

**Russia's Winter Woes: Tariff Setting for Local
Utilities in a Transition Economy**

by

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Abstract

During the past two winters, breakdowns in district heating services in Russia have grabbed international headlines. In Russia these services and water and sewerage services are the responsibility of municipal governments; these governments set the tariffs for these services. This article examines the tariff-setting process during 1997–2001 for these two services with particular emphasis on the decision process for considering tariff increases. We find that little progress has been made during the transition period in developing the legal base for rational tariff-setting procedures. Overall, tariff increases have been substantially less than the rate of inflation. Statistical analysis confirms that decisionmaking is highly politicized and that in times of extreme inflation tariff increases lag even further behind inflation, with the sector being used as a kind of shock absorber to cushion the full impacts of inflation on the population. There is an obvious acute need for leadership at the national level to address these problems.

Breakdowns in district heating services in Russia during the truly frigid winters of 2001–2002 and again in 2002–2003 grabbed headlines around the world. Local municipal enterprises that provide the heat claim that they had insufficient resources to maintain distribution pipes and boilers adequately or that they did not have the money to purchase coal or gas to generate the heat. Others believe the problem rests primarily with the inefficiency of the enterprises, which could do much better with the funds they do receive.

In fact, at least five factors determine the quality and costs of providing this type of service:

1. the technical procedures followed by the utility in determining the funds required to provide services, and if necessary expand them;
2. the process at the municipality for reviewing the tariff request made by the utility, including the level at which tariffs are set (adequate or insufficient to do the job);
3. the process at the municipality for acting on the recommendation from the review process;
4. the extent to which payments due to the utility for providing services are actually made (by households, commercial clients, and budget organizations, i.e., local governments and their associated agencies); and
5. the efficiency with which the available resources are applied by the utility.

This article examines tariff setting in Russian municipalities at the end of 2002, with the emphasis on the second and third points listed above. This is not to suggest that there are not problems in the other areas; there are, and they are very substantial.¹

Generally, municipalities set tariffs for district heat services and for water and sewerage services. In the following, we review the formal legal base, cite its shortcomings, and then empirically examine the behavior of a sample of municipalities in setting these tariffs from 1997 to 2002.

We find that little progress has been made in establishing a rational system for setting tariffs, that decisionmaking is highly politicized, and that in times of extreme inflation, tariff increases lag even further behind inflation. To judge from a review of

World Bank documents, these problems are common in the countries of the Commonwealth of Independent States but much less so in among Eastern European and Baltic countries.²

Tariff Reform in the Russian Federation

Under the Soviet system, municipal enterprises providing communal services operated on a cost-reimbursable basis. Investments were funded separately. Cost was divided into two parts: base costs and profit. Base costs covered regular expenses. In addition, certain classes of expenses, such as extra contributions to the employee funds for vacations or training and other “add-ons,” were covered by “profit.” Profit was set by municipal officials as a percentage of base costs, often in the absence of any analysis. These Soviet accounting rules are still in force and have a profound impact on the operations of utilities. Utilities cannot include most investment spending—including interest expense—in base costs, and the share of profits that can be used for investment is strictly limited, as is the maximum profit rate.

It is important to distinguish between two possible cost bases that could be used for regulatory purposes. Under one, the regulations determine tariffs for monopoly communal service firms, particularly water and district heat companies, as the cost of goods (or services) produced (or sold) by these enterprises. Thus, for a water utility it is the cost of a unit of water delivered to the boundary of the customer (e.g., connection to the internal network of a multifamily building). The regulation of tariffs for communal services for Russian households is based on an alternative approach. It differs from the standard western tariff regulation of utility monopolies in three important ways:

- The tariff may include not only the tariff for the services of the utility enterprise, but also the cost of works and services of other organizations engaged in the service delivery (in case of water supply, the cost of maintaining internal building nets, water meters in buildings or apartments, etc.).

¹ See, for example, Frienkman (1998) and PADCO (1998).

² This is based on a review of the descriptions of problems in these sectors contained in Bank project appraisal reports for urban water and district heat projects in the region; in particular, World Bank (1995, 1998a, 1998b, 1999, 2000a, 2001b, 2001c, 2002a, 2002b).

