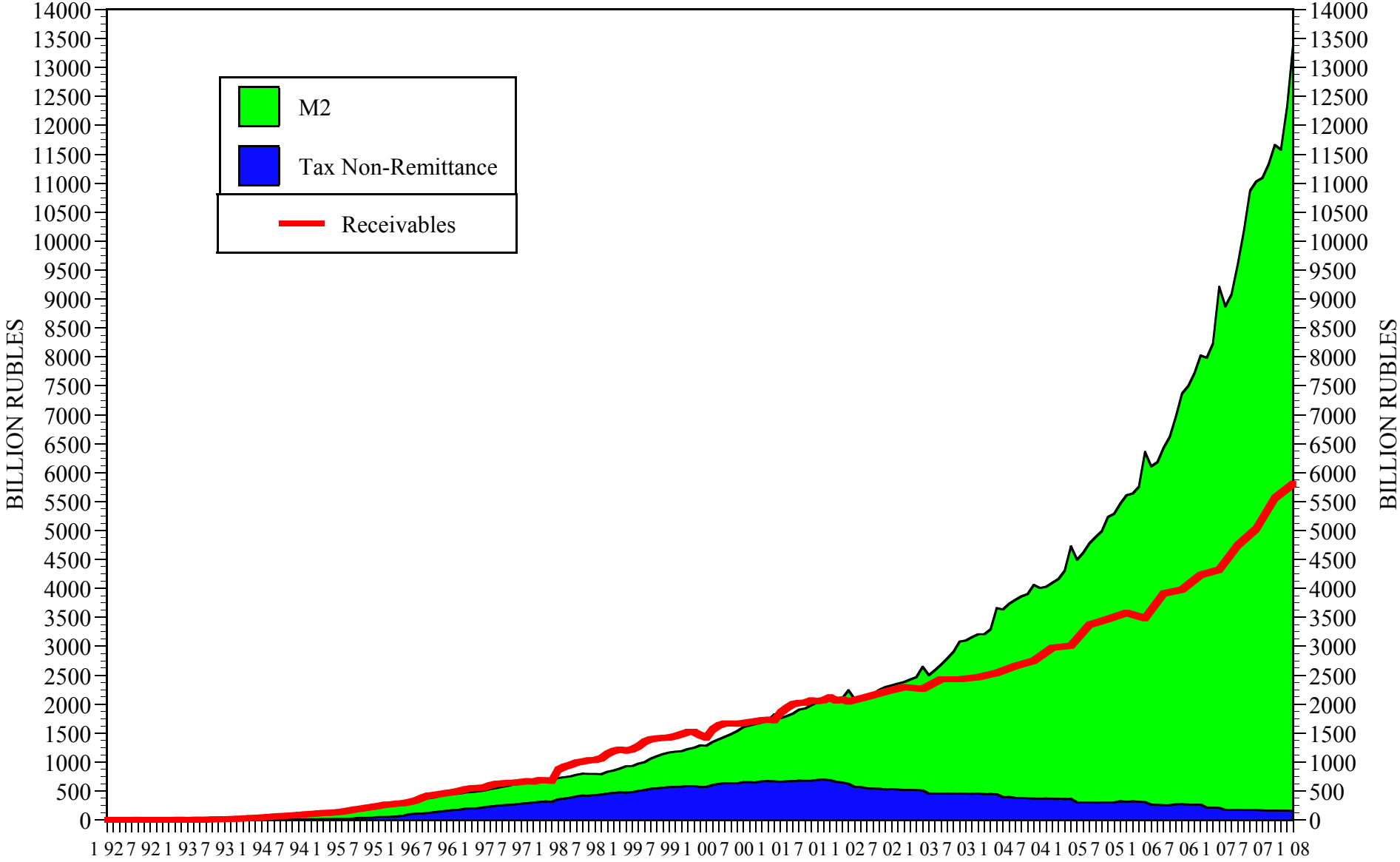
Case conditions:

1. The budget (including interest payments) is balanced net of subsidies for tax non-remittance and for tax remittance
2. Economic growth rate **R** is smaller than the real interest rates, **r**
3. Bonds finance tax non-remittance
4. Seigniorage finances tax remittance (hence the dashed portion of tax revenues)



Source: Figure 11 with modifications

FIGURE 13.1. THE SELF-ENFORCEABLE TAX SUBSIDY: THE RELATIONSHIP BETWEEN ENTERPRISE RECEIVABLES, TAX NON-REMITTANCE, AND MONEY, RUSSIA, 1992-2008



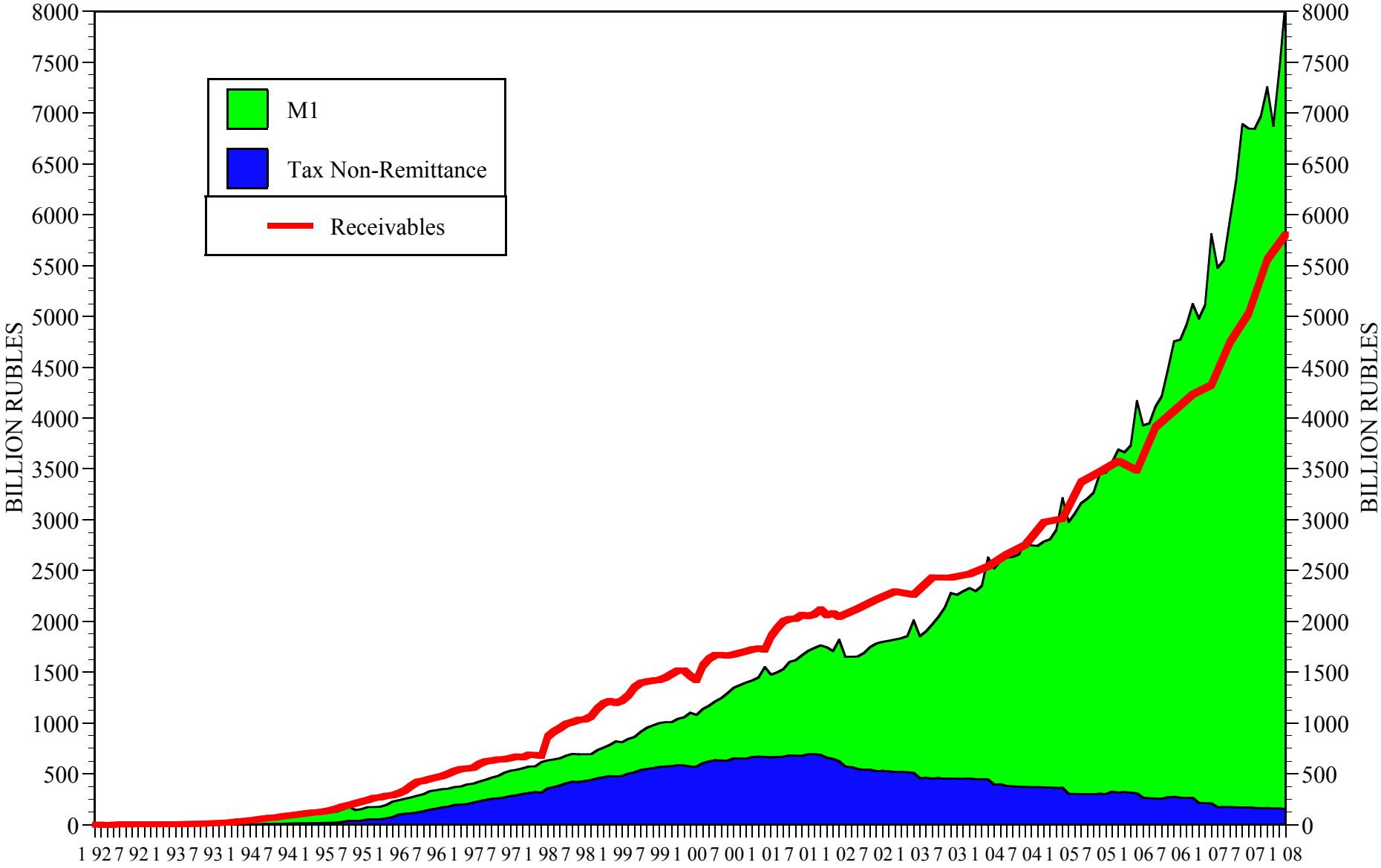
Note: 1. All data are denominated in billion 1998 nominal rubles

2. An increase in the deposit multiplier during 2000-2008, when tax non-remittance decreased and became negative and the subsidy to finance enterprise receivables decreased accordingly, makes the monetary aggregate M2 less suitable than M1 (see figure 13.2) for approximating the quasi-fiscal component of the subsidy, which, together with tax non-remittance as a fiscal component, matched the outstanding balances of enterprise receivables until 2006

Sources: Receivables and tax non-remittance: Russian State Committee on Statistics; money: Central Bank of Russia.

