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Price Liberalization in Russia: The Early Record

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Abstract

Prices in Russia have been decontrolled in several steps since early 1991, after decades of near-fixity. Their behavior before and after the January 1992 price liberalization is analyzed here, as are the associated movements of wages and overall consumer incomes and expenditures. The emphasis is on developments in the first half of 1992. Comparisons are made with recent experience in Eastern Europe. Evidence on shortages, saving and income distribution is also considered.

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I. Introduction

Income and production developments in the Russian Federation began to diverge conspicuously in the late 1980s. Until then, increases in the measured real wage had not significantly outstripped measured productivity gains. After 1987, however, the growth of nominal wages and incomes accelerated, while the growth rate of production started to decline and finally turned negative. Under a regime of virtually fixed official prices, this divergence exacerbated shortages and led to a gradual loss of effective control over state-regulated prices. A gap emerged and widened between inflation in state stores and inflation in the control-free farmers' markets, one sign among others that major price adjustments were unavoidable. In early 1991, a first set of price reforms, combining discrete increases of controlled prices and liberalization of some prices, was undertaken. By the end of 1991, however, divergence from macroeconomic equilibrium had clearly worsened. As the convertibility of money into goods deteriorated rapidly, barter became widespread, particularly among enterprises. Effective January 2, 1992, a comprehensive price liberalization was implemented.

This paper documents and analyzes the behavior of prices, incomes, consumption and savings before and after the January 1992 price liberalization, with emphasis on developments during the first semester of 1992. The focus is on households because information on enterprise accounts is relatively limited. Among the questions and issues addressed are the following: (1) what happened to consumer and producer prices when most were liberalized in January 1992; (2) why was their increase so large compared to the price liberalizations in Eastern Europe of 1990-91; (3) to what extent did prices "overshoot"; (4) why has the rate of increase in producer prices continued to outpace that of consumer prices; (5) what evidence is there of a supply response and a decline in shortages as a result of price liberalization; (6) what happened to the real wage before and after price liberalization; (7) what happened to household expenditures, saving and real balances; and (8) what was the effect of price and income changes on the distribution of income and the standard of living?

Before addressing these questions, the limitations of the available statistics must be acknowledged. In this respect, it should be recognized that virtually all the data used for Russia are produced by the State Statistical Committee of the Russian Federation (Goskomstat). Many of the underlying methodological canons are inherited from the days of central planning and appear increasingly ill-suited as the economy becomes more market-oriented. Also, some of the available series are shorter than required for analytical purposes: seasonal variations, for example, cannot be properly assessed. A number of more specific data problems will be reported and discussed along the way.

Economic time series are difficult to interpret when major structural breaks occur. Therefore, several cross-country comparisons are conducted, showing how prices and wages moved in Russia, Poland, Czechoslovakia,

Romania and Bulgaria in the early stages of the transition to a market economy. While certain similarities are striking, the Russian experience in several respects appears as an extreme case.

The paper proceeds as follows: Section II discusses developments in consumer and producer prices, and presents some evidence on shortages and the supply response to price liberalization; Section III traces the path of wages and other household incomes, and depicts the apparent distributional impact of the early 1992 price burst; Section IV focuses on the response of household consumption and saving; Section V provides a summary and some conclusions and outlines some of the key outstanding questions raised in the paper. Tables and charts appear in a statistical appendix.

II. Prices and Shortages

Price reforms in the Russian Federation were carried out in several steps. Partial liberalization measures coupled with administrative price increases caused a sizable jump in producer prices in January 1991, and a comparably large burst in retail prices in April 1991. In the fall of 1991, the announcement of further liberalization measures and the gradual loss of central control over price setting resulted in accelerating open inflation. In early January 1992, as controls on most prices were officially lifted, and as administered prices were raised several times over, a massive price jump was registered, both at the retail and at the producer level. Additional liberalization measures followed, most notably in early March. After the January price burst, monthly inflation rates tended to decline, but remained at very high levels, while shortages and queues for goods whose prices had been decontrolled shrunk considerably.

1. Consumer prices

a. Policies

The April 1991 retail price reform undertaken by the authorities of the former U.S.S.R. reduced the share of fixed prices (to 55 percent), in favor of regulated prices (15 percent) and "contractual prices between the producer and the retail unit" (30 percent). In addition, certain fixed prices were raised with a view to reducing relative price distortions and subsidies. Indeed, the reform at the producer level three months earlier (discussed below) had virtually necessitated reform at the retail level.

As the dissolution of the union proceeded, the government of the Russian Federation that took office in November 1991 prepared a bold program of price liberalization that was announced in a presidential address on October 28, 1991. The corresponding decree was signed on December 3, 1991, and postponed the date of implementation from December 16 to January 2, 1992, on the request of the other former U.S.S.R. republics.

As of January 2, 1992, about 90 percent of retail prices were in principle free (in value terms, at 1991 relative prices). 1/ Price controls continued to apply to a number of basic consumer goods and services, including certain types of bread, milk and some milk products, baby foods, salt, sugar, vegetable oil, vodka and other spirits, electricity and fuels, matches, medicines, supplies for the disabled, housing rents, public utilities, and public transportation and communication services. Furthermore, the state distribution sector remained subject to a ceiling on its mark-up ratio which was, however, raised to 25 percent (45 percent for the far northern regions). Administered prices for most of the above-mentioned goods were raised by 3 to 5 times. Some state-controlled prices, however, such as air fares, were increased much more.

On March 7, 1992, a federal government decree allowed local authorities to abolish limits imposed on the prices of bread, milk, kefir, skim yogurt, sugar, salt, vegetable oil and matches. This decision generalized the permission granted to local governments in the course of January and February to adjust some of the regulated prices or to free them, as the budgetary resources required to maintain the controlled prices were not always forthcoming, causing some of the price ceilings to be exceeded. In some cases, however, liberalization was short-lived: e.g., *Rossiskaya Gazeta* reported around mid-March that the Krasnoyarsk krai had reverted to price controls cum subsidies on bread and milk after one week of free prices. Table 1 shows the extent of remaining controls on food prices by mid-1992.

Another limitation on the freedom to set prices in the first half of 1992 was the obligation for enterprises classified as monopolists by the state anti-monopoly committee to notify the state committee on prices (Goskomtsen) of increases in their prices and to abide by pre-defined limits (varying across branches) on profitability ratios. 2/

b. Data

Prior to the analysis of the price movements in 1992, a few clarifications are in order regarding the methodology and the meaning of the main price indices (presented in Table 2).

1/ This proportion would be much lower if calculated at free market prices rather than at 1991 prices. The overstatement of the degree of price liberalization inherent in such a figure may be considerable. For example, housing rents--which typically represent a large share of consumer expenditure in market economies--were controlled and thus would be given an artificially low weight in such a calculation.

2/ This regulation applied to both producer and consumer prices, although it included various exemptions. This form of regulation was somewhat weakened by being essentially of an *ex post* nature; nevertheless, it did restrict the ability of sellers to freely set prices and presumably reduced the incentive to minimize costs.

The traditional retail price index (RPI) computed by Goskomstat is essentially a Paasche index, published at a monthly frequency since January 1991. The weights are derived from information on current retail sales and paid services. Hence, the month-on-previous-month percentage changes of the RPI cannot be chained when the weights associated with the individual prices vary. In the early months of 1992 for example, the structure of consumption shifted rapidly, implying that chaining monthly RPI inflation data would distort actual price movements. The direction of the resulting net bias is ambiguous, and depends on the relative strength of substitution and income effects. Nevertheless, in the absence of a monthly fixed-weight index, monthly RPI data have been chained within 1991 for the derivation of real wage levels (see Section III, *infra*). 1/ Other problems pertaining to the RPI reflect the fact that seasonal and other very-short-term variations (such as strikes, or unusual weather) influence the current weights, 2/ and the use of delivery as opposed to sales data in the computation of some of the weights (deliveries are more subject to "lumpiness" than sales). In addition, the collection of accurate retail turnover data is increasingly difficult as distribution channels become more diversified. 3/

As an intermediate step en route to a standard Laspeyres consumer price index (CPI), Goskomstat introduced a "hybrid CPI". The latter aggregates 140 sub-indices from the traditional RPI weighted by coefficients derived from a 1990 household budget survey, rather than from retail sales records. Since the "hybrid CPI" is a derivative of the RPI, it shares most of its weaknesses.

During the first semester of 1992, a monthly Laspeyres CPI was developed by Goskomstat, with the technical assistance of the IMF's Department of Statistics, first for Moscow and then for an aggregation of 27 Russian urban areas. This nationwide index is henceforth referred to as the urban CPI. The reference group is workers' and employees' households

1/ Chaining the monthly rates of change of the RPI for goods and services from December 1990 to December 1991 produces a cumulative price increase of 138 percent. This compares to a 144 percent rise in the corresponding fixed-weight CPI (see *infra*), implying that in this case the distortion is not very large.

2/ A Laspeyres index would typically use weights relating to a full year.

3/ The authors are grateful to Robert Dippelsman for pointing out these problems, as well as for his observation that the use of current weights may be superior in cases where the change in the composition of sales can be viewed as a disguised price change (for example when the share of turnover on free markets rises relative to that of state stores for a good in increasingly short supply at the official price).

(pensioners' and farm workers' households are excluded). 1/ The weights are fixed and reflect the structure of consumption of an average urban household in 1991-92 (an adjustment was made to the 1991 weights to account for the change that occurred in the first quarter of 1992). 2/ The index is computed at a monthly frequency starting in December 1991, with the price registration dates falling between the 11th to the 20th of each month. For comparison purposes, the December 1990 value of the index has also been computed. The underlying basket incorporates 262 items (as opposed to around 1,300 in the traditional RPI), the main groups of which are shown in Table 3. Each item is in principle priced at least at 6 outlets (including, when applicable, street trading).

One official index is computed at a higher frequency, but it only covers food products. This is a 70 item, weekly index of food prices registered in 132 cities, currently published every Tuesday in *Izvestia*. The behavior of this index shows that within-month and average monthly inflation at times differ substantially in a period of high and volatile inflation. 3/

Alternative price indices are sometimes reported in the press, particularly those computed by the weekly publication *Commersant*. 4/ The coverage of these indices appears to be rather narrow, however, and the inflation rates reported in *Commersant* are not consistent across issues. These series are therefore omitted from the statistical appendix.

Other shortcomings associated with the indices used in this paper are related to the belated recognition of price increases which had been disguised as quality improvements, to the aggregation problems encountered in the context of massive price liberalization and to the fact that the deflationary trends in black markets tend to be overlooked. 5/ Lastly, information on seasonality is insufficient to construct properly deseasonalized series.

1/ International statistical norms stipulate that the population surveyed should be defined as widely as possible (see Turvey *et al.* (1989)). However, common exclusions made in practice are the rural population (for reasons of convenience of data collection) and the highest and lowest income groups (to avoid atypical observations).

2/ According to Goskomstat surveys, the share of food in workers' and employees' expenditures increased by 12 percentage points from December 1991 to February 1992. Within the food category, the consumption of bread products, potatoes and eggs rose, while that of meat, dairy products, vegetables and fruits declined.

3/ This index is apparently not computed in full accordance with international standards (see the August 5, 1992 issue of *Izvestia*).

4/ For instance, in the January 6, 1992 issue, p. 8, a full monthly series for 1991 is provided.

5/ See Osband (1992) on these index number biases.

c. Developments

Of particular interest are the size of the January 1992 price jump, the subsequent pace of inflation, the extent of price reversion or overshooting, relative price changes and the degree of price dispersion.

The magnitude of the price jump in Russia in January 1992 by far exceeded what had been observed in Eastern Europe at the time of large scale price liberalization in 1990-91 (Charts 1 and 2). Depending on the index considered--and ignoring the predictably much smaller rise in the kolkhoz (collective farm) markets--prices increased, on average, by 3 to 4 times in Russia in one month, while the largest monthly jump in the sample of four Eastern European countries considered in Table 4 was a 123 percent increase (in Bulgaria). Russia's replacement of the traditional turnover tax and the recently instituted 5 percent sales tax by a 28 percent value added tax in January 1992 would only explain a small fraction of the difference. More important, perhaps, was the effect on expectations of the Government's announcement, in late 1991, that prices would rise by 3 to 5 times, and indeed the raising of certain key remaining administered prices by such amounts on January 2, 1992. Another potential explanation is the apparent existence of a larger monetary overhang in Russia than in other former centrally-planned economies. In relation to Poland for example, where the extent of accumulated past repressed inflation in 1989 may have been of a similar order of magnitude to that in Russia in late 1991, the significantly greater price burst in Russia could simply have reflected the fact that up to 50 percent of prices in Poland had already been liberalized prior to the initiation of its stabilization program in January 1990. ^{1/2/} Inflation following the price jump was also relatively high in Russia, remaining in the double digits throughout the first semester of 1992, whereas it subsided to single digit levels within two months in Eastern Europe.

The Russian price jump measured by the fixed-weight urban CPI was considerably larger than that measured by the current-weight RPI (296 versus 221 percent), while the "hybrid CPI" fell in between (at 245 percent). The interpretation of the differences between these alternative measures is not straightforward. For one thing, the sheer size of the price shock and the associated confusion (see *infra*) may have implied that the RPI measure of the price jump lacked precision. For another, it should be recalled that the weights used for the urban CPI broadly reflect the structure of

^{1/} In December 1991, money amounted to about 85 percent of annualized GDP in Russia. In Poland, the ratio of money to GDP had been similar (at about 90 percent) in mid-1989, but partial price decontrols in subsequent months brought money down to about 35 percent of GDP by the end of 1989. In January 1990, money as a share of GDP continued to fall in Poland, to around 28 percent. In Russia, this share dropped more abruptly, but to a similar level (24 percent) in January 1992.

^{2/} For further discussion of the experience in Eastern Europe, see Bruno (1992) and the sources cited therein.

consumption in early 1992, rather than in December 1991. Given the marked shift in consumption patterns that accompanied price liberalization, this measure is likely to incorporate the downward influence of the pure substitution effect. However, with food prices rising much faster than other prices (see *infra*), and with consumption having shifted towards food, it also embodies the strong upward influence from the income effect.

At the time of the price jump, numerous press reports mentioned price increases for individual items that were much larger than 3 to 4 times. ^{1/} Table 5 and Chart 3 show that this was locally the case for prices in state stores of various food items. Table 3 shows that the price of butter, on average, increased tenfold. Two factors were at work. On the one hand, as was the case for butter, substantial relative price changes were required to reduce previous distortions. On the other hand, overshooting apparently occurred in a number of cases: Chart 3 shows significant price reversion after January for beef, for example, and to a lesser extent for butter, in state stores across cities. Similarly, Chart 4 reveals instances of overshooting for beef, milk and potatoes in some city markets. Even at the national level, the price of eggs overshot somewhat in January (Table 3). Weekly data show that nationwide overshooting was more widespread than monthly data may suggest, for example for beef and vegetable oil. ^{2/} Whether the overall consumer price level overshoot is a more difficult issue, discussed in Section IV.

One of the key relative prices is that of food. During 1991, it rose by about 12 percent (Table 3). In January 1992, it increased by another 16 percent. While it fell somewhat during subsequent months, it still stood 6 percent above its December 1991 level at the end of the first half of 1992. In part, these developments are related to the removal (and reintroduction, in some cases) of food price subsidies. They probably also reflect the shifts in relative supply and demand of food versus non-food items.

A certain degree of geographical price dispersion is to be expected in any country. In Russia, however, the geographical price dispersion registered around the time of the price jump, and for some items in the following months as well, seems extreme. In part, this probably reflects the fact that distances are great, implying larger transportation costs and greater potential for local monopoly power. Also, local subsidization varies considerably, as can be inferred from the observation that geographical price dispersion is much smaller across city markets (or "free markets") than across state stores. But the fact that prices sometimes vary

^{1/} This may represent a selection bias, in that examples of above-average price rises may be deemed more newsworthy than examples of smaller price increases.

^{2/} A more accurate assessment of the degree of overshooting would require information on seasonality. It should also be noted that price reversion is *a priori* more likely for perishable goods (although it appears that large quantities of meat, for example, remained unsold).

by a factor of ten or more as shown for state stores (Table 5) may also reflect the price uncertainty and confusion that is bound to accompany radical liberalization. 1/ One would expect that effect to be largely dissipated after a few months, however, and indeed for a number of goods, geographical dispersion dropped remarkably between end-December 1991 and June 1992, presumably as a consequence of declining subsidies, increasing competition and diminishing price uncertainty. For example, the coefficients of variation for prices in state stores for beef, eggs, milk, butter and vegetable oil fell sharply between end-December 1991 and July 1, 1992 (respectively from 0.41 to 0.11, from 0.31 to 0.18, from 0.96 to 0.45, from 0.97 to 0.11 and from 1.26 to 0.31). 2/

Another facet of price dispersion is the discrepancy between prices on city markets and prices in state stores (Table 6). The ratios of the former to the latter vary considerably across products and regions. In the case of milk, for instance, they remained significantly above unity through June 1992, since milk sales in state stores generally continued to be subsidized. For eggs or butter, in contrast, they fell rapidly, even dropping below unity in some cases. As to regional variations, the Moscow price ratios were typically among the highest throughout the first semester of 1992.

A final noteworthy aspect of price dispersion is the regional variations in inflation rates. For selected individual food items, these differences can be derived from the data presented in the rows of Table 5. At the aggregate level, the comparison between the two last columns of Table 2 shows that consumer prices rose more rapidly in 1991 in Moscow than in the rest of the country; accordingly, the January 1992 price jump was smaller in the capital.

2. Producer prices

a. Policies

An important reform of producer prices took place in January 1991, shifting many prices from the fixed to the "contractual" category. 3/ After the reform, contractual prices accounted for 40 percent of the total in light industry, 50 percent in machine construction, and about 25 percent in the raw materials, energy, and metals sectors. As before the reform, the prices of "new products" were allowed to be set on a contract basis. 4/

1/ The large price differences observed even within cities for some items would corroborate this conjecture.

2/ A notable exception is potatoes, for which the coefficient of variation rose from 0.19 to 0.47 during the first half of 1992.

3/ In theory, enterprises were permitted to negotiate "contract" prices for so-called new goods within administratively set limits. In practice, these prices reportedly were still heavily regulated and linked to state order prices.

4/ Some retail prices were also liberalized with this reform.

The January 2, 1992 price liberalization resulted in about 80 percent of the producer prices being free (again, in value terms, at 1991 relative prices). A restricted list of producer goods and services, however, remained controlled, including electricity and fuels, precious metals and stones, and freight tariffs.

The prices of energy products had long been very low by international standards. 1/ In January 1992, they were increased by about five times: the price for crude oil was raised to rub 350 per ton, the price of gas to rub 260 per 1,000 m³, and the price of coal to rub 140 per ton (all exclusive of VAT). In the months following the January price jump, however, oil, gas and coal producers were allowed to sell an increasing proportion of their output at free prices, amounting to 40 percent in early May in the oil and gas sectors (and equal to the output exceeding state orders in the coal sector). A May 18 federal government decree increased the administered price of oil and gas by 4 to 6 times, but at the same time abolished the right to sell a fraction of production at a price exceeding the administrative ceiling (thus, the average effective price of oil and gas rose significantly less than the administered price). 2/ The maximum price of oil was raised to rub 1,800-2,200 per ton (excluding VAT), with a steeply progressive tax applied on increments above rub 1,800. Similarly, the price of gas was raised to rub 1,100-1,600 per 1,000 m³ (excluding VAT), with an analogous provision. Furthermore, in the second half of May, freight prices were liberalized.

b. Data

The producer price index (PPI) published by Goskomstat relies on fixed 1989 weights. 3/ In contrast to what its denomination (*optoviy*) may suggest, it measures prices at the factory gate rather than in wholesale trade. Hence, it excludes imported goods. The proliferation of barter deals, side payments and discounts for cash, as well as reportedly

1/ During 1991, the relative price of energy carriers had fallen sharply: prices in the fuel industry for example had risen by 129 percent and prices in the petro-chemical complex by 149 percent, while the overall industrial producer price index had increased by 236 percent.

2/ In the case of oil, it was estimated that the average effective price rose by 2 to 3 times rather than by 6 times.

