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# Russia's Informal Economic Growth: 1960–1990<sup>†</sup>

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## Abstract

This paper studies the historical GDP of Russia from the perspective of the informal economy. We re-estimate nominal and real informal GDP in the period 1960–1990, using the expenditure approach and declassified archival materials of household budget surveys. The main findings are as follows. First, previously estimated values of Russia's nominal GDP were underestimated, on average, by about 12.6% for 1960–1990, due to ignoring informal GDP. Second, after including informal GDP, we find that economic growth is 15–39 percentage points lower during this period, which corresponds to differences in the annual growth rate in the range of 0.24–0.38 percentage points.

Keywords: informal economy, historical statistics, Russia, USSR

JEL Codes: N14, O17, N24, N27

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## 1 Introduction

The informal economy or the so-called *second economy* served as an essential part of the Soviet command economy. It is said that the informal economy made up for the shortcomings of the dysfunctional planning system while having had an overall detrimental effect on the economy. According to Grossman (1977), the fundamental contradictions inherent to centrally planned economies (CPEs) caused the informal economy to emerge already at the time of its establishment, and the deterioration of a functioning system, accompanied by losing the dedicated and enthusiastic support for the socialist system, made room for the informal economy to develop. It is also thought that the development of the informal sector itself reflected the deteriorating economic conditions in the Soviet economy (e.g., Grossman, 1977; Ericson, 2006). Owing to its importance, researchers paid great attention to the informal economy in the Soviet period, though they faced a lot of difficulties in their attempts to comprehensively understand this phenomenon. Data unavailability, one of the main difficulties, made researchers rely heavily on anecdotal evidence which appeared in newspapers and journal articles, or on unrepresentative and one-time immigrant survey data (eg., Schroeder and Greenslade, 1979; Rutgaizer, 1992a; 1992b). Therefore, earlier studies suffered either from methodological deficiencies or from limitations as to the considered time periods and regions mainly due to data unavailability (Kim, 2003; Shida, 2015, pp. 96–102).

Nowadays, economic history researchers interested in long-term trajectories of Russian economic growth are riding on a surge of archives opened to the public and newly obtained materials (e.g., Markevich and Harrison, 2011; Cheremukhin et al., 2013; Mau and Drobyshevskaya, 2013). Such improved conditions provide us with a chance to revisit the remaining issues related to Soviet economic growth. The informal economy is among them because it seemed to penetrate the everyday lives of the Soviet population to a considerable extent and might have significantly affected the size of the Russian economy and its growth path in terms

of both nominal and real gross domestic product (GDP).

In this paper, we evaluate the economic performance of Soviet Russia for the period from 1960 to 1990, focusing on informal GDP. Access to previously unpublished materials enables us to measure informal GDP. Our primary statistical sources are two: disclosed archival materials on household budget surveys and disclosed archival materials on monetary balances of incomes and expenditures of the population (*denezhyi balans dokhodov i raskhodov naseleniia*). Both materials were collected by the author at the Russian State Archive of Economy (RGAE, *Rossiiskii gosudarstvennyi arkhiv ekonomiki*). We use these materials and apply the expenditure-side approach to estimate informal GDP.

Generally, the expenditure side of GDP can be decomposed into four components: household consumption (C), investment (I), government expenditures (G), and net exports (NX);  $GDP = C + I + G + NX$ . It is likely that informal economic activities permeated every sector of the Soviet economy, but to a widely varying degree. Therefore, the statistical treatment should be differentiated accordingly. First, the component with the least informality is likely to be government expenditures (G). Expenditures from the state budget were always reported to the statistical authority, even if they were partly misappropriated, embezzled, or stolen for private gains. Hence, illicit uses of the state budget do not change the size of the government expenditures. Second, all foreign trade operations (NX, exports minus imports) were also reported to the authority because Soviet foreign trade was operated solely by foreign trade organizations under state monopoly. This institutional setting made it difficult for citizens and for private firms (if there were any) to engage in trade.<sup>1</sup> Third, investment (I) by state and cooperative enterprises as

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<sup>1</sup> Due to the nature of smuggling, it is difficult to measure its volume. These activities may be, however, reflected at least in household incomes (earned from illegal exports) and expenditures (spent on illegally imported goods). It is also difficult to separate domestic and import components of consumption goods from household expenditures, although here we assume that the consumption of illegally imported goods was marginal compared to the total volume of consumption. Net exports

well as collective farms were centrally planned and then reported to the authority, even though informal operations including illegal procurement of materials and intermediate goods via pushers (*tolkachi*) or connections (*blat*) were used in the course of plan execution to fulfill the plan targets.<sup>2</sup> Fourth, household consumption (C), in contrast, had closer connections with the informal economy. Households, free from the state's direct control and commands, were able to buy goods and services from the state and cooperative sectors if these goods and services were available. Households, however, sometimes resorted to informal channels when they faced shortages. Hence, household consumption is the most important part of the informal economy. It is very likely that, in using the expenditure approach to estimate informal GDP, final consumption by households can capture informal economic activities.

Our main findings are as follows. First, the composition ratio of the informal GDP to the integrated GDP (formal GDP plus informal GDP) is, on average, 12.6% for the period 1960–1990. This ratio is decreasing over time. Second, the real growth rate of the Russian economy during the period examined decreased by 15–39 percentage points in comparison with the GDP growth rate not accounting for the informal economy, which corresponds to a difference of 0.3

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in the 1970s ranged from 1 to 5 billion rubles (Ministerstvo vneshnikh ekonomicheskikh svyazei SSSR, 1991, p. 6), which accounted for, at most, 1% of Soviet net material products. According to Alexeev and Sayer's (1987) study using an immigrant survey, the goods brought from abroad by friends or family members accounted for another 3–5 billion rubles; the size of the illegal market for foreign-made goods in the late 1970s is estimated to have been 13–15 billion rubles per year.

<sup>2</sup> State enterprises settled their payments on books and cash transactions were strictly regulated (limited). They were permitted to procure only a limited amount of materials via an officially approved small-scale wholesale trade system (*melkii opt*). It is possible that they illegally obtained goods without permission and increased their inventories. These illicit transactions in the consumer markets are called the “siphoning effect,” that is unplanned spillover of effective demand from the planned sector to the consumer sector (Kim, 2002, pp. 111–115). Although enterprises engaged in these activities, the total amount of retail turnover reported to the authority did not change. Measurement problems are thus undetectable.

percentage points per annum.

This paper is structured as follows. In Section 2, we describe and discuss our primary data sources and compile a statistical dataset to be used to estimate the informal GDP. Next, in Sections 3 and 4, we estimate the nominal GDP and its growth rate in real terms, respectively, and provide an overview of the estimation results. Finally, we summarize our findings in Section 5.

## 2 Compiling the Household Expenditures Dataset

### 2.1 Primary statistical sources

Researchers had a limited access to household-related materials during the Soviet period. Information on household incomes and expenditures rarely appeared in official statistical publications such as *National Economy of the USSR: Statistical Yearbook* (*Narodnoe khoziaistvo SSSR: Statisticheskii ezhegodnik*). The household budget surveys were finally published, for the first time, at the end of the Soviet era (*Biuro sotsiologicheskikh obsledovaniï, 1990*).<sup>3</sup> This information was made available to the public after the collapse of the Soviet Union. The availability of a wide variety of previously inaccessible and unpublished sources increased dramatically, which now stimulates new, quantitative research on the economic history of the Soviet Union (e.g., Kim, 2003; Osipov, 2009; Shida, 2015).

One of our two main primary sources is archival materials on household budget surveys. These materials are available at the Russian State Archive of Economy (RGAE: *Rossiiskii gosudarstvennyi arkhiv ekonomiki*). However, as mentioned below, household budget surveys contain several measurement problems that warrant cautious treatment. Therefore, we complement this source with archival materials on monetary balances of incomes and expenditures of the population (*balans denezhnykh dokhodov i raskhodov naseleniia*, hereafter

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<sup>3</sup> Summary results of household budget surveys for administrative use only (DSP: *dlia sluzhebnogo pol'zovaniia*) can be found in the Russian State Library.

*balance*) in order to correct the household budget survey data.<sup>4</sup> Using the *balance* data ensures that the household budget survey data are consistent with other macroeconomic statistics. Soviet statistical authorities constructed *balances* for the purpose of macroeconomic planning and controlling cash flows. Hence, they needed *balances* that most comprehensively and correctly tracked money flows between the state and household sectors; from enterprises and organizations to workers in the form of, for example, wages and social security payments, and from citizens to the state in the form of, for example, retail sales, fees for public utilities, taxes, or deposits at savings banks. In spite of this advantage, *balances* failed to capture private transactions, especially those within the population (Shida, 2012, pp. 45–46, 52). The disadvantages of household budget surveys and *balances* are mitigated by combining the two types of data.

We describe household budget surveys and briefly discuss problems related to their representativeness and reliability below.

### 2.1.1 An overview of household budget surveys

Soviet household budget surveys were conducted on a regular basis since the early 1950s.<sup>5</sup> The total number of surveyed households was around 30,000 per year since 1952, and it reached 50,000 at the time the socialist system ended. In addition to the regular surveys, temporary and more detailed surveys were also conducted. Survey investigators regularly visited people at their homes to interview them, while households themselves recorded their incomes and expenditures

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<sup>4</sup> See Shida (2011; 2012; 2015, p. 343). We use data also from Kashin and Mikov (2006).

<sup>5</sup> The history of household budget surveys in Russia can be traced back to the 19th century. Large-scale surveys targeting farmers started in the early 20th century, and so did surveys targeting industrial workers. In the early 1950s, surveys were extended to include the wider population and their basic methodology, which is similar to the one employed later on, was established. These efforts were enhanced by issuing the Decree of the Soviet Council of Ministers No. 4354 on November 3, 1951, on improvements to budget surveys of workers, employees, and collective farmers. (El'fterov, 2010, p. 80).

and reported them to investigators in the form of household account books (*zapisi*). To ensure the reliability of interviews and reports, investigators collected certificates and receipts on wage payments, rents, fees for public services, and so on (Dumnov and Riik, 1978, p. 73; Belova and Dmitrichev, 1990, pp. 19–28).

Sample members were selected via a systematic sampling method (*metod tipicheskogo proporsional'nogo otbora s mekhanicheskoi vyborkoi*).<sup>6</sup> Prior to the selection, the number of households to be surveyed in each sector and region was allocated proportionally according to the size of industrial sectors and regions; “representative” enterprises, organizations, and collective farms were selected first, then households were selected from them. Following this systematic sampling method, all organizations to which workers belonged were ordered according to their average wage. Next, several organizations were selected at regular intervals, and from these organizations, the survey subjects were selected, also at regular intervals. The representativeness of the organizations was examined by applying the criterion that their average wages should not differ by more than 3–5%. Only relatively large organizations were selected to facilitate the survey process. The representativeness of the surveyed households was confirmed in the same way. In summary, surveys in the Soviet Union were conducted on a workplace basis (Matiukha, 1967, pp. 11–40). Those who were not strongly linked to an employer organization at the time the survey was conducted, such as pensioners, households with only one worker, and single persons, were possibly outside of the scope of these surveys.<sup>7</sup> Households participated, in principle, voluntarily in the surveys. The group of participating households changed partially every year and every census year.

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<sup>6</sup> See Belova and Dmitrichev (1990, pp. 19–28) and Shida (2011, pp. 131–135).

<sup>7</sup> As mentioned above, the systematic sampling method reduced the probability that those who are not in the list, such as students, pensioners, or families with single workers, are selected as the object of the survey. For example, the probability of a single-worker family (including single persons) to be selected was half of that of a two-worker family (Belova and Dmitrichev, 1990, p. 26).



### 2.1.2 Reliability of household budget surveys

The issues with the surveys' reliability can be summarized in three points (Shida, 2011, pp. 131–135). First, certain industrial sectors (e.g., food, services, trade), regions (e.g., less populated areas), minor social groups (e.g., pensioners, students receiving scholarship) were less likely to be included in the survey samples; preference was given to conducting surveys more easily, and to heavy industry sectors with higher average wages (Shenfield, 1983, pp. 531–568). Second, the authority recommended, counter to the principle of rotating sampling, that households continue to participate in the survey for a longer period. In line with the rotating principle, 15–20% of households in the sample should have been replaced every year; the entire sample would thus be replaced in 5–7 years. In fact, a lot of households participated in the survey for 10–20 years.<sup>8</sup> Third, households and organizations to which the households are linked, as well as statistical authorities were closely tied. Not only households, but also their superiors at the workplace, officers from statistical authorities, members of labor unions, or communist party members supported surveys. This might affect the reliability and anonymity of the surveys. Some regional statistical offices held meetings and awarded households for their long-term cooperation.<sup>9</sup> Furthermore, committees to support surveys were sometimes established at the workplace (V.B., 1964, p. 79). These findings imply that households were monitored not only by investigators but also by their colleagues and other organizations. Very close interactions among those concerned were likely to affect the reliability of the surveys and households might have provided distorted

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<sup>8</sup> One-fourth of households surveyed in Kharkov Oblast (Ukraine) participated in the survey for more than 10 years. In Lviv Oblast, 20% of households participated for more than 20 years (Babaev, 1972, p. 75; Kuz'menkova, 1988, p. 22).

<sup>9</sup> For example, such meetings were held in Moscow City in 1965 and in Moscow Oblast in 1982 (Rovinskaia, 1965, pp. 80–81; Panina, 1983, p. 69). Reports on such meetings can be found in the journal *Vestnik statistiki*.

information when deciding on what would be reported to the authority. As a result, there would be bias: either those opposing the government were not selected to participate in the survey, or selected households would not report what was not desirable for the government or they reported what the authority desired.<sup>10</sup>

These three points raise issues concerning the representativeness and reliability of Soviet household budget surveys. High-income groups would be represented more. Subjects of the surveys would be monitored by the authorities, which motivated households not to report the undesirable and to behave more in line with what was expected of them. The informal economy added incomes and enabled households to obtain shortage goods informally, although such activities tended not to be reported to the authority. In sum, it is highly likely that using household budget surveys leads to downward bias in the estimation of informal economic activities, and we thus obtain only the lower boundary on the volume of these activities.

## 2.2 Compiling the household budget survey database

The household budget surveys we use come from archival materials aggregated at the republic level and provide average data for 100 households for several categories of households. The classification of households varies according to when the survey was conducted:<sup>11</sup> industrial workers (*RP: rabochie promyshlennosti*, about 8,000–10,000 households) for 1960–1968; workers and employees (*RS: rabochie i sluzhashchie*, about 20,000–37,000 households) for 1969–1989; collective farmers (*K: kolkhozniki*, about 10,000–13,000 households) for 1960–1989. The total number of households surveyed ranges from 20,000 to 50,000. This corresponds to 0.1% of

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<sup>10</sup> One of the key differences between Soviet surveys and other European countries' surveys is that the response rate in the former is almost 100% (Dumnov and Riik, 1978, p. 74).

<sup>11</sup> The list of archival materials used in this paper is shown in [Table A1 \(Appendix\)](#). See also Shida (2015).

the entire population excluding one-person households; there were 402.5 million households in Russia in 1989.<sup>12</sup> The statistical authority prepared also aggregated data to represent “all of the population,” these are available only for the period 1979–1989 (*All: vse naselenie*, about 32,000–49,000 households). Integrating the different household categories gives us an aggregated and “representative” Russian household database: household categories *RP*, *RS*, and *K* are merged into one category, which is then adjusted so that it can be consistently linked to category *All*.<sup>13</sup> As reporting formats vary according to time periods and household categories prior to the introduction of a uniform format in 1979 (D.D., 1979, p. 62), we reorganize them so that they follow a uniform format.

Next, statistical items in our newly constructed dataset are classified into official and informal ones. Budget survey results are reported in two forms, each of which serves a different purpose. The first form is the total expenditures series (*sovokupnye: TE*), which captures how the population consumed, distinguishing monetary transactions (monetary expenditures:  $TE_m$ ) and in-kind expenditures (self-consumption:  $TE_n$ ) in 43 statistical categories of commodities. The latter pertains to the informal economy in its natural form. The second reporting form is the money expenditures series (*denezhnye: ME*), which captures where consumers spent their money on 46 commodity items, and distinguishes between state and cooperative trade networks ( $ME_o$ ) and other places, especially direct payments to other citizens (private transactions among citizens,  $ME_i$ ). The former component is considered official economy, the latter pertains to informal market transactions because these transactions were conducted by citizens, not centrally planned nor reported to the authority. Money expenditures as a whole (*ME*) correspond to the monetary part

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<sup>12</sup> Population census conducted in 1989 (CISstat, 1993, p. 5). Changes in the social composition over time affected also the structure of the survey sample: the proportion of collective farmer families decreased as the proportion of worker and employee families increased.

<sup>13</sup> *RP*, *RS*, and *K* can be disaggregated into more detailed groups according to industrial sectors and regions (location). The data integration and adjustment process is described in the [Table A2](#).

( $TE_m$ ) of the total expenditures series ( $TE$ ). The informal economy in our dataset has two components, namely, self-consumption ( $TE_n$ ) and monetary expenditures (transactions) among citizens ( $ME_i$ ).

Based on these two different data series, household expenditures can be decomposed into three components: official money expenditures (*official*,  $E_{m,o} = ME_o$ ), informal money expenditures (*informal*,  $E_{m,i} = ME_i$ ), and informal expenditures in kind (*self-consumption*,  $E_n$ ). The latter two components correspond to informal economic activities conducted outside the centrally planned economic system. Informal money expenditures ( $E_{m,i}$ ) capture informal market transactions not included in the sales of state and cooperative retail shops. It is difficult for the authority to monitor self-consumption ( $E_n$ ).