FIGURE 13.2

THE SELF-ENFORCEABLE TAX SUBSIDY: THE RELATIONSHIP BETWEEN ENTERPRISE RECEIVABLES, TAX NON-REMITTANCE, AND MONEY, RUSSIA, 1992-2008

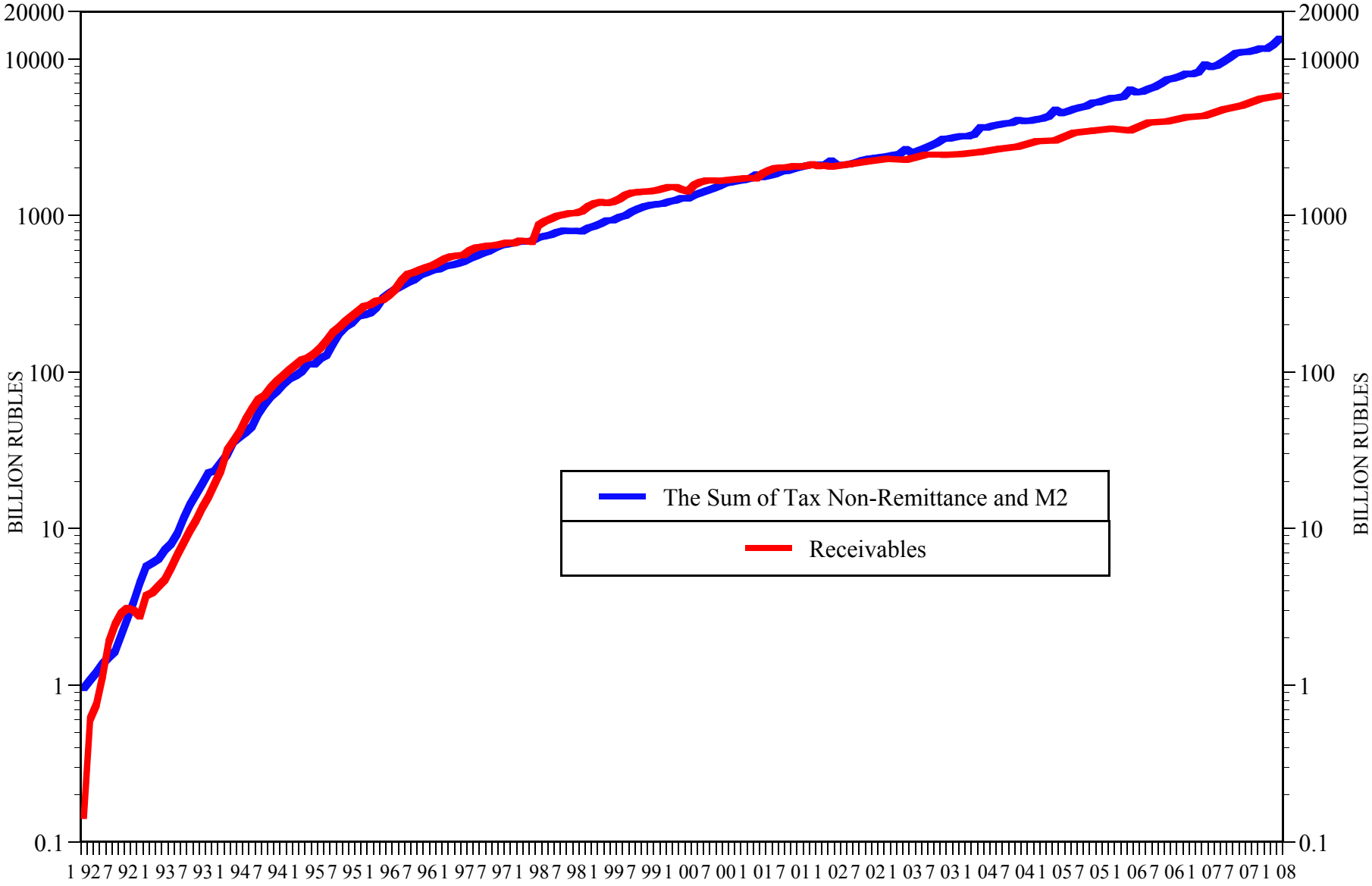


Note: All data are denominated in billion 1998 nominal rubles.

Sources: Receivables and tax non-remittance: Russian State Committee on Statistics.
Money: Central Bank ofRussia.

FIGURE 14.1

THE SELF-ENFORCEABLE TAX SUBSIDY: THE RELATIONSHIP BETWEEN ENTERPRISE RECEIVABLES, TAX NON-REMITTANCE, AND MONEY (LOGARITHMIC SCALE), RUSSIA, 1992-2008

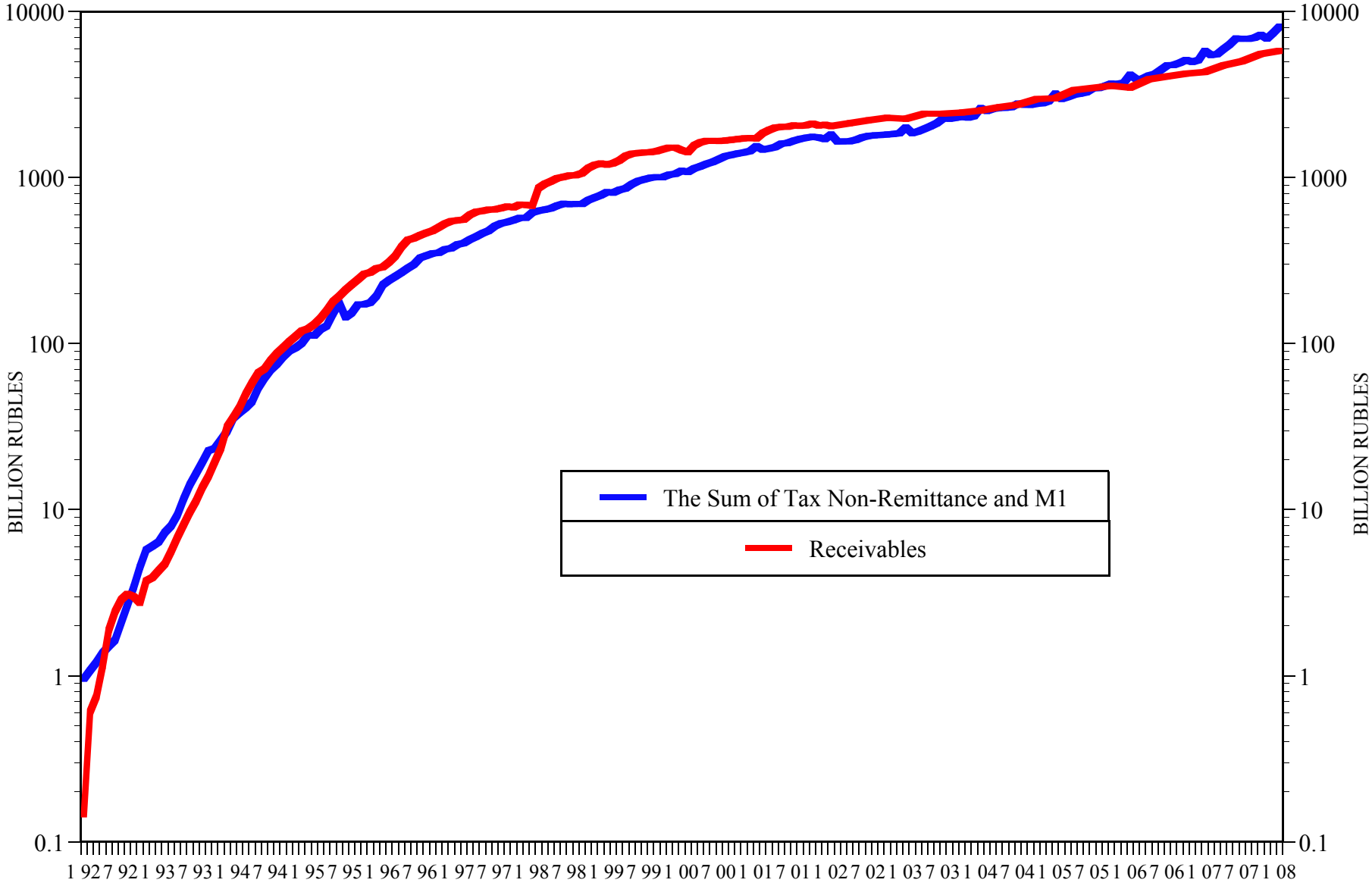


Note: All data are denominated in billion 1998 nominal rubles.

Sources: Receivables and tax non-remittance: Russian State Committee on Statistics.
Money: Central Bank of Russia.