3/ The cumulative within-1991 price increase derived by chaining the reported monthly PPI inflation rates vastly exceeds the reported December 1991 over December 1990 increase. Comparisons with similar series for the former U.S.S.R. suggest that the figures for February, July and August 1991 may have been misreported (with each one being about 10 percentage points too high).

widespread price discrimination, 1/ suggests that the PPI data should be interpreted with caution.

c. Developments

Industrial producer prices jumped, on average, by 5 times in January 1992, after having more than tripled within 1991, with large inter-branch variations (Table 7). Subsequently, they continued to grow rapidly, outpacing retail prices by a large margin in February and March (see Table 2 and Chart 1). Again, compared to the Eastern European experience, both the initial burst and the subsequent inflation were considerably larger in the Russian case (see Table 8 and Chart 5).

Since the industrial PPI had already risen much faster than consumer prices in 1991, the cumulative wedge between these two indicators had widened tremendously by the end of the first semester of 1992: taking December 1990 as a 100 base, the urban CPI had risen to 2,113 while the industrial PPI had grown to 7,106 i.e., 3.4 times more. 2/ This cannot be explained by the lag usually observed between changes in producer and changes in consumer prices, since the divergence has increased almost monotonically. For the same reason, it cannot be accounted for by one-time factors such as the fact that in January 1992, shops were obliged to sell existing inventories at no more than two times (for food products) or three times (for other products) their December 1991 prices. More relevant could be explanations based on the definition of the PPI on the differential coverage of the indices under consideration, on the role of price controls and subsidies, and on the financial counterpart of higher producer prices.

A first potential reason is that the PPI may reflect listed prices rather than prices actually charged. In particular, the PPI may not reflect the significant discounts which were reportedly available for cash payment. Another factor that may help account for the divergence is the large amount of subsidies pledged and paid out following some of the producer price increases, in particular the ones for energy carriers. For example, the mid-May increase in oil and gas prices was reportedly followed by the announcement that additional subsidies for passenger transportation and for fuel used by the population would be granted. 3/ However, sizable producer subsidies have also been announced for some sectors, in particular

1/ See for instance *Rossiskaya Gazeta*, June 26 and 27, 1992, on the survey conducted by the Expert Appraisal Institute of the Russian Union of Industrialists and Entrepreneurs, suggesting that low prices are charged to "traditional customers", much higher prices (by 100 to 150 percent) are applied to "new partners", and even higher prices prevail on the commodity exchanges.

2/ The latter number is derived by chaining the monthly 1992 inflation rates with the December 1991 over December 1990 increase.

3/ *Interfax News Bulletin*, no 2, June 3, 1992.

for agricultural producers. 1/ Hence, the net impact of subsidization on the wedge between producer and retail prices is ambiguous.

Lastly, the exponential growth of interenterprise arrears during the first semester of 1992--from rub 34 billion on January 1 to rub 666 billion on April 1 and rub 2,919 billion on July 1--suggests that producer prices are contract prices but not necessarily settlement prices. It bears noting that in Romania, where interenterprise arrears also exploded, industrial producer prices rose much faster than consumer prices as well; while in Bulgaria and Czechoslovakia, where interenterprise arrears remained much smaller, no such discrepancy arose. 2/ The "hardness" of the budget constraints faced by enterprises was questionable; in contrast, households were liquidity-constrained (literally, by the cash shortage, as well as by the absence of consumer credit). Thus the growth of prices of consumption goods was probably relatively more limited by demand than that of the intermediate and capital goods sold to other enterprises. The exclusion of the latter goods from the CPI may account for its much smaller increase in 1992.

Supporting this view is the fact that prices in the "food industry" component of the PPI rose by much less than those of the industrial goods in the PPI in the first six months of 1992. Indeed, the increase of 995 percent was not much greater than the 820 percent increase of the "food, beverages and tobacco" component of the CPI. 3/

As regards energy prices, these remained far below world prices in U.S. dollars, even after their further increase in mid-May 1992. For example, the average producer price of oil in June 1992 was still only about rub 1,520 per ton. Evaluated at the average exchange rate during that month, 4/ this would represent less than one-tenth of a prevailing world price on the order of US\$20 per barrel. Even taking into account the possible undervaluation of the ruble in purchasing power parity terms, the relative price of energy remained very low in Russia.

1/ *Interfax Agriculture Report*, May 18-25 and June 15-22, 1992.

2/ In Poland, where interenterprise arrears grew much less following the January 1990 price liberalization, consumer prices rose somewhat faster.

3/ This points to a sharp deterioration of the inter-sectoral terms of trade faced by the agricultural sector since 1991. Anecdotal evidence abounds documenting such a shift (if one were to trust all the press reports on the relative prices of inputs and outputs across sectors, one would have to conclude that all are facing a dramatic squeeze; while this may sound awkward, it is not *a priori* impossible, depending on how adverse price developments in foreign trade actually were).

4/ Rub 125 per U.S. dollar on the Moscow Interbank Foreign Currency Exchange.

3. Shortages

One of the main objectives of price liberalization was to reduce relative price distortions and thereby eliminate shortages and wasteful queuing behavior. At the retail level, direct evidence on the latter can be found in the form of crude statistics on the availability of selected items in state stores. Other, indirect evidence includes the path of prices on free markets and in state stores for specific goods and the level of inventories in the distribution sector. The diversification of sales outlets is also a relevant indicator. At the producer level, some evidence of a supply response is perceptible as well but cannot be readily isolated in the chaotic context of the first semester of 1992.

A rudimentary measure of shortages is the proportion of cities where selected goods are deemed available in state stores. By that token, food shortages shrunk considerably during the first quarter of 1992 (Table 9). It should be emphasized, however, that this measure is discontinuous in two respects: cities are not weighted by their population or by some other relevant criterion; and the variable under consideration is a discrete one. Hence, percentages should not be interpreted too literally. In addition, shortages remained acute for some products, such as sugar or vegetable oil.

Other indicators also suggest a decline in shortages. The ratio of free market prices to prices in state stores fell sharply for many products across cities (Table 6). In a number of cases, they came down to unity (or, exceptionally, even slightly below).

Inventories in retail trade also rose substantially in the early months of 1992, even if they remained low by historical standards (Chart 6). 1/ The interpretation of inventory statistics, however, is far from straightforward. The valuation rules determining the ruble amount of inventories are unclear. Moreover, inventories simultaneously reflect demand and supply factors; thus, their recent recovery cannot be viewed purely as a positive supply response. 2/

Another striking development has been the surge of street trading, legalized by a January 1992 presidential decree, similar to what had been observed in Eastern Europe. In part, street trading is carried out by producers bypassing the traditional distribution channels. However, a significant proportion of the items on display are reportedly resold in the streets by individuals who acquired them in state stores (possibly through the back door, though). In the latter case, street trading can be viewed as a sign that shortages in state stores have not altogether vanished.

1/ The deflator used in Chart 6 is average daily retail sales in the month ending.

2/ Also relevant would be the behavior of stocks held by consumers. On this point, see Weitzman (1991).

At the producer level, the output mix changed in reaction to the relative price shifts. For example, in the dairy sector, the large increase in the relative retail price of butter was accompanied by a sharp output shift from milk to butter, with production of the former falling by 29 percent during the first quarter of 1992 (compared to the same period one year earlier), while output of the latter rose by 8 percent. ^{1/} A more comprehensive analysis of the supply response would have to control for the presence of shortages (excess demand), differential consumer and producer subsidies as well as for exogenous disruptions in interenterprise links (and also, of course, for the decline of aggregate consumer demand).

III. Household incomes

An important phenomenon of the late 1980s was the growth of nominal incomes and wages considerably in excess of price increases or any conceivable productivity advances. With the price level not free to adjust, the implication was a growing macroeconomic disequilibrium, expressed in worsening shortages and the accumulation of undesired holdings of financial wealth. By the end of 1991, the divergence of nominal incomes and prices was extreme.

This continued and accelerating build-up of excess real wages and a presumptive monetary overhang set the stage for the large jump in the price level when prices were liberalized. On the eve of the January 2, 1992 price liberalization, the size of this jump was not the only uncertainty; other questions involved the behavior of wages. Would there follow a sustained correction in the real wage, in contrast to the aftermath of the administered 1991 price reforms? If so, how would the new real wage compare to historical levels? Would the price burst trigger a wage-price spiral that the monetary authority might feel compelled to validate? Evidence on these questions is considered in this section, as well as evidence on the inter-sectoral and overall distribution of income. Real wage developments in Russia are also compared to the recent experience of other economies which have undergone comprehensive liberalizations.

1. Wages and other incomes

a. Data

Two main types of evidence are available from Goskomstat for the study of income developments: average wages and the so-called "money incomes of the population," a measure of household income. The average wage data have their origin in the total "wage fund" figures reported by enterprises to Goskomstat. This formerly annual series became available quarterly, and

^{1/} The relative price of butter versus milk increased by four times between December 1990 and the first quarter of 1992 (Table 3).

then monthly, in 1991. In addition to an overall national average, average wages in various sub-categories are compiled.

The household incomes data represent a broader concept, including for example pension payments, stipends, family allowances and interest income. These data are available on an annual basis as part of the Goskomstat table, "Money Incomes and Expenditures of the Population" ^{1/} which also permits calculation of the rate of saving of households. Household income at the annual frequency is computed as the sum of direct estimates of the various types of incomes. At the monthly frequency, however, the published money income figures are estimated as the sum of estimates of household saving and expenditure. While the monthly incomes data are of considerable interest to the analysis of events in 1992, their reliability is much less certain, as discussed below. It should also be noted that in recent years the monthly data have at times been strongly influenced by special lump-sum "compensation" payments on households' deposits. ^{2/}

The Goskomstat wage and household incomes data differ significantly in the way they were influenced by the so-called cash shortage. Numerous reports appeared in 1992 indicating that many workers were receiving less income than promised by their employer. Almost all Russian workers (excepting the military) are accustomed to being paid in cash, twice a month. However, the cash shortage meant that some enterprises were unable to obtain from the banking system the currency required to make all wage payments. This reportedly led, in some cases, to the relatively new phenomenon of enterprises making transfers to workers' savings bank accounts as a substitute means of payment. A worker receiving such a transfer, however, may also not have been able to convert it into cash. ^{3/ 4/ 5/} Of course, the failure of some enterprises to make promised wage payments may have been attributable not to the cash shortage but rather to their own financial difficulties.

Significantly, Goskomstat wage data reflect wages earned, rather than wage payments actually received, during a given period. As discussed below,

^{1/} See IMF (1992), p. 62.

^{2/} For example, in April and July 1991, and in April 1992 (see Table 10, footnote 2).

^{3/} In early June 1992, a decree allowed for wages which were placed on deposit but which were unrecoverable owing to a lack of cash to be indexed to inflation. This decree applied to wages of state enterprises and institutions in May and June.

^{4/} Another response to the cash shortage problem was a plan to increase the frequency of most wage payments, from twice to four times a month. Similar moves have often occurred in countries experiencing very high inflation.

^{5/} In Russia, cash has traditionally been the almost exclusive means of payment for households. Hence, these aspects of the cash shortage may have been important in restricting the demand for final goods.

the difference between these concepts was significant during the first half of 1992. In contrast, the money incomes data are in principle a measure of payments actually received.

In analyzing income data, the main interest is the rate of growth relative to that of prices. For example, it will be useful to examine the ratio of average wages to a price level index. This statistical or measured real wage is to be distinguished, especially prior to 1992, from the real wage concept used in studying market economies. The latter construct can be considered an indicator of consumer welfare, if wages and incomes in the form of money are freely convertible into goods at market-clearing prices. Such was not the case in the shortage economy which prevailed in Russia before January 1992. ^{1/} The statistical real wage measured prior to that date is of interest more as an indicator of macroeconomic disequilibrium than as an indicator of consumer welfare.

In constructing a real wage series with a base year of 1987, Goskomstat's retail price index (RPI) is used through 1991; beginning in 1992, the urban CPI is used. Although the RPI is imperfect (as discussed in section II), the limited flexibility of the price level during most of the period prior to 1992 implies that variation due to error in measuring the price level is likely to be small in relation to the magnitude of wage inflation. Thus the main findings of this section are probably robust to the price level mismeasurement occurring before the 1992 price liberalization.

b. Developments

With the above considerations and data limitations in mind, one can analyze recent developments in incomes, starting with wages. Growth of average wages began to significantly outpace that of retail prices in 1988, resulting in steady growth of the statistical real wage (Chart 7). By 1990, average real wages stood 27 percent above their 1987 levels. The price reforms of early 1991 abruptly canceled this build-up, lowering the national average and industrial real wages approximately to their 1987 levels in the second quarter. However, while prices at the retail level were quite stable for some time after the April 1991 price reform, wage inflation continued: the national average wage rose 30 percent in the third quarter of 1991, reversing the recent real adjustment. In the final quarter, retail price inflation accelerated to 16 percent, but was again outpaced by a 48 percent

^{1/} As discussed in section II.3, shortages continued to be observed in Russia in the first half of 1992; however, these may be considered more microeconomic in nature, at least in contrast to the situation prior to January 1992, which clearly was one of excess supply of financial assets and excess demand for national output.

surge in the average wage (57 percent in industry). By December 1991, statistical real wages were nearly twice their 1987 levels. 1/

Nominal wage growth accelerated further in early 1992, with the national average wage rising 31 percent in January (50 percent in industry). 2/ The statistical real wage, however, fell precipitously with the January price burst (by 62 percent in industry, and 67 percent overall). As Chart 7 makes clear, a large part of this decline represented a reversal of increases experienced only in late 1991, and only in a context of widespread shortages and an unsustainable run-down of retail inventories. Nevertheless, statistical real wages dropped below 1987 levels. Furthermore, in contrast to the experience after the (largely administered) price increases of early 1991, the January 1992 decline in the statistical real wage was not quickly reversed. The real wage did increase, however, after the January price burst, with overall real wages growing at an average monthly rate of 10 percent from January through June. By June 1992, the relationship between the national average wage and consumer prices was approximately the same as in 1987 (in industry, the measured real wage was almost 15 percent above its 1987 level).

This evidence appears to contradict the numerous reports to the effect that the standard of living of most Russian citizens had fallen to levels not seen in recent memory; certainly the strong growth of the real wage within the first half of 1992 has seldom been recognized. In this connection, it should be recalled that actual wage payments were less than indicated by the wage data analyzed here, which do not reflect wage arrears. Goskomstat has reported various measures of such arrears, beginning with April 1, 1992. 3/ Although this data is not as complete as one would desire, an illustrative calculation suggests that in the second quarter of 1992, wage payments in industry may have been only about 90 percent of the wage bill implied by the average industrial wage figures.

While it is difficult to determine the appropriate level of the real wage in Russia, a number of observations are possible. There is some disagreement in the literature as to whether substantial macroeconomic disequilibrium (in the form of a monetary overhang and excess real wages) had been a long-standing phenomenon or whether it had developed only in the

1/ This extreme outcome can be only partially explained by the seasonal extra payments to wage earners in the month of December.

2/ A sometimes overlooked point is that if an accumulated monetary overhang is sufficiently large, its elimination may require a jump not only in the price level but also in the average wage. (Only by coincidence would the price level jump required to eliminate the monetary overhang also reduce the real wage by exactly the required amount.)

3/ Total arrears on cash payments to individuals grew from rub 31.8 billion as of April 1 to rub 221.6 billion as of July 1. The wage arrears recorded for industry, construction plus agriculture amounted respectively to rub 14.6 billion and rub 65.1 billion.

late 1980s. In the latter case, the 1987 base year considered here seems a reasonable choice, given the strong divergence of wage and price growth which began in 1988. Supposing that in 1987 the real wage per unit of aggregate output was approximately appropriate, subsequent real wage developments may be considered in conjunction with developments in both aggregate output and employment. Clearly, the rise of the measured real wage from 1987 through December 1991 was far in excess of any conceivable improvement in aggregate labor productivity. In fact, rough calculations of productivity suggest a substantial cumulative decline (reflecting mostly the abrupt fall in output which began in 1990-1991). The drop in the real wage which occurred in January 1992 would appear to have more than offset this decline. However, the recovery of the real wage, to beyond its 1987 level by June 1992, together with the continued decline in 1992 of all indicators of aggregate output, suggests that by mid-1992 the real wage per unit of output was again significantly above its 1987 level (which itself may have been somewhat excessive). 1/

Chart 8 depicts real wage developments, since 1987, in four Eastern European countries as well as Russia. 2/ It is not meant to imply that real wages in 1987 represented equilibrium values in any or all of these economies, but simply to allow a basic comparison of real wage developments during the last five years. For example, in the cases of Bulgaria and Romania, the increase of real wages prior to general liberalization of prices was much smaller than in Russia; in Czechoslovakia, almost no divergence of wages and prices had occurred. In each of these three cases, however, real wages fell steeply in early 1991.

The Russian experience is closer to that of Poland, particularly with respect to the much larger growth of the statistical real wage prior to general price liberalization. In the Polish case, however, the decline from the peak real wage value was less abrupt, as it began with the partial liberalization of prices in August 1989. At its lowest point just after the comprehensive January 1990 liberalization, the Polish real wage was about three-quarters of its 1987 level. The corresponding low point for real wages in Russia was fairly similar, at about 75 percent in industry and 65

1/ Of course, an increase in the real wage per unit of output may be appropriate under some circumstances. In the Russian case, the decline in the role of public consumption (most notably military procurement) may make room for additional private consumption. A similar point involves the high share of investment and particularly of stockbuilding in national output, often considered a reflection of the inefficiencies of central planning. If these inefficiencies can be reduced, then a given level of output will be consistent with a greater share for private consumption. More generally, increases in the taxation of personal income or in saving out of disposable income may justify higher real wages.

2/ Footnotes to Chart 8 describe the coverage of the various wage indices.

percent overall. In both Russia and Poland, a significant recovery of real wages occurred within the six months following general price liberalization.

Another way to compare wage developments across countries is to compute wages in terms of U.S. dollars. By that standard, the level reached six months after comprehensive price liberalization was relatively modest in Russia, on the order of U.S. \$40 per month in June 1992 for the overall average wage, as compared to U.S. \$180 in Poland at the same stage.

Incomes policy was considered an important component of stabilization programs of the Eastern European countries depicted in Chart 8. 1/ Because the managers of state enterprises might otherwise lack incentives or the ability to restrain wage increases, such a policy was thought particularly important. In Poland, for example, wage bill ceilings were set, 2/ and payments in excess were subject to heavy penalties.

The Russian authorities opted for a much weaker policy, whereby the wage bill in excess of four times the minimum wage (times the number of employees) could not be deducted for purposes of calculating an enterprise's taxable profits. The effectiveness of such a policy depends both on the profit tax rate and the setting of the official minimum wage. 3/ As discussed below, the setting of the minimum wage was quite restrictive in the first semester of 1992; however, the prevailing profit tax rate of 32 percent would not seem prohibitive. Another factor which may have weakened the effectiveness of the policy was that it was not binding on those enterprises which would have earned negative profits even if they had paid an average wage equal to only four times the minimum wage.

Indeed, Russia's wage policy did not induce enterprises to keep most wages below four times the minimum wage: by April 1992, the average wage in the so-called material sphere had reached 10 times the minimum wage. 4/ The policy might have raised revenue for the government, but it evidently did not provide a nominal anchor. Monthly wage inflation ran at an average of 35 percent through the first quarter (42 percent in industry). A deceleration occurred in April 1992; however, wage inflation in May and June was 20 percent and 38 percent, respectively.

It is also of interest to consider, in addition to average wages, a broader measure of household incomes (Table 10). Growth rates of money incomes and average wages had been similar during 1988-1990. 5/ Not

1/ See, e.g., Bruno (1992).

2/ Enterprises were permitted to choose between ceilings on the average wage and ceilings on the wage bill; most chose the latter.

3/ The effectiveness of the policy would also depend on the perceived "hardness" of the budget constraints faced by enterprises.

4/ In the final quarter of 1991, the average material sphere wage was less than six times the minimum wage.