- The tariff for services to the households may cover only a portion of the cost of service delivery, with the remainder covered by other sources: the municipal budget (subsidies for the difference between full costs and the tariffs) or higher tariffs for other consumers (cross-subsidization).
- Tariffs for the households typically regulate not just the cost of a service, but also a normative volume of service consumption in cases where metering equipment is unavailable; thus the payment rate for the service equals the value of the regulated tariff multiplied by the regulated normative consumption rate. Metering for residential use of water and district heat, even at the building level, is extremely rare.

In the first days of the transition, the federal government transferred to municipalities the ownership of state housing (mostly of state enterprises), municipal housing, and the communal service assets associated with it. In practice this meant that municipalities became the owners of the great majority of district heat and water-sewerage service enterprises. (As discussed below, some large facilities that co-generate electricity and heat are regulated by the Subjects of the Federation, that is, the regional governments.) The main regulatory document issued in September 1993 on reforming the prices of housing and communal services empowered local administrations to establish tariffs for housing and communal services. It also called for the development of a methodology for the determination of economically reasonable rates and tariffs.³ A 1996 Government Resolution confirmed that households should pay the full costs of these services by 2003 but again failed to address the structure for setting tariffs. Several subsequent regulations continued this pattern.

It wasn't until 2001 that a regulation was issued that actually addressed the setting of tariffs at the municipal level.⁴ It spoke of the need for tariffs to be substantiated by the production and investment programs of the regulated enterprises. For the first time, it declared the need for developing procedures linking tariff regulation at the municipal and regional levels, and established that the tariff structure should correspond to the system of contractual relations in the housing and communal service sector.

³ Resolution of the RF Council of Ministers, *On Transition to a New System of Payments for Housing and Communal Services, and Procedures for Granting Compensations (Subsidies) to Citizens for Housing and Communal Services Payments*. (No. 935 as of September 22, 1993).

⁴ RF Government Resolution No. 797 of November 17, 2001, *On the Subprogram "Reform and Modernization of the Housing and Communal Service Complex in the Russian Federation" of the Federal Targeted Program "Zhilishche" for 2002–2010*.

At the end of 2002, the determination of tariffs for municipal communal services was influenced by the federal, regional, and municipal levels of government, because the production of these services involves inputs that have prices regulated by the federal and regional authorities. The effective legislation assigns each level its own regulatory powers. More specifically, the distribution of responsibilities is as follows:

I. *At the federal level:*

- approving the federal standards of the cost of housing and communal services that are used in computing the federal contribution to locally paid housing allowances that subsidize communal service payments;
- establishing tariffs for the electricity and gas delivered to the wholesale market by all participants in this market; and
- establishing limits for fuel and energy consumption by organizations financed by the federal budget.

II. *At the regional (Subject of the Federation) level:*

- regulating tariffs for the electricity, gas, and heat procured on the wholesale market from enterprises of the fuel and energy complex (FEC), for all consumer groups;
- establishing regional prices and tariffs for the electricity and heat produced by large cogeneration plants operating in the region sold on the retail market;
- establishing tariffs for the electricity and heat, as well as water supply and wastewater collection, for private enterprises producing these goods and services for sale in the retail market; and
- exercising control over compliance with the existing regulatory legal acts of local governments.

III. *At the municipal level:*

- regulating prices and tariffs for water and heat for municipal enterprises;
- establishing normative rates for the consumption of housing and communal services; and
- establishing rates for households' payments for communal services.

The above listing reveals multiple overlapping authorities. Prominent among these is that the cognizant regulatory agency in the area of heat and water supply depends on the type of owner. Private entities are regulated at the regional level even if they provide services only within a municipality. This creates serious, sometimes irresolvable, problems in attracting private businesses for management of municipal communal infrastructure.

It is important to note that the existing legislation does give some direction to the tariff-setting process by stating that municipalities should establish

rates and tariffs for the housing and communal services (except tariffs for electricity and gas) subject to the implementation of cost-reduction measures as a result of unjustified expenditures revealed through expert examination of the tariffs for goods, works, and services counted in their price. The decision to review the rates and tariffs for the housing and communal services should be preceded by an obligatory expert examination of the economic feasibility of the tariffs for goods, works, and services counted in the price of respective services.⁵

This statement and the assignment of tariff-setting authority to local governments constitute the entire legislative base.