[Figure 1 here]

There are two points we need to be cautious about. First, monetary expenditures from the total expenditures series, that is,  $TE_m$ , do not correspond to monetary expenditures,  $ME$ , because the reported expenditure items (the format of reports) are structured differently. Therefore, it is difficult to replace  $TE_m$  with  $ME$  without altering the structure of expenditures. In other words, combining  $TE_m$  with  $ME$  would change the ratios of monetary and natural expenditures to total expenditures (Shida, 2011, p. 137). We thus adjust self-consumption data as follows:  $TE_n' = ME \times (TE_n/TE_m)$ .

Second, self-consumption ( $TE_n$ ) is evaluated at official retail prices (centrally set prices do not reflect scarcity), which underestimates its size. We thus reevaluate this expenditure component using market prices. The price gap ( $g$ ) between official prices and market prices is calculated as  $g = p_k/p_o$ , where  $p_o$  and  $p_k$  denote average price levels in the state and cooperative retail shops ( $o$ ) and in collective farmers' markets ( $k$ ), respectively. The availability

of these price data is rather limited; the *Statistical Yearbooks of National Economy of the USSR* only provide retail turnovers of state and cooperative shops (in rubles) and their share (%) in the total retail turnover, which includes sales in collective farmers' markets.  $R$  denotes retail turnover of state and cooperative retail shops, while  $S$  its share in the total turnover. Note that  $S$  is evaluated at two different price systems: the official prices ("the same price,"  $p_o$ ), and the effective prices ( $p_o$  and  $p_k$ , respectively). In other words,  $S$  is evaluated at either the official prices ( $S_1$ ) or the effective prices ( $S_2$ ), depending on the distribution channel:

$$S_1 = R / (R + p_o q_k), \quad (1)$$

$$S_2 = R / (R + p_k q_k). \quad (2)$$

The turnover in the collective farmers' markets is obtained by transforming Eqs. (1) and (2):

$$p_k q_k = R \times [(1 - S_2) / S_2], \quad (3)$$

$$p_o q_k = R \times [(1 - S_1) / S_1]. \quad (4)$$

From Eqs. (3) and (4), we calculate the price gap ( $g$ ) as

$$g = p_k q_k / p_o q_k = [(1 - S_2) / S_2] / [(1 - S_1) / S_1]. \quad (5)$$

Self-consumption expressed in official prices ( $TE_n'$ ) can be transformed into self-consumption in effective market prices ( $E_n$ ) by using the price gap data ( $g$ ) as follows:  $E_n = g \times TE_n'$ .

### 2.3 Adjustments to household budget survey data

The above estimated money expenditures ( $E_m$ ) correspond to values per member of a "representative" household ( $x$ ). The macro-aggregate of this data ( $X$ : a composite commodity item of  $E_m$ ) equals  $x$  multiplied by the "total household population", that is, it is a product of the average number of family members (*member*) and total number of households (*family*):

$$X = x \times family \times member. \quad (6)$$

As mentioned above, we distinguish money expenditures in two sectors: (i) official money expenditures at state and cooperative retail shops ( $X_{m,o}$ ); and (ii) private transactions among

citizens, that is, the informal market ( $X_{m,i}$ ). The usefulness of the above compiled household budget survey dataset is subject to the degree of consistency of its macro aggregate with other macroeconomic statistics such as national incomes, net material products (NMP), and so on. This can be judged by how consistent it is with *balances* (monetary balances of incomes and expenditures of the population). *Balances* have higher reliability and are more consistent with macroeconomic statistics because they correctly evaluate the official component of money flow between organizations and the population (Shida, 2012).<sup>14</sup> The problem is whether official money expenditures in household budget surveys ( $X_{m,o}$ ) correspond to *balances'* official money expenditures ( $Y$ ):

$$X_{m,o} = (x_{m,o} \times \text{family} \times \text{member}) = \alpha Y. \quad (7)$$

If  $\alpha = 1$ , there is no need to adjust the data because the two series are perfectly consistent with each other.

Two points should be noted. First, the total number of household members or “total household population” ( $\text{family} \times \text{member}$ ) is based on the size of households, which do not include one-person households. Hence, “total household population” is smaller than the actual total population by the number of singles (the ratio of “total household population” to the total population is  $\beta$ ). As a result, macro aggregates of household budget survey data are probably smaller than the actual ones. Second, the surveys’ reliability is affected by sampling bias and survey implementation. It might be difficult to remove these biases and the *balance* data might not be equal to the macro aggregate ( $\alpha \neq 1$ ).  $Y$  can be expressed in the same way as the budget survey,  $Y$  is a product of per capita money expenditures ( $y$ ) and total population (*population*):

$$Y = y \times \text{population}. \quad (8)$$

From Eqs. (7) and (8), it follows that

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<sup>14</sup> Money expenditures in the *balance* data comprise two sectors: (A) monetary expenditures at state and cooperative retail shops; (B) transactions among citizens.

$$x_{m,o}/y = \alpha/\beta. \tag{9}$$

**Table 1** shows the calculated values of  $\alpha$ ,  $\beta$ , and  $\alpha/\beta$  (see also **Figure A1 (Appendix)**). The overall difference between the two macro aggregates ( $\alpha$ ) is, on average, -16.3% for 1960–1989, while the difference in the demographic structure ( $\beta$ ) is -12.6%.<sup>15</sup>  $\alpha$  can be explained mainly by demographic inconsistency ( $\beta$ ):  $12.6/16.3=77.2\%$ . On the other hand, the reporting bias ( $\alpha/\beta$ ) is 4.3% on average. It follows that household budget surveys underestimated official money expenditures ( $y > x_{m,o}$ ).

[Table 1 here]

Using *balance* data, we adjust the constructed database in order to make it consistent with other macroeconomic aggregates. Instead of calculating  $(\alpha/\beta)_t$  for year  $t$  and for each commodity item, we use a single coefficient. The data are reported differently in the *balances* and household budget surveys, so it is impossible to compare commodity items one by one. Even if we attempted to compare them, adjustments using a coefficient for each item would distort the structure of household budget surveys and transform them into the same structure as in the *balances*; the proportions of  $X_{m,o}$ ,  $X_{m,i}$ ,  $X_n$  would be altered. Taking into account these issues, we calculate coefficients  $(\alpha/\beta)_t$  for each year based on *balances*' official money expenditures ( $Y$ ) and official money expenditures from the household budget surveys ( $X_{m,o}$ ).<sup>16</sup> This gives the

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<sup>15</sup> *Balance* data used here is author's own estimation. Estimation methodology and primary sources are described in Shida (2012). **Table A3** shows official data and author's estimation results for 1960–1990. Estimated results based on household budget survey are shown in **Table A4**. Population and “total household population” are shown in **Table A5**. Estimated *balance* and constructed household budget survey data are compared in **Table A6** and **Figure A1**.

<sup>16</sup> As mentioned above, official money expenditures ( $Y$ ) corresponds to Sector A in the *balance* data

same result as multiplying the estimates with  $(\beta/\alpha)_t$ . Data for 1990 are extrapolated estimates.<sup>17</sup>

The final output of the reconstructed dataset that we use to estimate informal GDP is shown in [Tables S1](#) (per capita) and [S2](#) (macro aggregates).

### 3 Estimating Nominal GDP

#### 3.1 Estimation methodology

In this section, we estimate nominal GDP taking into account the informal economy. Generally speaking, existing alternative estimates of Russia's GDP or gross national product (GNP) are either based on NMP (Kuboniwa and Ponomarenko, 2000), or similar to *balances*' officially published data (CIA, 1975, 1983; JEC, 1982, 1990). *Balance* is a component of NMP, and both of them employed the expenditure approach (Shida, 2012). As mentioned above, *balances* were affected by measurement problems because they failed to consider households' informal economic activities outside the planned sectors in their entirety. It follows that NMP as well as GDP/GNP estimates based on NMP are likely to be affected by the same kind of measurement problems. In fact, the ratio of private transactions among citizens to the total money expenditures in the Soviet *balance* (Sector B in the *balance* data) is, on average, only 1.4% for 1960–1990 (with a maximum of 2.8% and a minimum of 0.8%).<sup>18</sup> In contrast, this ratio is 14.4% (with a maximum of 21.7% and a minimum of 10.7%) according to estimates based on household budget surveys. Existing GDP/GNP estimates based on NMP and *balances* do not seem to properly capture the size of the informal economy. The CIA estimated that the ratios of private expenditures

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(see footnote 14) while official monetary expenditures at state and cooperative trade networks in the household budget surveys corresponds to Sector B (see notes in [Table A2](#)).

<sup>17</sup> The ratios of the components of the estimated official money expenditures ( $X_{m,o}$ ) are shown in [Table A7](#).

<sup>18</sup> Author's calculations using data from Kashin and Mikov (2006) who, using Bank of Russia's archival materials, compiled data from *balances* at the Soviet Union level.



to total household expenditures were only 1.10% in 1970, and 1.91% in 1982 (CIA, 1975, 1983; JEC, 1982, 1990; Shida, 2012, p. 48). As the CIA follows a methodology similar to *balance* compilation (Shida, 2012, p. 48), the volume of informal economic activities is underestimated.

In contrast, our estimates are simultaneously more valid and consistent with macroeconomic statistics. Consumption components of existing GDP/GNP estimates can be replaced by our alternative estimates of household consumption, and then the newly integrated official and informal GDP (hereafter the sum of official and informal GDPs is referred to as integrated GDP) can be estimated. To estimate nominal informal GDP, we proceed as follows:

1. We extract consumption components from our database following the CIA's (1983) nominal expenditure GDP. The CIA's estimates comprise household consumption, investment, and other governmental expenditures. Household consumption consists of goods and services, where goods are food, light products, and durables. Our database provides data on goods consumption according to the following classification: food (see [Table S2](#), item no. 1), non-food goods (item no. 2), livestock and poultry (item no. 3), agricultural and fishery tools, and similar (item no. 5). The CIA estimates concerning services consist of housing, public utilities, transportations, communication, repair and personal services, entertainment, education, and health care, while our database contains the items housing (item no. 4), rents and public utilities (item no. 10), transportation and communication (item no. 9), services (item no. 8), other services (item no. 11), leisure (item no. 7), and fees for facilities (item no. 6). For convenient summation, items that are difficult to categorize are included in "other" or "unidentified" (item no. 15).
2. We replace the final consumption by households in the existing estimates of GDP/GNP by our estimates. There are two alternative estimates of nominal

GDP/GNP, Kuboniwa and Ponomarenko's (2000) estimates of expenditure GDP for Russia, and the CIA's (1983) estimates for the Soviet Union.

- a) We revise Kuboniwa and Ponomarenko's (2000) estimates. As they do not distinguish between final consumption by households and other government expenditures, we add only informal household expenditures ( $E_{m,i}$  and  $E_n$ ) to their estimates. We assume that they did not take the informal economy into account at all.
- b) We revise the CIA's (1983) estimates. Before we include the informal economy, we extract Russia's GNP from the CIA's estimates of Soviet GNP; the CIA's estimates of Soviet GNP are distributed among the Union republics, including Russia, according to the size of the nominal NMP (officially published data), the size of the population mid-year, and the size of the macro aggregate of money expenditures (our estimates of *balance* at the republic level). We replace the extracted share of Russia in households' final consumption entirely by our estimates of  $E_{m,o}$ ,  $E_{m,i}$ , and  $E_n$ .

### 3.2 Estimation results

**Table S3** presents our main estimation results (Step 2a described in Section 3.1). **Figure 2** shows the evolution of the ratio of informal economy to integrated GDP in the period 1960–1990. **Table 2** compares the estimation results in 1960, 1970, 1976, and 1980. According to our estimation, the share of informal GDP in nominal terms exhibits a decreasing trend. The share of the informal economy is 17.7% in 1960 (the base year for our estimates), and then it sharply decreases throughout the 1960s to reach 12.5% in 1970. Its further decline is relatively moderate as it continues to decrease and reaches 12.4% in 1980, 10.5% in 1985, and 9.9% in 1990. As household

purchases increased with the development of retail distribution networks, the share of in-kind expenditures (self-consumption) decreased (Shida, 2015, Chap. 1). The share of self-consumption is 9.2% in 1960 and 5.1% in 1990. At the same time, the share of informal market trade decreases from 8.5% to 4.7%, respectively. The share of the informal economy excluding self-consumption is, on average, 6.5% for the entire period, and, in particular, 10.0% in 1960, 6.1% in 1970, 6.9% in 1980, and 5.4% in 1990. The average size of the informal economy in Russia ranges from 6.5% to 12.6%. This trend is confirmed also by results obtained with alternative estimates (Step 2b described in Section 3.1). As the CIA's GNP is smaller than Kuboniwa and Ponomarenko's (2000) GDP estimate, the share of informal GNP increases. The ratios of nominal informal GNP to Russia's nominal GNP, calculated using nominal NMP, population, and money expenditures, are, on average, 20.3% in 1960, 14.2% in 1970, 12.7% in 1976, and 14.0% in 1980. The ratios calculated with estimation results from Step 2a are 17.7%, 12.5%, 11.4%, 12.4%, respectively. The shares of informal GDP in the main results (Step 2a) are smaller than those in the alternative results (Step 2b); the differences between them, in percentage points, are 2.6, 1.7, 1.3, and 1.7, respectively. Results based on Step 2b also show an increasing trend in the period between the late 1970s and the early 1980s.

[Figure 2 here]

[Table 2 here]

## 4 Estimating Real GDP

### 4.1 Estimation methodology

In this section, we estimate informal GDP and its growth rates in real terms. We first calculate the official and informal GDP in 1960 rubles separately, then we sum them to obtain the real integrated GDP. Real GDP and deflators to be used are computed using Kuboniwa and

Ponomarenko's (2000) nominal GDP (in rubles) and growth indices.<sup>19</sup> They estimated four alternative GDP growth indices as follows: the official deflator (A), chain volume indexes and an updated industrial output index (B), chain volume indexes and the official industrial output index (C), and fixed weight volume indexes and the official industrial output index (D). The informal GDP values in real terms are computed by these four cases and an alternative one. The alternative price index for deflating informal GDP is calculated as  $p_{k,t} = p_{o,t} \times g_{k,t}$ , based on Eq. (3) in Section 2.2. The price index (1961=1) becomes  $I_{k,t} = p_{k,t}/p_{k,1961} = I_{o,t} \times (g_{k,t}/g_{k,1961})$ .

#### 4.2 Estimation results

The calculated growth indices (1961=100) and real growth rates are shown in [Tables S4](#) and [S5](#), respectively. Panel A shows the results case for deflators A–D, and Panel B for our alternative price index. [Figures 3](#) and [4](#) depict the dynamics of growth indices and growth rates according to Panel B of [Tables S4](#) and [S5](#), respectively. Both figures trace Kuboniwa and Ponomarenko's (2000) estimates. Notably, integrated GDP exhibits relatively modest growth only in comparison with official GDP. This is because the nominal GDP in 1960 (base year) was not fully considered in Kuboniwa and Ponomarenko's (2000) estimates, and the informal economy grew more moderately than the official economy. The growth indices in 1990 (1961=100) of the integrated GDP and the informal economy are 450.0 and 252.2, respectively. The values of the four deflators A, B, C, and D in 1990 are 131.5, 210.1, 149.8, and 171.7, respectively, whereas our alternative price index is 186.4 in 1990. The growth indices considering Kuboniwa and Ponomarenko's (2000) official 1990 GDP are 375.2, 234.8, 329.3, and 287.4 for A, B, C, and D, respectively. If informal GDP is taken into account, the growth indices for A, B, C, and D decrease to 336.3, 219.1, 298.0, and 263.1, respectively.<sup>20</sup>

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<sup>19</sup> See also Kuboniwa (1997).

<sup>20</sup> The growth indices of informal GDP deflated by the four deflators A, B, C, and D used for the

The average annual growth rates of official GDP calculated with deflators A, B, C, and D are 4.7%, 3.1%, 4.2%, and 3.7%, respectively (Kuboniwa and Ponomarenko, 2000), whereas our estimates considering informal GDP are 4.3%, 2.7%, 3.9%, and 3.4%, respectively (Table 3).<sup>21</sup> This means that when the informal economy is taken into consideration, the real GDP growth rates decrease by 0.24–0.38 percentage points per annum.

[Figure 3 here]

[Figure 4 here]

[Table 4 here]

## 5 Conclusions

In this paper, we estimate the nominal and real informal GDP for the period 1960–1990, using declassified archival materials containing household budget surveys and monetary balances of incomes and expenditures of the population. Estimation results show that Russia's informal GDP (including self-consumption) in nominal terms constituted, on average, 12.6% of the total GDP integrating official and informal economies. This means that former estimates of GDP/GNP undervalued the Russian economy during the Soviet period. Even if we exclude self-consumption, the informal economy's share is 6.5% on average. Further, our study confirms that the real GDP growth rate is underestimated by 15–39 percentage points for the entire examined period and by 0.24–0.38 percentage points per annum. This is due to the fact that the nominal GDP in 1960 (base year) is most underestimated, and the share of the nominal informal GDP exhibits a

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official GDP in 1990 are 346.0, 216.5, 303.7, and 265.0, respectively. All estimates except B are biased upward.