5/ See Table 8 in IMF (1992).

surprisingly, given the large share of wages in money incomes, growth of such incomes also accelerated in 1991, with the largest part of the increase occurring in the final quarter. However, money incomes rose even faster than wages in 1991. ^{1/} In 1992, strong growth of nominal household incomes continued, but the 1991 pattern was reversed: growth of money incomes fell significantly behind that of the average wage, as an abrupt divergence occurred in January 1992 that was not later offset. With the January price burst, measured real money incomes plummeted to only 51 percent of their 1987 level.

The shock to household income thus appears to have been considerably greater than indicated by the average wage data. Wage arrears are one factor behind this divergence, since Goskomstat money incomes data are meant to reflect only actual payments. Furthermore, anecdotal evidence suggests that payments arrears may have been proportionately more significant in the case of non-wage income. With the resolution of payments arrears, one would expect a narrowing of the divergence of the wage and household incomes series.

It also seems likely that the divergence in 1992 of the household incomes and wage series results from measurement problems imparting a substantial downward bias on the monthly money incomes series. The recent (i.e., monthly) incomes data are not a direct measure of income but rather are derived by Goskomstat as the sum of estimates of household saving and household expenditure. The latter have been based on reports of state retailing organizations, and thus exclude the likely increasing share of output distributed through unofficial channels, particularly with the decree liberalizing trading in January 1992. Furthermore, the reporting of sales by the retailing organizations is believed to have broken down significantly in 1992. ^{2/} The resulting underestimation of household expenditures implies a corresponding underestimation of household incomes.

In summary, although it could not be expected that either the wage or money incomes series would be free from error, the likelihood that the latter has recently become significantly downward biased (at least at the monthly frequency) suggests that the wage series may be the more reliable (albeit partial) indicator of Russian incomes. However, it must be kept in mind that the wage data has tended to overstate the current income of wage earners because it does not reflect the significant wage arrears that developed in the first half of 1992.

^{1/} The precise reasons for the apparently faster growth of non-wage income are not clear.

^{2/} Characteristically of statistical methods in the former U.S.S.R., sales data are based on exhaustive reporting rather than sampling techniques.

2. Sectoral Income Developments

A pattern emerged in sectoral wage developments (Table 11 and Chart 9) which implied a widening in 1992 of the sectoral distribution of income. Sectors which had been above the national average wage in early 1991 tended to experience faster wage growth, while slower wage growth occurred in sectors already below the national average. For example, industrial wages exceeded the national average by 7 percent in the first quarter of 1991, but by almost 20 percent in the second quarter of 1992. Wages in agriculture and education, which had both been 19 percent below the national average in early 1991, fell to 58 and 74 percent of that average, respectively. As seen in Chart 9, this widening of the wage dispersion occurred primarily in the first quarter of 1992, and was only partially offset in the second quarter. ^{1/} Wages in the so-called budgetary sphere, and also the official minimum wage, were raised only intermittently in a setting of rapid inflation, and thus were subject to large real fluctuations.

In contrast to the extraordinary build-up of overall average wages and household incomes, the minimum wage failed to grow at all in real terms from 1987 through 1991 (Chart 7). Although the minimum wage was raised from rub 180 to rub 342 a month in January 1992, the magnitude of the price burst in that month brought the minimum wage to only 40 percent of its real 1987 level. Despite rapid subsequent inflation, the nominal minimum wage was kept constant through the first four months of the year; by April, it had fallen to only 23 percent of its real 1987 value. Beginning in May, the minimum wage was raised to rub 900 in certain sectors. Despite this increase, a minimum wage of rub 900 (which anyway would not apply to all sectors until July 1) would have been only 18 percent of the national average wage in June 1992, compared to about 35 percent during 1987-1989. Thus the relative position of those receiving the official minimum wage deteriorated sharply in 1992.

It should be noted that persons receiving the official minimum wage in 1992 represented a negligible share of total employment. However, the official minimum wage is also of interest for its various benchmark roles: e.g., the minimum pension has been linked to the minimum wage; also, as discussed earlier, the minimum wage plays a role in the determination of the excess wage tax liability.

Wages in the budgetary sphere were increased in discrete steps: by 90 percent in December 1991, by 45 percent in February 1992 and by another 80 percent on June 1, implying that a significant deterioration relative to other wage earners occurred between December 1991 and the second quarter of

^{1/} More generally, changes in the relative wage ratios tend to display some degree of negative serial correlation over the period examined, suggesting that wage claims in a given sector are influenced not only by the absolute level of the real wage in that sector, but also by its level relative to other sectors.

1992. It may also have been the case that the wages of those employed in the budgetary sphere, as was the case for the minimum wage, did not surge in 1991, leaving these employees without a cushion to absorb the 1992 price burst. Strongly suggestive of a relative deterioration of the position of budgetary sphere workers was the fact that 98 percent of all strikes which occurred during the first five months of 1992 were in the "non-productive" sphere, with nearly 90 percent occurring in April and May. ^{1/} A significant catch-up of budgetary sphere wages occurred in May and June 1992.

Pension payments traditionally constitute a significant portion of total household incomes, amounting to about 13 percent in 1990, for example. It has already been noted that the minimum pension was linked to the official minimum wage. Indeed, the minimum pension was the one received by a large proportion of pensioners, though often with supplementary payments in 1992. ^{2/} Thus, while the minimum wage--and minimum pension--remained at rub 342 a month in April 1992, the average pension in that month amounted to rub 738. In May 1992, the minimum pension was raised to rub 900, and all pensions were revalued (by half a percentage point for each year of seniority). As a result, the average pension increased to rub 1,383.

The increase in the average pension from late 1991 to mid-1992 was similar to that of the overall average wage. The critical difference was that in the case of pensions, no cushion had been accumulated prior to the January price burst: pension increases did not keep up with wage increases in 1991. ^{3/} Furthermore, it may have been the case that arrears on pension payments were relatively larger than on wage payments in the spring of 1992.

3. Income distribution

Goskomstat data on the distribution of the population by per capita income brackets are presented in Table 12. The distribution shifts rightwards over time (Chart 10) as the price level rises. Although the bottom panel of Chart 10 seems to suggest a widening of the income distribution, this mainly reflects the fact that inflation has scaled up the distribution while the width of the reported income brackets has remained unchanged. Chart 11 presents the same data converted to constant rubles of 1990. In real terms, the distribution did not change greatly in 1991, but with price liberalization it shifted strongly to the left in the first quarter of 1992. The bottom panel of Chart 11 seems to suggest a narrowing of the distribution of income in 1992; but this may mostly reflect that the

^{1/} This may have also been related to the accumulation of larger wage arrears in the budgetary sector.

^{2/} Special compensation payments to pensioners amounted to rub 200-300 per month in the first half of 1992.

^{3/} This conclusion follows from the historical link of most pensions to the minimum wage, the real behavior of which was discussed above.

bracket width is unchanged despite the fact that the mean of the distribution has decreased.

Several other qualifications are in order. Firstly, the data published by Goskomstat only capture officially recorded incomes. To the extent that other income sources grew faster, or differently across groups (as is likely), actual income distribution profiles might differ significantly from those displayed in Charts 10 and 11. More fundamentally, this information is simply too coarse to allow much insight into the degree of dispersion of incomes, let alone to compute formal statistics. 1/

More informative is the available data on the distribution of wages. As was suggested by the sectoral wage data, the evidence points to increasing wage dispersion: in March 1992, the average wage of the highest decile of wage earners was 11 times that of the lowest decile, compared to only 6 times in September 1991.

The leftward shift of the real income distribution suggests that the proportion of the population below any fixed definition of the poverty line must have risen sharply in 1991 and early 1992. The problem with such an inference is that measured real incomes prior to 1992 were overstated, since money incomes were not freely convertible into goods and services. Furthermore, shortages may not have affected the population uniformly. For example, pensioners or others who had more time available to stand in queues were relatively better off than their money incomes would have suggested. Even in 1992, after price liberalization, there was no consensus on the level of the poverty line. 2/

IV. Household expenditure and saving

The emergence of substantial open inflation in 1991, the surge in measured real incomes in that year, the anticipated price jumps of April 1991 and January 1992, and the fall in measured real incomes in 1992 have significantly affected recent household expenditure and saving behavior.

1/ One aspect of this problem is that information on incomes in the upper tail of the distribution is insufficiently detailed, implying that the leftward shift of the distribution in real terms in 1992 is somewhat exaggerated.

2/ According to Goskomstat (1992), the proportion of the population receiving incomes less than the "minimum" income level rose from 35 to 50 percent between 1990 and end-1991, and to 80 percent in January 1992. However, an alternative figure was cited by government officials of a "physiological minimum" of 550 rubles in January 1992, implying that about 20 percent of the population was then living below this definition of the poverty line.

As discussed in section III, measured real wages and incomes may be a poor indicator of consumer welfare, particularly when making comparisons to periods when incomes were not readily convertible into goods and services. It is therefore of interest to consider a more direct indicator, the path of real expenditures on goods and services. ^{1/} Similarly, the behavior of the saving rate is of interest. With the apparent elimination of the monetary overhang and forced saving in early 1992, it might have been expected that the measured saving rate would drop significantly, with households' real expenditures falling by less than their measured real incomes.

1. Household expenditure behavior

The Goskomstat series for nominal expenditures on goods and services rose continuously throughout 1991 and the first semester of 1992 (Table 10). However, in real terms, the level of expenditures fluctuated considerably over time. Chart 12 shows the relationships in 1991-92 among real wages, real expenditures on goods, and inventories in retail trade. Prior to each (announced) price jump, consumers stepped up their purchases of goods, apparently hoarding significant quantities. Corresponding to these expenditure surges were sharp declines in retail inventories. Evidently consumers' desire to hoard tended to outweigh retailing enterprises' contrary motivation to cling to inventories.

After each price jump, consumer purchases dropped considerably. Following the April 1991 reform, however, real purchases recovered rapidly, possibly reflecting the depletion of household stocks, the rapid subsequent catch-up of real incomes and then, towards the end of the year, the incentive to hoard in advance of the pre-announced general liberalization of prices. In contrast, after the January 1992 price jump, real purchases of goods recovered more slowly and by much less. Indeed, real expenditures of households dropped in January to only 42 percent of their 1987 level. Some recovery occurred in subsequent months, but by the second quarter of 1992 real expenditures were still only about one-half of their 1987 level.

It was to be expected that real expenditures would fall significantly in early 1992 relative to their surge in late 1991, reflecting the strong incentives to hoard and then dishoard before and after an announced price liberalization. However, the persistence of a low level of real expenditures relative to the 1987 base might seem more surprising. Of course, much of the decline in real expenditure can be related to the decline in real incomes, particularly given the wage and other payments arrears. The significant increase in indirect taxation in 1992 is also to be considered: *ceteris paribus*, such an increase would be expected to crowd

^{1/} Household expenditures may differ significantly from actual consumption during periods of extensive hoarding and dishoarding. Reliable information on total household inventories does not appear to be available.

out real household expenditure. 1/ Finally, the limitations of the expenditure data must be noted. As discussed above, the share of actual consumer expenditures captured by official expenditure data may have declined sharply in early 1992.

Even if overstated by the official data, it is likely that a decline in real consumer expenditure did occur in 1992. Viewed from the production side, such a decline was necessitated by the cumulative decline in aggregate output, since by mid-1992, real NMP had fallen by more than 20 percent from its 1987 level. 2/ Taking a recent example, production of "everyday goods" for consumers in January-June 1992 was only about 85 percent of that during the first semester of 1991.

As regards the impact of the decline in expenditure on consumer welfare, a number of qualifying points are relevant. First, to some extent the level of expenditure may have reflected households' temporary reliance on stocks of goods accumulated prior to January 1992. Absent reliable information on household inventories, it is difficult to know the importance of this point, but it must decline over time. Second, the apparent welfare loss from lower real expenditures must to some extent be offset by the reduction in the time consumers spend in queues. 3/ Similarly, consumers in 1992 are in a better position to choose the composition of their consumption basket freely, whereas prior to price liberalization a significant portion of expenditures may have represented "spillover" demand (demand for goods which happened to be available but which offered only very low marginal utility per ruble).

2. Saving behavior

The accelerating growth of the saving rate has been considered a prime indicator of the increasing repressed inflation and monetary overhang prior to the price liberalization in January 1992. 4/ In 1985, financial saving out of disposable income was little more than 5 percent, but it grew steadily to 9 percent in 1988, and then reached nearly 13 percent in 1990. The acceleration continued in 1991, with the saving rate remaining above 25 percent in the final half of that year. Most striking is the evidence from December 1991, when the expected short term real rate of return on financial

1/ The accuracy of measurement of real expenditures should not be influenced by the introduction of the VAT. The household expenditure data includes payment of the VAT, and correspondingly, the price indices used here to deflate this series are based on VAT-inclusive prices.

2/ In the face of such a decline in production, the fall in net exports which would have been required to maintain absorption would have been enormous.

3/ See Roberts (1992).

4/ See, for example, IMF *et al* (1991), Volume 1, Chapter III.3, which notes that financial saving out of disposable income had remained fairly stable for more than 20 years until the late 1980s.

assets must have been extremely negative. While this strong incentive to hoard goods did result in a surge of expenditures, saving out of disposable income nevertheless jumped to 32 percent in the final month of 1991. It is difficult to avoid concluding that a large share of this saving was forced.

Simply by ending the phenomenon of forced saving, the liberalization of most prices in January 1992 might have been expected to significantly lower the saving rate. It is also possible that introduction of the 28 percent VAT might have induced households to lower their rate of saving, if they sought to avoid the full implied reduction in their real expenditures. On the other hand, there could be no presumption that the saving rate would fall entirely back to historical levels, particularly as structural change may have made them irrelevant.

In the event, the measured saving rate fell somewhat in January 1992, but only in comparison to its December 1991 peak. Saving remained at a high level by historical standards, never falling below 20 percent of disposable income in the first semester of 1992 (Table 10). In June 1992, it reached a new height of 34 percent. 1/ However, measurement issues are again relevant: it is likely that the measured saving rate has become biased upward. 2/

It is interesting to note that in several Eastern European economies, price liberalization also did not lead to a fall in the measured saving rate. On the contrary, in Poland, the saving rate jumped with the liberalization of food prices in August 1989; after falling somewhat, it then peaked at nearly 30 percent in early 1990. In Czechoslovakia, the circumstances prior to the price reform were quite different from those of Russia, as households were not granted enormous increases in nominal incomes. Accordingly, the saving rate actually became negative in the quarter before price liberalization, as households anticipated higher prices. After prices were liberalized, the saving ratio was little changed in the first quarter, but then rose significantly, peaking at almost 20 percent in the fourth quarter of 1991. In Bulgaria, the saving ratio remained fairly stable in the late 1980s, falling only slightly in 1990. In 1991 saving out of disposable income rose from less than 9 percent to more than 13 percent. In Romania, however, a fall in the saving rate did occur in 1991. The saving rate had approximately doubled in each of the previous two years, exceeding 12 percent of gross income in 1990. In the first three quarters of 1991, it fell back to about 7 percent. Thus only in Poland was the post-reform saving rate comparable to that of Russia. In the Polish

1/ The April 1992 spike reflects the unfreezing of rub 71.9 billion in demand deposits.

2/ This follows from the fact that the expenditure data are probably biased downward. Since the recent incomes data are estimated from expenditure data, the same bias would appear in the incomes data, thus biasing the ratio of expenditure to income downward (and the saving rate upward).

case, however, the saving rate fell sharply in the second quarter after comprehensive price liberalization.

One factor which could have exerted upward pressure on saving in 1992 in Russia might be a greater precautionary motive, in a context of heightened uncertainty about future employment and income prospects. Indeed, employment security and the traditional provision of most "life-cycle" services by the state were presumably responsible for the fairly low rate of saving which had existed prior to the late 1980s. ^{1/} However, even if the desired level of real stock of savings did rise with the beginning of the transition to a market economy, presumably the real stock that existed in late 1991 was even higher than this amount, as suggested by the jump in the price level in January 1992. Thus the above is not an explanation in itself; what is needed is the auxiliary assumption that the price level overshot, bringing the real stock of savings below the (perhaps newly-higher) desired level.

The stock of household real savings (which were largely monetary in nature) was in fact cut significantly in early 1992. ^{2/} With the January 1992 price burst, household real money balances declined by almost 75 percent. Presumably most, if not all, of this decline represented elimination of excess or undesired real balances. Nevertheless, it is possible that the price level overshot in aggregate, in the sense of real balances being reduced beyond the desired level.

Such overshooting is not implausible *a priori*; it is difficult to see what mechanism would have ensured that the Russian price level would have jumped, in the short-run, by an amount close to that required to equate desired and actual real balances. ^{3/} In the short-run, prices may not always reflect monetary equilibrium, as time may be required before errors become obvious, or as prices are set on the basis of expectations that may or may not turn out to be correct. In the case of Russia, limited prior pricing experience and a high degree of monopolization may also have played a role.

Under the assumption that the Russian price level did indeed overshoot, households might be expected to subsequently save at high rate, in order to raise real balances. If so, they were unsuccessful, as price-setters evidently did not respond to the signal of reduced aggregate demand in the following months. The expansion of interenterprise and bank credit permitted firms to continue to raise prices despite limited final demand, and to pile up inventories of unsold output. Household real balances therefore continued to fall, dropping a further 22 percent by the end of the

^{1/} See IMF *et al* (1991).

^{2/} In the absence of sufficient information, foreign currency assets are ignored, even though they are probably constitute a large proportion of total financial assets held by households.

^{3/} One could also argue that undershooting was a possibility.

first quarter, despite a saving rate that was high by historical standards. (In February, the growth of the CPI was such that in order to maintain their real balances at the January level -- to say nothing of raising them -- households would have had to save more than 80 percent of their gross income in that month!) Indeed, a difficulty with the overshooting hypothesis is the failure of its implicit prediction of a subsequent significant recovery of real balances. Such a recovery did not occur in the first half of 1992 (Table 13). Persistent overshooting over such a longer horizon seems somewhat less plausible.

The alternative assumption of continuous stock equilibrium may also yield insight into 1992 developments, with the saving rate seen as primarily reflecting the inflation tax on household real balances. Suppose that after January 2, 1992, the price level adjusted to keep desired and actual real balances equal, or at least nearly so. Thus the January price burst eliminated excess real balances; in the remainder of the first quarter, adaptation to an inflationary environment then brought desired and actual real balances down further. In the second quarter, however, these real balances stabilized somewhat, perhaps as households found it difficult to further economize on real balances and/or felt it imprudent to lower their stock of savings any further. Thus, while the assumption of continuous stock equilibrium is admittedly strong, the path of actual real balances may be viewed as a plausible path for desired real balances.

Furthermore, with real balances fairly stable from April 1992, it might be reasonable to assume that at least by that time, actual real balances held by households were close to desired levels. If for example in May and June households had wished to maintain the level of real balances in the previous month, then they would have needed to save roughly one-third of their disposable income in each of these months. 1/ In fact, real balances fluctuated somewhat within the second quarter, and the observed saving rate during this period was 35 percent of disposable income. 2/ Thus the inflation tax on real balances may have been a significant factor in household saving.

Finally, it is possible that the relatively high measured rate of saving in 1992 also reflected the persistence of supply failures and shortages. As discussed earlier, price liberalization was not complete, and

1/ This conclusion is robust to the treatment of the "unfreezing" in April 1992 of rub 71.9 billion of deposit compensation.

2/ Or 38 percent, if the rub 71.9 billion is excluded from the April income and saving figures.

some shortages continued to be observed in 1992, suggesting that the forced saving phenomenon might not have ceased entirely. ^{1/}

In summary, the measured level of real expenditures by households dropped significantly in 1992, not only with respect to 1991 but also with respect to the 1987 base emphasized here. With respect to 1987, most of this decline may be attributable to a decline in real incomes, particularly in light of the wage and other payments arrears that developed in 1992. The remaining portion of the real expenditure decline reflects a significant increase in the measured saving rate from its 1987 level. The analysis is clouded, however, by the suspicion that both the nominal income and expenditure data for households developed a downward bias in 1992.

IV. Concluding Remarks

A full assessment of the Russian experience of price liberalization in 1992 is beyond the scope of the present paper. This paper has focussed on variables of direct interest to Russian workers, consumers, and households. A number of essential points emerge from the data available for the first six months of this reform. Naturally, some of these findings raise questions of interpretation, and issues for future research.