In addition to these laws and regulations, three methodological documents have been issued by the national government. A recent review characterizes the content of these as follows:

Overall, one can say that practically all methodological recommendations reduce the tariff rate calculation to base-costs, disregarding or merely declaring the need to take into account the development goals of the regulated enterprises. These recommendations say nothing about a system of tariff regulation at the municipal level, tariff regulation procedures, etc. (Sivaev et al. 2003)

While these methodologies are not binding for local governments, they have gained broad acceptance because of the opportunity they offer to begin to fill the regulatory vacuum.

Tariff Setting in Practice

The result of the weak legislative and methodological base provided to municipalities is very poor decisionmaking on tariffs. Specifically, analysis of tariff regulation practices in Russian municipalities reveals several typical problems:⁶

1. Almost universally, tariff regulation acts are a belated response to changes in external conditions for the operation of the enterprises, such as general inflation or increases in electricity tariffs. There is no understanding of tariff

⁵ RF Government Resolution No. 707 as of June 18, 1996, *On Reorganizing the System of Payments for Housing and Communal Services*.

⁶ This list was prepared by experts at the Institute for Urban Economics (Sivaev et al. 2003). It is highly consistent with World Bank observations. See in particular, World Bank (2000b, 2001a) and Fienkman (1998).

regulation as a component of the property management system for utility enterprises.

2. Tariffs are, as a rule, determined as “costs plus profitability.” Being based on cost-tied principles of tariff formation, this system in no way stimulates utility enterprises to control costs.
3. Tariffs are set without accounting for the true investment needs of enterprises. Several vital expense items (e.g., investment projects for expanding production and modernizing fixed assets) may be financed from “profit” only. Since profit is determined as a specified percentage of self-cost, it often turns out to be insufficient both for investment needs and for the financial viability of the firm.
4. The majority of municipalities lack formal tariff regulation procedures. There is no formal definition of the reasons for which a tariff may be reviewed, or of the effective term of tariffs (in the majority of municipalities tariffs are established for an unspecified term). Also absent are tariff application review procedures and procedures for reconciling the needs of the enterprise and the paying capacity of consumers. Tariff review processes are nontransparent and do not provide for the participation of all interested parties.
5. Because no formal procedures are in place, tariff rates turn into an instrument for heads of local administrations or representatives to use for their political objectives. As a result of populist decisions, municipal utilities are deprived of the financial resources they need for normal operations, which leads to depreciation of the fixed assets and reduced service quality.
6. In practically all municipalities the tariff review and approval process is unrelated to the budget process. As a result, the budget is based on the tariff rates effective when the budget is formulated. If tariffs are reviewed and increased during the budget year, the increase results in overdue payables from public organizations.

This is a formidable list of deficiencies, and it will take comprehensive federal legislation to address most of them.

Statistical Analysis

The broad findings outlined above are widely accepted. In this section we formulate specific hypotheses about the local tariff-setting process and then test them with data from nine cities.

Hypotheses. We have formulated three hypotheses based on the foregoing analysis.

1. Decisions on increasing tariffs are deferred until elections are over.

2. Municipalities where tariff review decisions are the responsibility of the local legislature (Duma) are less willing to review and increase tariffs.
3. Local authorities use tariff policy to shelter the population from the adverse impacts of the transition on household incomes, particularly in periods of very high inflation.

Obviously, these hypotheses do not cover the entire spectrum of the problems reviewed earlier. Testing them, nevertheless, may provide insight into the current situation in municipalities.

Variable Definitions and the Data Employed. To test these hypotheses, the following model was estimated for four dependent variables: the ratio of a tariff index (January 1997 = 100) to the consumer price index (same base) for heat and water services, for residential and industrial users. The mean values of the four variables are:

Water–households	.90
Water–industry	.67
Heat–households	.58
Heat–industry	.51

The general reluctance to raise tariffs is clear from these figures. The cumulative shortfall in maintenance and investment to renew systems suggested by these figures is large indeed. Since heat costs are much greater for households than water costs, the figures also indicate that the overall lag of tariffs for residential users behind inflation was probably around one-third during this period. The lower average rate of increase for industrial tariffs compared with those for households in part reflects a national policy of moving toward a unified tariff for each service. During the Soviet period, industrial users faced tariffs several times those of households, and the new policy is designed to make Russian industry more competitive. Even in 1996 in Perm, for example, water tariffs for industrial customers were 20 times greater than those for residential users; by February 2002 the ratio had fallen to about 6. The higher rate of increase shown above for residential users compared with industrial users suggests this policy is being implemented.

