

The resilience of the Bush–Steelman contract notwithstanding, *Between Politics and Science* is an important contribution that raises new questions for policymakers to consider. The negotiations that take place between principles and agents in what seems to be ever-expanding boundary institutions clearly have a significant role to play in the development of science policy. It is interesting to note, however, that boundary institutions are not new to science policy. At least since the time of the creation of the National Defense Research Committee (1940), principles and agents have been meeting to negotiate the policies that govern research funding in the United States. What is new about ORI, OTT, and the other boundary institutions that have emerged over the last 20 years is that they are increasingly cropping up on the science side of the principle–agent divide rather than the reverse. That is, politicians, as the public’s representatives, seem to be demanding more say in the affairs of science while at times weakening the role their agents have in helping plan the politics of science. This raises what might be one of the most central questions for science policy in the years ahead, which is not whether boundary institutions ought to exist or play a role in science policy but how they should be distributed across the principle–agent spectrum to maintain research programs that best serve public needs.

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REFERENCES

- Bush, V. (1945, 1960). *Science, the endless frontier*. Washington, DC: National Science Foundation.
- ORI [Office of Research Integrity]. (2000). Review group recommendations being rapidly implemented. *ORI Newsletter*, 8(1), 5–6.
- OSTP [Office of Science and Technology Policy]. (1999). Proposed federal policy on research misconduct to protect the integrity of the research record. *Federal Register*, 64(198, Thursday October 14), 55722–55725.
- Steelman, J.R. (1947). *Science and Public Policy*. Washington, DC: The President’s Scientific Research Board, Government Printing Office.

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Money Unmade: Barter and the Fate of Russian Capitalism, by David Woodruff. 1999. Ithaca and London; Cornell University Press, 1999, + 228pp.

This book is about one of the most puzzling phenomena of the Russian transition that still does not have a good explanation—the unexpected rise of the nonmonetary economy in the 1990s. It covers the period before the August 1998 crisis and hence does not discuss the subsequent events, which seem to be no less puzzling—the nonmonetary economy in 1999–2000 started to disappear as unexpectedly as it emerged in the first half of the decade.

To be exact, we are talking here about three interrelated stylized facts:

(1) *The proliferation of trade, tax, wage and bank arrears that increased dramatically in 1992, after the deregulation of prices.* The real value of these arrears (in constant prices) or the relative value (as a percent of output) reached maximum three times: in mid-1992, in mid-1994, and right before the August 1998 crisis, i.e. exactly in those periods, when monetary tightening led to the fall in inflation. However, in the most prolonged period of macrostabilization—1995–1998—total arrears increased mostly

due to the overdue tax payments, whereas arrears to suppliers were relatively stable. After the August 1998 financial crisis all arrears were falling, although inflation was on a steady decline until spring 2000—a highly unusual pattern as compared to the pre-crisis experience, when the drops in inflation were always accompanied by the growth of arrears.

(2) *The increase in barter transactions that was rather steady before the August 1998 crisis.* Barter accounted for about 10 percent of sales of industrial enterprises in 1992–1993, for about 15–20 percent in 1993–1995, and increased to about 40 percent in 1996 and 50 percent by the time of the August 1998 crisis. After the crisis it was on a steady decline. The share of “barter taxes” (paid in kind) was also growing before the 1998 crisis and was declining afterwards.

(3) *The proliferation of offsets (vzaimozachyoty) and quasi-monies—wechsels—issued by regional governments and by banks and companies and widely accepted as means of payments by businesses and governments.* In mid-1996, when the use of *wechsels* was at its highest point, at least 34 provinces out of 89 accepted tax payments in *wechsels* (table 4 on p. 160).

There are plenty of papers seeking to interpret these stylized facts, but I am not aware of any coherent theory offering a consistent explanation of the above mentioned three stylized facts pertaining to the dynamics of nonpayments (arrears), barter, and quasi-money simultaneously.

The earlier explanations of the proliferation of nonmonetary instruments of exchange (mostly nonpayments in 1992–1994) centered on the monetary aspects—the lack of liquidity in the economy or the lack of credibility of the government/central bank policy to fight inflation. There was an obvious correlation between the money supply, on the one hand, and inflation (positive) and non-payments (negative), on the other. But it was interpreted differently by “Keynesians” and “monetarists”. The former believed that Russian inflation is mostly of the cost-push nature and that tightening of the money supply results only in the increase of nonpayments that leads to the collapse of output. In contrast, the latter viewed Russian inflation as a monetary, demand-pull phenomenon. Enterprises, they said, react to monetary tightening by the accumulation of nonpayments (instead of cutting prices) because of soft budget constraints and poor credibility of government policy; they know only too well that at the end of the day the government is going to bail them out (Popov, 1996).

These interpretations were mutually exclusive, but had one thing in common—the belief that nonpayments are associated mostly with macroeconomic policy, not with structural and institutional factors. They explained neither the monotonic increase in barter transactions in 1992–1998, nor the proliferation of quasi-money in 1994–1996, nor the decrease in the use of non-monetary instruments in 1998–2000, after the financial crisis, despite the tightening of monetary policy.