A major theme was that the experience in 1992 should be viewed not in isolation but rather as the belated resolution of a substantial disequilibrium which had been growing through the late 1980s, and which worsened dramatically in the final months of 1991. Thus comparisons to 1991 (frequently encountered in the press) may be particularly misleading. The paper instead focussed on a base year of 1987, one year prior to the beginning of pronounced divergence in wage and (administered) price developments. Comparisons with several Eastern European countries provided additional perspective. Finally, the paper also emphasized the technical aspects, coverage, and limitations of the available data; it is hoped that this work will aid future analysis of the economic developments in the Russian Federation.

As to the liberalization of prices itself, the Russian price jump of January 1992 far exceeded those registered in Eastern Europe. At the level of individual goods, overshooting of some prices did occur. As regards the aggregate consumer price level, the question of overshooting remains open. While the size of the Russian price jump was impressive, the price level in the first month of the liberalization turned out to be similar to that of

^{1/} However, this effect may not be of great importance. As argued earlier, shortages in 1992 are likely to be more microeconomic in nature: with most prices liberalized, "spillover" demand opportunities are presumably much better than formerly. Thus a consumer unable to purchase the good yielding the highest marginal utility per ruble may be more likely to purchase a second-best good than to simply give up.

Poland in January 1990 (considered in relation to the level of real output and of the money stock). ^{1/} On the other hand, it is possible that the price level overshoot in both countries.

Following the January jump, CPI inflation dropped sharply, but continued at double-digit monthly levels, in contrast to the aftermath of other comprehensive price liberalizations. The jump in industrial producer prices in January was even larger than that of the CPI. Initially suggestive of the elimination of relative price distortions (e.g., the raising of energy prices), the sustained faster growth of industrial producer prices compared to the CPI is one of the more striking and puzzling developments of the first half of 1992. A number of (at least partial) explanations have been suggested, including the possibility that whereas households were subject to credibly hard budget constraints in 1992, the same could not be said of state enterprises. As regards the price of oil, even in June 1992 it remained only a fraction of the world market price.

The increase in the price level not only rationed consumer demand but also induced some response of supply at the retail level. The availability of goods in stores increased significantly, and the run-down of retail inventories was ended. A striking decline was observed in the spread between prices for similar goods in free markets and state stores.

Interpreting these developments, it seems reasonable to conclude that one of the most fundamental effects of the price liberalization was a significant move toward market relations at the retail level. Some shortages were still to be found, but the "shortage economy" ended abruptly. Money (at least cash) became readily convertible for domestic goods and services, thus establishing a basis for an exchange (rather than command or barter) economy. However, the extent of the supply response at the producer level remains more difficult to assess.

The immediate cause of the disequilibrium that grew through 1991 was an increase in the measured real wage which was out of proportion to the supply of consumer goods and desired saving. An often-overlooked point is that this disequilibrium was substantially reduced in the second quarter of 1991, only to reach a new -- and extreme -- level at the end of that year. The price jump of January 1992 then brought the average wage, in real terms, to about two-thirds of its 1987 level. Whether this initial adjustment was excessive or not, there followed a significant recovery of real wages, which had returned to their 1987 level by June 1992. While it is difficult to judge the appropriate level of the real wage, the large decline in aggregate productivity of labor may suggest that the real wage had again become (somewhat) excessive.

^{1/} That is, money as a share of nominal GDP (alternatively, velocity) was similar in both countries.

It should be noted that the above discussion refers to the wage data reported by enterprises. From the point of view of Russian households, a significant development in 1992 was the growth of wage and other payments arrears. Actual wage payments, e.g., were lower than implied by the official wage data. ^{1/}

Whereas incomes policy was considered an important component of stabilization programs in Eastern Europe, Russia implemented a much weaker policy after its price liberalization. At 32 percent, the rate of taxation on average wages in excess of four times the minimum wage was apparently not prohibitive. The policy clearly failed to provide a nominal anchor, as nominal wage inflation averaged nearly 30 percent a month during the first half of 1992.

Analysis of the evolution of the distribution of income is hampered both by inadequacies of the data and a lack of consensus on the definition of the poverty line. Furthermore, comparisons to periods prior to 1992 suffer from the problem that measured real money incomes were not readily convertible into goods. Nevertheless, several observations are possible. The overall distribution of wages widened significantly; some of this change can be seen in an increasing dispersion of average wages across key sectors of the economy. The relative position of persons receiving the minimum wage deteriorated sharply in 1992 (although this cohort was not significant in size). Pensioners' income was also lagging, not because pensions grew significantly less than did the average wage in the first half of 1992, but because the average pension did not accumulate a "cushion" prior to 1992.

The use of measured real wages and incomes as indicators of changes in consumer welfare is problematic when money is not readily convertible into goods, a problem which may not be entirely avoided by the focus on a 1987 base. The path of real expenditures by households is therefore of interest as a more direct indicator. These had grown considerably in the late 1980s, and surged in late 1991, developments made possible by a significant run-down of retail inventories. With the January price burst, estimated real expenditures plummeted to about 40 percent of their 1987 level. While some recovery occurred thereafter, the corresponding figure for the second quarter of 1992 was still only 50 percent. It seems likely, however, that the household expenditure data became significantly biased downward in 1992. Whatever was the actual decline in expenditure, its effect on consumer welfare was presumably offset -- to some degree -- by reliance on previously accumulated stocks and by the reduction of time spent in queues. Similarly, the likelihood that much of previous consumer expenditure represented "spillover" demand is relevant.

The rise in the saving rate in the late 1980s has been considered a prime indicator of macroeconomic disequilibrium in that period. The saving

^{1/} The bulk of these arrears was paid off in July and August 1992, when large-denomination ruble notes were put into circulation.

rate grew significantly further in 1991, with the surge in nominal incomes and increasing shortages. With the liberalization of prices in 1992 (presumably ending the phenomenon of forced saving), it might have been expected that the saving rate would fall. However, the measured saving rate in 1992 remained near the levels of late 1991. Interpretation of this finding remains an open question. It also seems likely that the saving rate implied by the official data is upwardly biased.

Statistical appendix

Table 1. Controls on Food Prices, mid-1992

Product	Proportion of cities where the price remained controlled around July 1, 1992 <u>1/</u> (In percent)
Milk	44
Kefir	36
Fat cottage cheese	29
Rye bread	30
Mixed rye-wheat bread	28
Grade 1 and 2 wheat bread	32
Top-quality wheat bread	10
Sugar	30
Salt	17
Meat products	11
Butter	6
Vegetable oil	14

Source: Goskomstat of the Russian Federation.

1/ Sample of 132 cities.

Table 2. Russian Federation: Inflation Indicators, 1987-92
(Percentage change over the previous period)

	Industrial producer prices	Retail price indices					Consumer price indices		
		Goods and services, all trade	Goods, state and cooperative trade	Goods, city coope- ratives	Goods, kolkhoz markets	Services	"Hybrid CPI"	National urban CPI	Moscow CPI
1987	...	...	1.6	2.4	3.7	...	...	...	...
1988	...	...	0.2	0.6	2.5	...	...	...	...
1989	1.2	...	2.4	0.5	7.4	...	...	...	...
1990	3.9	5.6	5.2	14.1	34.3	...	...	...	...
1991	138.1	92.6	95.6	111.7	132.1	70.6	...	...	...
1991									
Jan	62.9	6.2	6.6	17.6	13.2	3.2	...	...	...
Feb	18.9	4.9	4.8	14.4	14.9	5.2	...	...	...
Mar	7.1	6.3	6.4	7.0	9.3	5.5	...	...	...
Apr	8.2	52.2	54.4	38.7	7.5	24.3	63.5	...	...
May	3.8	2.5	2.4	-0.8	-5.3	3.5	3.0	...	...
Jun	2.8	0.2	0.0	-1.5	-21.2	2.9	1.2	...	...
Jul	17.5	-0.2	-0.7	-3.1	-20.1	5.5	0.6	...	...
Aug	15.2	0.1	-0.2	-5.7	-17.7	2.2	0.5	...	...
Sep	6.6	1.4	1.3	5.3	-4.8	2.2	1.1	...	...
Oct	5.8	4.2	3.9	11.1	13.5	2.1	3.5	...	...
Nov	9.4	8.6	9.0	27.6	33.2	3.8	8.9	...	...
Dec	11.3	12.0	12.6	49.7	39.3	4.3	12.1	...	...
1992									
Jan	382	221	245	...	53	127	245.3	296.0	226.5
Feb	75	24	24	...	15	33	38.0	27.3	32.2
Mar	28	21	21	...	16	16	29.9	16.5	12.2
Apr	17	15	15	...	7	16	21.7	17.2	21.3
May	23	11	11	...	5	15	11.9	10.5	23.8
Jun	36	15	13	...	-2	31	19.1	13.9	48.3
Memorandum item: percent change Dec 1991 over Dec 1990	236.3	146.1	152.1	360.8	281.2	99.7	160.4	143.9	203.9

Source: Goskomstat of the Russian Federation.

Table 3. Russian Federation: Urban CPI, December 1990-June 1992
(Percentage change from previous observation)

	Index weight	Dec. 1990	Dec. 1991 <u>1/</u>	Jan. 1992	Feb. 1992	Mar. 1992	Apr. 1992	May 1992	June 1992
Food, beverages and tobacco	0.5520	...	174.0	358.6	16.7	14.6	15.5	11.3	16.8
Beef	0.0226	...	488.2	345.1	3.8	4.6	1.7	11.8	6.7
Eggs	0.0113	...	243.6	265.3	-6.0	11.7	35.2	0.7	5.6
Milk	0.0096	...	114.1	209.4	61.6	40.3	25.7	6.1	45.4
Butter	0.0310	...	249.7	912.7	14.5	4.2	14.5	5.1	2.6
Vegetable oil	0.0081	...	153.2	234.9	27.3	49.5	28.7	16.6	4.8
Potatoes	0.0049	...	465.0	87.0	8.2	9.8	19.2	16.6	19.6
Clothing and footwear	0.2297	...	223.6	187.2	40.4	21.1	15.8	3.4	2.6
Rent, water, fuel and power	0.0208	...	35.0	272.1	40.6	9.1	8.5	13.8	17.9
Household goods	0.0626	...	163.2	295.8	60.7	22.7	21.7	6.0	4.7
Medical care	0.0037	...	6.2	410.0	10.6	19.6	30.4	25.5	13.7
Transport and communication	0.0461	...	-2.4	289.5	47.3	8.6	15.4	38.7	25.6
Recreation, education and culture	0.0722	...	69.2	190.2	51.3	18.6	32.6	8.3	19.2
Personal care and effects	0.0129	...	162.5	178.5	39.1	30.1	25.1	4.4	5.7
Total, all items	1.0000	...	143.9	296.0	27.3	16.4	17.2	10.5	13.9

Source: Goskomstat of the Russian Federation.

1/ Percentage change from December 1990.

Table 4. Russian Federation: Consumer price inflation:
comparison with Eastern Europe, 1987-92
(Percentage change)

	Bulgaria 1/	Czechoslovakia	Poland	Romania 2/	Russia 3/
1987	2.7	0.1	25.2	1.1	1.6
1988	2.5	0.1	60.2	2.8	0.2
1989	6.4	1.4	251.1	0.8	2.4
1990	23.8	10.0	585.8	4.2	5.6
1991	333.5	57.7	70.3	161.1	90.4
1989					
Jan	...	...	11.0	...	...
Feb	...	...	7.9	...	...
Mar	...	...	8.1	...	...
Apr	...	...	9.8	...	...
May	...	...	7.2	...	...
Jun	...	...	6.1	...	...
Jul	...	...	9.5	...	...
Aug	...	...	39.5 *	...	...
Sep	...	...	34.3	...	...
Oct	...	...	54.8 *	...	...
Nov	...	...	22.4	...	...
Dec	...	...	17.7	...	...
1990					
Jan	1.9	...	79.6 *	...	...
Feb	1.8	...	23.8	...	...
Mar	1.9	...	4.3	...	...
Apr	1.9	...	7.5	...	...
May	1.8	...	4.6	...	...
Jun	4.1	...	3.4	...	...
Jul	3.5	...	3.6	...	...
Aug	10.9	...	1.8	...	...
Sep	4.5	...	4.5	...	...
Oct	4.1	...	5.7	...	...
Nov	4.9	...	5.0	23.4 *	...
Dec	10.4	...	5.9	11.6	...
1991					
Jan	13.6	25.8 *	12.7	14.8	6.6
Feb	122.9 *	7.0	6.7	7.0	4.8
Mar	50.5	4.7	4.5	6.6	6.4
Apr	2.5	2.0	2.7	26.5 *	54.4 *
May	0.8	1.9	2.7	5.1	2.4
Jun	5.9	1.8	4.9	2.0	--
Jul	8.4	-0.1	0.1	9.4 *	-0.7
Aug	7.5	--	0.6	11.2	-0.2
Sep	3.8	0.3	4.3	7.3	1.3
Oct	3.3	-0.1	3.2	10.4	4.4
Nov	5.0	1.6	3.2	10.4	9.0
Dec	4.9	1.2	3.1	13.7	12.6
1992					
Jan	4.8	1.0	7.5	19.5	296.0 *
Feb	5.8	0.5	1.8	17.5	27.3
Mar	3.9	0.4	2.0	5.3	16.4
Apr	3.2	0.5	3.7	4.7	17.2
May	11.9	0.4	4.0	12.1	10.5
Jun	5.8	0.3	1.6	4.2	13.9

Sources: IMF, International Financial Statistics; Bulgarian National Bank, News Bulletin; Goskomstat of the Russian Federation.

An asterisk denotes a month of major price reform or liberalization.

1/ For 1987-89, RPI; from 1990 onwards, CPI.

2/ Through 1990, the annual data relate to a Paasche index of goods and services prices.

3/ State stores and consumer cooperatives index through 1989; consolidated RPI for 1990 and 1991; and urban CPI thereafter.

Table 5. Russian Federation:
Geographical price dispersion, December 1991-June 1992
(Prices in rubles)

Prices in state stores

Beef (/kg)							
	12/27/91	01/24/92	03/01/92	04/01/92	05/05/92	06/02/92	07/01/92
Moscow	20.6	36-87	92.0	64.4	58.9	57.4	66.1
St. Petersburg	37.5	79.7	50.0	51.5	88.0	86.9	85.9
Arkhangelsk (North)	45.0	65.1	72.5	72.5	82.1	80.6	83.5
Saratov (Volga region)	17.0	50.0	...	...	NA	62.5	62.5
Voronezh (Central Russia)	13.0	77.9	...	NA	NA	NA	73.5
Krasnodar (South)	27.0	46.0	...	...	62.8	83.8	79.2
Yekaterinburg (Urals)	16.8	74.3	57.5	57.5	77.0	77.0	87.6
Novosibirsk (Siberia)	23.2	55.0	83.1	NA	68.6	80.3	78.3

Eggs (/10)							
	12/27/91	01/24/92	03/01/92	04/01/92	05/05/92	06/02/92	07/01/92
Moscow	9.7	16.0	...	...	27.7	26.2	21.0
St. Petersburg	4.6	18.5	...	...	23.7	23.4	24.0
Arkhangelsk (North)	6.6	13.6	...	...	29.8	26.9	26.5
Saratov (Volga region)	7.0	15.0	...	...	18.0	19.4	15.3
Voronezh (Central Russia)	2.6	18.8	...	...	19.1	15.0	16.5
Krasnodar (South)	6.0	13.6	...	...	12.5	15.1	17.4
Yekaterinburg (Urals)	7.0	NA	...	...	26.8	28.7	24.3
Novosibirsk (Siberia)	6.5	15.3	...	...	30.5	23.4	21.2

Milk (/l)							
	12/27/91	01/24/92	03/01/92	04/01/92	05/05/92	06/02/92	07/01/92
Moscow	0.7	2.0	2.9	2.0	2.0	2.0	9.1
St. Petersburg	0.8	1.6	9.0	NA	8.6	8.4	9.5
Arkhangelsk (North)	NA	3.1	NA	NA	13.3	20.0	21.0
Saratov (Volga region)	1.2	1.3	...	...	4.5	3.2	7.8
Voronezh (Central Russia)	0.5	1.5	...	NA	1.3	2.9	4.0
Krasnodar (South)	1.6	1.6	...	...	1.6	7.9	7.9
Yekaterinburg (Urals)	4.5	1.8	5.0	4.8	5.4	12.3	12.7
Novosibirsk (Siberia)	0.5	1.6	6.9	9.0	8.1	7.6	8.4

Butter (/kg)							
	12/27/91	01/24/92	03/01/92	04/01/92	05/05/92	06/02/92	07/01/92
Moscow	10.0	45.0-126.5	73.6	132.4	147.1	186.5	188.3
St. Petersburg	8.6	49.6	163.5	157.0	189.0	182.2	180.0
Arkhangelsk (North)	80.0	171.6	166.7	175.0	193.3	194.2	213.6
Saratov (Volga region)	24.0	121.8	...	...	175.6	209.0	209.0
Voronezh (Central Russia)	8.3	110.4	...	NA	164.4	156.7	155.6
Krasnodar (South)	38.0	122.5	...	...	193.5	196.4	196.7
Yekaterinburg (Urals)	NA	201.0	192.2	198.0	183.7	185.3	194.0
Novosibirsk (Siberia)	8.8	198.7	196.4	165.0	159.1	159.7	166.1

Table 5 (Continued). Russian Federation:
Geographical price dispersion, December 1991-June 1992
(Prices in rubles)

	Vegetable oil (/l)						
	12/27/91	01/24/92	03/01/92	04/01/92	05/05/92	06/02/92	07/01/92
Moscow	35.0	16.3	20.8	27.0	34.8	40.8	37.3
St. Petersburg	2.6	17.1	10.6	19.0	57.8	57.6	67.8
Arkhangelsk (North)	36.0	17.0	NA	NA	43.4	39.9	45.5
Saratov (Volga region)	3.0	15.7	...	...	20.3	NA	42.5
Voronezh (Central Russia)	3.0	9.0	...	NA	33.3	24.3	31.0
Krasnodar (South)	4.0	NA	...	...	20.6	33.0	34.3
Yekaterinburg (Urals)	2.7	12.1	NA	30.0	49.5	51.7	51.4
Novosibirsk (Siberia)	2.9	NA	...	NA	77.5	73.8	71.7

	Potatoes (/kg)						
	12/27/91	01/24/92	03/01/92	04/01/92	05/05/92	06/02/92	07/01/92
Moscow	3.2	4.8	4.2	4.6	7.7	7.2	6.8
St. Petersburg	3.4	7.0	8.0	7.8	11.4	9.0	7.9
Arkhangelsk (North)	3.0	2.8	9.0	5.2	6.3	7.4	6.4
Saratov (Volga region)	3.0	3.1	...	...	7.0	6.0	6.0
Voronezh (Central Russia)	2.0	5.0	NA	NA	4.3	7.2	5.9
Krasnodar (South)	3.0	6.0	...	...	5.3	8.4	20.0
Yekaterinburg (Urals)	2.4	NA	...	6.0	6.6	11.3	10.5
Novosibirsk (Siberia)	2.0	4.0	4.0	3.5	5.1	5.0	7.7

Prices in city markets

	Beef (/kg)						
	12/27/91	01/24/92	03/01/92	04/01/92	05/05/92	06/02/92	07/01/92
Moscow	100.0	130-225	139.8	225.0	248.6	244.2	266.1
St. Petersburg	118.0	225.0	121.4	125.0	180.0	172.0	243.0
Arkhangelsk (North)	60.0	70.0	...	...	120.0	120.0	NA
Saratov (Volga region)	40.0	45.0	...	...	77.5	93.5	85.3
Voronezh (Central Russia)	70.0	80.0	81.8	90.0	120.0	110.0	90.0
Krasnodar (South)	50.0	60.0	...	...	110.0	120.0	120.0
Yekaterinburg (Urals)	55.0	74.8	70.8	75.0	130.0	130.0	140.0
Novosibirsk (Siberia)	60.0	75.0	75.0	67.5	100.0	90.0	90.0