<sup>21</sup> The average growth rates, calculated as in Footnote 17, for A, B, C, and D are 4.4%, 2.7%, 3.9%, and 3.4%, respectively.

decreasing trend. As consumer prices in informal markets increased more steeply, a more flexible price mechanism reflecting the relationship between demand and supply started to operate. In the Soviet economy, shortage problems did not stimulate informal production. Rather, they manifested as increasing informal market prices or repressed inflation in the official sector, and brought about economic stagnation. This study provides evidence that the informal economy, in fact, contributed to the absolute volume of the Russian economy's GDP under the planned system. At the same time, we confirm that the informal economy restrained the overall economic growth in Russia. As Kim and Shida (2017) show, from among the Soviet republics, Russia's informal economy was most dependent on the official economy. Therefore, without growth in the official sector, there was no stimulus for the informal economy to increase. When the official economy stagnated, the informal economy also stagnated. The informal economic growth in Russia was not quantity-driven. Inflation caused by shortages resulted in economic stagnation.

This retrospective analysis of historical statistics focuses on informal GDP was motivated by the necessity to revisit factors underlying current Russia's growth path during the transition period. Our estimates imply that the informal economy around 1989 and 1990, the last year of the Soviet regime and the year the transition started, was underestimated by 5–10%. This point is important for determining when the Russian economy recovered from the transition recession. According to the United Nations' national accounts database, the Russian economy recovered its 1990 GDP level in 2007 and has shown no signs of decline thereafter (United Nations, 2016). In contrast, assuming that the GDP in 1990 was, in fact, larger than what the UN data suggest just due to accounting for the informal economy (10.5% or 5.4%), we find that the recovery happened around 2007–2008, and as a result of the global financial crisis, the level of the GDP in 2009 and 2010 was smaller than its 1990 level.

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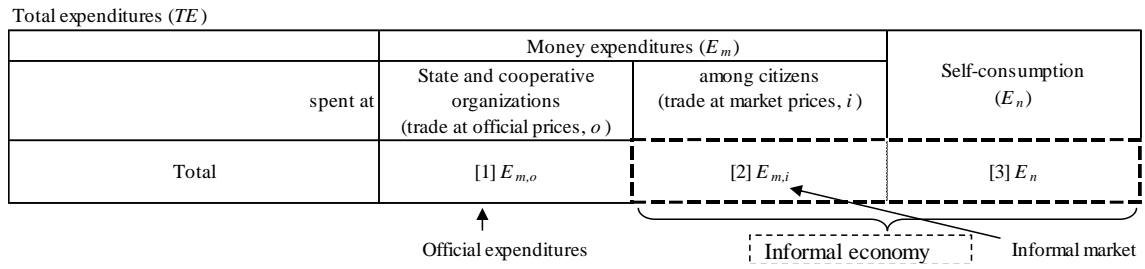
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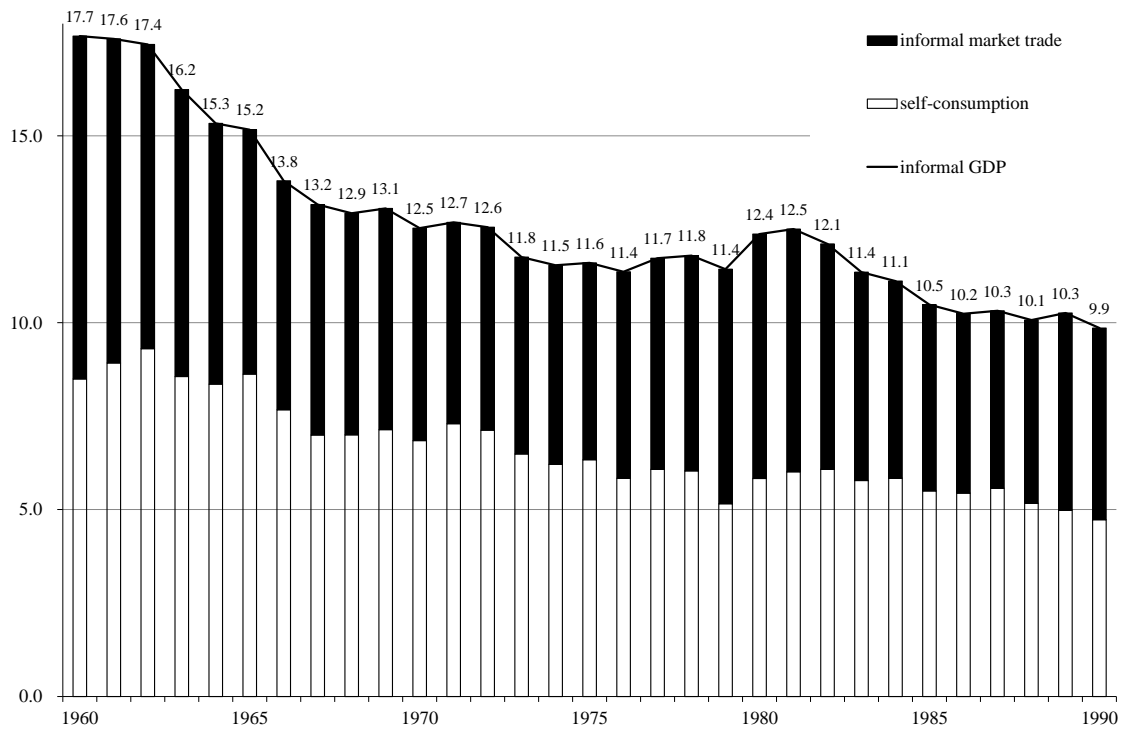
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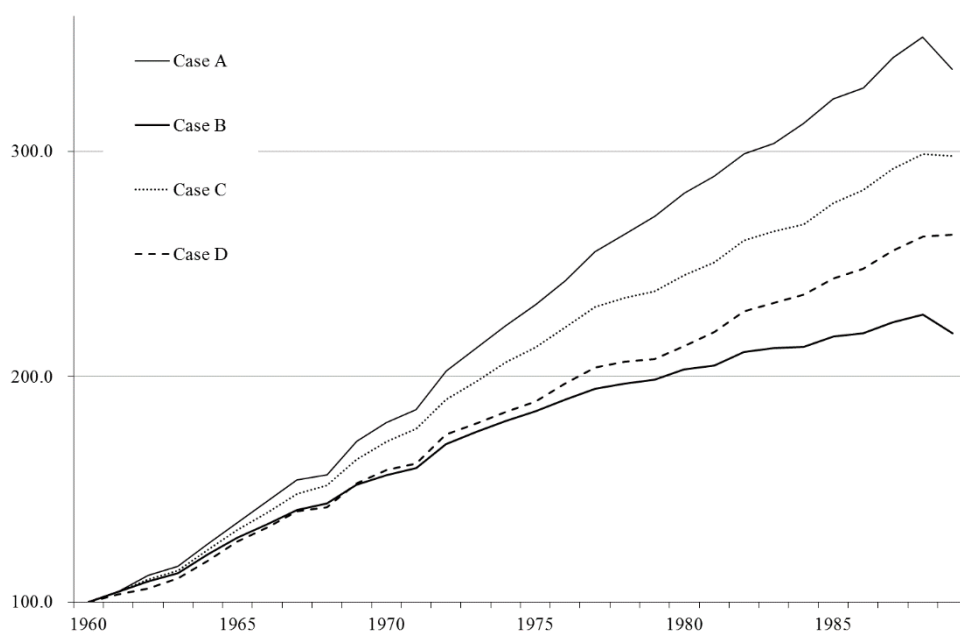
**Figure 1** Classification of household expenditure items

Source: Author.

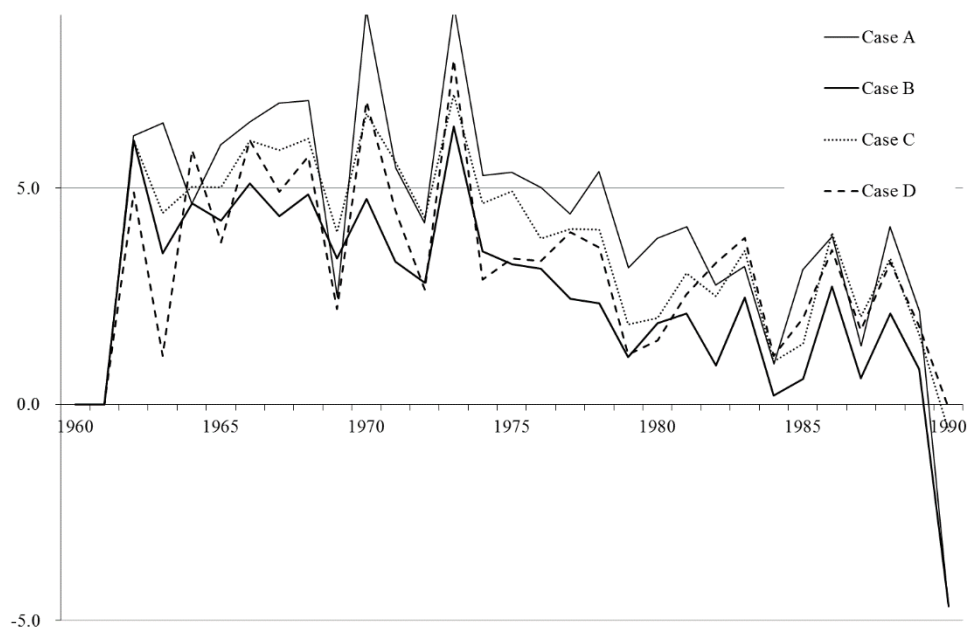


**Figure 2** Dynamics of informal GDP: its share in the integrated GDP (%)

Source: Compiled by the author based on Table S3.



**Figure 3** Russia's growth index of official and informal integrated GDP (1961 = 100)  
 Source: Compiled by the author based on Table S4, Panel B.



**Figure 4** Russia's growth rates of official and informal integrated GDP (%)  
 Source: Compiled by the author based on Table S5, Panel B.

**Table 1** Reliability of household budget surveys

	1	2	3	4	5
	Macro aggregates			Ratio of "total household population" to the population, (%)	
	Money expenditures (estimates based on <i>balance</i> data)	Household budget survey Total money expenditures	Official money expenditures		
	( $Y$ ) compared with official data, ratio	( $X_m$ ) compare with balance estimates, ratio	( $X_{m,o}$ ) compare with balance estimates, ratio		( $x_{m,o}/y$ )
			$\alpha$	$\beta$	$\alpha/\beta$
Average	0.999	0.979	0.837	0.874	0.957
Max	1.009	1.065	0.868	0.881	0.985
Min	0.993	0.904	0.802	0.862	0.920
Std.dev	0.004	0.039	0.018	0.007	0.019
Cov	0.004	0.040	0.021	0.008	0.020

Notes:

1) Estimates using data for 1960–1989.

2) Column [5] is calculated as the ratio of column [3] to column [4].

Source: Author's estimation based on Tables A3, A4, and A5 in the Appendix.

**Table 2** Russia's nominal GDP/GNP: estimates

	1960	1970	1976	1980	
<b>Step 2a. Russia's informal GDP (nominal rubels): author's estimates</b>					
1	Final consumption (original data)	91.4	168.2	221.4	263.9
2	Household informal consumption	24.4	32.1	38.8	51.6
3	Investment	21.8	54.0	82.5	101.1
4	Net exports	0.3	1.6	-1.4	0.5
5=1+2+3+4	GDP, total	137.9	255.9	341.3	417.1
	Informal GDP, share	17.7%	12.5%	11.4%	12.4%
<b>Step 2b. 1. Estimates based on GNP (CIA) distributed by nominal NMP</b>					
		<i>0.62</i>	<i>0.60</i>	<i>0.59</i>	<i>0.59</i>
1	Consumption (revised data)	74.6	126.2	166.1	203.2
	Informal household consumption	24.4	32.1	38.8	51.6
2	Investment	30.5	65.4	90.6	104.3
3	Other government expenditures	16.4	37.7	53.9	67.2
4=1+2+3	GNP	121.5	229.3	310.7	374.7
	Informal GDP, share	20.1%	14.0%	12.5%	13.8%
<b>Step 2b. 2. Estimates based on GNP (CIA) distributed by population</b>					
		<i>0.56</i>	<i>0.54</i>	<i>0.53</i>	<i>0.52</i>
1	Consumption (revised data)	74.6	126.2	166.1	203.2
	Informal household consumption	24.4	32.1	38.8	51.6
2	Investment	27.5	58.7	80.8	91.9
3	Other government expenditures	14.8	33.8	48.0	59.2
4=1+2+3	GNP	116.9	218.6	294.9	354.3
	Informal GDP, share	20.9%	14.7%	13.1%	14.6%
<b>Step 2b. 3. Estimates based on GNP (CIA) distributed by money expenditure</b>					
		<i>0.63</i>	<i>0.60</i>	<i>0.60</i>	<i>0.59</i>
1	Consumption (revised data)	74.6	126.2	166.1	203.2
	Informal household consumption	24.4	32.1	38.8	51.6
2	Investment	31.1	65.5	91.4	104.0
3	Other government expenditures	16.7	37.7	54.4	67.0
4=1+2+3	GNP	122.4	229.4	311.9	374.2
	Informal GDP, share	19.9%	14.0%	12.4%	13.8%

**Notes:**

- 1) Values in italics are Russia's share in the Soviet Union.
- 2) Step 2a is based on Table S3.
- 3) Step 2b is author's estimates using CIA (1983)'s GNP data for the USSR.
- 4) NMP data were provided by professor Kuboniwa. Data on population are from the *Statistical Yearbooks of the National Economy (Narodnoe khoziaistvo SSSR)* (various years). *Money expenditures* is author's estimates based on *balance* data (Shida, 2012).

Source: Table S3, CIA (1983, p. 18, Table 15), Shida (2012).

**Table 3** Russia's economic growth: period average (%)

	1961-1970	1971-1980	1981-1985	1986-1990	1961-1990
A Official deflator	6.2	4.7	2.9	1.5	4.3
B Chain volume indexes and updated industrial output index	4.8	2.7	1.4	0.5	2.7
C Chain volume indexes and official industrial output index	5.6	3.9	2.4	2.2	3.8
D Fixed weight volume indexes and official industrial output index	4.8	3.1	2.6	2.1	3.4

Source: Compiled by the author based on Table S5.

## **Statistical Tables**





Table S1 (cont'd)