FIGURE 14.2

THE SELF-ENFORCEABLE TAX SUBSIDY: THE RELATIONSHIP BETWEEN ENTERPRISE RECEIVABLES, TAX NON-REMITTANCE, AND MONEY (LOGARITHMIC SCALE), RUSSIA, 1992-2008



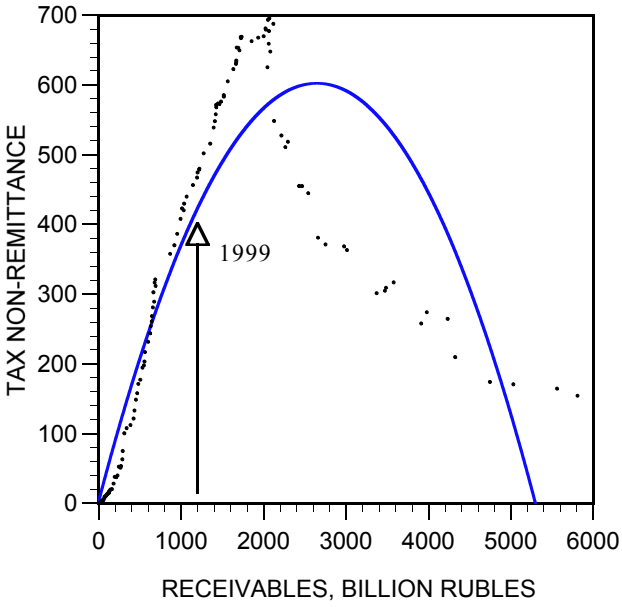
Note: All data are denominated in billion 1998 nominal rubles.

Sources: Receivables and tax non-remittance: Russian State Committee on Statistics.
Money: Central Bank of Russia.

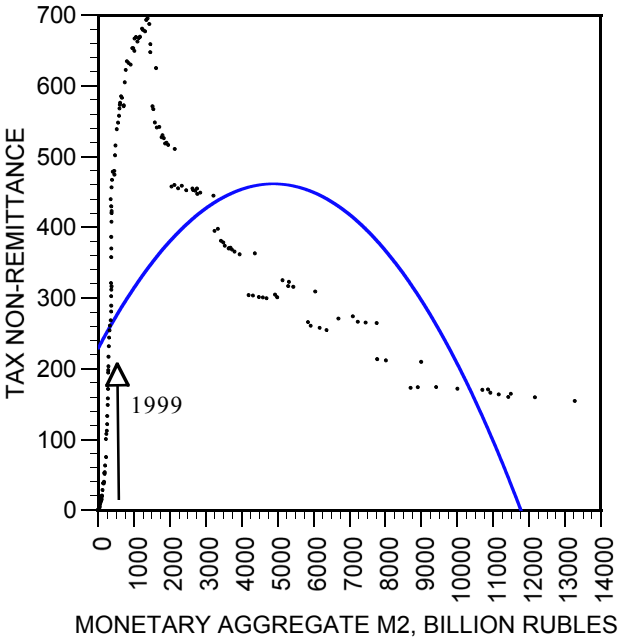
FIGURE 15

PANELS 1-3. TAX NON-REMITTANCE, MONEY STOCK, AND RECEIVABLES, IN BILLION RUBLES, MONTHLY DATA, RUSSIA, 1992-2008

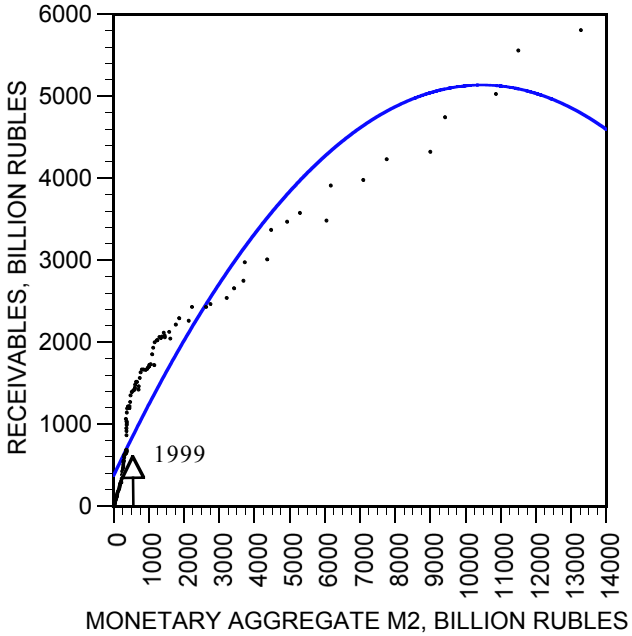
Panel 1. Tax Non-Remittance against Receivables, 1992-2008



Panel 2. Tax Non-Remittance against the Money Stock , 1992-2008



Panel 3. Receivables against the Money Stock, 1992-2008



Sources:

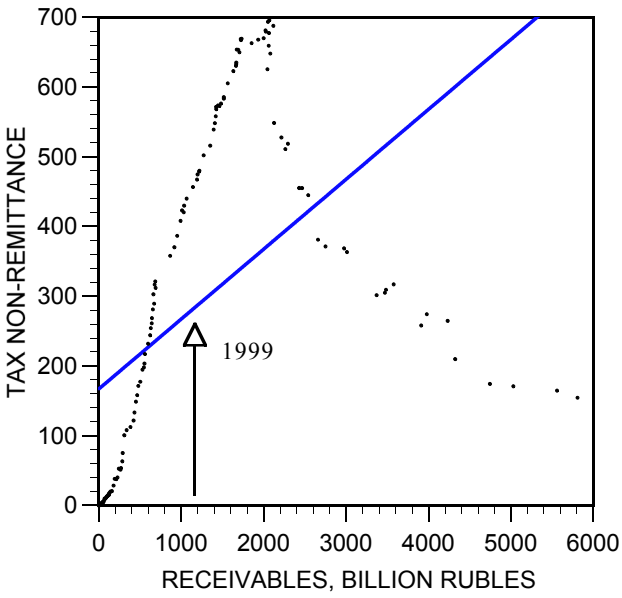
Receivables and tax non-remittance: Russian State Committee on Statistics

Money: Central Bank of Russia

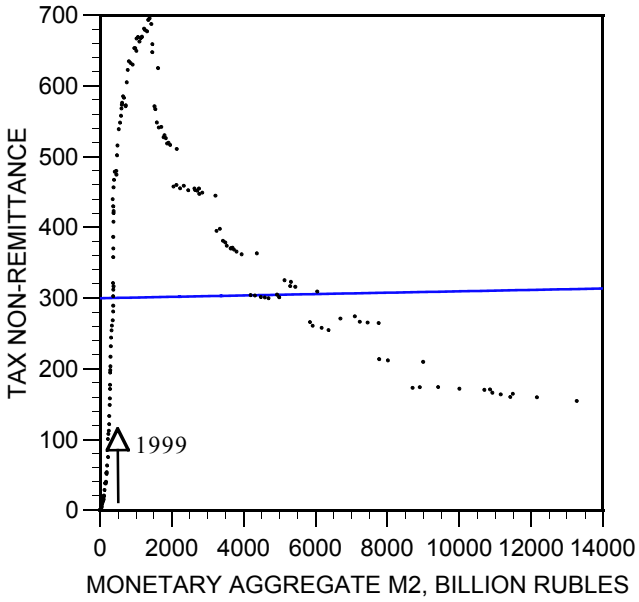
FIGURE 15

PANELS 1A-3A. TAX NON-REMITTANCE, MONEY STOCK, AND RECEIVABLES, IN BILLION RUBLES, MONTHLY DATA, RUSSIA, 1992-2008

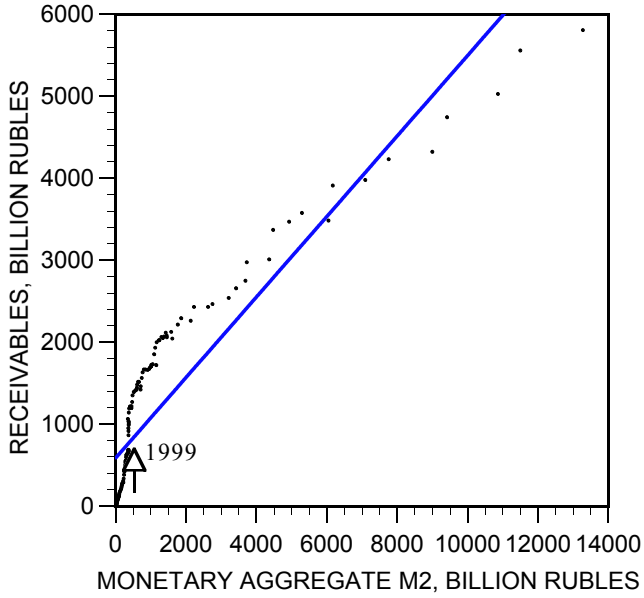
Panel 1A. Tax Non-Remittance against Receivables, 1992-2008