	Eggs (/10)						
	12/27/91	01/24/92	03/01/92	04/01/92	05/05/92	06/02/92	07/01/92
Moscow	20.0	NA	...	...	35.6	38.4	44.3
St. Petersburg	25.3	30.0	...	...	50.0	40.0	45.0
Arkhangelsk (North)	NA	NA	...	...	NA	NA	NA
Saratov (Volga region)	11.0	14.7	...	...	NA	20.0	25.0
Voronezh (Central Russia)	20.0	18.0	...	...	19.0	18.0	20.0
Krasnodar (South)	15.0	17.0	...	...	14.0	16.0	20.0
Yekaterinburg (Urals)	NA	NA	...	...	NA	NA	NA
Novosibirsk (Siberia)	15.0	20.0	...	...	25.0	25.0	20.0

Table 5 (Concluded). Russian Federation:
Geographical price dispersion, December 1991-June 1992
(Prices in rubles)

Milk (/l)							
	12/27/91	01/24/92	03/01/92	04/01/92	05/05/92	06/02/92	07/01/92
Moscow	33.0	30.5	31.0	35.0	36.4	42.6	41.7
St. Petersburg	NA	25.0	...	NA	NA	NA	NA
Arkhangelsk (North)	NA	NA	...	...	NA	NA	NA
Saratov (Volga region)	4.0	6.1	...	...	NA	14.0	NA
Voronezh (Central Russia)	7.0	25.0	8.8	10.0	8.3	7.5	10.8
Krasnodar (South)	6.0	10.0	...	...	17.0	16.0	16.0
Yekaterinburg (Urals)	10.0	5.9	16.0	20.0	NA	NA	20.0
Novosibirsk (Siberia)	NA	NA	NA	10.5	NA	13.0	NA

Butter (/kg)							
	12/27/91	01/24/92	03/01/92	04/01/92	05/05/92	06/02/92	07/01/92
Moscow	200.0	200.0	189.9	NA	300.0	200.0	241.4
St. Petersburg	100.0	275.0	167.7	275.0	300.0	NA	NA
Arkhangelsk (North)	NA	NA	...	...	NA	NA	NA
Saratov (Volga region)	60.0	105.6	...	...	NA	240.0	207.3
Voronezh (Central Russia)	60.0	140.0	226.7	170.0	175.0	140.0	160.0
Krasnodar (South)	80.0	NA	...	...	200.0	200.0	200.0
Yekaterinburg (Urals)	NA	NA	NA	280.0	NA	NA	240.0
Novosibirsk (Siberia)	NA	150.0	168.5	150.0	160.0	150.0	155.0

Vegetable oil (/l)							
	12/27/91	01/24/92	03/01/92	04/01/92	05/05/92	06/02/92	07/01/92
Moscow	50.0	50-100	80.0	80.0	80.3	85.1	123.1
St. Petersburg	63.8	82.0	99.0	NA	104.0	125.0	108.0
Arkhangelsk (North)	NA	NA	...	...	NA	NA	NA
Saratov (Volga region)	11.0	18.7	...	...	NA	NA	NA
Voronezh (Central Russia)	24.0	20.0	27.3	30.0	28.0	22.5	35.0
Krasnodar (South)	20.0	20.0	...	...	35.0	42.0	35.0
Yekaterinburg (Urals)	NA	NA	NA	80.0	NA	NA	100.0
Novosibirsk (Siberia)	NA	80.0	NA	80.0	80.0	80.0	75.0

Potatoes (/kg)							
	12/27/91	01/24/92	03/01/92	04/01/92	05/05/92	06/02/92	07/01/92
Moscow	25.0	15.0	15.1	10.6	10.6	23.0	38.8
St. Petersburg	8.5	13.0	15.0	15.0	15.0	11.0	13.0
Arkhangelsk (North)	3.0	4.8	...	...	8.0	8.0	8.0
Saratov (Volga region)	5.0	7.8	...	...	8.0	8.6	10.0
Voronezh (Central Russia)	7.0	9.0	7.0	7.5	7.0	7.0	NA
Krasnodar (South)	6.0	10.0	...	...	9.0	9.0	15.1
Yekaterinburg (Urals)	5.0	NA	7.8	7.0	11.0	12.0	23.0
Novosibirsk (Siberia)	NA	8.0	5.0	7.5	10.0	9.0	10.0

Sources: Goskomstat of the Russian Federation; and Interfax: Agriculture report, various issues.

Note: NA signifies that the item was not available.

Table 6. Russian Federation: Ratio of city market to state store prices for selected food products, December 1991-June 1992

Beef (/kg)							
	12/27/91	01/24/92	03/01/92	04/01/92	05/05/92	06/02/92	07/01/92
Moscow	4.8	...	1.5	3.5	4.2	4.3	4.0
St. Petersburg	3.1	2.8	2.4	2.4	2.0	2.0	2.8
Arkhangelsk (North)	1.3	1.1	...	...	1.5	1.5	...
Saratov (Volga region)	2.4	0.9	...	...	...	1.5	1.4
Voronezh (Central Russia)	5.4	1.0	...	...	...	...	1.2
Krasnodar (South)	1.9	1.3	...	...	1.8	1.4	1.5
Yekaterinburg (Urals)	3.3	1.0	1.2	1.3	1.7	1.7	1.6
Novosibirsk (Siberia)	2.6	1.4	0.9	...	1.5	1.1	1.1

Eggs (/10)							
	12/27/91	01/24/92	03/01/92	04/01/92	05/05/92	06/02/92	07/01/92
Moscow	2.1	...	...	...	1.3	1.5	2.1
St. Petersburg	5.5	1.6	...	...	2.1	1.7	1.9
Arkhangelsk (North)	...	...	...	...	...	...	...
Saratov (Volga region)	1.6	1.0	...	...	...	1.0	1.6
Voronezh (Central Russia)	7.7	1.0	...	...	1.0	1.2	1.2
Krasnodar (South)	2.5	1.2	...	...	1.1	1.1	1.1
Yekaterinburg (Urals)	...	...	...	...	...	...	...
Novosibirsk (Siberia)	2.3	1.3	...	...	0.8	1.1	0.9

Milk (/l)							
	12/27/91	01/24/92	03/01/92	04/01/92	05/05/92	06/02/92	07/01/92
Moscow	50.8	15.6	10.8	17.5	18.2	21.3	4.6
St. Petersburg	...	16.0	...	...	...	...	...
Arkhangelsk (North)	...	...	...	...	...	...	...
Saratov (Volga region)	3.3	4.6	...	...	...	4.4	...
Voronezh (Central Russia)	15.2	16.7	...	...	6.4	2.6	2.7
Krasnodar (South)	3.8	6.4	...	...	10.6	2.0	2.0
Yekaterinburg (Urals)	2.2	3.4	3.2	4.2	...	...	1.6
Novosibirsk (Siberia)	...	...	...	1.2	...	1.7	...

Butter (/kg)							
	12/27/91	01/24/92	03/01/92	04/01/92	05/05/92	06/02/92	07/01/92
Moscow	20.0	...	2.6	...	2.0	1.1	1.3
St. Petersburg	11.6	5.5	1.0	1.8	1.6	...	...
Arkhangelsk (North)	...	...	...	...	...	...	...
Saratov (Volga region)	2.5	0.9	...	...	...	1.1	1.0
Voronezh (Central Russia)	7.2	1.3	...	...	1.1	0.9	1.0
Krasnodar (South)	2.1	...	...	...	1.0	1.0	1.0
Yekaterinburg (Urals)	...	...	...	1.4	...	...	1.2
Novosibirsk (Siberia)	...	0.8	0.9	0.9	1.0	0.9	0.9

Table 6 (Concluded). Russian Federation: Ratio of city market to state store prices for selected food products, December 1991-June 1992

Vegetable oil (/l)							
	12/27/91	01/24/92	03/01/92	04/01/92	05/05/92	06/02/92	07/01/92
Moscow	1.4	...	3.9	3.0	2.3	2.1	3.3
St. Petersburg	24.2	4.8	9.4	...	1.8	2.2	1.6
Arkhangelsk (North)	...	...	...	...	...	...	...
Saratov (Volga region)	3.7	1.2	...	...	...	...	...
Voronezh (Central Russia)	8.0	2.2	...	...	0.8	0.9	1.1
Krasnodar (South)	5.0	...	...	...	1.7	1.3	1.0
Yekaterinburg (Urals)	...	...	...	2.7	...	...	1.9
Novosibirsk (Siberia)	...	...	...	...	1.0	1.1	1.0

Potatoes (/kg)							
	12/27/91	01/24/92	03/01/92	04/01/92	05/05/92	06/02/92	07/01/92
Moscow	7.8	3.1	3.6	2.3	1.4	3.2	5.7
St. Petersburg	2.5	1.9	1.9	1.9	1.3	1.2	1.6
Arkhangelsk (North)	1.0	1.7	...	...	1.3	1.1	1.3
Saratov (Volga region)	1.7	2.5	...	...	1.1	1.4	1.7
Voronezh (Central Russia)	3.5	1.8	...	...	1.6	1.0	...
Krasnodar (South)	2.0	1.7	...	...	1.7	1.1	0.8
Yekaterinburg (Urals)	2.1	...	...	1.2	1.7	1.1	2.2
Novosibirsk (Siberia)	...	2.0	1.3	2.1	2.0	1.8	1.3

Sources: Goskomstat of the Russian Federation; and Interfax: Agriculture report, various issues.

Table 7. Russian Federation: Industrial producer price index, December 1990-June 1992
(Percentage change over previous observation)

	Dec. 1990	Dec. 1991 <u>1/</u>	Jan. 1992	Feb. 1992	Mar. 1992	Apr. 1992	May 1992	June 1992
Electric energy	...	110	269	55	49	35	32	92
Fuel	...	129	394	26	28	6	108	228
Ferrous metallurgy	...	237	361	160	25	33	27	24
Non-ferrous metallurgy	...	233	500	157	67	12	27	37
Chemicals	...	165	502	78	33	34	25	22
Petro-chemicals	...	149	696	37	20	34	16	38
Machinery	...	212	412	63	33	16	15	9
Timber processing and paper	...	242	371	123	26	10	10	11
Construction materials	...	215	382	69	13	14	15	30
Light industry	...	371	230	61	16	6	8	8
Food industry	...	314	365	25	18	19	9	23
Total	...	236	382	75	28	17	23	36

Source: Goskomstat¹ of the Russian Federation.

1/ Percentage increase over December 1990.

Table 8. Russian Federation: Producer price inflation:
comparison with Eastern Europe, 1987-92
(Industrial producer prices, percent change)

	Bulgaria	Czechoslovakia	Poland 1/	Romania	Russia
1987	0.7	0.0	26.7	...	...
1988	3.7	0.1	59.8	...	...
1989	3.1	-0.7	212.8	...	1.2
1990	5.0	4.4	622.3	...	3.9
1991	...	69.9	48.1	...	138.1
1989					
Jan	...	...	11.8	...	...
Feb	...	...	6.1	...	...
Mar	...	...	5.2	...	...
Apr	...	...	8.9	...	...
May	...	...	5.9	...	...
Jun	...	...	6.7	...	...
Jul	...	...	5.4	...	...
Aug	...	...	34.4 *	...	...
Sep	...	...	29.5	...	...
Oct	...	...	43.8 *	...	...
Nov	...	...	34.8	...	...
Dec	...	...	37.9	...	...
1990					
Jan	...	...	109.6 *	...	...
Feb	...	...	9.6	1.5	...
Mar	...	...	-0.2	0.0	...
Apr	...	...	2.1	0.0	...
May	...	...	0.6	2.0	...
Jun	...	...	1.5	0.2	...
Jul	...	...	3.3	0.0	...
Aug	...	...	2.9	0.0	...
Sep	...	...	2.7	2.4	...
Oct	...	...	4.9	4.6	...
Nov	...	...	3.6	126.2 *	...
Dec	...	...	3.3	3.3	...
1991					
Jan	...	24.0 *	9.8	4.3	62.9 *
Feb	118.9 *	19.3	5.4	0.6	18.9
Mar	13.5	-0.2	1.4	1.1	7.1
Apr	1.8	2.9	1.0	16.3 *	8.2
May	14.4	1.7	1.6	3.5	3.8
Jun	12.5	-0.8	3.1	1.3	2.8
Jul	3.0	-0.5	2.1	7.7	17.3
Aug	0.5	0.4	1.6	17.6	15.2
Sep	7.5	-0.4	1.6	9.1	6.6
Oct	-4.1	0.0	2.3	11.2	5.8
Nov	5.2	0.9	1.1	25.4	9.4
Dec	8.0	0.6	0.3	42.7	11.3
1992					
Jan	13.3	1.0	3.2	10.1	382 *
Feb	...	1.9	1.9	3.1	75
Mar	...	0.1	3.2	0.1	28
Apr	...	0.5	3.1	5.5	17
May	...	1.1	2.1	1.0	23
Jun	...	0.5	2.5	0.1	36

Sources: IMF: International Financial Statistics; OECD (1992); National Bank of Bulgaria, Annual Reports and Quarterly Bank Review (2/1992); Goskomstat of the Russian Federation.

An asterisk denotes a month of major price reform or liberalization.

1/ Overall producer price index.

Table 9. Russian Federation: Availability of selected food products
in state stores, January-June 1992 1/
(In percent of total number of cities)

	Item was available:			Item was not available
	Without lines	With lines	With coupons	
<hr/>				
Meat				
January	34.2	5.3	7.9	52.6
February	51.3	2.6	7.9	38.2
March	53.9	2.6	3.9	39.6
April	50.0	6.6	5.2	38.2
May	47.4	5.3	7.9	39.4
June	48.7	5.3	--	46.0
Milk products				
January	30.3	55.3	--	14.4
February	44.7	48.7	1.3	5.3
March	78.9	15.8	--	5.3
April	78.9	14.5	1.3	5.3
May	80.3	18.4	--	1.3
June	78.9	13.2	--	7.9
Butter				
January	39.5	9.2	13.2	38.1
February	75.0	14.5	2.6	7.9
March	78.9	1.3	10.5	9.3
April	90.8	--	7.8	1.3
May	92.1	--	3.9	4.0
June	92.1	2.6	1.3	4.0
Eggs				
January	67.1	2.6	7.9	22.4
February	88.2	--	9.2	2.6
March	75.0	6.6	3.9	14.5
April	90.8	2.6	1.3	5.3
May	93.4	2.6	1.3	2.7
June	93.4	3.9	--	2.7
Vegetable oil				
January	1.3	9.2	19.7	69.8
February	11.8	2.6	21.1	64.5
March	21.1	2.6	21.1	55.2
April	36.8	--	11.8	51.4
May	56.6	1.3	14.5	27.6
June	51.3	--	5.3	43.4

Table 9 (Concluded). Russian Federation: Availability of selected food products in state stores, January-June 1992

	Item was available:			Item was not available
	Without lines	With lines	With coupons	
Sugar				
January	1.3	11.8	32.9	54.0
February	5.3	3.9	40.8	50.0
March	14.5	1.3	26.3	57.9
April	19.7	3.9	30.3	46.1
May	40.8	2.6	26.3	30.3
June	43.4	1.3	23.7	31.6
Bread				
January	22.4	28.9	17.1	31.6
February	65.8	28.9	3.9	1.4
March	81.6	18.4	--	--
April	80.3	17.1	--	2.6
May	82.9	14.5	--	2.6
June	77.6	2.6	11.8	8.0
Potatoes				
January	63.2	3.9	--	32.9
February	90.8	1.3	--	7.9
March	81.6	--	--	18.4
April	71.1	1.3	--	27.6
May	77.6	--	--	22.4
June	65.8	--	--	34.2
Vegetables				
January	76.3	1.3	--	22.4
February	88.2	1.3	--	10.5
March	88.2	--	--	11.8
April	86.8	--	--	13.2
May	90.8	--	--	9.2
June	86.8	1.3	--	11.9

Source: Goskomstat of the Russian Federation.

1/ Sample of 76 major cities, availability at the end of the month.

Table 10. Russian Federation: Household incomes, expenditures and savings, 1991-92
(In billions of rubles and percent)

	1991												1992					
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
Income	33.7	38.7	42.5	45.0	45.1	52.6	77.8	65.3	67.4	78.2	83.7	125.2	119.6	175.3	226.4	349.9	272.3	369.3
(-) Taxes and duties	4.5	4.5	4.5	4.6	4.6	3.9	4.5	5.2	5.3	7.4	8.3	10.4	11.0	15.8	25.4	25.1	29.2	41.1
(=) Disposable income	29.2	34.2	37.9	40.4	40.6	48.7	73.3	60.1	62.1	70.8	75.4	114.9	108.5	159.5	201.0	324.8	243.1	328.2
Expenditure on goods & services ^{1/}	25.3	26.0	32.1	32.3	35.5	36.7	41.3	43.8	46.2	52.8	56.4	77.7	82.3	122.6	153.5	178.9	190.5	217.2
o/w on goods	22.5	23.1	28.4	28.3	31.6	32.6	36.2	39.6	41.1	47.2	51.9	71.0	74.8	112.2	139.4	165.6	175.1	199.4
Accumulation of deposits:	4.6	5.5	2.8	1.9	2.4	2.1	20.6	4.0	5.5	10.2	7.3	17.5	9.2	15.2	8.7	78.9	10.3	19.5
o/w																		
Sberbank	4.5	5.4	2.7	1.8	2.3	2.0	20.6	3.9	5.4	9.8	7.0	16.8	8.8	14.3	7.5	77.5	8.1	16.1
other banks	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.3	0.6	0.4	0.6	1.2	1.4	2.2	3.4
Accumulation of securities	0.4	0.3	0.1	2.5	0.0	0.0	0.1	0.2	0.3	0.3	0.1	0.1	1.6	-0.9	-0.2	-0.2	-0.1	-0.2
Accumulation of cash	-1.2	2.3	2.8	3.6	2.8	9.8	11.1	12.0	9.8	7.5	11.3	19.4	16.8	22.5	38.9	67.9	42.1	91.4
Total saving ^{2/}	3.7	8.0	5.7	8.0	5.2	11.9	31.8	16.2	15.6	17.9	18.7	36.9	27.7	36.7	47.4	146.6	52.2	110.7
Saving rate:																		
In percent of gross income	11.1	20.8	13.4	17.9	11.6	22.6	40.9	24.8	23.2	22.9	22.4	29.5	23.1	21.0	20.9	41.9	19.2	30.0
In percent of after-tax income	12.8	23.6	15.0	19.9	12.9	24.5	43.4	26.9	25.2	25.3	24.9	32.2	25.5	23.0	23.6	45.1	21.5	33.7
Share in percent of saving as:																		
cash	-33	29	49	45	54	82	35	74	63	42	60	53	61	61	82	46	81	83
non-cash	133	71	51	55	46	18	65	26	37	58	40	47	39	39	18	54	19	17

Source: Goskomstat of the Russian Federation.

^{1/} Including VAT.

^{2/} Excludes savings in the form of insurance policies.

Note: the 1991 data exclude the frozen part of the April 1991 deposit compensation (rub 71.9 billion). However, the compensation paid on bonds is included in the April 1991 figures, and the compensation on demand deposits that could be withdrawn starting in July 1991 (rub 18.2 billion) is included in the July 1991 figures. The rub 71.9 billion were unfrozen in April 1992, and have been added to income and to savings for that month.