		(per capita, rubles)																				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
		[1], [2], [3], [6]	[4], [5]	[7]	[8]	[9], [10]	[11], [12], [13]	[14], [15]	[16]	[17], [18]	[19], [20], [21], [22], [23], [24]	[25], [26], [27], [28]	[29], [30], [31], [32]	[33]	[34], [35]	[36], [37]	[38], [1], [19], [25], [37]	[39], [40], [41], [42]	[39]	[43], [38], [39], [40], [41], [42]	[44]	[45], [43], [44]
	Expenditures item forms or category	Food	Non-food	Livestock	House	Agricultural and fishery implements	Facility fee	Entertainment	Services	Transport	House rent and public utility charge	Other services	Taxes	Insurance fee	State bond and lottery	Other	Total	Savings	Deposits	Total	Cash balance at the end of the year	
1960	C among citizens	39.6	17.6	7.5	0.8	3.8	0.0	0.0	0.1	1.3	0.6	5.9	0.0	0.0	0.0	28.5	105.6	27.9	-	133.6	-	
1961	C among citizens	44.3	13.8	6.1	1.2	3.6	0.0	0.0	0.0	1.1	0.5	5.0	0.0	0.0	0.0	30.0	105.6	26.2	-	131.8	-	
1962	C among citizens	43.5	12.2	6.2	2.1	3.5	0.0	0.0	0.0	1.2	0.5	7.7	0.0	0.0	0.0	29.5	106.3	31.2	-	137.5	-	
1963	C among citizens	44.1	11.0	5.4	1.8	3.1	0.0	0.0	0.0	1.1	0.5	7.2	0.0	0.0	0.0	27.5	101.9	33.0	-	134.9	-	
1964	C among citizens	44.7	9.9	4.7	1.6	2.8	0.0	0.0	0.0	1.1	0.6	6.8	0.0	0.0	0.0	25.6	97.8	34.8	-	132.6	-	
1965	C among citizens	36.7	9.7	6.1	2.1	2.6	0.0	0.0	0.0	0.7	0.7	7.3	0.0	0.0	0.0	27.2	93.6	35.4	-	129.0	-	
1966	C among citizens	35.7	10.9	5.6	2.1	2.8	0.0	0.0	0.0	1.1	0.5	7.6	0.0	0.0	0.0	28.1	94.5	34.9	-	129.3	-	
1967	C among citizens	37.1	12.8	5.6	1.9	2.9	0.0	0.0	0.0	1.2	0.7	7.8	2.9	0.0	0.0	32.9	102.8	34.9	-	137.8	-	
1968	C among citizens	38.8	15.7	5.5	1.9	1.4	0.0	0.0	0.0	1.2	0.8	7.7	0.0	0.0	0.0	32.6	105.6	33.6	-	139.3	-	
1969	C among citizens	38.5	15.8	4.7	1.5	1.2	0.0	0.1	0.0	1.1	0.7	7.2	0.0	0.0	0.0	35.9	107.0	34.6	-	141.5	-	
1970	C among citizens	39.6	16.4	5.3	2.5	1.4	0.0	0.2	0.0	1.0	1.0	7.1	0.0	0.0	0.0	37.1	111.5	33.3	-	144.8	-	
1971	C among citizens	35.2	18.1	4.9	2.4	1.4	0.0	0.0	0.0	0.9	1.2	6.8	0.0	0.0	0.0	39.5	110.4	33.0	-	143.4	-	
1972	C among citizens	35.6	19.2	4.6	1.9	1.3	0.0	0.0	0.0	1.0	1.0	7.3	0.0	0.0	0.0	42.0	113.9	34.3	-	148.2	-	
1973	C among citizens	36.1	19.1	4.5	1.8	1.6	0.0	0.0	0.0	1.0	1.0	7.1	0.0	0.0	0.0	45.9	118.1	34.9	-	153.0	-	
1974	C among citizens	35.6	19.6	4.6	3.0	1.2	0.0	0.2	0.0	0.9	1.3	7.4	0.0	0.0	0.0	49.7	123.5	37.7	-	161.2	-	
1975	C among citizens	38.2	20.6	3.9	2.1	1.2	0.0	0.0	0.0	0.9	1.3	5.9	0.0	0.0	0.0	53.7	127.7	36.2	-	163.9	-	
1976	C among citizens	45.5	20.9	4.0	2.0	1.2	0.0	0.2	0.0	0.9	1.4	7.1	0.0	0.0	0.0	56.4	139.6	34.7	-	174.3	-	
1977	C among citizens	49.9	20.3	4.7	2.1	1.3	0.0	0.2	0.0	0.9	1.7	7.3	0.0	0.0	0.0	60.6	148.9	35.6	-	184.5	-	
1978	C among citizens	54.5	22.9	4.7	2.3	1.5	0.0	0.2	0.0	0.9	1.5	7.0	0.0	0.0	0.0	64.3	159.9	35.9	-	195.8	-	
1979	C among citizens	60.5	28.2	4.9	1.9	2.3	0.0	0.3	0.0	1.2	1.3	8.0	0.0	0.0	0.0	71.1	179.6	34.8	-	214.3	-	
1980	C among citizens	68.1	32.5	5.0	2.2	2.1	0.0	0.2	0.0	1.1	1.3	8.1	0.0	0.0	0.0	76.0	196.5	36.9	-	233.4	-	
1981	C among citizens	73.2	33.7	4.6	2.7	2.3	0.0	0.2	0.0	1.1	1.2	8.9	2.3	0.0	0.0	74.9	202.9	40.5	-	243.3	-	
1982	C among citizens	70.3	31.0	4.9	3.1	2.2	0.0	0.2	0.0	1.1	1.2	8.6	0.0	0.0	0.0	79.2	201.9	43.6	-	245.5	-	
1983	C among citizens	64.5	26.0	4.9	2.6	2.2	0.0	0.2	0.0	1.1	1.2	8.9	0.0	0.0	0.0	79.4	190.9	42.3	-	233.2	-	
1984	C among citizens	59.6	23.5	3.9	3.0	2.2	0.0	0.2	0.0	1.2	1.3	8.5	0.0	0.0	0.0	81.6	184.9	39.0	-	223.9	-	
1985	C among citizens	57.6	21.9	4.6	2.7	2.0	0.0	0.1	0.0	1.1	1.2	8.4	2.0	0.0	0.0	80.7	180.3	36.6	-	216.9	-	
1986	C among citizens	54.7	20.1	4.6	2.3	1.6	0.0	0.1	0.0	0.8	1.1	8.1	0.0	0.0	0.0	81.5	174.8	36.0	-	210.8	-	
1987	C among citizens	53.3	21.9	3.1	2.7	1.6	0.0	0.1	0.0	0.8	1.0	7.7	0.0	0.0	0.0	85.0	177.1	35.0	-	212.1	-	
1988	C among citizens	55.8	30.4	3.2	3.2	1.7	0.0	0.2	0.0	0.7	1.2	8.4	0.0	0.0	0.0	86.7	191.4	46.3	-	237.7	-	
1989	C among citizens	63.3	44.2	3.5	3.4	1.7	0.0	0.2	0.0	0.9	1.1	8.7	0.0	0.0	0.0	94.5	221.4	48.1	-	269.5	-	
1960	D Expenditures in kind	62.3	12.0	-	-	-	-	-	-	1.0	-	-	-	-	-	-	-	-	-	75.3	-	
1961	D Expenditures in kind	61.5	8.4	-	-	-	-	-	-	0.9	-	-	-	-	-	-	-	-	-	70.8	-	
1962	D Expenditures in kind	65.0	6.4	-	-	-	-	-	-	0.8	-	-	-	-	-	-	-	-	-	72.2	-	
1963	D Expenditures in kind	64.9	5.2	-	-	-	-	-	-	0.7	-	-	-	-	-	-	-	-	-	70.8	-	
1964	D Expenditures in kind	63.1	4.1	-	-	-	-	-	-	0.7	-	-	-	-	-	-	-	-	-	67.9	-	
1965	D Expenditures in kind	81.4	3.1	-	-	-	-	-	-	0.7	-	-	-	-	-	-	-	-	-	85.2	-	
1966	D Expenditures in kind	82.8	2.7	-	-	-	-	-	-	0.6	-	-	-	-	-	-	-	-	-	86.1	-	
1967	D Expenditures in kind	82.1	2.3	-	-	-	-	-	-	0.5	-	-	-	-	-	-	-	-	-	84.9	-	
1968	D Expenditures in kind	85.7	2.7	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	88.4	-	
1969	D Expenditures in kind	79.2	3.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	82.1	-	
1970	D Expenditures in kind	84.3	2.7	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	87.0	-	
1971	D Expenditures in kind	89.9	2.7	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	92.6	-	
1972	D Expenditures in kind	83.8	2.5	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	86.2	-	
1973	D Expenditures in kind	81.4	2.5	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	83.9	-	
1974	D Expenditures in kind	78.3	2.2	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	80.5	-	
1975	D Expenditures in kind	80.2	2.1	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	82.3	-	
1976	D Expenditures in kind	70.7	2.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	72.7	-	
1977	D Expenditures in kind	77.0	2.1	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	79.1	-	
1978	D Expenditures in kind	80.6	2.1	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	82.7	-	
1979	D Expenditures in kind	70.4	2.3	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	72.8	-	
1980	D Expenditures in kind	74.0	2.7	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	76.7	-	
1981	D Expenditures in kind	80.6	2.2	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	82.8	-	
1982	D Expenditures in kind	83.3	2.4	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	85.7	-	
1983	D Expenditures in kind	84.5	2.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	86.6	-	
1984	D Expenditures in kind	86.8	2.6	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	89.4	-	
1985	D Expenditures in kind	81.1	1.9	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	83.0	-	
1986	D Expenditures in kind	77.4	2.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	79.4	-	
1987	D Expenditures in kind	81.2	2.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	83.2	-	
1988	D Expenditures in kind	78.0	1.3	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	79.3	-	
1989	D Expenditures in kind	84.9	1.1	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	86.0	-	

**Table S1 (cont'd)**

(per capita, rubles)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
		[1], [2], [3], [6]	[4], [5]	[7]	[8]	[9], [10]	[11], [12], [13]	[14], [15]	[16]	[17], [18]	[19], [20], [21], [22], [23], [24]	[25], [26], [27], [28]	[29], [30], [31], [32]	[33]	[34], [35]	[36], [37]	[38], [11], [19], [25], [37]	[39], [40], [41], [42]	[39]	[43], [38], [39], [40], [41], [42]	[44]	[45], [43], [44]
	Expenditures (total form or category)	Food	Non-food	Livestock	House	Agricultural and fishery implements	Facility fee	Entertainment	Services	Transport	House rent and public utility charge	Other services	Taxes	Insurance fee	State bond and lottery	Other	Total	Savings	Deposits	Total	Cash balance at the end of the year	
1960	F Total expenditures	308.1	186.1	7.9	1.5	5.6			90.9				37.0	1.0	0.2	31.3	669.6	53.1	18.0	722.7	5.3	728.0
1961	F Total expenditures	319.8	179.7	6.5	2.0	5.1			93.8				37.1	1.3	0.1	32.8	678.2	50.7	16.6	728.9	6.8	735.7
1962	F Total expenditures	338.0	181.2	6.7	3.6	4.8			98.8				39.1	1.8	0.2	30.8	704.9	61.2	19.4	766.1	8.1	774.2
1963	F Total expenditures	348.5	182.1	5.9	2.9	4.2			100.0				40.7	2.1	0.2	28.9	715.4	66.2	20.8	781.7	8.1	789.8
1964	F Total expenditures	357.2	182.7	5.5	2.6	3.7			101.4				42.3	2.4	0.2	27.1	725.1	71.6	22.3	796.7	8.1	804.8
1965	F Total expenditures	383.2	194.4	7.3	3.6	4.1			107.2				45.5	2.9	0.2	28.7	777.2	79.1	26.1	856.3	8.8	865.1
1966	F Total expenditures	403.1	207.3	6.8	3.2	4.7			111.2				49.2	3.4	0.2	29.9	839.0	83.1	29.9	902.1	10.3	912.4
1967	F Total expenditures	424.5	226.6	6.8	2.7	4.9			121.8				54.5	4.0	0.2	34.9	881.0	87.8	35.0	968.8	11.6	980.4
1968	F Total expenditures	451.1	256.2	6.6	2.7	2.6			124.8				60.8	4.7	0.3	34.8	944.5	94.6	42.6	1039.1	26.2	1065.3
1969	F Total expenditures	452.4	268.8	5.7	2.1	2.3			137.1				65.6	8.1	0.3	37.6	980.0	108.8	53.5	1088.8	27.5	1116.3
1970	F Total expenditures	478.4	286.8	6.7	3.2	2.7			142.7				71.9	10.6	0.4	38.8	1042.1	116.4	62.3	1158.6	29.2	1187.7
1971	F Total expenditures	493.4	304.4	6.4	3.9	2.6			144.0				76.3	13.7	0.3	41.2	1086.3	124.6	68.5	1210.8	30.2	1241.0
1972	F Total expenditures	504.8	319.8	6.0	2.7	2.5			151.4				82.3	16.9	0.4	43.9	1130.7	138.0	78.0	1268.7	30.6	1299.3
1973	F Total expenditures	513.4	334.7	6.0	2.8	2.8			161.2				87.4	20.3	0.4	48.0	1177.0	145.4	83.0	1322.3	33.4	1355.8
1974	F Total expenditures	526.1	350.2	6.2	4.1	2.4			177.2				94.2	23.5	0.5	51.7	1236.1	165.8	99.2	1401.9	34.3	1436.3
1975	F Total expenditures	552.2	376.1	5.7	3.2	2.5			180.7				100.6	26.7	0.5	54.0	1302.3	178.4	112.5	1480.7	37.0	1517.7
1976	F Total expenditures	559.6	389.5	5.5	2.8	2.5			195.0				106.0	29.2	0.6	58.6	1369.4	181.2	117.1	1530.6	40.6	1571.2
1977	F Total expenditures	577.2	410.1	6.7	3.3	2.7			207.0				110.7	32.0	0.5	62.8	1413.1	191.4	125.7	1604.5	43.5	1648.0
1978	F Total expenditures	596.5	426.8	6.8	2.9	3.3			215.9				116.2	34.7	0.5	66.5	1470.1	204.4	138.2	1674.5	46.4	1720.9
1979	F Total expenditures	619.9	436.9	6.2	3.2	5.0			227.9				120.7	37.0	1.4	73.0	1531.2	214.1	150.6	1745.3	50.4	1795.6
1980	F Total expenditures	645.4	466.7	6.6	3.7	4.4			238.8				128.0	40.0	1.3	77.6	1612.5	221.1	155.3	1833.6	50.4	1884.0
1981	F Total expenditures	666.6	493.0	6.3	3.4	5.2			243.0				131.9	42.2	1.2	76.4	1669.3	233.7	164.1	1903.0	50.9	1953.9
1982	F Total expenditures	678.3	508.7	6.7	4.1	5.7			249.6				136.4	44.5	1.4	80.6	1716.1	243.6	168.7	1959.7	53.0	2012.7
1983	F Total expenditures	682.0	516.7	6.6	5.9	6.0			255.7				140.2	46.8	1.3	81.2	1742.5	260.8	182.8	2003.3	57.2	2060.5
1984	F Total expenditures	685.9	524.0	5.7	6.0	6.4			261.3				145.1	48.2	1.3	84.2	1768.0	276.2	194.4	2044.2	63.0	2107.3
1985	F Total expenditures	674.7	543.1	6.5	6.6	6.4			262.2				148.6	48.2	1.3	83.9	1781.5	289.9	207.3	2071.4	63.4	2134.9
1986	F Total expenditures	665.2	553.2	6.4	6.6	6.6			266.6				153.5	49.5	1.4	88.8	1794.6	311.9	228.4	2106.5	67.7	2174.1
1987	F Total expenditures	679.1	560.1	5.2	8.0	7.4			273.7				156.0	50.3	1.4	88.4	1826.0	332.4	251.5	2162.1	71.6	2233.7
1988	F Total expenditures	688.1	606.6	6.0	7.0	8.2			300.3				175.2	52.8	1.7	94.8	1940.6	380.2	285.0	2320.8	66.2	2387.0
1989	F Total expenditures	748.3	690.7	6.8	9.2	9.3			319.0				196.4	55.6	2.0	101.7	2138.8	430.8	334.7	2569.6	78.2	2647.8

**Notes:**

- 1) Natural expenditures, or expenditures in kind (D), are evaluated at official retail prices. Therefore, *Total expenditures* (F) is a sum of money expenditures evaluated at market prices (A) and expenditures in kind (D).
- 2) The original *total* expenditures series comprises expenditures in kind (D) and money expenditures (E). In this table, money expenditures (A) from the *money* expenditures series are integrated into the *total* expenditures series, so that (A) and (E) are consistent. Hence, money expenditures (E) from total expenditures are omitted from the table.
- 3) [*item number*] indicates the number of the expenditure items shown in the original money expenditure tables. We restructured the total expenditure table to the maximum degree so that money and total expenditures tables are comparable.
- 4) A:  $E_{m,o} + E_{m,i}$ ; B:  $E_{m,o}$ ; C:  $E_{m,i}$ ; D:  $E_n$ ; F:  $E = E_{m,o} + E_{m,i} + E_n$ .

Source: Author's estimation.