The independent variables employed in the analysis are listed in Table 1 along with a summary rationale for including each in the model.

Table 1. Independent Variables Included in the Analysis

Variable	Definition/Rationale	Mean value
D	Var = 1, if the city Duma approves tariffs. Resistance to increased tariffs is greater if the Duma, rather than the mayor, approves tariffs.	0.90
EL	Var = 1, during the six months prior to an election. Pressure exists during all elections for the political parties not to anger voters with tariff increases.	0.33
A	Var = 1 when the rate of monthly inflation is greater than 3 percent. Municipalities are likely to use restraint in increasing housing and communal services costs to consumers as a “shock absorber” during periods of extreme inflation. The main inflation spike was after the 1998 ruble devaluation.	0.20
E	Index for electricity tariffs (Jan. 1997 = 100). Electricity is an important component of operating costs for both water and heat. Because there is no coordination between regional and municipal authorities on the timing of tariff increases, there is no firm expectation about the sign of the coefficient.	167
C _i	Series of dummy variables for the included cities to capture city-specific effects. Omitted city is Cherepovets; see text for further explanation.	

Cherepovets was selected as the base city (omitted category) because it differs from the other cities in two important respects because of reforms implemented in 2000.

1. It is one of the few cities in Russia with a logical system for regulating the tariffs of its housing and utility enterprises that takes into account the needs of both regulated enterprises and consumers.
2. It has abandoned the practice of budget subsidies for housing and utility enterprises, thereby increasing the total revenues of the enterprises (because the government was often delinquent in its gap-filling payments) and strengthening the targeting of the remaining subsidies, which are allocated through a means-tested housing allowance program.⁷

⁷ These innovations are described in Sivaev et al. (2003). The housing allowance payment is operational throughout Russia. For information on it, see Puzanov (1997) and Struyk, Lee and Puzanov (1997).

To estimate the model monthly data on tariff levels, various events were assembled for nine cities for the period 1997–2001: Perm, Izhevsk, Petrozavodsk, Cheboksary, Yuzhno-Sakhalinsk, Ulyanovsk, Yoshkar-Ola, Magadan, and Cherepovets. These cities are drawn from several Russian regions, including European Russia (Cherepovets), the Urals (Perm), and the Russian Far East (Yuzhno-Sakhalinsk, Magadan). The cities have exhibited sharp differences in their interest in housing and communal sector reforms over the years. For example, while Cherepovets and Petrozavodsk have been progressive in housing and communal services reform generally, Ulyanovsk strongly resisted adopting reforms until two years ago, when it was forced to begin by its virtual bankruptcy. While the cities were selected, to some extent, for their diversity, they do not constitute a representative sample.

The authors had good working relationships with these cities and could collect the necessary data for the analysis from local administrations. In Perm, Cheboksary, and Yuzhno-Sakhalinsk, data on electricity tariffs were not available. Consequently, only six cities are used in the analysis of water tariffs, where electricity is a very important input. Models with and without the electricity variable are estimated for district heat tariffs (i.e., samples of six and nine cities, respectively). With electricity accounting for less than 10 percent of the production costs for district heat, estimating both specifications seemed reasonable. Since the data are monthly, the total observations range between 360 and 540.

Results

The results, presented in Table 2, generally confirm the hypotheses set out earlier, but the patterns are complex. Six estimated models are included—one each for household water and industrial water tariffs and two specifications (and samples) for district heat tariffs. The two sets of district heat models differ in the inclusion of the variable indicating an increase in electricity tariffs.

The results attest to the impact of municipal Dumas' reluctance to raise water tariffs. For example, for residential users, the ratio of the tariff index to inflation falls by 0.41, a decline of nearly half of the average value when a Duma must vote on the increase. On the other hand, the Dumas' reluctance is not evident in heat tariffs. Indeed,

if anything, they seem more willing to increase heat tariffs, particularly for industry, than are municipal administrations.

The hypothesis that tariff policy works to cushion the blow of severe inflation on household and industry well-being is clearly supported: The dummy variable is highly significant in all six models.