Table 11. Wage structure across sectors, 1991-92
(In rubles per month and ratio to national average)

Sector	1991				1992					
	Q.I	Q.II	Q.III	Q.IV	Jan.	Feb.	Mar.	Apr.	May	June
National average	318	426	554	820	1,438	2,004	2,732	3,052	3,675	5,067
Industry	340 1.07	447 1.05	596 1.08	937 1.14	1,801 1.25	2,567 1.28	3,464 1.27	3,769 1.23	4,296 1.17	5,948 1.17
Agriculture	259 0.81	302 0.71	440 0.79	799 0.97	888 0.62	1058 0.53	1,330 0.49	1,640 0.54	2,264 0.62	2,982 0.59
Transport	364 1.14	508 1.19	678 1.22	886 1.08	2008 1.40	2786 1.39	3,618 1.32	4,292 1.41	5,001 1.36	7,109 1.40
Communications	276 0.87	428 1.00	522 0.94	815 0.99	1250 0.87	1688 0.84	2,189 0.80	2,289 0.75	3,114 0.85	4,182 0.83
Construction	401 1.26	539 1.27	759 1.37	1,019 1.24	1751 1.22	2615 1.30	3,953 1.45	4,089 1.34	4,817 1.31	6,733 1.33
Trade, public catering, material-technical supplies, and other	271 0.85	347 0.81	462 0.83	692 0.84	1023 0.71	1359 0.68	2,250 0.82	2,524 0.83	3,089 0.84	3,843 0.76
Health care, physical training, social security	240 0.75	382 0.90	424 0.77	662 0.81	902 0.63	1264 0.63	1,464 0.54	1,734 0.57	2,741 0.75	3,574 0.71
Public education	256 0.81	373 0.88	366 0.66	625 0.76	1087 0.76	1321 0.66	1,369 0.50	1,659 0.54	2,769 0.75	4,283 0.85
Culture <u>1/</u>	222 0.70	327 0.77	316 0.57	643 0.78	882 0.61	1038 0.52	1,413 0.52	1,655 0.54	2,232 0.61	3,133 0.62
Arts <u>1/</u>	279 0.88	381 0.89	409 0.74	699 0.85						
Science and science services	387 1.22	455 1.07	551 0.99	839 1.02	1066 0.74	1412 0.70	2,076 0.76	2,294 0.75	2,547 0.69	3,583 0.71
Finance and state insurance	475 1.49	727 1.71	905 1.63	1,073 1.31	1622 1.13	2346 1.17	3,871 1.42	4,385 1.44	4,656 1.27	7,005 1.38
Government employees, public organizations staff, etc.	362 1.14	440 1.03	522 0.94	828 1.01	1389 0.97	1653 0.82	2,178 0.80	2,443 0.80	2,825 0.77	5,118 1.01
Memorandum item: Minimum wage	80 0.25	120 0.28	140 0.25	180 0.22	342 0.24	342 0.17	342 0.13	342 0.11	342-900 <u>2/</u>	

Source: Goskomstat of the Russian Federation.

1/ In 1992, the arts and culture categories are combined.

2/ The increase to rub 900 took place between May 1 and July 1, depending on the sectors.

Table 12. Russian Federation: Distribution
of the population by income level, 1990-92
(Monthly incomes per capita)

Income class (In rubles)	Number in class (In millions)			Proportion in class (In percent)		
	1990	1991	1992.QI	1990	1991	1992.QI
0 - 100	16.9	0.5	0.0	11.4	0.3	0.0
100 - 150	40.3	4.6	0.0	27.2	3.1	0.0
150 - 200	38.4	12.3	0.0	26.0	8.3	0.0
200 - 250	25.5	18.5	0.1	17.2	12.5	0.1
250 - 300	14.2	20.7	0.2	9.6	14.0	0.1
300 - 350	7.6	19.7	0.6	5.1	13.3	0.4
350 - 400	3.9	16.9	1.1	2.6	11.4	0.7
400 - 450	0.5	13.7	1.8	0.3	9.2	1.2
450 - 500	0.3	10.6	2.5	0.2	7.1	1.7
500 - 600	0.2	14.1	7.6	0.1	9.5	5.1
600 - 700	0.1	7.7	10.6	0.1	5.2	7.1
700 - 800	0.0	4.1	12.7	0.0	2.8	8.6
800 - 900	0.0	2.2	13.8	0.0	1.5	9.3
900 - 1,000	0.0	1.2	13.9	0.0	0.8	9.4
1,000 - 1,100	]	]	13.3	]	]	9.0
1,100 - 1,200			12.3			8.3
1,200 - 1,300			11.0			7.4
1,300 - 1,400			9.7			6.5
1,400 - 1,500	0.0	1.5	8.4	0.0	1.0	5.7
1,500 - 1,600			7.2			4.8
1,600 - 1,700			6.0			4.0
1,700 - 1,800			5.1			3.4
1,800 - 1,900	]	]	4.2	]	]	2.8
1,900 - 2,000			3.5			2.4
Over 2,000			2.9			2.0
Total	147.9	148.3	148.5	100.0	100.0	100.0

Source: Goskomstat of the Russian Federation.

Table 13. Household Savings, 1986-1992
(End-period values) 1/

Period	Household balances 2/ (in billions of rubles)	Real index 2/ (1987=100)	Household balances 3/ (in billions of rubles)	Real index 3/ (1987=100)
1986	178.1	...	178.1	...
1987	196.7	100.0	196.7	100.0
1988	219.9	110.9	219.9	110.9
1989	253.1	122.9	253.1	122.9
1990	301.5	136.2	301.5	136.2
1991 January	305.2	137.8	305.2	137.8
February	313.2	134.1	313.2	134.1
March	318.9	129.0	318.9	129.0
April	326.9	86.4	326.9	86.4
May	332.1	85.8	332.1	85.8
June	344.0	88.0	344.0	88.0
July	375.8	93.6	447.7	102.1
August	392.0	99.9	463.9	118.6
September	407.6	102.4	479.5	120.8
October	425.5	102.8	497.4	120.6
November	444.2	98.7	516.1	115.1
December	481.1	93.5	553.0	108.1
1992 January	508.8	25.3	580.7	29.0
February	545.5	21.1	617.4	24.0
March	592.9	19.6	664.8	22.1
April	739.5	19.5	739.5	20.6
May	791.7	20.4	791.7	20.4
June	902.4	19.7	902.4	19.7

Sources: Goskomstat of the Russian Federation; and authors' calculations.

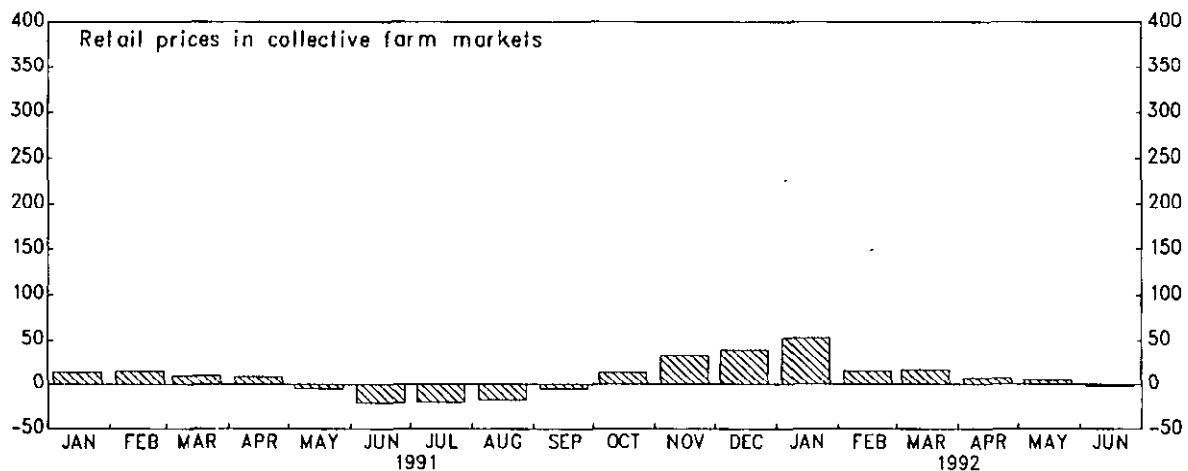
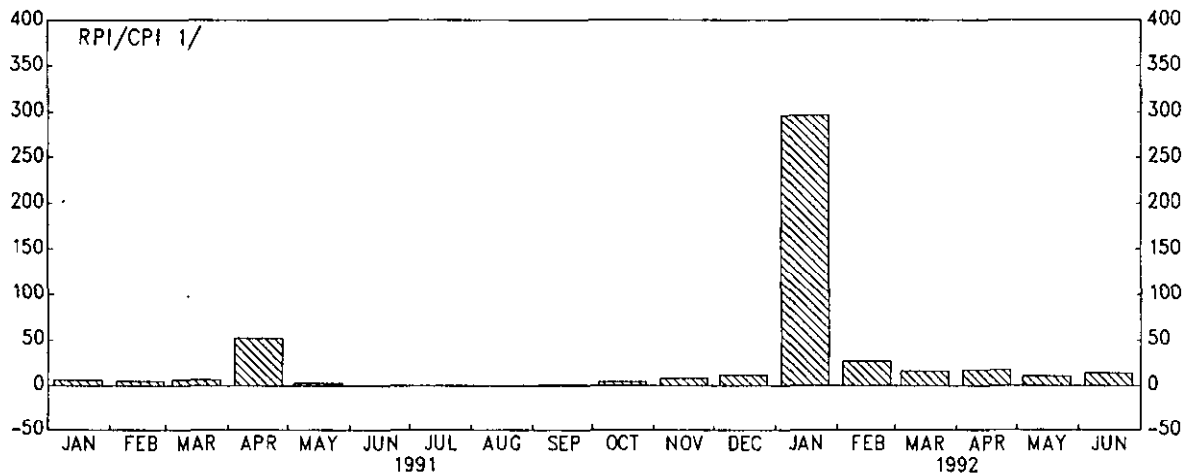
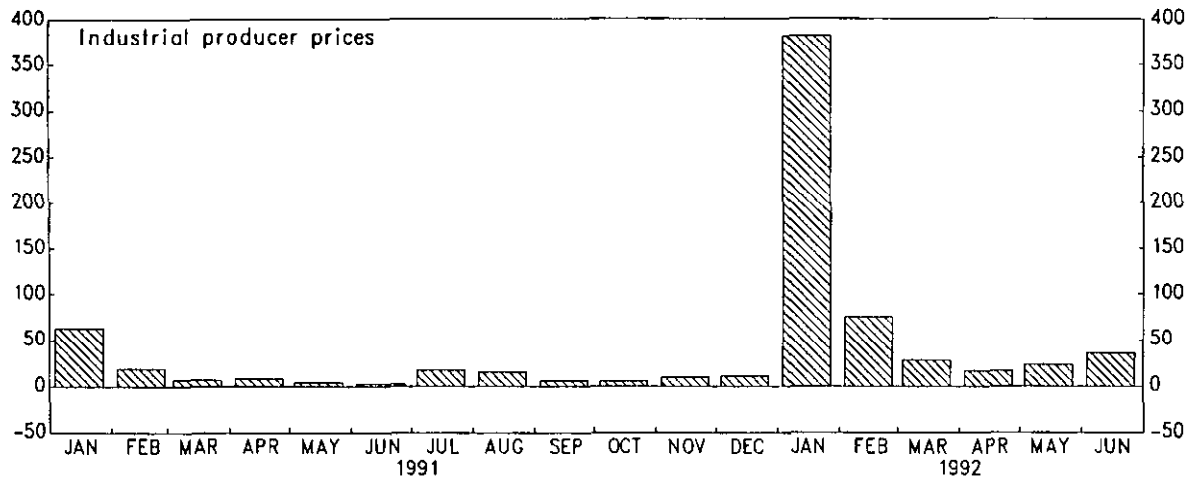
1/ Real indices computed using estimated period averages.

2/ Including the unfreezing of rub 71.9 billion of deposits in April 1992 as an addition to household balances in that month.

3/ Including the rub 71.9 billion which remained frozen until April 1992 as an addition to household balances in July 1991.

CHART 1

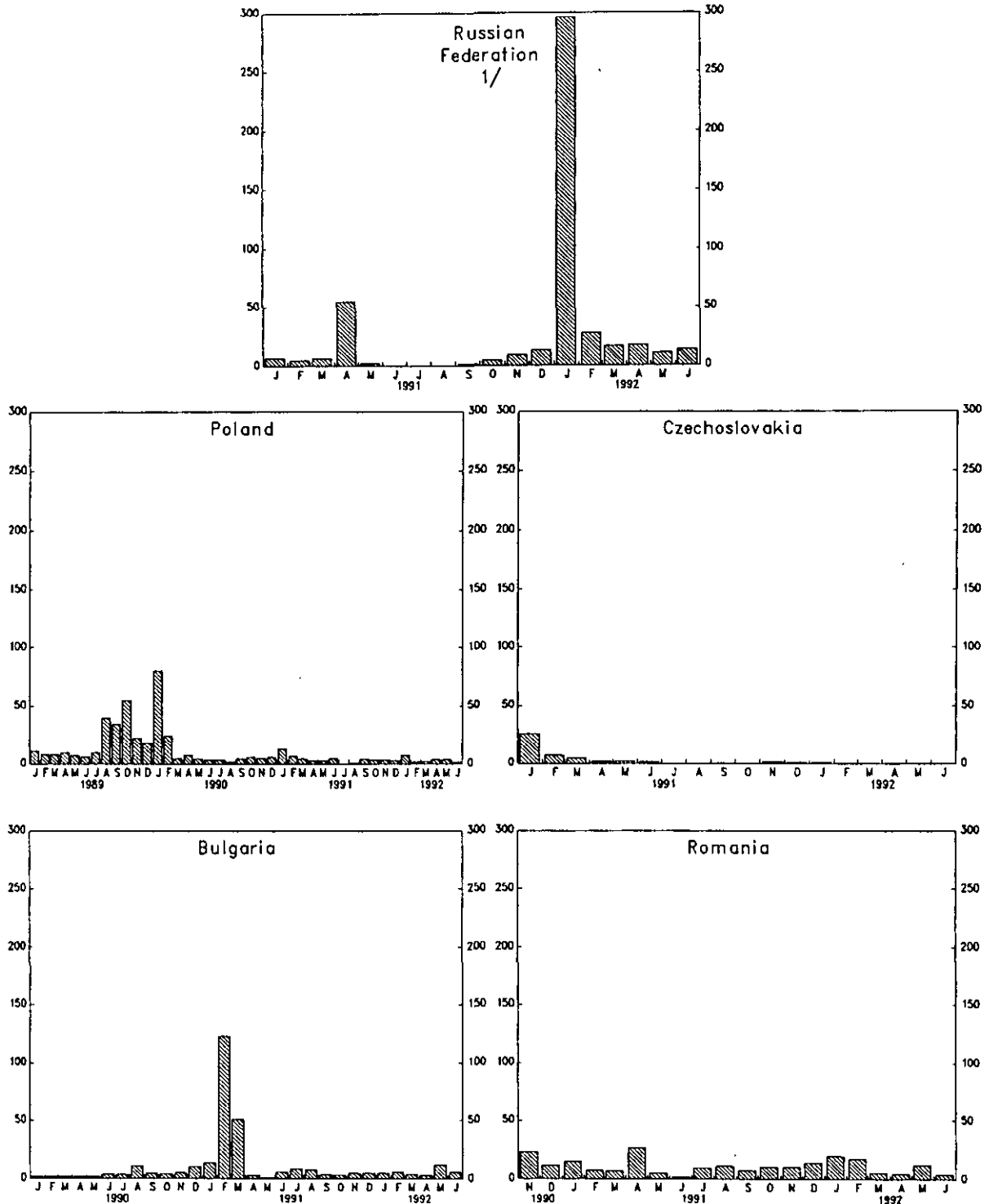
RUSSIAN FEDERATION
Inflation Rates, 1991-92
(Monthly percentage change)



Source: Goskomstat of the Russian Federation.

1/ Prior to January 1992, this is the RPI for goods and services. From January 1992 onwards, it is the new urban CPI.

CHART 2
RUSSIAN FEDERATION
Consumer Price Inflation:
Comparison with Eastern Europe
(Monthly percentage changes)



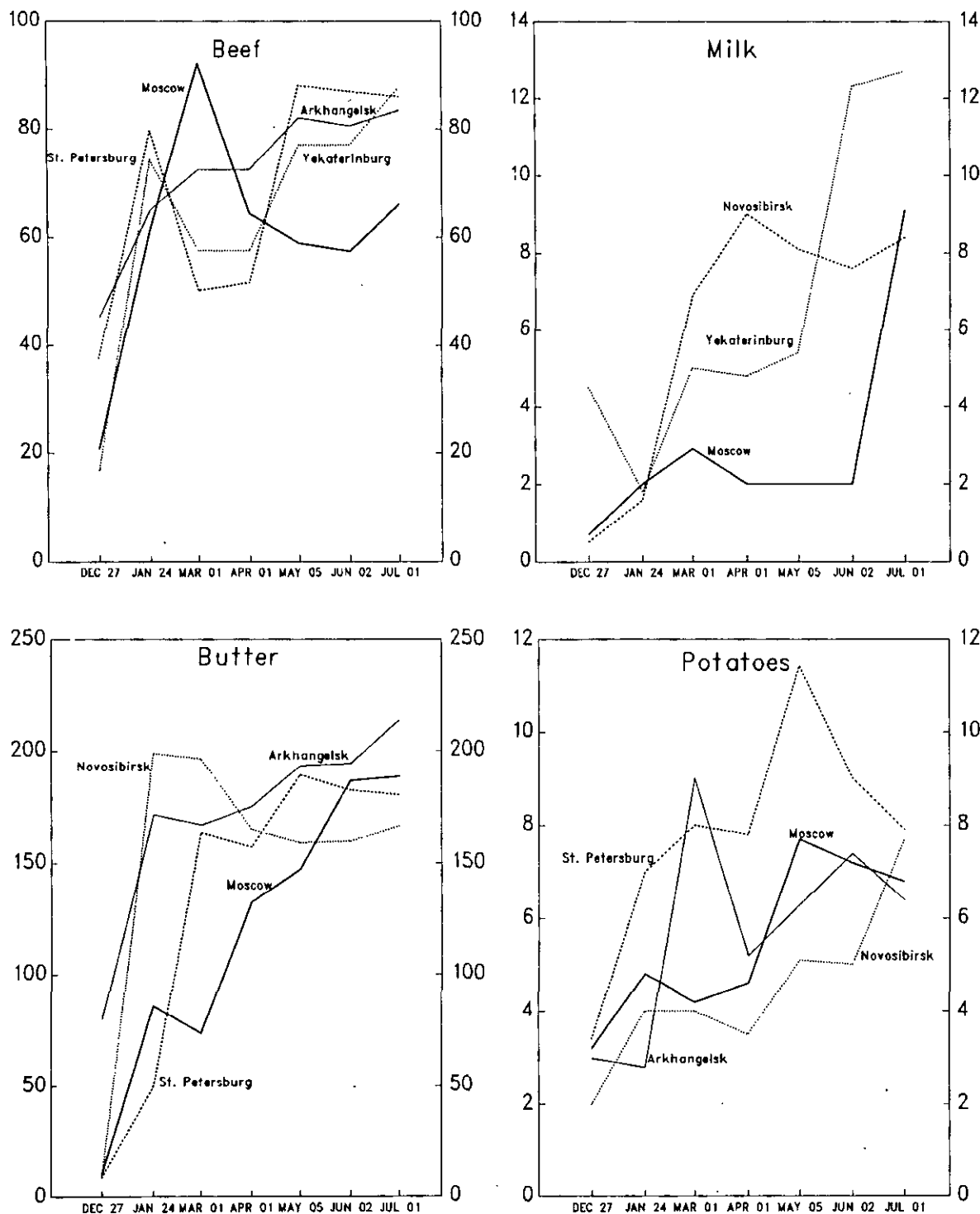
Sources: IMF: International Financial Statistics; Bulgarian National Bank: News Bulletin; and Goskomstat of the Russian Federation.

1/ Prior to January 1992, this is the RPI for goods and services. From January 1992 onwards, it is the urban CPI.