Panel 2A. Tax Non-Remittance against the Money Stock , 1992-2008



Panel 3A. Receivables against the Money Stock, 1992-2008



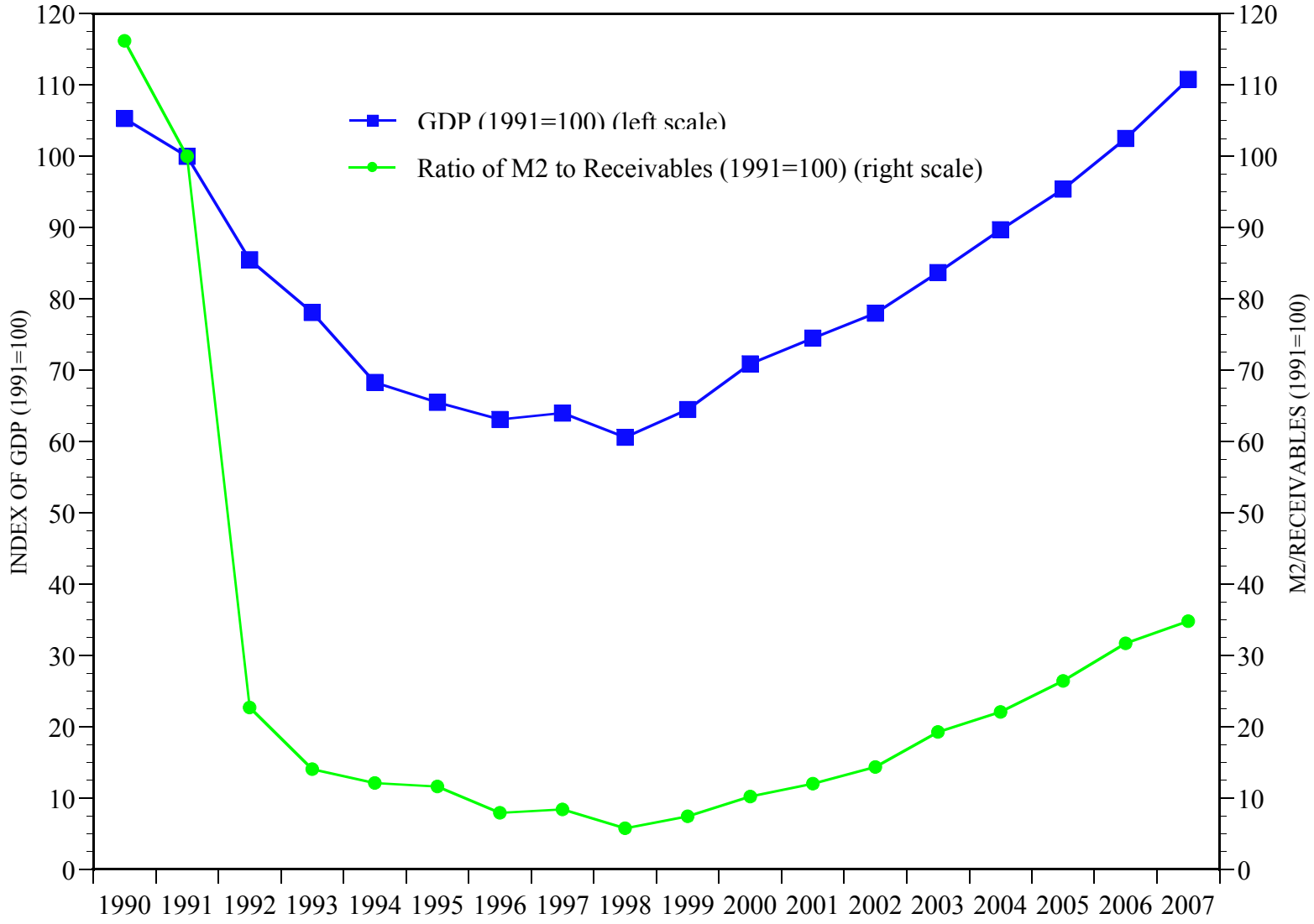
Sources:

Receivables and tax non-remittance: Russian State Committee on Statistics

Money: Central Bank of Russia

FIGURE 16

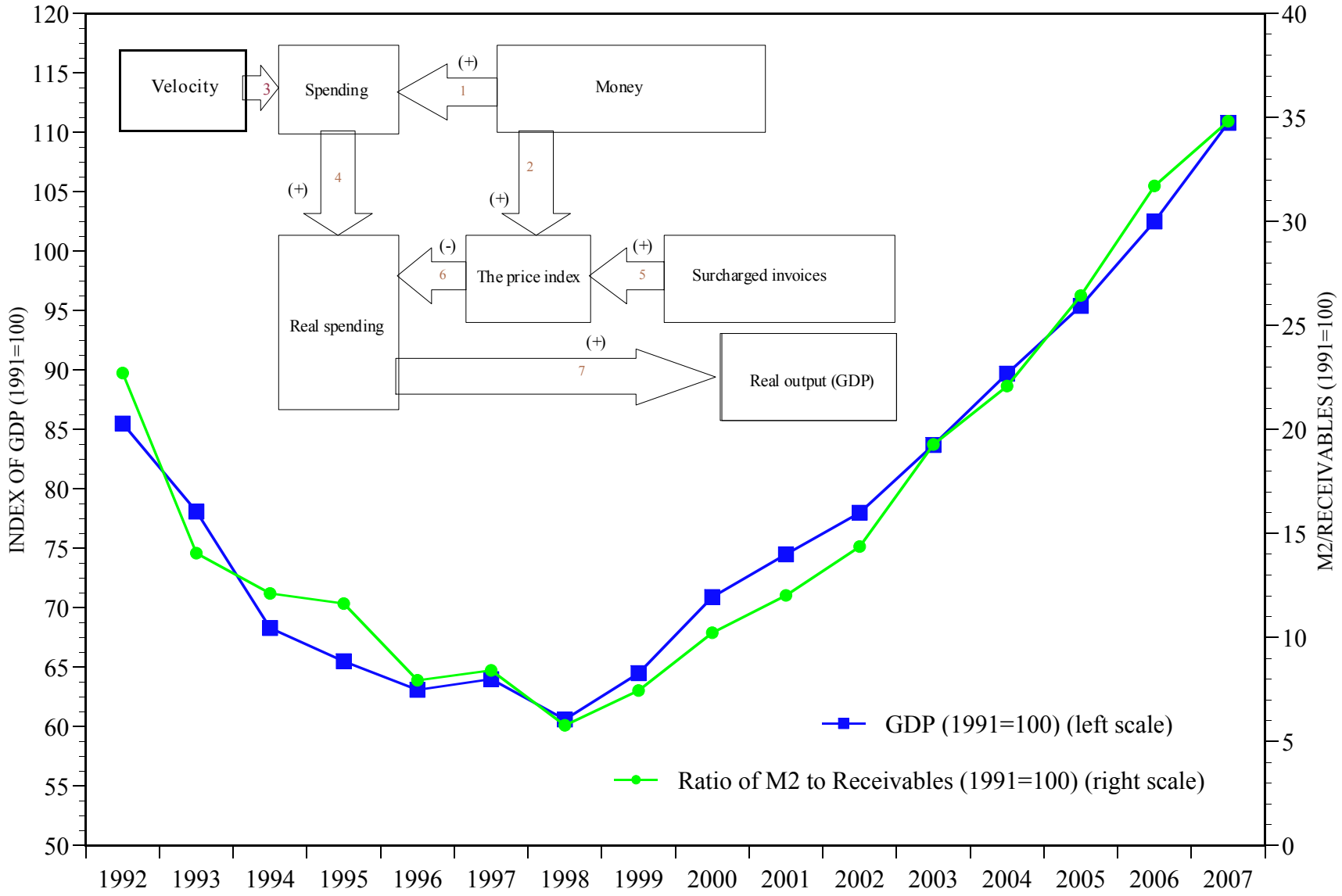
INDICES OF GROSS DOMESTIC PRODUCT (GDP) (1991=100) AND OF THE RATIO OF M2 TO RECEIVABLES (YEAR-END) (1991=100), RUSSIA, 1990-2007



Sources: Gross Domestic Product and enterprise receivables: Russian State Committee on Statistics
The monetary aggregate M2: Central Bank of Russia
The data are reproduced in table 1