**Table S2 (cont'd)**

(macro aggregates, million rubles)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
		[1], [2], [3], [6]	[4], [5]	[7]	[8]	[9], [10]	[11], [12], [13]	[14], [15]	[16]	[17], [18]	[19], [20], [21], [22], [25], [26], [27], [28]	[29], [30], [31], [32]	[33]	[34], [35]	[36], [37]	[38], [11], [19], [25], [37]	[39], [40], [41], [42]	[39]	[43], [38], [39], [40], [41], [42]	[44]	[45], [43], [44]	
Expenditures item/ form or category		Food	Non-food	Livestock	House	Agricultural and fishery implements	Facility fee	Entertainment	Services	Transport	House rent and public utility charge	Other services	Taxes	Insurance fee	State bond and lottery	Other	Total	Savings	Deposits	Total	Cash balance at the end of the year	
1960	F Total expenditures	36,909.8	22,293.4	950.7	177.0	673.1			10,890.1				4,436.1	123.3	22.2	3,747.4	80,223.1	6,357.6	2,158.6	86,580.7	632.0	87,212.7
1961	F Total expenditures	38,794.8	21,803.7	792.8	243.9	620.8			11,373.9				4,503.1	152.1	13.0	3,982.4	82,280.4	6,151.6	2,016.2	88,432.0	826.8	89,258.9
1962	F Total expenditures	41,497.9	22,241.4	820.2	442.5	595.2			12,126.5				4,801.2	216.9	20.8	3,776.9	86,539.5	7,513.3	2,377.6	94,052.8	993.6	95,046.5
1963	F Total expenditures	43,238.3	22,589.3	737.2	356.3	525.0			12,402.9				5,051.6	255.8	23.3	3,583.8	88,763.4	8,218.7	2,585.9	96,982.1	1,009.6	97,991.6
1964	F Total expenditures	44,735.6	22,881.4	690.1	323.1	462.4			12,697.3				5,294.8	300.3	26.0	3,392.8	90,803.9	8,969.0	2,793.5	99,772.8	1,020.2	100,793.0
1965	F Total expenditures	48,465.4	24,592.8	929.6	460.0	512.3			13,559.1				5,753.5	364.6	29.6	3,633.9	98,300.7	10,003.8	3,300.7	108,304.6	1,112.4	109,416.9
1966	F Total expenditures	51,347.7	26,398.2	861.8	499.8	600.8			14,165.1				6,268.3	430.7	30.6	3,802.2	104,315.2	10,588.8	3,862.2	114,904.0	1,310.7	116,214.7
1967	F Total expenditures	54,222.9	28,940.8	870.8	346.1	627.0			15,563.2				6,957.8	512.6	31.5	4,456.7	112,529.5	11,220.7	4,473.4	123,750.2	1,481.7	125,231.9
1968	F Total expenditures	57,840.4	32,853.1	841.7	347.6	327.0			16,095.7				7,794.2	603.1	36.4	4,456.5	121,105.7	12,126.7	5,467.5	133,232.4	3,361.7	136,594.1
1969	F Total expenditures	58,493.8	34,761.2	738.9	268.5	292.9			17,532.9				8,475.9	1,052.1	43.6	4,860.4	126,720.1	14,062.4	6,917.9	140,782.6	3,553.7	144,336.2
1970	F Total expenditures	62,376.0	37,394.2	873.4	416.7	350.3			18,600.5				9,373.6	1,386.1	51.0	5,600.7	135,882.5	15,179.4	8,124.8	151,061.9	3,806.0	154,867.9
1971	F Total expenditures	64,668.0	39,893.2	835.8	516.6	343.1			18,877.5				9,996.8	1,800.9	40.0	5,402.5	142,374.6	16,326.1	8,982.3	158,700.8	3,952.4	162,653.1
1972	F Total expenditures	66,537.5	42,159.8	787.7	353.6	333.7			19,950.0				10,852.2	2,223.0	49.3	5,793.1	149,039.8	18,188.3	10,286.2	167,228.1	4,037.0	171,265.1
1973	F Total expenditures	68,050.9	44,365.5	795.1	376.7	368.5			21,363.7				11,581.2	2,687.2	58.7	6,363.0	156,010.6	19,268.0	11,008.1	175,278.6	4,429.2	179,707.8
1974	F Total expenditures	70,143.1	46,693.2	823.2	549.4	321.8			23,631.5				12,557.6	3,133.0	63.0	6,894.5	164,810.2	22,105.5	13,226.1	186,915.7	4,576.9	191,492.6
1975	F Total expenditures	74,100.6	50,475.4	760.8	423.7	330.6			24,233.6				13,506.4	3,585.9	72.9	7,250.5	174,760.3	23,943.6	15,102.9	198,703.9	4,964.7	203,668.6
1976	F Total expenditures	75,617.8	52,630.6	737.4	378.0	343.2			26,433.4				14,229.3	3,362.3	80.5	7,918.9	182,311.4	24,486.5	15,817.4	206,817.9	5,483.9	212,301.8
1977	F Total expenditures	78,544.6	55,807.4	909.9	452.9	323.3			28,169.4				15,057.3	4,338.0	67.7	8,546.2	192,285.8	26,043.2	17,109.7	218,329.0	5,915.9	224,244.8
1978	F Total expenditures	81,746.9	58,486.4	937.4	401.5	457.0			29,593.7				15,922.6	4,750.8	69.2	9,113.8	201,479.4	28,011.9	18,945.4	229,491.3	6,356.7	235,848.1
1979	F Total expenditures	85,526.3	60,273.8	860.9	435.0	685.2			31,437.7				16,653.1	5,101.7	197.5	10,064.9	211,236.2	29,537.1	20,774.9	240,773.3	6,946.3	247,719.6
1980	F Total expenditures	89,564.2	64,761.4	909.9	511.5	612.8			33,140.4				17,760.0	5,547.2	176.4	10,766.6	223,756.4	30,677.8	21,550.7	254,434.2	6,995.7	261,429.9
1981	F Total expenditures	93,045.2	68,822.2	884.5	469.7	724.6			33,925.2				18,416.6	5,896.7	170.1	10,659.8	233,016.7	32,625.1	22,909.9	265,641.7	7,108.5	272,750.2
1982	F Total expenditures	95,311.8	71,483.6	946.6	581.6	799.6			35,068.5				19,168.0	6,254.3	200.2	11,329.5	241,143.7	34,225.7	23,704.4	275,369.3	7,440.4	282,809.8
1983	F Total expenditures	96,551.5	73,149.3	939.5	833.4	852.4			36,196.9				19,844.4	6,624.6	187.8	11,492.3	246,672.3	36,923.5	25,875.2	283,595.8	8,102.2	291,698.0
1984	F Total expenditures	97,809.5	74,721.6	814.6	853.7	909.4			37,262.1				20,693.1	6,867.9	186.0	12,010.0	252,128.1	39,384.4	27,720.4	291,512.5	8,889.0	300,401.5
1985	F Total expenditures	96,872.6	77,978.1	933.8	947.9	916.3			37,653.1				21,331.8	6,924.0	190.6	12,047.6	255,797.9	41,625.7	29,760.6	297,423.6	9,109.3	306,532.9
1986	F Total expenditures	96,257.0	80,044.3	930.7	925.5	923.3			38,581.8				22,216.7	7,157.4	198.3	12,489.7	259,673.8	43,124.0	33,046.7	304,797.8	9,789.8	314,587.6
1987	F Total expenditures	99,058.9	81,684.0	762.5	1,160.5	1,083.0			39,907.7				23,754.4	7,337.0	200.6	12,894.4	266,823.0	48,476.6	36,681.6	315,299.7	10,442.5	325,742.1
1988	F Total expenditures	101,059.4	89,092.9	877.2	1,030.1	1,208.1			44,101.1				25,728.5	7,254.1	255.7	13,929.8	285,036.9	55,838.5	41,566.6	340,875.4	9,728.2	350,603.6
1989	F Total expenditures	110,533.1	102,024.2	1,005.9	1,365.1	1,366.5			47,117.3				29,008.2	8,206.1	300.2	15,024.6	315,951.2	63,632.7	49,438.4	379,584.0	11,554.3	391,138.3

Notes:

1) Household expenditures per capita are converted into macro aggregates using population data.

Source: Author's estimation based on Table S1.

**Table S3** Russia's informal GDP (expenditure side) at current prices, billion rubles

	1	2	3	4	5	6	7	8	9
	GDP (expenditure) at market prices		Household final consumption		Revised GDP				
		Expenditures on final consumption	3=4+5+6	Official money expenditures	Infomal money expenditures	Infomal self-consumption, evaluated at market prices		Informal economy, share (%)	Informal market, share (%)
1960	113.6	91.4	74.6	50.2	12.7	11.7	138.0	17.7	9.2
1961	121.7	96.6	78.2	52.2	12.8	13.2	147.7	17.6	8.7
1962	132.4	104.6	83.8	55.8	13.0	14.9	160.4	17.4	8.1
1963	138.0	111.7	85.2	58.4	12.6	14.1	164.7	16.2	7.7
1964	148.6	115.0	87.9	61.0	12.2	14.7	175.5	15.3	7.0
1965	153.6	121.6	93.4	65.9	11.8	15.6	181.1	15.2	6.5
1966	169.4	129.5	97.9	70.8	12.0	15.1	196.5	13.8	6.1
1967	185.0	139.6	104.6	76.6	13.1	14.9	213.0	13.2	6.2
1968	199.0	149.6	112.9	83.3	13.5	16.0	228.5	12.9	5.9
1969	203.2	155.7	118.4	87.8	13.8	16.7	233.7	13.1	5.9
1970	223.8	168.2	126.2	94.1	14.5	17.5	255.9	12.5	5.7
1971	234.4	176.4	132.6	98.5	14.5	19.6	268.5	12.7	5.4
1972	241.7	185.0	138.4	103.7	15.0	19.7	276.4	12.6	5.4
1973	262.1	192.6	143.5	108.5	15.7	19.3	297.0	11.8	5.3
1974	273.5	201.5	150.6	115.0	16.5	19.2	309.2	11.5	5.3
1975	287.7	213.9	159.9	122.2	17.1	20.6	325.5	11.6	5.3
1976	302.5	221.4	166.1	127.4	18.9	19.9	341.3	11.4	5.5
1977	316.5	230.3	175.3	133.2	20.3	21.8	358.5	11.7	5.6
1978	335.5	241.3	183.3	138.4	21.9	23.0	380.4	11.8	5.8
1979	349.5	251.8	189.5	144.4	24.8	20.3	394.6	11.4	6.3
1980	365.4	263.9	203.2	151.6	27.3	24.3	417.0	12.4	6.5
1981	381.5	276.8	212.5	158.0	28.3	26.2	436.0	12.5	6.5
1982	413.3	287.9	220.7	163.8	28.4	28.6	470.2	12.1	6.0
1983	429.7	296.6	224.3	169.2	27.0	28.0	484.7	11.4	5.6
1984	443.8	305.9	228.8	173.3	26.4	29.1	499.3	11.1	5.3
1985	465.3	315.0	232.0	177.5	25.9	28.6	519.8	10.5	5.0
1986	473.0	322.2	234.9	180.9	25.3	28.7	527.0	10.2	4.8
1987	487.4	332.7	241.8	185.7	25.8	30.3	543.5	10.3	4.8
1988	514.9	350.8	255.3	197.6	28.1	29.6	572.6	10.1	4.9
1989	556.8	374.1	281.6	218.0	32.7	30.9	620.4	10.3	5.3
1990	599.1	413.3	291.9	226.4	34.1	31.4	664.6	9.9	5.1

Source: Author's estimation.

**Table S4** Alternative estimates of Russia's real integrated GDP growth: Index of Russia (1961=100)

Panel A: The same deflator used for official and informal GDP

	1	2	3	4
	A	B	C	D
	Growth rates based on official deflators	Growth rates based on chain volume indexes and updated industrial output index	Growth rates based on chain volume indexes and official industrial output index	Growth rates based on fixed weight volume indexes and official industrial output index
1960	-	-	-	-
1961	100.0	100.0	100.0	100.0
1962	106.2	106.1	106.1	104.9
1963	113.1	109.8	110.8	106.1
1964	118.4	114.9	116.4	112.3
1965	125.5	119.8	122.2	116.5
1966	133.7	125.9	129.7	123.7
1967	143.0	131.4	137.3	129.7
1968	153.0	137.7	145.8	137.2
1969	156.8	142.4	151.6	140.2
1970	171.1	149.2	161.7	150.0
1971	180.5	154.1	170.8	156.7
1972	188.1	158.4	178.2	160.9
1973	205.4	168.6	190.9	173.7
1974	216.2	174.6	199.8	178.7
1975	227.8	180.2	209.7	184.7
1976	239.3	185.9	217.7	190.9
1977	249.8	190.4	226.5	198.5
1978	263.2	194.9	235.7	205.6
1979	271.6	197.0	240.0	208.0
1980	282.0	200.7	244.8	211.1
1981	293.6	204.9	252.2	216.5
1982	301.7	206.8	258.6	223.6
1983	311.3	211.9	267.8	232.2
1984	314.2	212.3	270.4	234.8
1985	324.0	213.6	274.2	239.5
1986	336.6	219.4	285.1	248.0
1987	341.2	220.7	290.9	252.3
1988	355.2	225.3	300.7	260.6
1989	362.8	227.1	305.6	265.3
1990	346.0	216.5	303.7	265.0

Notes:

1) Both the official and informal nominal GDP are deflated by one of four deflators (A, B, C, or D).

Source: Author's estimation based on Kuboniwa and Ponomarenko (2000) and Table S3.



**Table S4** (cont'd)

## Panel B: Market prices index

	1	2	3	4
	A	B	C	D
	Growth rates based on official deflators	Growth rates based on chain volume indexes and updated industrial output index	Growth rates based on chain volume indexes and official industrial output index	Growth rates based on fixed weight volume indexes and official industrial output index
1960	-	-	-	-
1961	100.0	100.0	100.0	100.0
1962	104.6	104.5	104.5	103.5
1963	111.8	109.0	109.9	105.9
1964	115.8	112.9	114.1	110.7
1965	125.9	121.0	123.1	118.3
1966	135.4	128.7	132.0	126.8
1967	144.7	134.6	139.8	133.2
1968	154.3	140.9	148.0	140.4
1969	156.5	143.9	151.9	141.9
1970	171.3	152.0	163.1	152.7
1971	179.7	156.4	171.1	158.7
1972	185.5	159.4	176.8	161.6
1973	202.5	169.9	189.7	174.4
1974	212.5	175.4	197.9	179.1
1975	222.6	180.2	206.4	184.2
1976	232.1	184.6	212.9	189.0
1977	242.7	189.7	221.9	196.9
1978	255.5	194.6	230.9	204.2
1979	263.1	197.0	235.1	206.7
1980	271.1	198.6	237.9	207.9
1981	281.4	203.2	245.0	213.4
1982	288.8	204.9	250.7	219.7
1983	298.9	211.0	260.4	228.9
1984	303.5	212.6	264.4	232.6
1985	312.3	213.3	267.7	236.6
1986	323.4	217.9	277.1	243.7
1987	328.3	219.4	282.8	248.0
1988	341.5	224.1	292.3	256.0
1989	350.7	227.5	298.7	262.2
1990	336.3	219.1	298.0	263.1

Notes:

- 1) Official GDP is deflated by deflators A–D and informal GDP is deflated by the price index of collective farmers' markets. Thus calculated official and informal GDP are summed to obtain real integrated GDP.

Source: Author's estimation based on Kuboniwa and Ponomarenko (2000) and Table S3.

**Table S5** Alternative estimates of the real official and informal GDP growth rates in Russia

Panel A: The same deflator used for official and informal GDP

	1	2	3	4
	A	B	C	D
	Growth rates based on official deflators	Growth rates based on chain volume indexes and updated industrial output index	Growth rates based on chain volume indexes and official industrial output index	Growth rates based on fixed weight volume indexes and official industrial output index
1960	-	-	-	-
1961	-	-	-	-
1962	6.2	6.1	6.1	4.9
1963	6.5	3.5	4.4	1.1
1964	4.6	4.6	5.0	5.9
1965	6.0	4.2	5.0	3.8
1966	6.5	5.1	6.1	6.1
1967	7.0	4.3	5.9	4.9
1968	7.0	4.9	6.1	5.7
1969	2.5	3.4	4.0	2.2
1970	9.1	4.8	6.7	7.0
1971	5.5	3.3	5.6	4.5
1972	4.2	2.8	4.3	2.7
1973	9.2	6.4	7.2	8.0
1974	5.3	3.5	4.6	2.9
1975	5.4	3.2	4.9	3.4
1976	5.0	3.1	3.8	3.3
1977	4.4	2.4	4.1	4.0
1978	5.4	2.3	4.0	3.6
1979	3.2	1.1	1.9	1.2
1980	3.8	1.9	2.0	1.5
1981	4.1	2.1	3.0	2.5
1982	2.8	0.9	2.5	3.3
1983	3.2	2.5	3.6	3.9
1984	0.9	0.2	1.0	1.1
1985	3.1	0.6	1.4	2.0
1986	3.9	2.7	4.0	3.6
1987	1.4	0.6	2.0	1.7
1988	4.1	2.1	3.4	3.3
1989	2.2	0.8	1.6	1.8
1990	-4.6	-4.7	-0.6	-0.1

Source: Author's estimation based on Table S4, Panel A.

**Table S5** (cont'd)

## Panel B: Market prices index

	1	2	3	4
	A	B	C	D
	Growth rates based on official deflators	Growth rates based on chain volume indexes and updated industrial output index	Growth rates based on chain volume indexes and official industrial output index	Growth rates based on fixed weight volume indexes and official industrial output index
1960	-	-	-	-
1961	-	-	-	-
1962	4.6	4.5	4.5	3.5
1963	6.8	4.3	5.1	2.3
1964	3.6	3.5	3.9	4.5
1965	8.7	7.2	7.9	6.8
1966	7.6	6.3	7.2	7.2
1967	6.9	4.6	5.9	5.1
1968	6.6	4.7	5.8	5.4
1969	1.4	2.1	2.6	1.1
1970	9.5	5.6	7.4	7.6
1971	4.9	2.9	5.0	3.9
1972	3.2	2.0	3.3	1.8
1973	9.2	6.6	7.3	7.9
1974	4.9	3.2	4.3	2.7
1975	4.8	2.7	4.3	2.9
1976	4.2	2.4	3.1	2.6
1977	4.6	2.8	4.3	4.2
1978	5.3	2.6	4.1	3.7
1979	3.0	1.2	1.8	1.2
1980	3.0	0.8	1.2	0.5
1981	3.8	2.3	3.0	2.7
1982	2.6	0.8	2.3	3.0
1983	3.5	3.0	3.9	4.2
1984	1.5	0.8	1.5	1.6
1985	2.9	0.4	1.2	1.7
1986	3.6	2.1	3.5	3.0
1987	1.5	0.7	2.1	1.8
1988	4.0	2.1	3.3	3.2
1989	2.7	1.6	2.2	2.4
1990	-4.1	-3.7	-0.2	0.3

Source: Author's estimation based on Table S4, Panel B.

## **Appendix**

**Table A1** List of archival materials

Year	<i>opis'</i>	<i>delo</i>		
		Monetary balance of income and expenditure of the	Household budget survey	
			Money income and expenditure	Total income and expenditure
1960	3	1580		
	26		880, 1190	956
1961	26		981, 985, 986, 1190, 1196	1200
	337	155		
1962	26		1229, 1230, 1231, 1269	1287
	337	3158		
1963	337	6559	10060, 10064, 10065, 10066, 10067, 10068, 10069, 10070, 10071, 10072, 10091, 10092	10109
1964	37	165	3605, 3642, 3661, 3662, 3643	3669
1965	44	143	3708, 3709, 3710, 3718, 3720	3733
1966	45	126	3278, 3279, 3280	3275, 3303
1967	45	3644	6744, 6747, 6771, 6772	6737, 6769
1968	45	7065	10514, 10517, 10545, 10546	10512
1969	46	146	2156, 2157, 2195, 2197	2150
1970	47	151	1947, 1948, 1967, 1968, 1969	1971
1971	48	113	1972, 1973, 1991, 1992	1994
1972	49	113	2541, 2544, 2545, 2560, 2561	2563
1973	50	110	2241, 2242, 2256, 2257, 2258	2259
1974	55	110	2385, 2386, 2400, 2401	2403
1975	56	164	2614, 2628, 2629, 2630	
	57		692	691
1976	58	153	2097, 2098, 2113, 2114	2096
1977	59	430, 431	2583, 2585, 2586, 2601, 2602	2584
1978	60	179, 182, 183	2258, 2259, 2274, 2275, 2276	2287
1979	62	158, 160	2338, 2344, 2345, 2362, 2363	2341
1980	63	144, 145	2587, 2596, 2597, 2608, 2609	2625, 2628
1981	64	149, 150	2275, 2286, 2287, 2290, 2291	2309, 2311
1982	65	275, 276, 277	2743, 2755, 2756, 2759, 2760	2778, 2781
1983	66	119	2931, 2942, 2943, 2946, 2947	2965, 2966
1984	67	117	2435, 2446, 2447, 2450, 2451	2471, 2742
1985	68	83		
	70		1887, 1898, 1899, 1902, 1903	1921, 1922, 1923
	68	1773		
1986	70		3263, 3264, 3265, 3266, 3267, 3268, 3281, 3282	3301, 3303
1987	68	2565		
	70		4881, 4882, 4897, 4898	4912, 4914
	65	3557		
1988	68		4119, 4120	4151
	70		6085, 6086	
1989	68	4490	5239, 5240, 5241, 5242, 5245	

Notes: All archival materials listed here belongs to the *fond* of the Central Statistical Directorate of the USSR (*fond* No. 1562). *opis'* is a subcategory to the *fond*. *delo* is the specific document.