CHART 3
RUSSIAN FEDERATION

Food Prices in State Stores in Various Cities 1/ December 1991-July 1992

(In rubles per kilogram or liter)



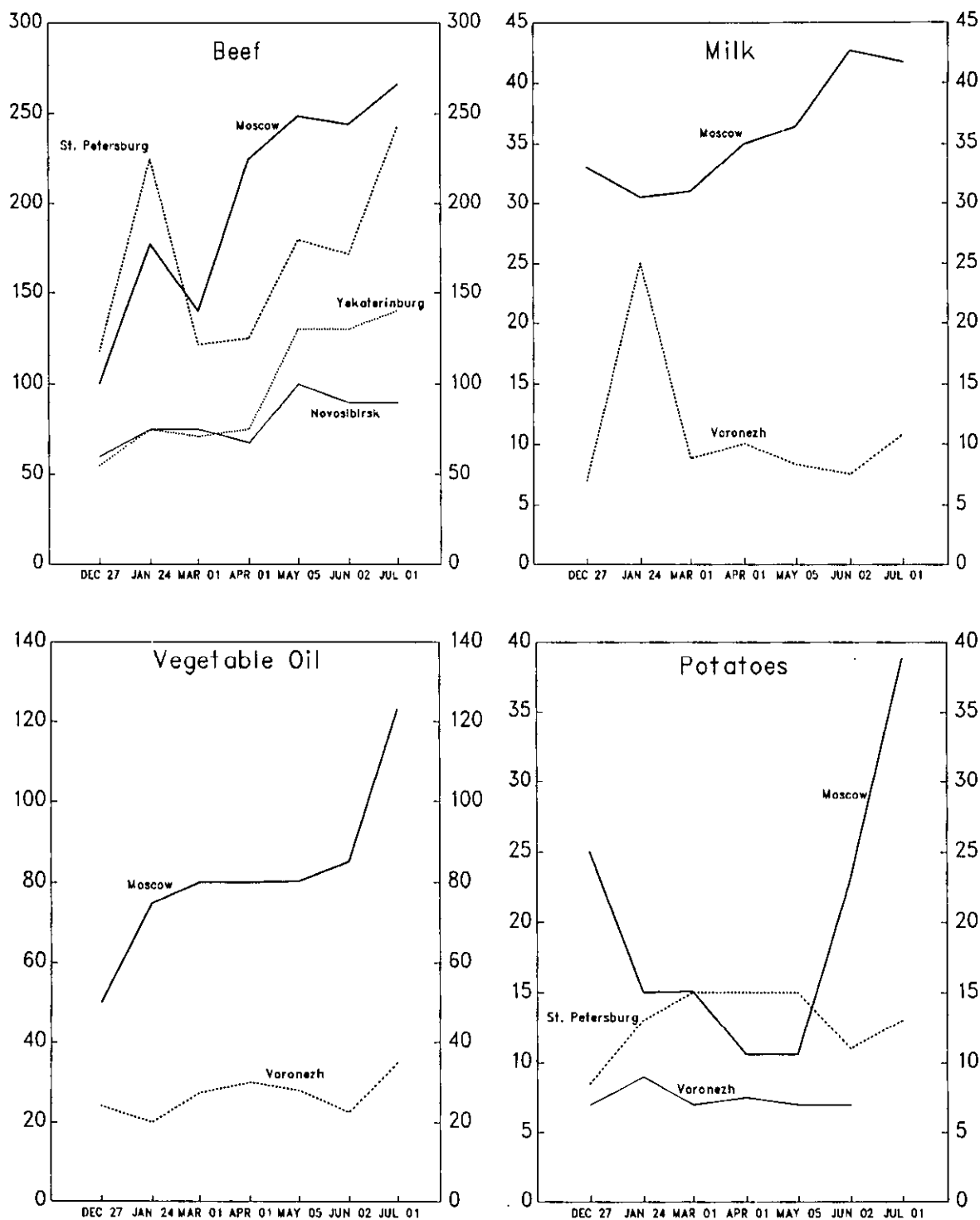
Sources: Goskomstat of the Russian Federation; and Interfax: Agriculture reports.

1/ When only a range of prices was available, its mid-point was used.

CHART 4
RUSSIAN FEDERATION

Food Prices in City Markets in Various Cities 1/ December 1991-July 1992

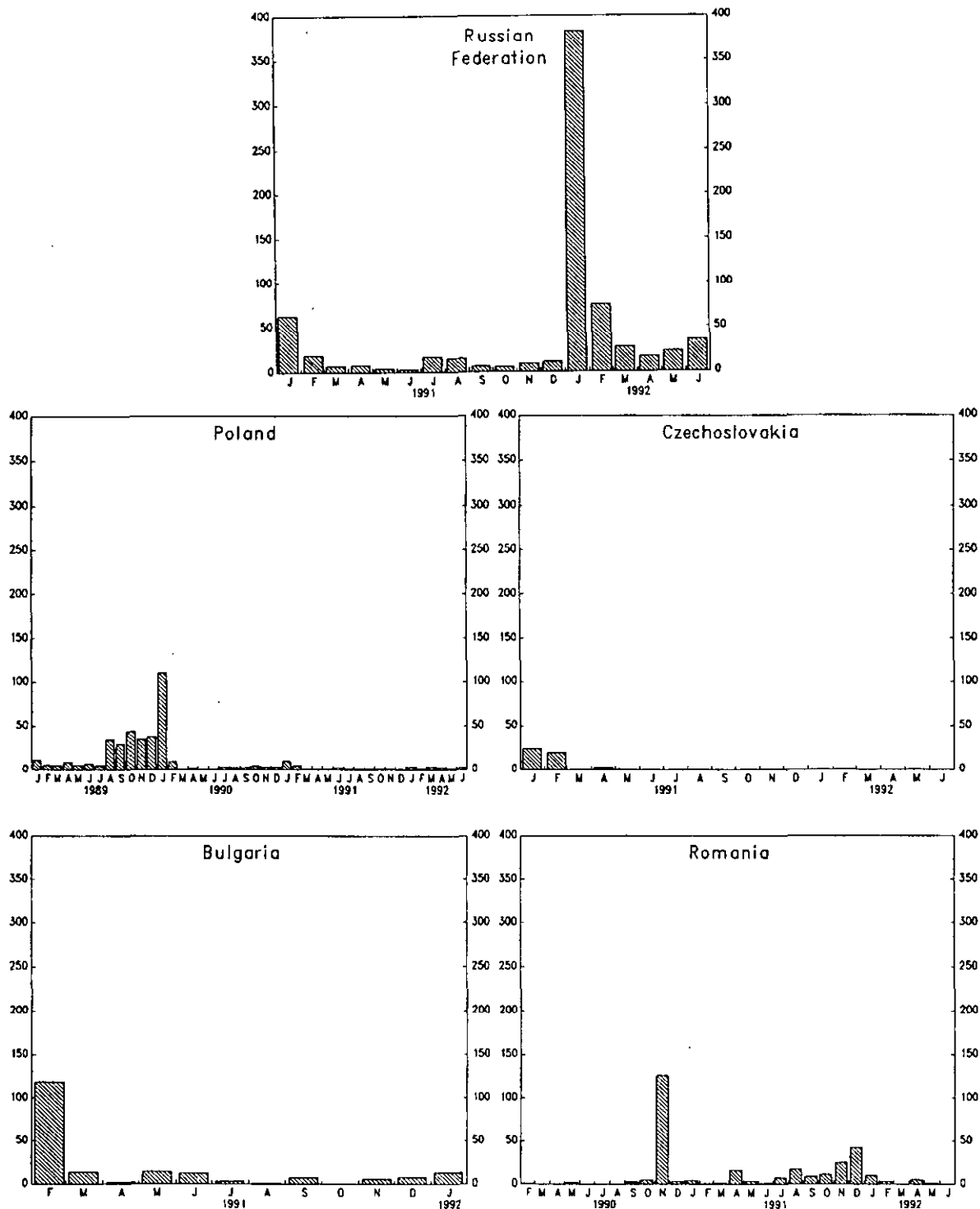
(In rubles per kilogram or liter)



Sources: Goskomstat of the Russian Federation; and Interfax: Agriculture reports.

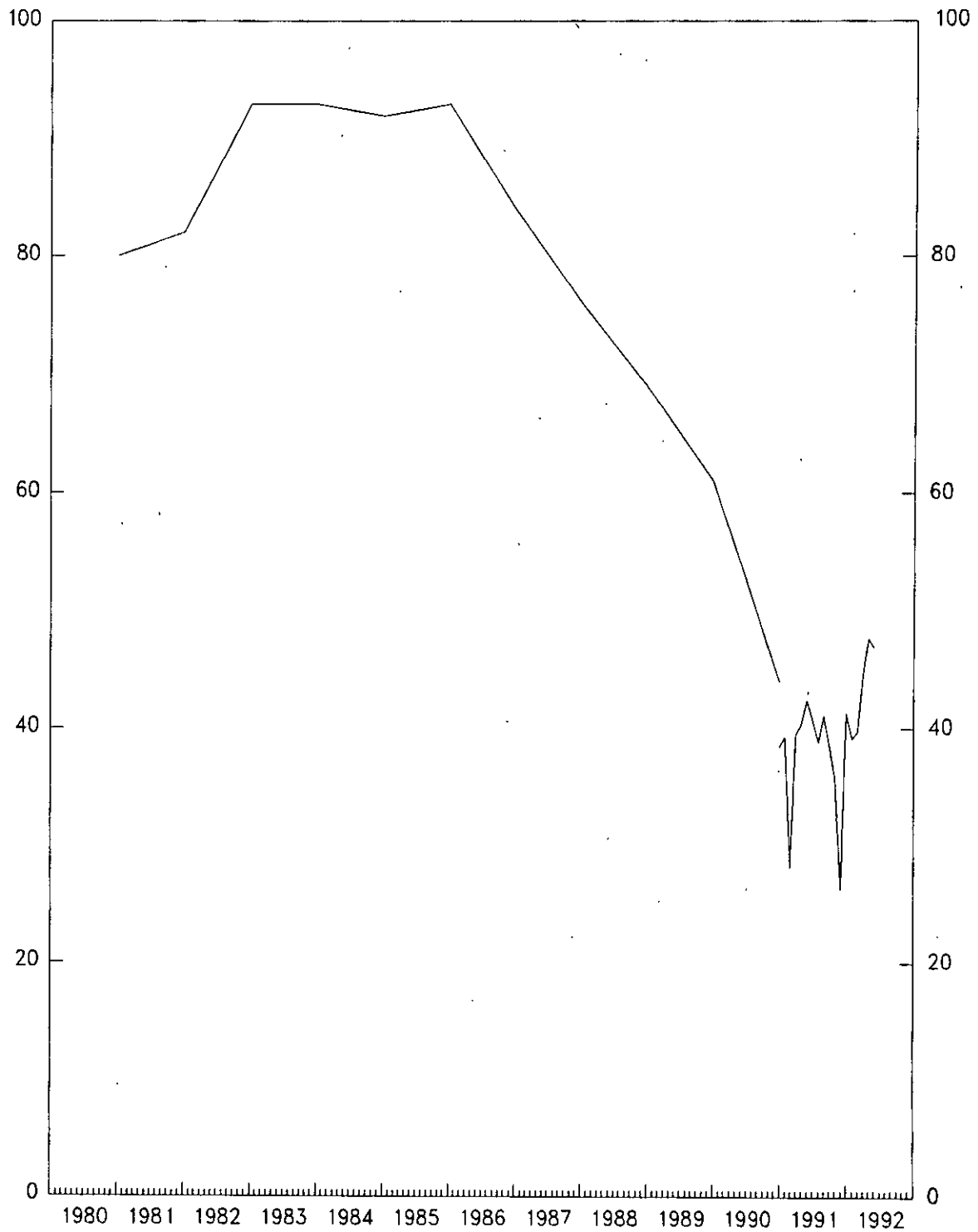
1/ When only a range of prices was available, its mid-point was used.

CHART 5
RUSSIAN FEDERATION
Producer Price Inflation:
Comparison with Eastern Europe
(Monthly percentage changes)



Sources: IMF: International Financial Statistics; OECD (1992); National Bank of Bulgaria: Bank Review (2/1992); and Gaskomstat of the Russian Federation.

CHART 6
RUSSIAN FEDERATION
Inventories in Retail Trade, 1980-92 1/
(In turnover days)

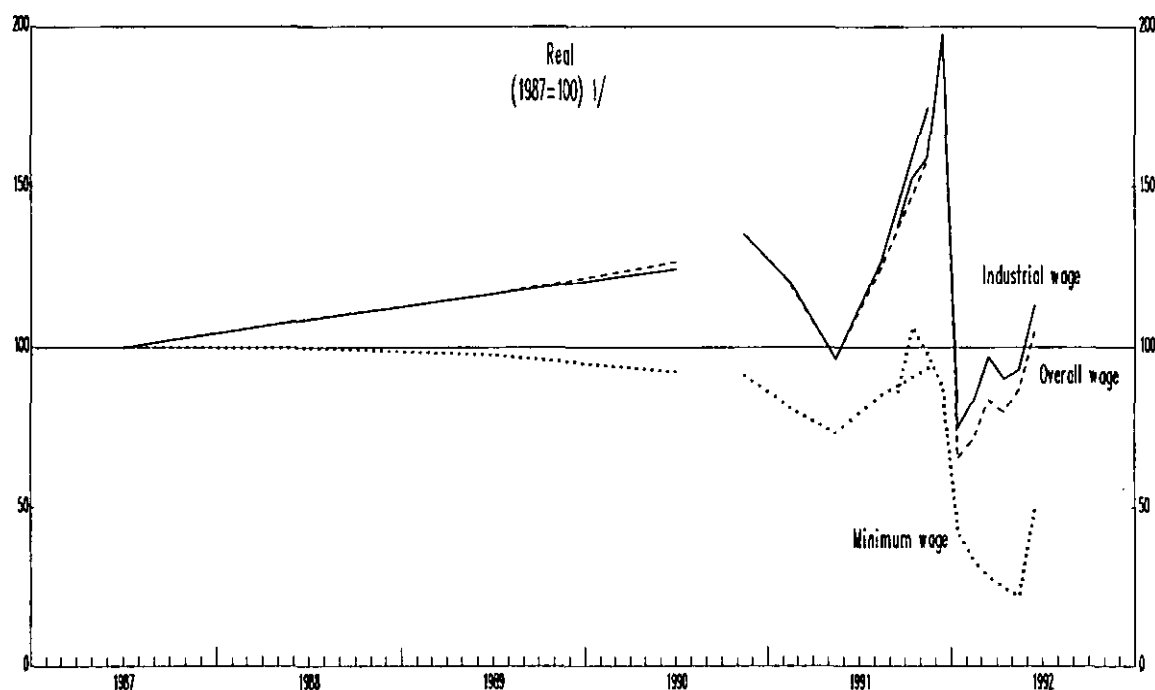
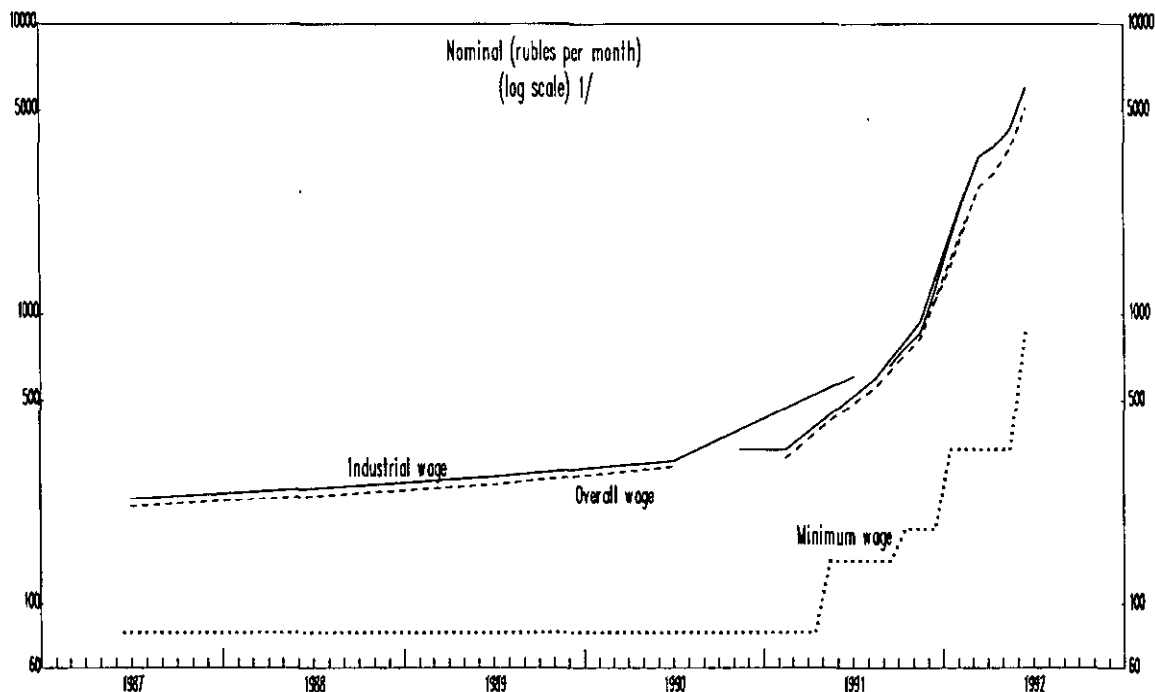


Source: Goskomstat of the Russian Federation.

1/ End-period. Annual observations through 1990, monthly observations thereafter.

CHART 7
RUSSIAN FEDERATION

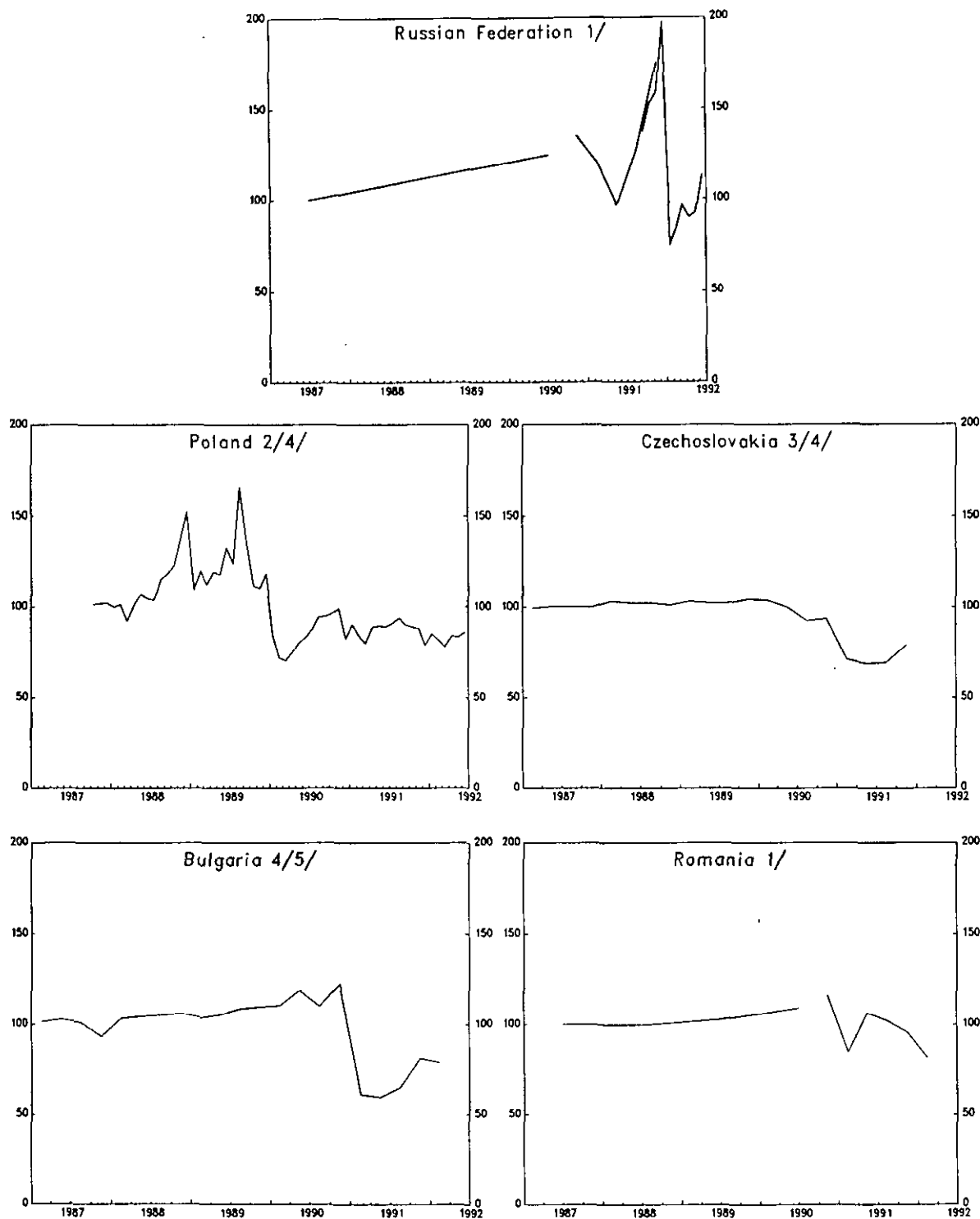
Nominal and Real Average Wages, 1987-92 1/



Sources: Goskomstat of the Russian Federation; and authors' estimates.