FIGURE 17

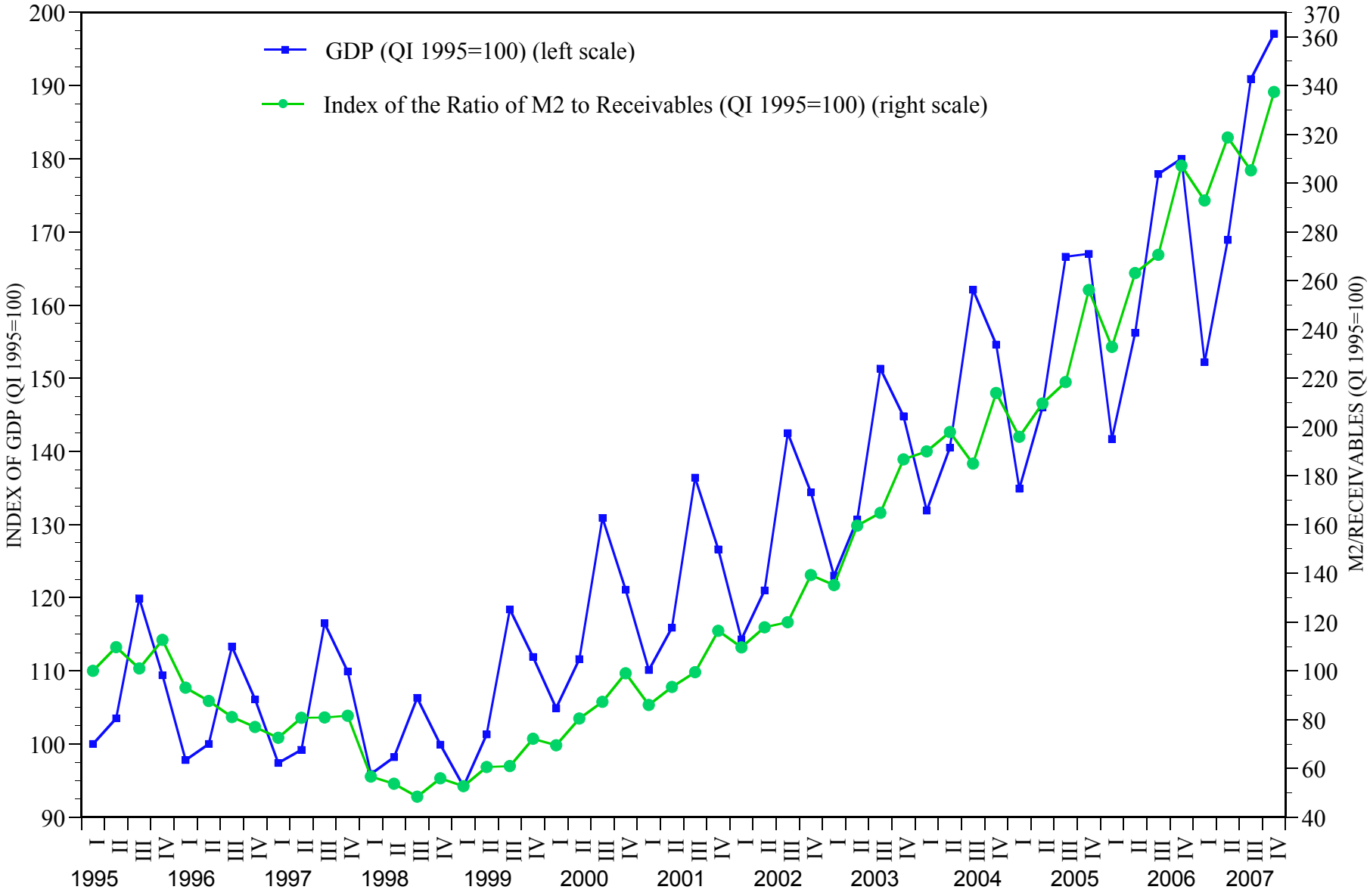
INDICES OF GROSS DOMESTIC PRODUCT (GDP) (1991=100) AND OF THE RATIO OF M2 TO RECEIVABLES (YEAR-END), (1991=100), RUSSIA, 1992-2007



Sources: Gross Domestic Product and enterprise receivables: Russian State Committee on Statistics
The monetary aggregate M2: Central Bank of Russia
The data are reproduced in table 1

FIGURE 18

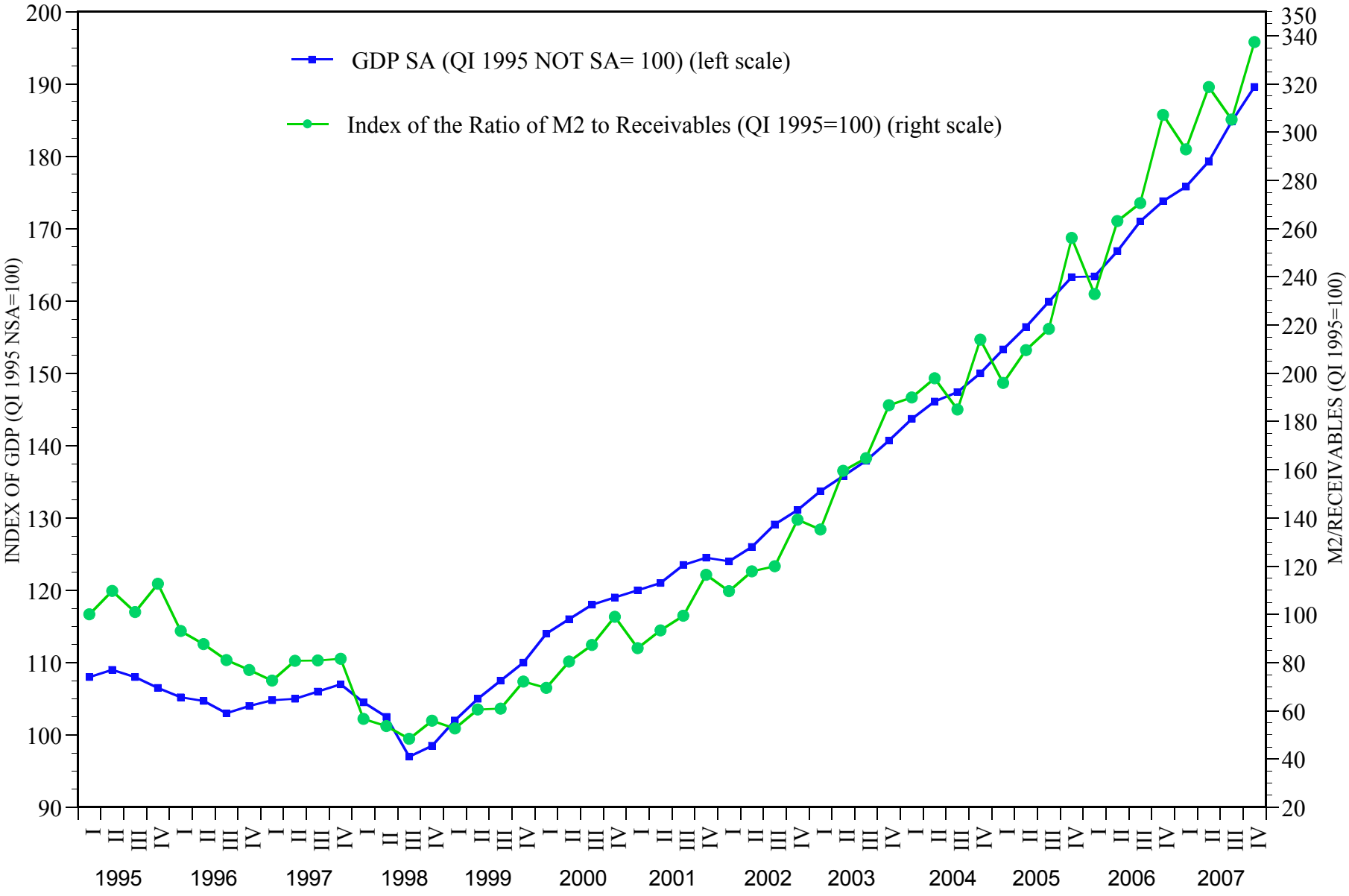
QUARTERLY INDICES OF GROSS DOMESTIC PRODUCT (GDP) (QI 1995=100) (NOT SEASONALLY ADJUSTED) AND OF THE RATIO OF M2 TO RECEIVABLES (QUARTER-END, QI 1995=100), RUSSIA, 1995-2007



Sources: Gross Domestic Product and enterprise receivables: Russian State Committee on Statistics, various releases
The monetary aggregate M2: Central Bank of Russia

FIGURE 19

QUARTERLY INDICES OF GROSS DOMESTIC PRODUCT (GDP) (SEASONALLY ADJUSTED) (QI 1995 NOT SA=100) AND OF THE RATIO OF M2 TO RECEIVABLES (QUARTER-END, QI 1995=100), RUSSIA, 1995-2007