Source: Author.

**Table A2** Reconstruction and estimation of the household budget database for all representative samples of the population

(per household member, rubles)													
			1	2	3	4	5	6	7	8	9	10	11
Household category			RP (raw)	RP (trend)	RS (raw)	RS (rev)	K (raw)	All (raw)	TF (RP + K)	TF (RS + K)	TF (RS rev + K)	ADJ	Final
expenditure item			1	1	1	1	1	1	1	1	1	1	1
			Spending on food goods	Spending on food goods	Spending on food goods	Spending on food goods	Spending on food goods	Spending on food goods	Spending on food goods	Spending on food goods	Spending on food goods	Spending on food goods	Spending on food goods
Year	Transaction/form	Weight											
1960	B State and coop. org.	0.80	209.0			218.8	31.9		201.0		182.2		188.0
1961	B State and coop. org.	0.81	211.2			225.0	32.8		207.4		188.0		194.0
1962	B State and coop. org.	0.81	221.6			233.5	51.8		219.4		199.2		205.6
1963	B State and coop. org.	0.81	228.3			239.7	54.0		226.2		205.3		212.0
1964	B State and coop. org.	0.82	235.2			246.1	56.2		233.3		211.7		218.5
1965	B State and coop. org.	0.82	254.3			257.8	63.5		246.2		223.5		230.7
1966	B State and coop. org.	0.83	265.7			266.5	75.9		257.4		233.8		241.4
1967	B State and coop. org.	0.83	280.0			280.3	90.8		273.8		248.8		256.8
1968	B State and coop. org.	0.84	296.5			296.4	96.1		290.8	270.4	264.2		272.8
1969	B State and coop. org.	0.85		344.1	310.9		104.4		307.4	279.3		281.8	281.8
1970	B State and coop. org.	0.85			323.3		110.8			292.0		294.6	294.6
1971	B State and coop. org.	0.86			329.6		114.6			299.2		301.8	301.8
1972	B State and coop. org.	0.86			341.5		118.5			311.2		313.9	313.9
1973	B State and coop. org.	0.87			348.0		124.3			318.8		321.6	321.6
1974	B State and coop. org.	0.87			358.8		126.0			329.6		332.5	332.5
1975	B State and coop. org.	0.88			369.4		127.2			340.3		343.3	343.3
1976	B State and coop. org.	0.89			387.3		137.1			358.6		361.7	361.7
1977	B State and coop. org.	0.89			389.9		140.1			362.5		365.7	365.7
1978	B State and coop. org.	0.90			397.9		145.7			371.5		374.7	374.7
1979	B State and coop. org.	0.90			409.5		211.7	391.3		389.8		1.0038	391.3
1980	B State and coop. org.	0.90			423.8		221.7	406.8		404.1		1.0067	406.8
1981	B State and coop. org.	0.90			428.1		228.6	413.0		409.1		1.0097	413.0
1982	B State and coop. org.	0.91			432.1		232.8	417.6		413.6		1.0098	417.6
1983	B State and coop. org.	0.91			436.3		246.2	423.5		419.0		1.0106	423.5
1984	B State and coop. org.	0.91			435.0		252.4	423.9		418.9		1.0121	423.9
1985	B State and coop. org.	0.91			442.1		265.0	433.1		426.8		1.0088	433.1
1986	B State and coop. org.	0.92			454.8		284.2	447.2		440.4			447.2
1987	B State and coop. org.	0.92			465.7		291.4	458.7		451.5			458.7
1988	B State and coop. org.	0.92			456.2		303.2	455.4		444.1			455.4
1989	B State and coop. org.	0.92			478.8		315.3	476.9		466.2			476.9

Notes:

- 1) The aggregated summary of household budget surveys takes two different forms, the table with *monetary* incomes and expenditures, and the table with *total* incomes and expenditures. The first one distinguishes three types of *monetary* incomes and expenditures: total (A), from/to state and cooperative sectors (B), among citizens (C). Total incomes and expenditures consist also of three components: in kind (D), in monetary form (E), and total (F). Combining these two series of data makes it possible to take into account different forms and categories of household incomes and expenditures. This table shows how different categories of household can be merged into one representative household category, focusing on money expenditures (buying) on food traded at state and cooperative retail shops (B).
- 2) “(raw)” indicates original, unaltered data from archival materials of household budget surveys, or data converted into their average value for household per member. Household categories listed in the tables are summarized as follows:
  - [1] Industrial-worker household (RP: *rabochie promyshlennosti* data series) raw data;
  - [2] Estimated values for industrial worker households in 1969, extrapolated using data for 1966–1968 (RP trend);
  - [3] Worker and employee households (RS: *rabochie i sluzhashchie* data series);
  - [4] Estimated data for workers and employees in 1960–1969 (RS rev: *rabochie i sluzhashchie* revised data series). Data in 1968 are calculated; the product of the ratio of [2] to [3] in 1969 and industrial workers’ data in 1968 ([1]) is indexed by the growth index of [1];
  - [5] Collective-farmer household (K: *kolkhozniki* data series) raw data;
  - [6] All-population household (All: *vse naselenie* data series) raw data;
  - [7] Merged data of industrial-worker ([1]) and collective-farmer ([5]) households, transformed using household weights derived from the population census (TF [RP + K]: transformed data based on the RP and K data series). Data in 1969 are extrapolated using data from 1966–1968;
  - [8] Merged data of worker and employee ([3]), and collective-farmer ([5]) households, transformed using household weights derived from the population census (TF [RS + K]: transformed data based on the RS and K data series). The number in 1968 comes from extrapolation, using 1969–1975 data;
  - [9] Revised merged data of worker and employee ([4]), and collective-farmer ([5]) households using household weights derived from the population census (TF [RS rev + K]: transformed data based on the RS revised and K data series);
  - [10] Adjusted data series (ADJ). Merged data ([8]) are adjusted so as to be consistent with the all-population representative series ([10]). The average ratio of [6] to [8] in 1979–

1984 is multiplied by [8] for 1969–1978.

[11] Final result (Final: final result data series). Data for 1965–1968 are estimated using [10] in 1969 (benchmark year) and growth rates of [9] in a retrospective manner. Data for 1969–1989 is based on [6] and [10].

Source: Compiled by the author.



**Table A3** Household money expenditures: Estimates (*balance* data) and official data, rubles

	1	2	3
	Household money expenditures ( <i>balance</i> data)		
	Total (estimates), rubles	Total (official data), rubles	Difference (%)
1960	57,810,551,864	57,300,000,000	0.9
1961	59,865,835,891	59,500,000,000	0.6
1962	64,528,921,546	64,400,000,000	0.2
1963	67,882,120,012	67,700,000,000	0.3
1964	71,274,809,081	71,100,000,000	0.2
1965	77,577,645,338	77,500,000,000	0.1
1966	83,661,222,335	83,600,000,000	0.1
1967	90,852,800,000	90,800,000,000	0.1
1968	99,580,908,943	99,600,000,000	0.0
1969	106,995,320,104	107,100,000,000	-0.1
1970	115,643,649,300	115,800,000,000	-0.1
1971	122,242,833,517	122,300,000,000	0.0
1972	130,390,404,116	130,500,000,000	-0.1
1973	137,368,611,968	137,500,000,000	-0.1
1974	147,633,314,845	147,900,000,000	-0.2
1975	158,263,458,618	158,500,000,000	-0.1
1976	165,369,344,607	165,800,000,000	-0.3
1977	173,762,535,671	174,200,000,000	-0.3
1978	182,064,701,862	182,800,000,000	-0.4
1979	190,984,025,993	191,800,000,000	-0.4
1980	200,502,169,210	200,000,000,000	0.3
1981	209,324,732,229	210,000,000,000	-0.3
1982	217,367,750,971	217,900,000,000	-0.2
1983	226,667,307,920	227,100,000,000	-0.2
1984	234,643,393,837	235,200,000,000	-0.2
1985	242,157,859,029	243,100,000,000	-0.4
1986	250,224,607,624	251,600,000,000	-0.5
1987	259,178,893,674	260,600,000,000	-0.5
1988	280,223,522,644	281,900,000,000	-0.6
1989	311,850,568,809	314,200,000,000	-0.7
1990	361,278,189,200	364,000,000,000	-0.7
1991	743,498,603,103	749,100,000,000	-0.7
1992	-	6,132,200,000,000	-

Notes:

- 1) See Shida (2012; 2015, Appendix 1) for details. These values are estimated by the author using archival materials containing *balances* of money incomes and expenditures of the population.

2) Archival materials used here are listed in Table A1.

Source: Author's estimates and *Rossiiskii statisticheskii ezhegodnik* (Goskomstat Rossii, 1995, pp. 84–85; 2003, p. 177).

**Table A4** Estimates of household money expenditures (*balance* and budget survey data), rubles

	1	2	3	4
	<i>balance</i> data, per capita	Household budget survey, total money expenditures (A) per family member		
	per capita (estimates)	Total	Expenditures in the socialist sector (B)	Expenditures in the private sector (C)
1960	482.6	593.5	464.8	128.7
1961	493.5	595.2	469.8	125.5
1962	525.6	635.8	504.0	131.8
1963	547.1	650.3	521.7	128.6
1964	569.1	667.4	541.3	126.1
1965	613.4	725.0	599.0	126.0
1966	656.8	754.6	630.5	124.1
1967	711.3	818.7	685.9	132.9
1968	776.7	882.6	748.4	134.2
1969	827.5	946.8	808.5	138.3
1970	886.9	1,004.9	863.9	141.0
1971	932.7	1,057.2	916.3	140.9
1972	989.2	1,117.7	972.0	145.7
1973	1,036.3	1,170.6	1,020.0	150.6
1974	1,107.3	1,249.6	1,090.7	158.8
1975	1,179.3	1,296.0	1,137.9	158.1
1976	1,223.8	1,369.6	1,198.8	170.8
1977	1,277.0	1,413.8	1,235.4	178.5
1978	1,328.5	1,462.9	1,275.0	187.9
1979	1,384.4	1,500.8	1,299.6	201.2
1980	1,444.9	1,575.0	1,356.0	219.0
1981	1,499.6	1,625.2	1,398.3	226.9
1982	1,546.9	1,669.7	1,441.0	228.7
1983	1,601.2	1,715.2	1,497.1	218.1
1984	1,645.4	1,736.6	1,528.6	208.0
1985	1,686.5	1,787.0	1,583.4	203.7
1986	1,729.3	1,853.9	1,652.4	201.4
1987	1,777.2	1,915.4	1,711.2	204.2
1988	1,907.9	2,010.7	1,787.9	222.8
1989	2,111.1	2,190.1	1,942.2	247.9
1990	2.4	-	-	-
1991	5.0	-	-	-
1992	-	-	-	-

**Table A4 (cont'd)**

	5	6
	Difference (%)	
	[1] and [2]	[1] and [3]
1960	23.0	-3.7
1961	20.6	-4.8
1962	21.0	-4.1
1963	18.8	-4.7
1964	17.3	-4.9
1965	18.2	-2.3
1966	14.9	-4.0
1967	15.1	-3.6
1968	13.6	-3.6
1969	14.4	-2.3
1970	13.3	-2.6
1971	13.3	-1.8
1972	13.0	-1.7
1973	13.0	-1.6
1974	12.8	-1.5
1975	9.9	-3.5
1976	11.9	-2.0
1977	10.7	-3.3
1978	10.1	-4.0
1979	8.4	-6.1
1980	9.0	-6.2
1981	8.4	-6.8
1982	7.9	-6.8
1983	7.1	-6.5
1984	5.5	-7.1
1985	6.0	-6.1
1986	7.2	-4.4
1987	7.8	-3.7
1988	5.4	-6.3
1989	3.7	-8.0
1990	-	-
1991	-	-
1992	-	-

Notes:

- 1) Author's estimates of total household money expenditures per capita are multiplied by mid-year population. Mid-year population is calculated using data from *National Economy of the USSR: Statistical Yearbook (Narodnoe khoziaistvo SSSR. Statisticheskii ezhegodnik*, various years). See Tables A3 and A5.
- 2) The list of archival materials used to estimate these values is shown in Table A1.

Source: Compiled by the author.

**Table A5** Comparing the population size and the number of households

	1	2	3	4	5
	Mid-year average population	Households			Comparison (%) [1] and [4]
		Number of households (excl. one-person)	Average number of household members	Total number of household members	
1960	119,799,000	28,900,297.8	3.6	103,778,342	-13.4
1961	121,319,000	29,271,995.6	3.6	104,846,966	-13.6
1962	122,762,500	29,643,693.5	3.6	105,908,832	-13.7
1963	124,070,500	30,015,391.3	3.6	106,963,940	-13.8
1964	125,234,000	30,387,089.1	3.6	108,012,289	-13.8
1965	126,478,500	30,758,786.9	3.5	109,053,881	-13.8
1966	127,369,500	31,130,484.7	3.5	110,088,714	-13.6
1967	127,730,500	31,502,182.5	3.5	111,116,789	-13.0
1968	128,218,500	31,873,880.4	3.5	112,138,106	-12.5
1969	129,302,500	32,245,578.2	3.5	113,152,665	-12.5
1970	130,388,000	32,617,276.0	3.5	114,160,466	-12.4
1971	131,067,000	33,073,644.1	3.5	115,022,785	-12.2
1972	131,813,000	33,530,012.2	3.5	115,864,820	-12.1
1973	132,551,000	33,986,380.3	3.4	116,686,572	-12.0
1974	133,327,000	34,442,748.4	3.4	117,488,042	-11.9
1975	134,195,500	34,899,116.6	3.4	118,269,228	-11.9
1976	135,125,000	35,355,484.7	3.4	119,030,132	-11.9
1977	136,073,000	35,811,852.8	3.3	119,770,752	-12.0
1978	137,048,500	36,268,220.9	3.3	120,491,089	-12.1
1979	137,958,000	36,724,589.0	3.3	121,191,144	-12.2
1980	138,765,000	37,076,747.3	3.3	121,982,499	-12.1
1981	139,591,000	37,428,905.6	3.3	122,766,810	-12.1
1982	140,514,500	37,781,063.9	3.3	123,544,079	-12.1
1983	141,564,500	38,133,222.2	3.3	124,314,304	-12.2
1984	142,603,500	38,485,380.5	3.3	125,077,487	-12.3
1985	143,585,000	38,837,538.8	3.2	125,833,626	-12.4
1986	144,695,500	39,189,697.1	3.2	126,582,722	-12.5
1987	145,833,250	39,541,855.4	3.2	127,324,774	-12.7
1988	146,877,750	39,894,013.7	3.2	128,059,784	-12.8
1989	147,720,500	40,246,172.0	3.2	128,787,750	-12.8
1990	148,292,000	40,598,330.3	3.2	129,508,674	-12.7
1991	148,543,000	40,950,488.6	3.2	130,222,554	-12.3
1992	-	-	-	-	-

## Notes:

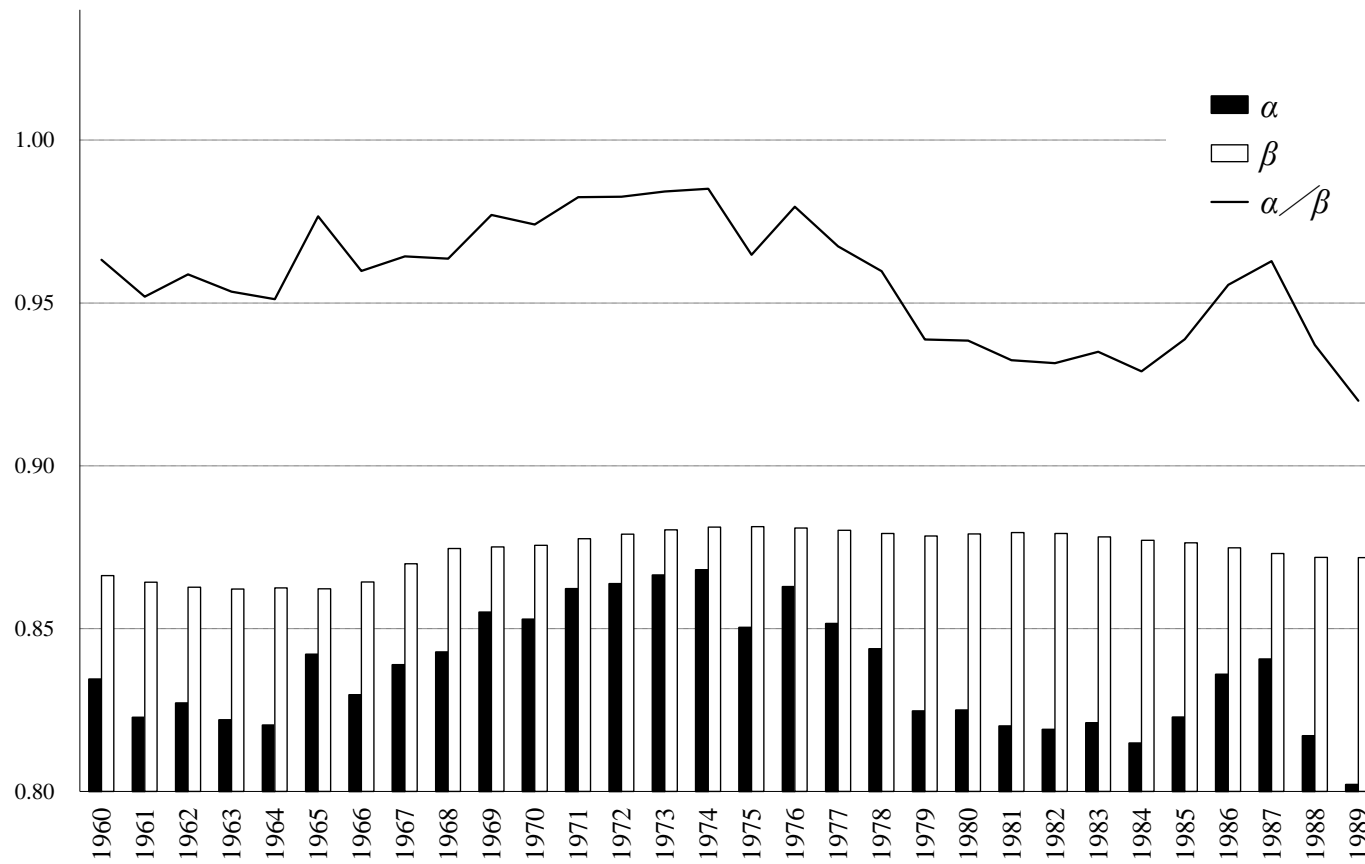
- 1) Mid-year population is a simple average of the official size of the population in the beginning of the year. The number of households, average size of households, and total number of household members, or “total household population,” is based on the population census data from 1959, 1970, 1979, and 1989. Values between census years are interpolated estimates.