1/ Annual data for 1987-90, quarterly data for 1990:QIV-1991:QIV, monthly data for September 1991-June 1992, as available.

CHART 8
RUSSIAN FEDERATION
Real Wage Developments:
Comparison with Eastern Europe, 1987-92
(1987 = 100)



Sources: IMF: International Financial Statistics; Goskomstat of the Russian Federation; Central Statistical Office (Poland); and Bulgarian National Bank.

1/ Average industrial wage.

2/ Average wage in the main areas of the socialized sector (excluding agriculture and state organs).

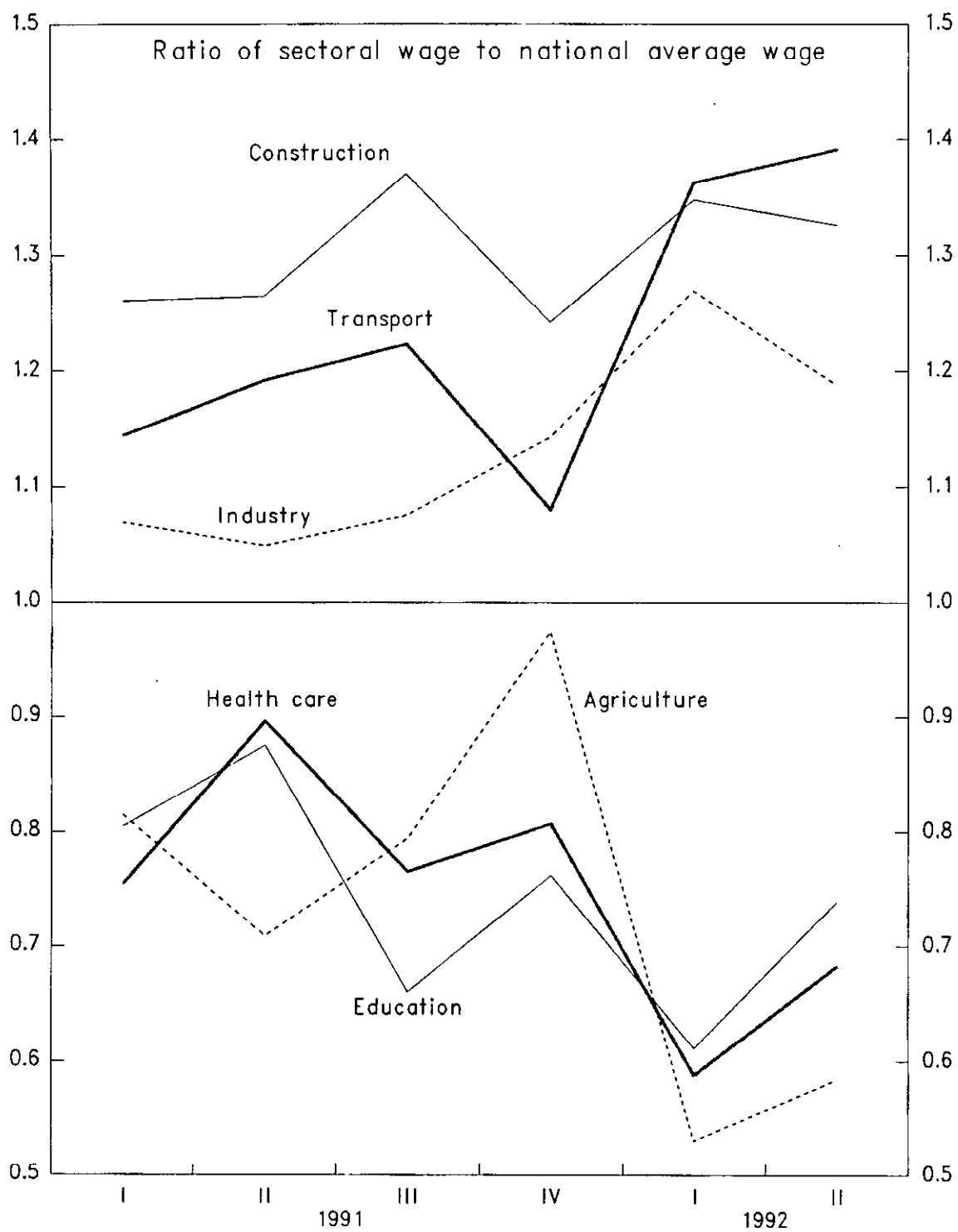
3/ Wage in the socialized sector (excluding agricultural cooperatives).

4/ Seasonally adjusted.

5/ Average wage in the state sectors.

CHART 9

RUSSIAN FEDERATION
Wage Structure Across Sectors, 1991-92



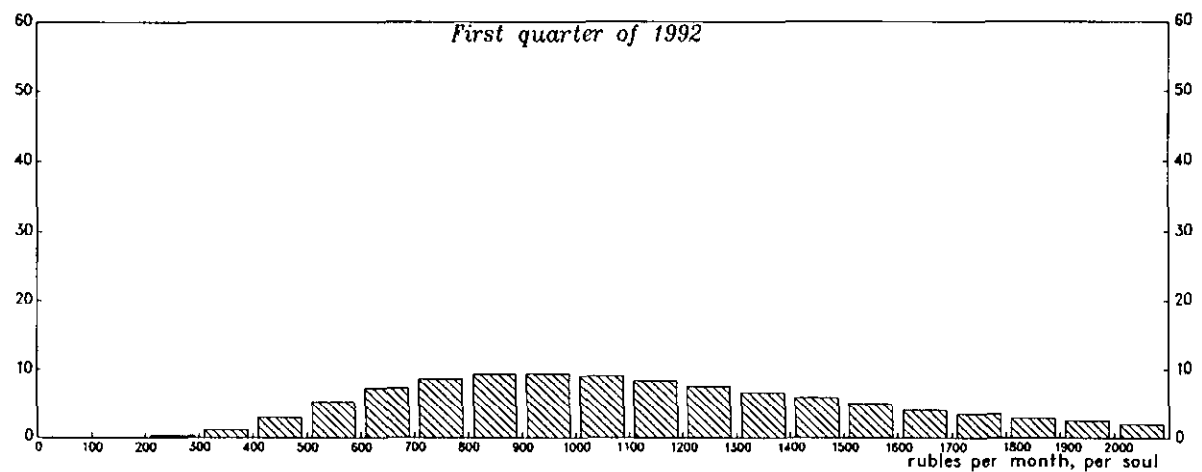
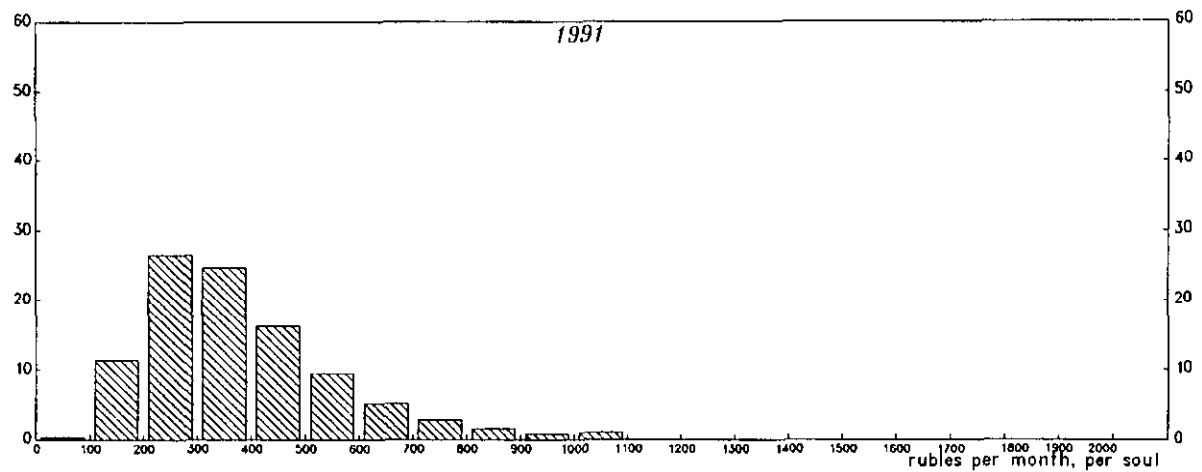
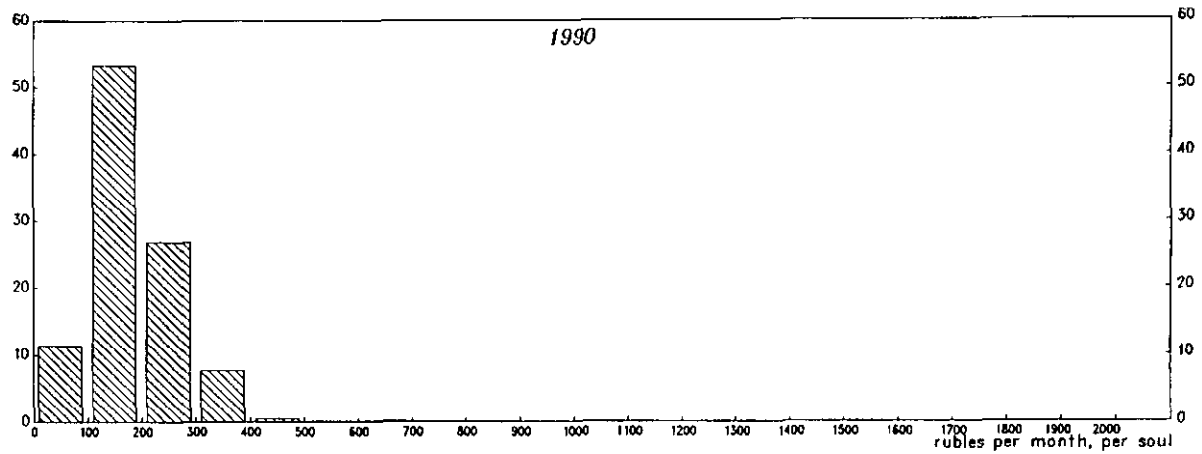
Source: Goskomstat of the Russian Federation.

CHART 10

RUSSIAN FEDERATION

Income Distribution in Current Rubles, 1990-92

(Percentage of population by income bracket)

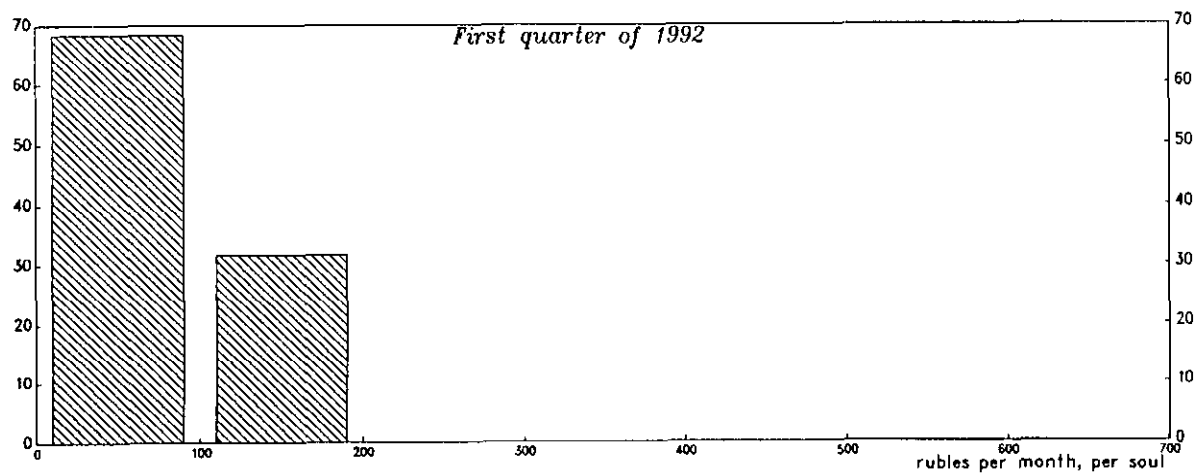
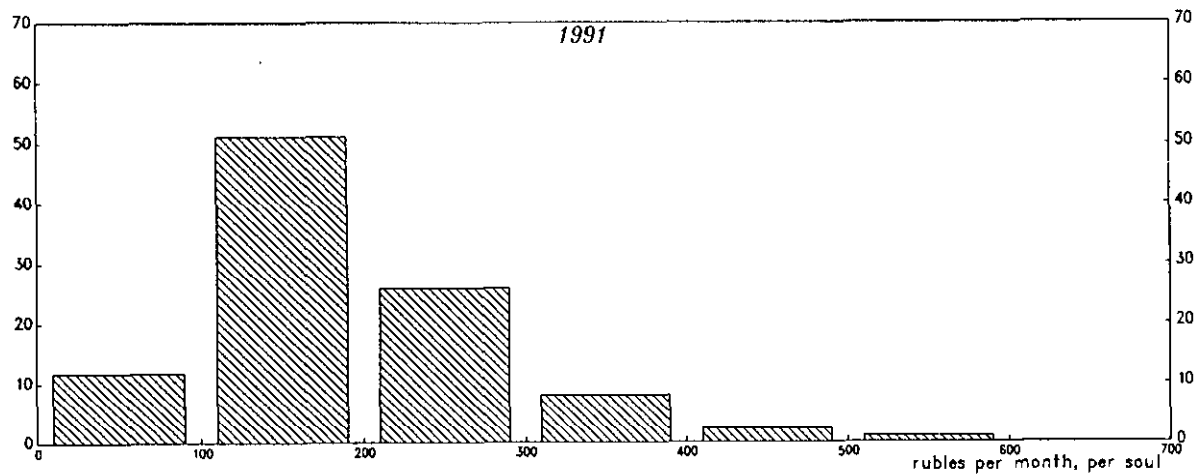
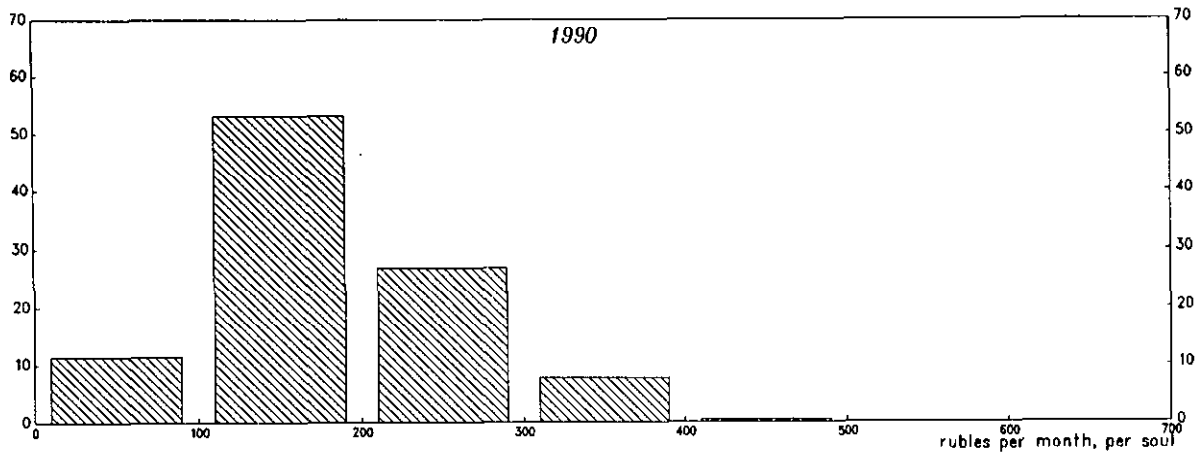


Source: Goskomstat of the Russian Federation.

CHART 11

RUSSIAN FEDERATION

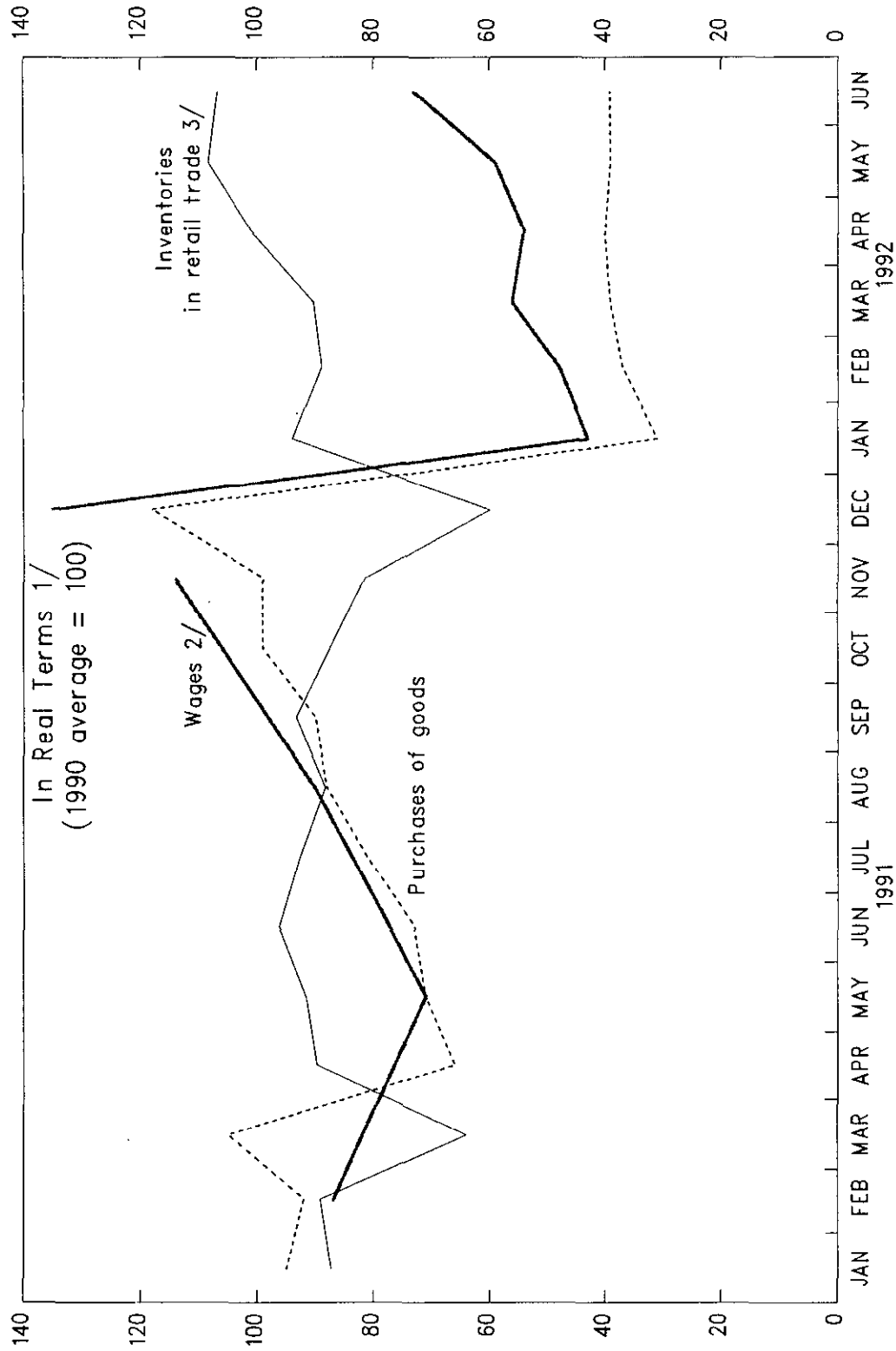
Income Distribution in Constant Rubles, 1990-92 1/ (Percentage of population by income bracket)



Source: Goskomstat of the Russian Federation.

1/ Incomes are expressed in constant 1990 rubles.

CHART 12
RUSSIAN FEDERATION
Wages, Purchases and Inventories in Retail Trade, 1991-92



Sources: Goskomstat; and authors' calculations.
1/ The deflator used is a spliced goods price index.
2/ Average monthly wage in the economy; quarterly for 1991 and monthly from December 1991 onwards.
3/ End-period, in days of turnover.

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