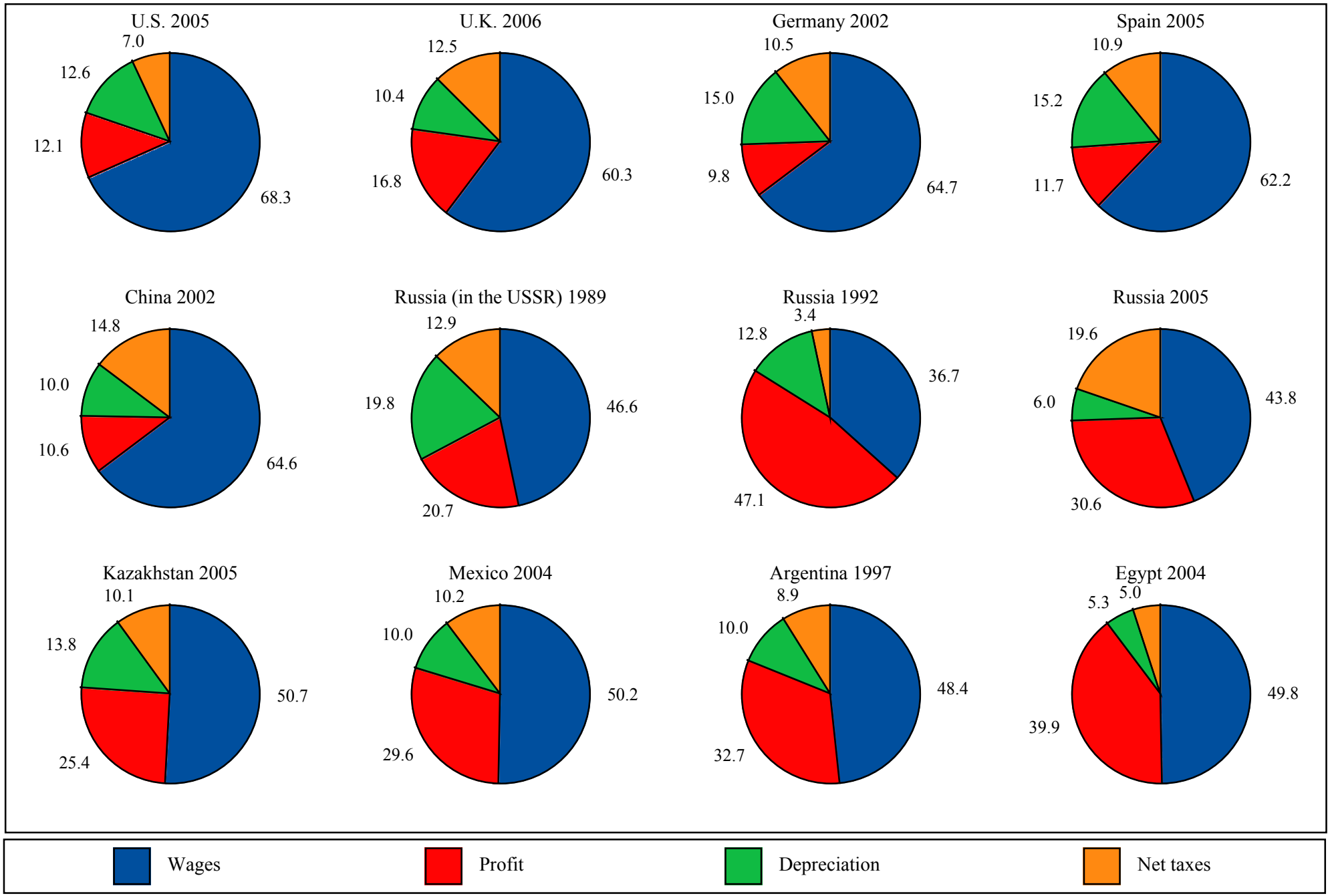


Notes: 1. The index of quarterly GDP is calculated from two discontinuous overlapping data series and contains random biases
2. The basis for the index of quarterly GDP is the GDP in the first quarter of 1995 not seasonally adjusted

Sources: Gross Domestic Product and enterprise receivables: Russian State Committee on Statistics, various releases
The monetary aggregate M2: Central Bank of Russia

Figure 20

Income Shares of GDP (in Percent), Ten Economies, Latest Available Year, and Russia in Retrospect



Note: Wages stand for the sum of compensation of employees and gross mixed income (income of self-employed proprietors including farmers). Profit stands for net operating surplus (gross operating surplus less consumption of fixed capital). Depreciation stands for consumption of fixed capital. Net taxes stand for taxes on production and import less subsidies on thereof. For methodology see Douglas Gollin, "Getting Income Shares Right," *Journal of Political Economy* 110, no. 2 (April 2002): 458-474.
Sources: All countries except Germany and Russia in 1989 and 1992: U.N. Division of Statistics, *National Accounts Statistics: Main Aggregates and Detailed Tables, 2006* (hereinafter *NAS:MADT* and year) (New York: United Nations, 2008), pt. I, pp. 56-57, 674-675, 1015-1016, pt. II, p. 824, pt. III, pp. 375, 950, 996; Germany: *NAS:MADT 2004* (New York: United Nations, 2006), pt. I, pp. 1047-1048; Russia, 1989: Russian State Committee on Statistics, *Rossiiskii Statisticheskii Ezhegodnik 1994* (hereinafter *RSE* and year) (Moscow, 1994), p. 238; Russia 1992: *RSE 1997* (Moscow, 1997), p. 306 and *NAS-MADT 2001* (New York: United Nations, 2003), pt. II, pp. 514-515.

Table 1. The Basic Data: Output, Prices, the Money Stock, and Receivables: Russia, 1990-2008

Year	GDP at current prices (billion rubles)	Growth rate of real GDP (%)	Index of real GDP (1991=100)	Consumer Price Index	Monetary aggregate M2 (billion rubles)	Enterprise receivables (billion rubles)	The ratio of M2 to receivables, year-end (percent)	The ratio of receivables to GDP, year-end (percent)	DSO
1990	0.6442	-3.0	105.3	n.a.	n.a.	n.a.	706.7	9.3	n.a.
1991	1.3985	-5.0	100.0	2.60	0.424	0.060	656.2	10.4	n.a.
1992	19.0	-14.5	85.5	26.09	0.958	0.146	149.0	22.6	n.a.
1993	171.5	-8.7	78.1	9.44	6.4	4.3	92.2	21.0	n.a.
1994	610.7	-12.5	68.3	3.24	33.2	36.0	79.5	20.1	n.a.
1995	1,428.5	-4.1	65.5	2.31	97.8	123.0	76.3	20.3	68
1996	2,007.8	-3.6	63.1	1.22	220.8	289.3	52.1	27.6	99
1997	2,342.5	1.4	64.0	1.11	288.3	553.2	55.3	28.9	136
1998	2,629.6	-5.3	60.6	1.84	374.1	677.0	37.9	45.6	122.8
1999	4,823.2	6.4	64.5	1.37	453.7	1,198.2	48.9	30.3	93.7
2000	7,305.6	10.0	70.9	1.20	714.6	1,462.6	67.1	23.6	74.5
2001	8,943.6	5.1	74.5	1.19	1,154.4	1,721.4	78.9	22.9	67.8
2002	10,830.5	4.7	78.0	1.15	1,612.6	2,045.1	94.3	20.9	64.0
2003	13,243.2	7.3	83.7	1.12	2,134.5	2,262.7	126.5	19.2	59.2
2004	17,048.1	7.2	89.7	1.117	3,212.7	2,540.0	144.9	17.7	55
2005	21,625.4	6.4	95.4	1.109	4,363.3	3,010.5	173.5	16.1	61
2006	26,879.8	7.4	102.5	1.090	6,045.6	3,484.4	208.1	16.1	n.a.
2007	32,987.4	8.1	110.8	1.119	8,995.8	4,323.6	228.5	17.6	n.a.
2008					13,272.1	5,807.5			

Notes:
1. All nominal values are denominated in billion 1998 rubles.
2. The data on nominal GDP at current prices derive from three discontinuous series in which overlapping data points do not match exactly. The consolidated continuous series includes the latest published data for each year. The series can serve as an approximation for the denominator in the ratios of various indicators to GDP but cannot serve as the basis for deriving the index of implicit GDP price deflator.
3. DSO stands for days of sales outstanding, also called the average collection period and the collection ratio. It constitutes outstanding balances of receivables divided by the average trade credit sales per day; or receivables divided by total sales on trade credit times 365 days.
Sources:
Money: Central Bank of Russia, various releases
GDP, prices, and receivables: Russian State Committee on Statistics, various releases

Table 2
Receivables and their Financing as a Share of GDP: Russia, 1990-2008

Year	Enterprise receivables (billion rubles)	Receivables flow (billion rubles)	GDP (billion rubles)	Receivables flow as a percent of GDP (Claim on the tax subsidy)	Enterprise receivables including foreign and internal receivables within holding companies (billion rubles)
1990	n.a.	n.a.	0.6442	n.a.	n.a.
1991	0.060	0.086	1.3985	6.1	0.082
1992	0.146	4.15	19.0	21.8	0.204
1993	4.3	31.7	171.5	18.5	5.2
1994	36.0	87.0	610.7	14.2	43.8
1995	123.0	166.3	1,428.5	11.6	150.5
1996	289.3	263.9	2,007.8	13.1	362.0
1997	553.2	123.8	2,342.5	5.3	662.6
1998	677.0	521.2	2,629.6	19.8	846.1
1999	1,198.2	264.4	4,823.2	5.5	1,542.0
2000	1,462.6	258.8	7,305.6	3.5	1,999.7
2001	1,721.4	323.7	8,943.6	3.6	2,450.8
2002	2,045.1	222.6	10,830.5	2.1	3,211.0
2003	2,267.7	272.3	13,243.2	2.1	3,663.3
2004	2,540.0	470.5	17,048.1	2.8	4,138.7
2005	3,010.5	473.9	21,625.4	2.2	5,174.4
2006	3,484.4	839.2	26,879.8	3.1	6,331.3
2007	4,323.6	1,483.9	32,987.4	4.5	7,871.2
2008	5,807.5				11,061.1