Source: Author’s estimation; *National Economy of the USSR: Statistical Yearbook (Narodnoe khoziaistvo SSSR. Statisticheskii ezhegodnik*, various years); TsSU SSSR (1963, pp. 452–453); TsSU SSSR (1974, pp. 252–272); Goskomstat SSSR (1990, pp. 216–246); CISstat (1993, pp. 336–367).

**Table A6** *Balances* and budget surveys: alternative estimates compared

	1		2		3		4	
	Aggregated household money expenditure				Comparison with <i>balance</i> data (%)			
	Total money expenditures (A)	Expenditures in the socialist sector (B)	Total money expenditures (A)	Expenditures in the socialist sector (B)	Total money expenditures (A)	Expenditures in the socialist sector (B)	Total money expenditures (A)	Expenditures in the socialist sector (B)
1960	61,592,043,788	48,239,440,175			6.5			-16.6
1961	62,405,832,574	49,252,036,614			4.2			-17.7
1962	67,335,119,565	53,373,865,355			4.3			-17.3
1963	69,553,899,894	55,797,792,870			2.5			-17.8
1964	72,087,383,105	58,469,558,541			1.1			-18.0
1965	79,066,530,662	65,325,106,242			1.9			-15.8
1966	83,074,425,944	69,407,149,784			-0.7			-17.0
1967	90,975,880,901	76,211,873,498			0.1			-16.1
1968	98,974,462,841	83,924,262,344			-0.6			-15.7
1969	107,127,929,847	91,482,570,622			0.1			-14.5
1970	114,724,658,962	98,625,930,529			-0.8			-14.7
1971	121,598,109,828	105,397,134,450			-0.5			-13.8
1972	129,498,869,620	112,621,755,028			-0.7			-13.6
1973	136,591,968,863	119,019,746,493			-0.6			-13.4
1974	146,807,212,875	128,149,456,571			-0.6			-13.2
1975	153,276,821,115	134,573,279,325			-3.2			-15.0
1976	163,018,452,441	142,693,949,457			-1.4			-13.7
1977	169,337,192,745	147,959,851,814			-2.5			-14.8
1978	176,260,734,746	153,622,678,709			-3.2			-15.6
1979	181,883,930,427	157,502,041,521			-4.8			-17.5
1980	192,125,935,923	165,406,676,505			-4.2			-17.5
1981	199,516,984,806	171,660,199,626			-4.7			-18.0
1982	206,278,099,518	178,027,447,860			-5.1			-18.1
1983	213,219,995,095	186,109,864,298			-5.9			-17.9
1984	217,211,572,235	191,197,119,097			-7.4			-18.5
1985	224,870,916,029	199,244,424,302			-7.1			-17.7
1986	234,666,505,100	209,167,778,516			-6.2			-16.4
1987	243,878,382,282	217,876,602,564			-5.9			-15.9
1988	257,487,148,629	228,960,220,513			-8.1			-18.3
1989	282,056,518,197	250,127,342,400			-9.6			-19.8
1990	-	-			-			-
1991	-	-			-			-
1992	-	-			-			-

Source: Author's estimation using Tables A3, A4, and A5.



**Figure A1** Bias in the coefficients of estimated household money expenditures

Source: Compiled by the author using Table A6.

**Table A7** Estimated household expenditures, component ratios

		(per household members, ratio)																				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
		[1], [2], [3], [6]	[4], [5]	[7]	[8]	[9], [10]	[11], [12], [13]	[14], [15]	[16]	[17], [18]	[19], [20], [21], [22], [25], [26], [27], [28]	[29], [30], [31], [32]	[33]	[34], [35]	[36], [37]	[38], [11] [19], [25], [37]	[39], [40], [41], [42]	[39]	[43]-[38], [39], [40], [44]	[45]-[43], [44]	[45]-[43], [44]	
Expenditure flow forms or category		Food	Non-food	Livestock	House	Agricultural and fishery equipments	Facility fee	Entertainment	Services	Transport	House rent and public utility charge	Other services	Taxes	Insurance fee	State bond and lottery	Other	Total	Savings	Deposits	Total	Cash balance at the end of the year	
1960	A Money expenditures	0.599	0.361	0.016	0.003	0.012	0.038	0.008	0.006	0.028	0.028	0.014	0.077	0.002	0.000	0.065	1.167	0.110	0.037	1.277	0.011	1.288
1961	A Money expenditures	0.523	0.347	0.013	0.004	0.010	0.039	0.008	0.005	0.029	0.012	0.075	0.003	0.000	0.067	0.164	1.070	0.103	0.034	1.267	0.014	1.281
1962	A Money expenditures	0.519	0.332	0.013	0.007	0.009	0.038	0.007	0.005	0.031	0.029	0.018	0.074	0.003	0.000	0.059	1.145	0.116	0.037	1.262	0.015	1.277
1963	A Money expenditures	0.518	0.323	0.011	0.005	0.008	0.039	0.006	0.005	0.031	0.030	0.017	0.074	0.000	0.053	0.125	1.098	0.121	0.038	1.247	0.015	1.261
1964	A Money expenditures	0.517	0.314	0.010	0.005	0.006	0.040	0.006	0.005	0.032	0.031	0.015	0.074	0.004	0.000	0.048	1.107	0.126	0.039	1.233	0.014	1.247
1965	A Money expenditures	0.492	0.312	0.012	0.006	0.006	0.038	0.006	0.005	0.027	0.031	0.015	0.074	0.005	0.000	0.047	1.081	0.129	0.043	1.210	0.014	1.225
1966	A Money expenditures	0.488	0.311	0.010	0.005	0.007	0.036	0.005	0.005	0.022	0.031	0.015	0.075	0.005	0.000	0.045	1.070	0.127	0.045	1.197	0.016	1.213
1967	A Money expenditures	0.481	0.315	0.010	0.004	0.007	0.034	0.006	0.004	0.023	0.030	0.014	0.077	0.006	0.000	0.049	1.070	0.124	0.049	1.194	0.016	1.210
1968	A Money expenditures	0.470	0.326	0.008	0.003	0.003	0.032	0.005	0.004	0.023	0.029	0.013	0.078	0.006	0.000	0.045	1.058	0.122	0.055	1.179	0.034	1.213
1969	A Money expenditures	0.451	0.321	0.007	0.003	0.003	0.033	0.010	0.004	0.022	0.029	0.012	0.079	0.010	0.000	0.045	1.040	0.131	0.065	1.171	0.033	1.204
1970	A Money expenditures	0.444	0.320	0.008	0.004	0.003	0.031	0.010	0.003	0.021	0.030	0.011	0.081	0.012	0.000	0.044	1.033	0.131	0.070	1.163	0.033	1.196
1971	A Money expenditures	0.433	0.323	0.007	0.004	0.003	0.029	0.006	0.003	0.022	0.030	0.010	0.082	0.015	0.000	0.044	1.021	0.134	0.073	1.154	0.032	1.186
1972	A Money expenditures	0.426	0.321	0.006	0.003	0.003	0.028	0.005	0.003	0.021	0.030	0.010	0.083	0.010	0.000	0.044	1.011	0.139	0.079	1.150	0.031	1.181
1973	A Money expenditures	0.417	0.321	0.006	0.003	0.003	0.029	0.005	0.003	0.021	0.031	0.010	0.084	0.020	0.000	0.046	1.008	0.140	0.080	1.148	0.032	1.180
1974	A Money expenditures	0.404	0.314	0.006	0.004	0.002	0.029	0.000	0.003	0.021	0.030	0.010	0.085	0.021	0.000	0.047	0.997	0.150	0.090	1.146	0.031	1.177
1975	A Money expenditures	0.400	0.317	0.005	0.003	0.003	0.030	0.003	0.002	0.017	0.030	0.009	0.085	0.023	0.000	0.046	0.989	0.151	0.095	1.139	0.031	1.170
1976	A Money expenditures	0.399	0.317	0.004	0.002	0.002	0.030	0.009	0.003	0.011	0.030	0.009	0.087	0.024	0.000	0.048	0.995	0.148	0.096	1.142	0.033	1.176
1977	A Money expenditures	0.420	0.320	0.005	0.002	0.002	0.029	0.009	0.002	0.011	0.029	0.009	0.087	0.025	0.000	0.049	0.995	0.150	0.098	1.144	0.034	1.179
1978	A Money expenditures	0.388	0.320	0.005	0.002	0.003	0.031	0.009	0.003	0.022	0.030	0.006	0.087	0.026	0.000	0.050	0.994	0.154	0.104	1.147	0.035	1.182
1979	A Money expenditures	0.397	0.314	0.005	0.002	0.000	0.028	0.004	0.002	0.011	0.030	0.009	0.087	0.027	0.001	0.053	1.001	0.155	0.106	1.155	0.036	1.191
1980	A Money expenditures	0.395	0.321	0.005	0.003	0.003	0.030	0.008	0.003	0.021	0.031	0.009	0.089	0.028	0.001	0.054	1.009	0.153	0.107	1.162	0.035	1.196
1981	A Money expenditures	0.391	0.327	0.004	0.002	0.003	0.031	0.008	0.003	0.021	0.030	0.009	0.088	0.028	0.001	0.051	1.007	0.156	0.109	1.162	0.034	1.196
1982	A Money expenditures	0.385	0.327	0.004	0.003	0.004	0.030	0.007	0.003	0.020	0.030	0.009	0.088	0.029	0.001	0.052	1.002	0.157	0.109	1.159	0.034	1.193
1983	A Money expenditures	0.373	0.321	0.004	0.004	0.004	0.029	0.007	0.003	0.020	0.030	0.009	0.088	0.029	0.001	0.051	0.983	0.164	0.129	1.146	0.036	1.181
1984	A Money expenditures	0.364	0.317	0.003	0.004	0.004	0.029	0.007	0.003	0.020	0.030	0.009	0.088	0.029	0.001	0.051	0.969	0.168	0.118	1.136	0.038	1.174
1985	A Money expenditures	0.352	0.321	0.004	0.004	0.004	0.029	0.006	0.003	0.020	0.030	0.009	0.088	0.029	0.001	0.050	0.957	0.172	0.129	1.129	0.038	1.166
1986	A Money expenditures	0.340	0.319	0.004	0.004	0.004	0.030	0.006	0.003	0.028	0.029	0.009	0.089	0.029	0.001	0.050	0.942	0.180	0.132	1.122	0.039	1.161
1987	A Money expenditures	0.336	0.314	0.003	0.004	0.004	0.029	0.006	0.003	0.028	0.029	0.009	0.088	0.028	0.001	0.050	0.933	0.187	0.142	1.119	0.040	1.160
1988	A Money expenditures	0.320	0.317	0.003	0.004	0.004	0.032	0.007	0.003	0.027	0.028	0.011	0.092	0.028	0.001	0.050	0.926	0.199	0.148	1.125	0.035	1.159
1989	A Money expenditures	0.314	0.327	0.003	0.004	0.004	0.030	0.007	0.003	0.026	0.026	0.011	0.093	0.026	0.001	0.048	0.924	0.204	0.159	1.128	0.037	1.165
1960	B at state and coop.	0.427	0.324	0.001	0.001	0.004	0.038	0.008	0.005	0.025	0.027	0.001	0.077	0.002	0.000	0.006	0.948	0.052	0.037	1.000	-	-
1961	B at state and coop.	0.434	0.319	0.001	0.002	0.003	0.039	0.008	0.005	0.026	0.028	0.002	0.075	0.003	0.000	0.006	0.950	0.050	0.034	1.000	-	-
1962	B at state and coop.	0.437	0.309	0.001	0.003	0.003	0.038	0.007	0.005	0.028	0.028	0.003	0.074	0.003	0.000	0.002	0.943	0.057	0.037	1.000	-	-
1963	B at state and coop.	0.438	0.303	0.001	0.002	0.002	0.039	0.006	0.005	0.029	0.029	0.003	0.074	0.004	0.000	0.003	0.939	0.061	0.038	1.000	-	-
1964	B at state and coop.	0.438	0.297	0.001	0.002	0.002	0.040	0.006	0.005	0.030	0.030	0.003	0.074	0.004	0.000	0.003	0.935	0.065	0.039	1.000	-	-
1965	B at state and coop.	0.432	0.296	0.002	0.003	0.002	0.038	0.006	0.005	0.030	0.030	0.003	0.074	0.005	0.000	0.003	0.929	0.070	0.043	1.000	-	-
1966	B at state and coop.	0.433	0.295	0.002	0.002	0.003	0.036	0.005	0.005	0.030	0.030	0.003	0.075	0.005	0.000	0.003	0.927	0.073	0.045	1.000	-	-
1967	B at state and coop.	0.429	0.297	0.002	0.001	0.003	0.034	0.006	0.004	0.023	0.029	0.003	0.077	0.006	0.000	0.003	0.926	0.074	0.049	1.000	-	-
1968	B at state and coop.	0.421	0.306	0.001	0.001	0.001	0.032	0.005	0.004	0.021	0.028	0.003	0.078	0.006	0.000	0.003	0.922	0.078	0.055	1.000	-	-
1969	B at state and coop.	0.404	0.302	0.001	0.001	0.001	0.033	0.010	0.003	0.021	0.028	0.003	0.079	0.010	0.000	0.002	0.910	0.090	0.065	1.000	-	-
1970	B at state and coop.	0.400	0.302	0.002	0.001	0.001	0.031	0.010	0.003	0.021	0.029	0.003	0.081	0.012	0.000	0.002	0.907	0.093	0.070	1.000	-	-
1971	B at state and coop.	0.395	0.304	0.002	0.002	0.001	0.029	0.006	0.003	0.021	0.029	0.003	0.082	0.015	0.000	0.002	0.903	0.097	0.073	1.000	-	-
1972	B at state and coop.	0.390	0.301	0.001	0.001	0.001	0.028	0.005	0.003	0.020	0.029	0.003	0.083	0.017	0.000	0.002	0.896	0.104	0.079	1.000	-	-
1973	B at state and coop.	0.382	0.302	0.001	0.001	0.001	0.029	0.005	0.003	0.021	0.030	0.003	0.084	0.020	0.000	0.002	0.894	0.106	0.080	1.000	-	-
1974	B at state and coop.	0.372	0.297	0.001	0.001	0.001	0.029	0.004	0.003	0.021	0.030	0.003	0.085	0.021	0.000	0.002	0.885	0.115	0.090	1.000	-	-
1975	B at state and coop.	0.368	0.300	0.002	0.001	0.001	0.030	0.005	0.003	0.020	0.029	0.004	0.085	0.023	0.000	0.000	0.880	0.120	0.095	1.000	-	-
1976	B at state and coop.	0.362	0.300	0.001	0.001	0.001	0.030	0.009	0.003	0.020	0.029	0.003	0.087	0.024	0.000	0.002	0.881	0.119	0.096	1.000	-	-
1977	B at state and coop.	0.353	0.304	0.002	0.001	0.001	0.031	0.008	0.002	0.021	0.029	0.003	0.087	0.025	0.000	0.002	0.879	0.121	0.098	1.000	-	-
1978	B at state and coop.	0.347	0.302	0.002	0.000	0.001	0.031	0.008	0.003	0.021	0.029	0.003	0.087	0.026	0.000	0.002	0.874	0.126	0.104	1.000	-	-
1979	B at state and coop.	0.353	0.294	0.001	0.001	0.002	0.030	0.008	0.003	0.021	0.030	0.003	0.087	0.027	0.001	0.011	0.871	0.129	0.109	1.000	-	-
1980	B at state and coop.	0.348	0.299	0.001	0.001	0.002	0.030	0.008	0.003	0.020	0.030	0.003	0.089	0.028	0.001	0.001	0.873	0.127	0.107	1.000	-	-
1981	B at state and coop.	0.342</																				