The structural “virtual economy” explanation by Gaddy and Ickes (1998) and Ericson and Ickes (2000) regards non-payments as the mechanism of hidden subsidization of the inefficient manufacturing sector by the efficient energy and resource sector. The latter is strongly encouraged to carry out such a transfer of funds by the government, which tries to avoid the shut down of noncompetitive manufacturing plants.¹ The mere fact of such transfers is hardly disputable, since the resource and energy sector is a net creditor, whereas most secondary manufacturing industries are net debtors

¹Woodruff criticizes the “virtual economy” model briefly in the book (p. 174-76) and in greater detail elsewhere (Woodruff, 1999), saying that the redistribution argument is by no means a necessary precondition for the proliferation of non-monetary instruments. Theoretically this is perfectly correct (and Gaddy and Ickes do not seem to argue the opposite), but nevertheless such a redistribution from efficient to inefficient sectors is the actual story of the Russian transition. Woodruff also claims that the government

in the arrears balance.² However, what also needs to be explained is why these transfers from resource to nonresource industries take the strange form of arrears (instead of transparent direct subsidies or less transparent price subsidies) and why these transfers change over time in a way they do. Besides, the “virtual economy” theory does little to explain the rise and fall of barter and quasi-money.

Other structural explanations are numerous: tax evasion (Hendley et al., 1998), inefficient monetary and credit system and the lack of trust and financial discipline (Poser, 1998; Marin, 2000), monopoly power resulting in the spread of overpriced barter sales (Guriev and Ickes, 1999; Guriev and Kvassov, 2000), just to name a few. Although these explanations advance the understanding of the nonmonetary instruments, they usually do not offer the interpretation of the dynamics, since they concentrate on cross-company comparisons, not on time series. Besides, one crucial question remains unanswered: why tax evasion drive, or monopoly power, or other mentioned (and unmentioned) factors lead to such a peculiar form of redistribution as barter and non-payments, whereas in other countries they materialize in more conventional forms.

Woodruff’s book offers a different—institutional—and potentially productive approach to the explanation of non-monetary instruments. It focuses on the institutional capacity of the state to ensure the monopoly to create money. We use to take this monopoly for granted, although “only in the second half of the XIX century can central authorities of the most-developed countries be said to have achieved the thorough dominion in the monetary sphere they continue to maintain” (p.3). The book itself in fact is a meticulous historical study of the development of money and nonmonetary instruments in Russia in 1987–1998 with inquiries into the Soviet monetary history (1924–1933), the monetary consolidation story in Italy during the “Risorgimento” of the 1860s, and the story of Shay’s Rebellion in the United States in 1786 with demands to allow taxes to be paid in kind.

The monetary authority of the central bank and the government (and the ability to enforce this authority), as Woodruff believes, was by no means assured once and for all from the very beginning of transition. He argues, for instance, that the center-regional conflict in Russia is crucial for the understanding of the rise of non-monetary instruments, and that this rise was basically caused by the loss of control of the center over what counts as making a payment. “Local authorities asserted the power to define the non-monetary means of payment for legal obligations denominated in rubles, both through taxing in kind and encouraging local enterprises to arrange payments among themselves in similar manner” (p.18). Later, in 1996–1998, when the federal government and companies (losing control over pricing by offering discounts to those who had no need of them) found it increasingly costly to use *wechsels* they were removed from circulation (p. 173).

The attempt to incorporate institutional factors into the analysis of demonetization seems to be promising, although there is still much to be done to offer a reasonable model explaining quantitative changes in the relative shares of money (rubles and dollars) and nonmonetary instruments over time. All major developments in the story of demonetization of the Russian economy—the outburst of non-payments in 1992, the proliferation of quasi-money in 1994–1996, the unprecedented growth of barter did not allow Gasprom to cut prices for domestic customers, although Gasprom itself was willing to do it as part of the rational pricing strategy (different prices for different customers). This seems to be a far-fetched argument in general, and also in the particular case discussed in the paper (1996, when Gasprom under the pressure of the government had to borrow abroad to pay its arrears to the budget and to the Pension Fund).

²In addition to the non-payments subsidies, much greater transfers are carried out through price subsidies (keeping domestic fuel and energy prices at a much lower level than world prices) and through direct subsidies to agriculture.

transactions in 1995–1997—were totally unexpected and came as a major surprise to scholars and policy makers. To add insult to injury, barter and nonpayments started to disappear after the August 1998 financial crisis as unexpectedly as they emerged. There is a danger that the non-monetary economy in Russia will share the fate of the centrally planned economy—it can vanish before it is fully understood by economists.

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REFERENCES

- Ericson, R., Ickes, B. (2000, July). A model of Russia's "virtual economy." CEPR/WDI Annual Conference on Transition Economics, Moscow.
- Gaddy, C., & Ickes, B. (1998, September-October). Russia's virtual economy. *Foreign Affairs*, 53–67.
- Guriev, S., & Ickes, B. (1999). Barter in Russia. Mimeo, 2000.
- Guriev, S., & Kvassov, D. (2000, July). Barter for price discrimination? CEPR/WDI Annual Conference on Transition Economics, Moscow.
- Hendley, K., Ickes, B., & Ryterman, R. (1998, November). Remonetizing the Russian economy. In: H.G. Broadman, (ed.) *Russian enterprise reform: Policies to further the transition*. The World Bank, Wash., DC.
- Marin, D. (2000, July). Trust vs illusion: What is driving demonetization in Russia? CEPR/WDI Annual Conference on Transition Economics, Moscow.
- Popov, V. (1996). A Russian puzzle: What makes Russian economic transformation a special case. *WIDER/UNU*, RFA 29.
- Poser, J. (1998). Monetary disruption and the emergence of barter in FSU economies. *Communist Economies and Economic Transformation*, 10(2), 157–178.
- Woodruff, D. (1999). It's value that's virtual: Bartels, rubles and the place of Gasprom in the Russian economy. *Post-Soviet Affairs*, 15(2), 130–148.