Notes: All nominal values are denominated in billion 1998 rubles
Sources:
Receivables and GDP: Russian State Committee on Statistics, various releases

Table 3. The Index of Gross Domestic Product (GDP) and the Constant and Current Values of Export Revenues, Russia, 1991-2007

		Export Revenues in Constant 2007 Billion $			Export Revenues in Current Billion $		
	GDP Index (1991=100)	Total	Oil	Natural Gas	Total	Oil	Natural Gas
1991	100	77.894	n.a.	n.a.	50.911	n.a.	n.a.
1992	85.5	77.005	15.246	13.048	51.681	10.232	8.757
1993	78.1	84.982	14.889	13.907	58.608	10.268	9.591
1994	68.3	95.004	14.771	14.933	67.379	10.476	10.591
1995	65.5	112.914	18.253	16.607	82.419	13.323	12.122
1996	63.1	119.281	21.155	19.524	89.685	15.906	14.683
1997	64.0	112.964	19.250	21.338	86.895	14.808	16.414
1998	60.6	95.288	13.126	17.193	74.444	10.255	13.432
1999	64.5	94.439	17.698	14.190	75.551	14.158	11.352
2000	70.9	127.090	30.579	19.897	105.033	25.272	16.444
2001	74.5	120.223	29.488	20.969	101.884	24.990	17.770
2002	78.0	124.469	33.771	18.441	107.301	29.113	15.897
2003	83.7	154.959	45.234	22.778	135.929	39.679	19.981
2004	89.7	203.360	65.540	24.257	183.207	59.045	21.853
2005	95.4	260.864	89.279	33.888	243.798	83.438	31.671
2006	102.5	315.692	106.374	46.459	303.550	102.283	44.672
2007	110.8	355.465	121.503	44.837	355.465	121.503	44.837

Sources:
1. GDP index (1991=100): calculated from Russian State Committee on Statistics, various releases
2. Total export revenues, 1991: Russian State Committee on Statistics, *Rossiiskaia Federatsiia v 1992 Godu* (Moscow, 1993), p. 50
3. Total, oil, and natural gas export revenues, 1992-2007: Central Bank of Russia, "Statistics," at http://www.cbr.ru/statistics/credit_statistics/
4. U.S. Consumer Price Index applied to convert export revenue values from current to constant 2007 dollars: U.S. Bureau of Labor Statistics

Table 4. The Flows of Funds, Nonfinancial Business: U.S., 1992-2003 (Billions of dollars)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Income before taxes	727.0	802.3	905.2	967.2	1059.9	1129.5	1137.2	1195.9	1211.9	1149.4	1157.1	1289.6
Net capital transfers	-159.0	-190.0	-229.0	-235.0	-259.4	-268.9	-297.9	-290.7	-308.5	-205.5	-140.8	-170.2
Gross saving and net capital transfers	568.0	612.3	676.2	732.2	800.5	860.6	839.3	905.2	903.4	943.9	1016.3	1119.4
Gross investment	537.3	722.3	720.6	799.3	842.5	880.7	876.0	1003.1	1068.0	1061.9	973.2	1150.1
Capital expenditures	555.5	614.2	699.8	764.3	805.5	881.2	930.2	1059.3	1155.3	1013.2	948.1	967.7
Net financial investment	-18.2	108.1	20.8	35.1	36.9	-0.5	-54.2	-56.1	-87.4	48.7	25.1	182.4
Net acquisition of financial assets	174.2	361.0	338.4	503.9	549.0	403.7	791.0	1154.8	1455.3	335.9	296.6	638.1
Deposits and currency	26.1	37.8	40.5	52.6	84.2	79.9	118.8	177.7	163.8	63.9	28.8	126.4
Credit market instruments	27.7	17.1	24.5	-4.9	-6.2	-4.3	4.4	-25.7	26.4	8.9	25.3	31.0
Trade receivables	34.7	46.4	88.2	93.3	117.6	122.8	107.4	247.1	352.6	-126.7	-57.6	153.4
Other assets	85.7	259.6	185.3	363.0	353.4	205.3	560.4	755.6	912.5	390.0	299.9	327.2
Net increase in liabilities	192.4	252.9	317.6	468.8	512.1	404.2	845.2	1210.9	1542.7	287.3	271.5	455.7
Credit market instruments	-7.1	16.2	138.9	276.0	255.0	392.8	587.8	569.5	558.2	394.9	182.0	305.6
Bank loans and other loans	-19.9	-28.7	88.6	126.5	85.9	141.0	169.7	121.6	173.7	-57.4	-64.5	-63.9
Corporate bonds	67.6	75.2	23.3	91.1	116.3	150.5	235.2	221.7	162.6	348.5	132.3	158.3
Other credit instruments	-54.9	-30.2	27.0	48.5	52.9	101.2	182.9	226.2	222.0	103.9	114.4	211.2
Corporate equities	27.0	21.3	-44.9	-58.3	-47.3	-77.4	-215.5	-110.4	-118.2	-47.4	-41.6	-57.8
Trade payables	40.6	38.1	84.7	94.4	81.4	97.5	89.1	213.6	360.8	-111.3	45.9	125.5
Taxes payable	7.1	3.6	1.0	0.5	11.9	13.6	9.0	15.9	18.6	7.1	20.0	0.8
Other liabilities	124.9	173.6	137.8	156.2	211.3	-22.3	374.9	522.4	723.3	44.0	65.1	81.7
Discrepancy	30.7	-109.9	-44.4	-67.1	-41.9	-20.1	-36.8	-97.9	-164.5	-118.0	43.0	-30.7

Note: The table is abridged from Tables F.101 and F.102 of the Flow of Funds Accounts of the United States, by the Federal Reserve Board
Source: http://www.federalreserve.gov/releases/z1/current/data.htm

Table 5. The Flows of Funds, Nonfinancial Enterprises: Russia, 1992-2003 (Billions of rubles)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Profit and loss	5.6	40.8	80.4	250.6	125.0	174.0	-115.1	723.2	1190.6	1141.3	923.3	1366.9
Capital consumption	0.7	6.8	27.2	60.3	103.8	108.3	96.5	140.1	210.9	278.3	414.2	422.4
Net capital transfers	0.7	9.3	28.3	58.2	75.6	84.6	77.8	114.0	256.3	306.9	345.4	331.9
Gross saving and net capital transfers	7.0	56.9	135.9	369.1	304.4	366.9	59.2	977.3	1657.8	1726.5	1682.9	2121.2
Gross investment	2.0	22.3	77.3	120.2	230.3	488.8	-204.4	1042.7	1698.6	2766.8	2813.0	3404.1
Capital expenditures	2.7	27.1	108.8	267.0	376.0	408.8	407.1	670.4	1165.2	1504.5	1762.4	1774.9
Net financial investment	-0.7	-4.8	-31.5	-146.8	-145.7	80.0	-611.5	372.3	533.4	1262.3	1050.6	1629.2
Net acquisition of financial assets	6.1	46.1	140.0	286.3	441.9	495.5	914.8	1308.4	1759.4	3295.8	2756.4	3825.7
Deposits and currency	0.8	4.9	9.8	3.9	19.7	13.3	35.0	75.5	61.3	105.8	212.8	-40.2
Trade receivables	5.0	38.6	106.7	211.5	300.6	183.5	695.9	457.7	453.1	760.2	452.3	475.4
Other financial assets	0.3	2.6	23.5	70.9	121.6	298.7	183.9	775.2	1245.0	2429.8	2091.3	3390.5
Net increase in liabilities	6.8	50.9	171.5	433.1	587.6	415.5	1526.3	936.1	1226.0	2033.5	1705.8	2196.5
Credit market instruments	1.0	9.7	33.8	46.3	32.4	40.9	349.3	194.6	256.4	863.4	646.9	1037.4
Bank loans and other loans	1.0	9.7	33.8	46.3	32.4	40.9	349.3	194.6	256.4	863.4	646.9	1037.4
Corporate equities, bonds, and loans	0.1	2.2	10.7	78.0	103.8	75.6	112.8	138.1	355.4	454.4	571.0	780.5
Trade payables	5.6	35.4	111.5	239.6	287.9	181.8	881.9	538.6	530.3	760.8	601.6	450.9
Tax and payroll payables	0.14	3.6	15.5	69.2	163.5	117.2	182.3	64.8	83.9	-45.1	-113.7	-72.3
Tax arrears	0.11	2.9	12.1	60.0	128.3	113.2	157.9	98.1	95.9	-43.3	-114.4	-66.1
Payroll arrears	0.03	0.7	3.45	9.2	35.2	4.0	24.4	-33.3	-12.0	-1.8	0.7	-6.2
Discrepancy	5.0	34.6	58.6	248.9	74.1	-121.9	263.6	-65.4	-40.8	-1040.3	-1130.1	-1282.9