**Table A7 (cont'd)**

		(per household members, ratio)																				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
		[1], [2], [3], [6]	[4], [5]	[7]	[8]	[9], [10]	[11], [12], [13]	[14], [15]	[16]	[17], [18]	[19], [20], [21], [22], [23], [24]	[25], [26], [27], [28]	[29], [30], [31], [32]	[33]	[34], [35]	[36], [37]	[38], [1], [19], [25], [37]	[39], [40], [41], [42]	[39]	[43], [38], [39], [40], [41], [42]	[44]	[45], [43], [44]
	Expenditures item form or category	Food	Non-food	Livestock	House	Agricultural and fishery equipments	Facility fee	Entertainment	Services	Transport	House rent and public utility charge	Other services	Taxes	Insurance fee	State bond and lottery	Other	Total	Savings	Deposits	Total	Cash balance at the end of the year	
1960	C among citizens	0.082	0.036	0.016	0.002	0.008	0.000	0.000	0.000	0.003	0.001	0.012	0.000	0.000	0.000	0.059	0.219	0.058	-	0.277	-	-
1961	C among citizens	0.090	0.028	0.012	0.002	0.007	0.000	0.000	0.000	0.002	0.001	0.010	0.000	0.000	0.000	0.061	0.214	0.053	-	0.267	-	-
1962	C among citizens	0.083	0.023	0.012	0.004	0.007	0.000	0.000	0.000	0.002	0.001	0.015	0.000	0.000	0.000	0.056	0.202	0.058	-	0.262	-	-
1963	C among citizens	0.081	0.020	0.010	0.003	0.006	0.000	0.000	0.000	0.002	0.001	0.013	0.000	0.000	0.000	0.059	0.186	0.060	-	0.247	-	-
1964	C among citizens	0.078	0.017	0.008	0.003	0.005	0.000	0.000	0.000	0.002	0.001	0.012	0.000	0.000	0.000	0.045	0.172	0.061	-	0.233	-	-
1965	C among citizens	0.060	0.016	0.010	0.003	0.004	0.000	0.000	0.000	0.002	0.001	0.012	0.000	0.000	0.000	0.044	0.153	0.058	-	0.210	-	-
1966	C among citizens	0.054	0.017	0.008	0.003	0.004	0.000	0.000	0.000	0.002	0.001	0.012	0.000	0.000	0.000	0.043	0.144	0.053	-	0.197	-	-
1967	C among citizens	0.052	0.018	0.008	0.003	0.004	0.000	0.000	0.000	0.002	0.001	0.011	0.000	0.000	0.000	0.046	0.145	0.049	-	0.194	-	-
1968	C among citizens	0.050	0.020	0.007	0.003	0.002	0.000	0.000	0.000	0.002	0.001	0.010	0.000	0.000	0.000	0.042	0.136	0.043	-	0.179	-	-
1969	C among citizens	0.047	0.019	0.006	0.002	0.001	0.000	0.000	0.000	0.001	0.001	0.009	0.000	0.000	0.000	0.043	0.129	0.042	-	0.171	-	-
1970	C among citizens	0.045	0.018	0.006	0.003	0.002	0.000	0.000	0.000	0.001	0.001	0.008	0.000	0.000	0.000	0.042	0.126	0.038	-	0.163	-	-
1971	C among citizens	0.038	0.019	0.005	0.003	0.001	0.000	0.000	0.000	0.001	0.001	0.007	0.000	0.000	0.000	0.042	0.118	0.035	-	0.154	-	-
1972	C among citizens	0.036	0.019	0.005	0.002	0.001	0.000	0.000	0.000	0.001	0.001	0.007	0.000	0.000	0.000	0.042	0.115	0.035	-	0.150	-	-
1973	C among citizens	0.035	0.018	0.004	0.002	0.002	0.000	0.000	0.000	0.001	0.001	0.007	0.000	0.000	0.000	0.044	0.114	0.034	-	0.148	-	-
1974	C among citizens	0.032	0.018	0.004	0.003	0.001	0.000	0.000	0.000	0.001	0.001	0.007	0.000	0.000	0.000	0.045	0.112	0.034	-	0.146	-	-
1975	C among citizens	0.032	0.017	0.003	0.002	0.001	0.000	0.000	0.000	0.001	0.001	0.005	0.000	0.000	0.000	0.046	0.108	0.031	-	0.139	-	-
1976	C among citizens	0.037	0.003	0.003	0.002	0.001	0.000	0.000	0.000	0.001	0.001	0.006	0.000	0.000	0.000	0.046	0.114	0.028	-	0.142	-	-
1977	C among citizens	0.039	0.016	0.004	0.002	0.001	0.000	0.000	0.000	0.001	0.001	0.006	0.000	0.000	0.000	0.047	0.117	0.028	-	0.144	-	-
1978	C among citizens	0.041	0.017	0.004	0.002	0.001	0.000	0.000	0.000	0.001	0.001	0.005	0.000	0.000	0.000	0.048	0.120	0.027	-	0.147	-	-
1979	C among citizens	0.044	0.020	0.004	0.001	0.002	0.000	0.000	0.000	0.001	0.001	0.006	0.000	0.000	0.000	0.051	0.130	0.025	-	0.155	-	-
1980	C among citizens	0.047	0.023	0.003	0.001	0.002	0.000	0.000	0.000	0.001	0.001	0.006	0.001	0.000	0.000	0.053	0.136	0.026	-	0.162	-	-
1981	C among citizens	0.049	0.022	0.003	0.002	0.002	0.000	0.000	0.000	0.001	0.001	0.006	0.000	0.000	0.000	0.050	0.135	0.027	-	0.162	-	-
1982	C among citizens	0.045	0.020	0.003	0.002	0.001	0.000	0.000	0.000	0.001	0.001	0.006	0.000	0.000	0.000	0.051	0.131	0.028	-	0.159	-	-
1983	C among citizens	0.040	0.016	0.003	0.002	0.001	0.000	0.000	0.000	0.001	0.001	0.006	0.000	0.000	0.000	0.050	0.119	0.026	-	0.146	-	-
1984	C among citizens	0.036	0.014	0.002	0.002	0.001	0.000	0.000	0.000	0.001	0.001	0.005	0.000	0.000	0.000	0.050	0.112	0.024	-	0.136	-	-
1985	C among citizens	0.034	0.013	0.003	0.002	0.001	0.000	0.000	0.000	0.001	0.001	0.005	0.000	0.000	0.000	0.048	0.107	0.022	-	0.129	-	-
1986	C among citizens	0.032	0.012	0.003	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.005	0.000	0.000	0.000	0.047	0.101	0.021	-	0.122	-	-
1987	C among citizens	0.030	0.012	0.002	0.001	0.001	0.000	0.000	0.000	0.001	0.001	0.004	0.000	0.000	0.000	0.048	0.100	0.020	-	0.119	-	-
1988	C among citizens	0.029	0.016	0.002	0.002	0.001	0.000	0.000	0.000	0.001	0.001	0.004	0.000	0.000	0.000	0.045	0.100	0.024	-	0.125	-	-
1989	C among citizens	0.030	0.021	0.002	0.002	0.001	0.000	0.000	0.000	0.001	0.001	0.004	0.000	0.000	0.000	0.045	0.105	0.023	-	0.128	-	-
1960	D Expenditures in kind	0.129	0.025	-	-	-	-	-	-	0.002	-	-	-	-	-	-	-	-	-	0.156	-	-
1961	D Expenditures in kind	0.125	0.017	-	-	-	-	-	-	0.002	-	-	-	-	-	-	-	-	-	0.144	-	-
1962	D Expenditures in kind	0.124	0.012	-	-	-	-	-	-	0.002	-	-	-	-	-	-	-	-	-	0.137	-	-
1963	D Expenditures in kind	0.119	0.009	-	-	-	-	-	-	0.001	-	-	-	-	-	-	-	-	-	0.129	-	-
1964	D Expenditures in kind	0.111	0.007	-	-	-	-	-	-	0.001	-	-	-	-	-	-	-	-	-	0.119	-	-
1965	D Expenditures in kind	0.133	0.005	-	-	-	-	-	-	0.001	-	-	-	-	-	-	-	-	-	0.139	-	-
1966	D Expenditures in kind	0.126	0.004	-	-	-	-	-	-	0.001	-	-	-	-	-	-	-	-	-	0.131	-	-
1967	D Expenditures in kind	0.115	0.003	-	-	-	-	-	-	0.001	-	-	-	-	-	-	-	-	-	0.119	-	-
1968	D Expenditures in kind	0.110	0.003	-	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-	0.114	-	-
1969	D Expenditures in kind	0.096	0.004	-	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-	0.099	-	-
1970	D Expenditures in kind	0.095	0.003	-	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-	0.098	-	-
1971	D Expenditures in kind	0.096	0.003	-	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-	0.099	-	-
1972	D Expenditures in kind	0.085	0.002	-	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-	0.087	-	-
1973	D Expenditures in kind	0.079	0.002	-	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-	0.081	-	-
1974	D Expenditures in kind	0.071	0.002	-	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-	0.073	-	-
1975	D Expenditures in kind	0.068	0.002	-	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-	0.070	-	-
1976	D Expenditures in kind	0.058	0.002	-	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-	0.059	-	-
1977	D Expenditures in kind	0.060	0.002	-	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-	0.062	-	-
1978	D Expenditures in kind	0.061	0.002	-	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-	0.062	-	-
1979	D Expenditures in kind	0.051	0.002	-	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-	0.053	-	-
1980	D Expenditures in kind	0.051	0.002	-	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-	0.053	-	-
1981	D Expenditures in kind	0.054	0.001	-	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-	0.055	-	-
1982	D Expenditures in kind	0.054	0.002	-	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-	0.055	-	-
1983	D Expenditures in kind	0.053	0.001	-	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-	0.054	-	-
1984	D Expenditures in kind	0.053	0.002	-	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-	0.054	-	-
1985	D Expenditures in kind	0.048	0.001	-	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-	0.049	-	-
1986	D Expenditures in kind	0.045	0.001	-	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-	0.046	-	-
1987	D Expenditures in kind	0.046	0.001	-	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-	0.047	-	-
1988	D Expenditures in kind	0.041	0.001	-	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-	0.042	-	-
1989	D Expenditures in kind	0.040	0.001	-	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-	0.041	-	-

**Table A7 (cont'd)**

(per household members, rate)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
		[1], [2], [3], [6]	[4], [5]	[7]	[8]	[9], [10]	[11], [12], [13]	[14], [15]	[16]	[17], [18]	[19], [20], [21], [22], [23], [24]	[25], [26], [27], [28]	[29], [30], [31], [32]	[33]	[34], [35]	[36], [37]	[38], [11], [19], [25], [37]	[39], [40], [41], [42]	[39]	[43], [38], [39], [40], [41], [42]	[44]	[45], [43], [44]
	Expenditure item/ form or category	Food	Non-food	Livestock	House	Agricultural and fishery implements	Facility fee	Entertainment	Services	Transport	House rent and public utility charge	Other services	Taxes	Insurance fee	State bond and lottery	Other	Total	Savings	Deposits	Total	Cash balance at the end of the year	
1960	F Total expenditures	0.638	0.386	0.016	0.003	0.012			0.188				0.077	0.002	0.000	0.065	1.388	0.110	0.037	1.498	0.011	1.509
1961	F Total expenditures	0.648	0.364	0.013	0.004	0.010			0.190				0.075	0.003	0.000	0.067	1.374	0.103	0.034	1.477	0.014	1.491
1962	F Total expenditures	0.643	0.345	0.013	0.007	0.009			0.188				0.074	0.003	0.000	0.059	1.341	0.116	0.037	1.458	0.015	1.473
1963	F Total expenditures	0.637	0.333	0.011	0.005	0.008			0.183				0.074	0.004	0.000	0.053	1.308	0.121	0.038	1.429	0.015	1.444
1964	F Total expenditures	0.628	0.321	0.010	0.005	0.006			0.178				0.074	0.004	0.000	0.048	1.274	0.126	0.039	1.400	0.014	1.414
1965	F Total expenditures	0.625	0.317	0.012	0.006	0.007			0.175				0.074	0.005	0.000	0.047	1.267	0.129	0.043	1.396	0.014	1.410
1966	F Total expenditures	0.614	0.316	0.010	0.005	0.007			0.169				0.075	0.005	0.000	0.045	1.247	0.127	0.045	1.373	0.016	1.389
1967	F Total expenditures	0.597	0.319	0.010	0.004	0.007			0.171				0.077	0.006	0.000	0.049	1.239	0.124	0.049	1.362	0.016	1.378
1968	F Total expenditures	0.581	0.330	0.008	0.003	0.003			0.161				0.078	0.006	0.000	0.045	1.216	0.122	0.055	1.338	0.034	1.372
1969	F Total expenditures	0.547	0.325	0.007	0.003	0.003			0.166				0.079	0.010	0.000	0.045	1.184	0.131	0.065	1.316	0.033	1.349
1970	F Total expenditures	0.539	0.323	0.008	0.004	0.003			0.161				0.081	0.012	0.000	0.044	1.175	0.131	0.070	1.306	0.033	1.339
1971	F Total expenditures	0.529	0.326	0.007	0.004	0.003			0.154				0.082	0.015	0.000	0.044	1.165	0.134	0.073	1.298	0.032	1.331
1972	F Total expenditures	0.510	0.323	0.006	0.003	0.003			0.153				0.083	0.017	0.000	0.044	1.143	0.139	0.079	1.283	0.031	1.313
1973	F Total expenditures	0.495	0.323	0.006	0.003	0.003			0.156				0.084	0.020	0.000	0.046	1.136	0.140	0.080	1.276	0.032	1.308
1974	F Total expenditures	0.475	0.316	0.006	0.004	0.002			0.160				0.085	0.021	0.000	0.047	1.116	0.150	0.090	1.266	0.031	1.297
1975	F Total expenditures	0.468	0.319	0.005	0.003	0.002			0.153				0.085	0.023	0.000	0.046	1.104	0.151	0.095	1.256	0.031	1.287
1976	F Total expenditures	0.457	0.318	0.004	0.002	0.002			0.159				0.087	0.024	0.000	0.048	1.103	0.148	0.096	1.251	0.033	1.284
1977	F Total expenditures	0.452	0.321	0.005	0.003	0.002			0.162				0.087	0.025	0.000	0.049	1.107	0.150	0.098	1.256	0.034	1.291
1978	F Total expenditures	0.449	0.321	0.005	0.002	0.003			0.163				0.087	0.026	0.000	0.050	1.107	0.154	0.104	1.260	0.035	1.295
1979	F Total expenditures	0.448	0.316	0.005	0.002	0.004			0.165				0.087	0.027	0.001	0.053	1.106	0.155	0.109	1.261	0.036	1.297
1980	F Total expenditures	0.447	0.323	0.005	0.003	0.003			0.165				0.089	0.028	0.001	0.054	1.116	0.153	0.107	1.269	0.035	1.304
1981	F Total expenditures	0.445	0.329	0.004	0.002	0.003			0.162				0.088	0.028	0.001	0.051	1.113	0.156	0.109	1.267	0.034	1.303
1982	F Total expenditures	0.438	0.329	0.004	0.003	0.004			0.161				0.088	0.029	0.001	0.052	1.109	0.157	0.109	1.267	0.034	1.301
1983	F Total expenditures	0.426	0.323	0.004	0.004	0.004			0.160				0.088	0.029	0.001	0.051	1.088	0.163	0.114	1.251	0.036	1.287
1984	F Total expenditures	0.417	0.318	0.003	0.004	0.004			0.159				0.088	0.029	0.001	0.051	1.075	0.168	0.118	1.242	0.038	1.281
1985	F Total expenditures	0.400	0.322	0.004	0.004	0.004			0.155				0.088	0.029	0.001	0.050	1.056	0.172	0.123	1.228	0.038	1.266
1986	F Total expenditures	0.385	0.320	0.004	0.004	0.004			0.154				0.089	0.029	0.001	0.051	1.038	0.180	0.132	1.218	0.039	1.257
1987	F Total expenditures	0.382	0.315	0.003	0.004	0.004			0.154				0.088	0.028	0.001	0.050	1.029	0.187	0.142	1.217	0.040	1.257
1988	F Total expenditures	0.361	0.318	0.003	0.004	0.004			0.157				0.092	0.028	0.001	0.050	1.017	0.189	0.148	1.216	0.035	1.251
1989	F Total expenditures	0.354	0.327	0.003	0.004	0.004			0.151				0.093	0.026	0.001	0.048	1.013	0.204	0.159	1.217	0.037	1.254

Source: Author's estimation.