Note: The table of the flows of funds is modeled on Tables F.101-F.104 of the Flow of Funds Accounts of the United States, by the Federal Reserve Board
Source: Derived and calculated from Russian State Committee on Statistics and Central Bank of Russia, various releases

Table 6. The Statement of Cash Flows, Nonfinancial Enterprises: Russia, 1992-2003 (Billions of rubles)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Net income	5.6	40.8	80.4	250.6	125.0	174.0	-115.1	723.2	1190.6	1141.3	923.3	1366.9
- Trade receivables	5.0	38.6	106.7	211.5	300.6	183.5	695.9	457.7	453.1	760.2	452.3	475.4
+ Trade payables	5.6	35.4	111.5	239.6	287.9	181.8	881.9	538.6	530.3	760.8	601.6	450.9
+ Tax and payroll payables	0.14	3.6	15.5	69.2	163.5	117.2	182.3	64.8	83.9	-45.1	-113.7	-72.3
Tax arrears	0.11	2.9	12.1	60.0	128.3	113.2	157.9	98.1	95.9	-43.3	-114.4	-66.1
Payroll arrears	0.03	0.7	3.45	9.2	35.2	4.0	24.4	-33.3	-12.0	-1.8	0.7	-6.2
+ Depreciation	0.7	6.8	27.2	60.3	103.8	108.3	96.5	140.1	210.9	278.3	414.2	422.4
Net cash from operating activities	7.0	48.0	127.9	408.2	379.6	397.8	349.7	1009.0	1562.6	1375.1	1373.1	1692.5
Investing activities												
- Capital expenditures	2.7	27.1	108.8	267.0	376.0	408.8	407.1	670.4	1165.2	1504.5	1762.4	1774.9
- Other financial assets	0.3	2.6	23.5	70.9	121.6	298.7	183.9	775.2	1245.0	2429.8	2091.3	3390.5
- Net cash from investing activities	3.0	29.7	132.3	337.9	497.6	707.5	591.0	1445.6	2410.2	3934.3	3853.7	5165.4
Financing activities												
+ Credit market instruments	1.0	9.7	33.8	46.3	32.4	40.9	349.3	194.6	256.4	863.4	646.9	1037.4
Bank loans and other loans	1.0	9.7	33.8	46.3	32.4	40.9	349.3	194.6	256.4	863.4	646.9	1037.4
+ Corporate equities, bonds, and loans	0.1	2.2	10.7	78.0	103.8	75.6	112.8	138.1	355.4	454.4	571.0	780.5
+ Net capital transfers	0.7	9.3	28.3	58.2	75.6	84.6	77.8	114.0	256.3	306.9	345.4	331.9
+ Net cash from financing activities	1.8	21.2	72.8	182.5	211.8	201.1	539.9	446.7	868.1	1624.7	1563.3	2149.8
Net cash per period	0.8	4.9	9.8	3.9	19.7	13.3	35.0	75.5	61.3	105.8	212.8	-40.2
Discrepancy	5.0	34.6	58.6	248.9	74.1	-121.9	263.6	-65.4	-40.8	-1040.3	-1130.1	-1282.9

Source: Derived and calculated from Russian State Committee on Statistics and Central Bank of Russia, various releases

Table 7
Enterprise Money Balances and the Stock of Tax Non-Remittance, Russia, 1992-2008

	(1)	(2)	(3)	(4)
Beginning of year	Enterprise money balances	Tax non-remittance	The ratio of (1) to (2)	The ratio of tax non-remittance to GDP (year-end) (%)
1992	0.221	0.010	22.1	0.6
1993	0.980	0.122	8.0	1.7
1994	5.9	3.0	2.0	2.5
1995	15.7	15.1	1.04	5.3
1996	19.6	75.1	0.26	10.1
1997	39.3	203.4	0.19	13.5
1998	58.5	316.6	0.18	18.0
1999	93.5	474.5	0.20	11.9
2000	169.0	572.6	0.30	9.2
2001	231.3	668.5	0.35	7.0
2002	337.1	625.2	0.54	4.7
2003	549.9	510.8	1.08	3.4
2004	509.7	444.7	1.15	2.1
2005	679.4	363.2	1.87	1.4
2006	865.2	309.2	2.80	0.8
2007	1,109.0	209.8	5.29	0.5
2008	1,369.0	154.4	8.87	

Note: All nominal values are denominated in billion 1998 rubles

Source: Russian State Committee on Statistics, various releases

Glossary

Selected Terms of Trade Credit and Related Accounting, Dichotomized and Synchronized by Two Trading Parties

Trade credit encompasses open account relations between sellers (trade creditors) and buyers (trade debtors) of goods and services. In trade credit, sales and their invoices precede payments. Invoices add to the income of sellers and bills add to the expenses of buyers on the accrual basis accounting, with cash payments (liquid funds) to be remitted by buyers and collected by sellers before or on due date.

Stock or flow	**Sellers, trade creditors**	**Buyers, trade debtors**
Flow	**Invoice**: An instrument of trade credit with the amount charged to the buyer, technically the list of goods shipped and services rendered, itemized by units and unit prices, and with the sum due	**Bill**: An instrument of trade credit with the amount charged by the seller in the invoice
Flow	**Charge**: The amount, sum, or price for goods supplied and services rendered in the invoice and the bill	
Flow	**Payment**: The complete or partial discharge of the invoice, the amount remitted in cash (liquid funds) by the buyer	
Stock	**Accounts receivable**, trade receivables, receivables: Outstanding balances (due by buyers) of amounts invoiced minus amounts paid, balances of invoices net of payments, a current asset of sellers	**Accounts payable**, trade payables, payables: Outstanding balances (due to sellers) of amounts billed minus amounts paid, balances of bills net of payments, a current liability of buyers
Flow	**The flow of trade receivables**, receivables flow, period receivables: Balances of invoices net of payments during a given period, the difference between receivables at the beginning and the end of the period	**The flow of trade payables**, payables flow, period payables: balances of bills net pf payments during a given period, the difference between payables at the beginning and the end of the period
Flow	**The average collection period**, collection ratio, days sales outstanding: Outstanding balances of receivables divided by the average trade credit sales per day; or receivables divided by total sales on trade credit times 365 days	**Days payable outstanding**: Outstanding balances of payables divided by purchases times 365 days

Flow	**Accounts receivable aging schedule**: Accounts receivable tabulated by the length outstanding—by the number of days until due and past due	**Due period**: The number of days after issuance of the invoice (or receipt of the bill) allowed to remit payment
Stock	**Aged receivables**: Accounts receivable past due	**Payment arrears**, arrears: Accounts payable past due
Flow	**Net income, surplus, profit**: Revenues (total earnings) minus expenses, on the accrual or cash basis accounting	
Flow	**Net cash flow**, cash flow, net cash from operating activities: Net income adjusted for non-cash charges; net income minus receivables flow plus trade payables flow plus the flow of taxes payables plus depreciation. If the flow of receivables is greater than the sum of net income, the flow of trade and tax payables, and depreciation, net cash flow is negative	
Stock	**Clearing**, settlement, mutual netting: Without cash transactions, in lieu of payments, the bookkeeping crediting of accounts receivable of sellers and debiting of accounts payable of buyers in discharge of equal amounts of mutual obligations between two or any number of enterprises in a circular chain of trade credit, performed by the Central Bank	
Flow	**Tax remittance**: Payment of taxes in cash, including taxes withheld from workers and collected from consumers	
Stock	**Taxes payable**, tax liabilities, tax payables: Payroll taxes withheld from workers and sales taxes and value-added taxes collected from consumers due to be remitted to the government and currently held with the enterprise cash balances; also profit taxes, corporate income taxes, and employer taxes due	
Stock	**Tax arrears**: Taxes payable past due	
Stock	**Payroll arrears**, wage arrears: Wages and salaries of employees past due	

Sources: Plagiarized, adapted, and compiled from numerous manuals, textbooks, encyclopedias, dictionaries, and glossaries, the most handy of which are www.investorwords.com , www.investopedia.com , and www.trading-glossary.com . Note, however, that most terms (e.g., accounts receivable and accounts payable, receivables flow and payables flow, and even charge and payment) are adapted in an operational rather than descriptive manner and thus may differ in appearance, but not in substance, from standard definitions. The term 'aged receivables' has been concocted and added for analytical purposes to mirror payment arrears and to make a stock measure of the flows in the accounts receivable aging schedule.