The impact of elections is more modest than we had expected. Interestingly, after controlling for other factors, upcoming elections seem to have no influence on the level of water tariffs for households. On the other hand, tariffs for industrial users for both water and heat (in the model including the electricity variable) are maintained during the run-up to elections. One interpretation is of a possible quid pro quo between election contributions and the cost of doing business. Nevertheless, the coefficients of these variables are fairly small, suggesting that, after controlling for other factors, the reductions are modest.

The results of the increase in electricity tariffs are highly significant in all four models where it is included. The small quantitative effect is negative. One might have expected the opposite (i.e., higher electricity tariffs pushing up municipal tariffs). The negative sign could be interpreted as demonstrating the lack of coordination between regional and municipal governments in tariff setting.

It is also worth noting that during much of the analysis period, local utilities piled up huge debts to the national electricity monopoly. This means that the electricity rate increases may not have mattered much to some of the municipal utilities—a tory consistent with the negative sign.

Table 2 Estimated Regression Models						
	Household water tariff	Industry water tariff	Household heating tariff	Industry heating tariff	Household heating tariff	Industry heating tariff
(Constant)	1.103	1.356	0.361	0.304	0.688	0.786
	13.237*	27.820	9.737	10.236	8.592	15.292
Election hypothesis	0.022	-0.046	-0.034	-0.028	-0.063	-0.062
	0.543	-1.888	-1.095	-1.095	-1.430	-2.198
Duma factor	-0.405	-0.169	0.123	0.376	-0.042	0.131
	-4.609	-3.290	1.808	6.881	-0.506	2.468
Inflation jumps more than 3%	-0.118	-0.081	-0.130	-0.106	-0.155	-0.141
	-3.025	-3.545	-4.548	-4.621	-3.867	-5.476
Perm	-	-	0.241	0.045	-	-
	-	-	3.353	0.780	-	-
Izhevsk	0.139	-0.297	-	-	-	-
	1.643	-6.023	-	-	-	-
Petrozavodsk	0.937	-0.165	0.118	-0.083	0.128	-0.068
	11.111	-3.345	1.635	-1.449	1.620	-1.335
Cheboksary	-	-	0.171	-0.029	-	-
	-	-	2.373	-0.511	-	-
Yuzhno-Sakhalinsk	-	-	0.255	0.054	-	-
	-	-	3.540	0.939	-	-
Ulyanovsk	1.513	-0.359	0.261	-0.028	0.304	0.036
	17.836	-7.236	3.627	-0.481	3.804	0.694
Yoshkar-Ola	0.573	-0.218	0.357	-0.036	0.330	-0.075
	7.198	-4.675	5.266	-0.659	4.411	-1.562
Magadan	-0.205	-0.537	0.188	0.299	0.082	0.142
	-3.300	-14.785	3.845	7.654	1.400	3.772
Electricity tariff growth	-0.002	-0.001	-	-	-0.001	-0.002
	-6.001	-6.151	-	-	-4.717	-10.886
R2	0.744	0.473	0.248	0.292	0.312	0.499
F-stat	113.186	34.954	15.496	19.328	16.484	36.219
n	360	360	540	540	360	360

* t-statistics appear below the coefficients.

The inclusion of the electricity variable has significant impacts on the magnitude and significance of the coefficients of other variables in the models for district heat. This result holds when the sample of cities included in the regression where electricity tariffs are excluded is the same as in the regression where the variable is included. The variable for elections is significant for the models that include electricity. The coefficient of the Duma variable and many of the city-dummy variables change sharply. This argues for the importance of controlling for the actions of regional authorities in analyzing municipal tariffs.

A number of the city-dummy variables are statistically significant and impressively large. Interestingly, there is not much of a clear pattern in the signs of these variables, either for the same city across the four tariffs or for all the cities in a single model (i.e., relative to Cherepovets). For example, in the model of household water tariffs, the coefficients for Petrozavodsk and Ulyanovsk are positive, very large, and highly significant. But the coefficient for Magadan is highly significant, small, and *negative*. Two reasons for the high variability in the results for the city variables seem plausible. First, Cherepovets adopted its exemplar practices only in the past couple of years, so it is not a steady reference point for the other cities. Second, tariff policy in many cities has been highly variable, shifting dramatically with changes in administration and the posture of presidential administrations in Moscow.

Conclusions

After reviewing the analysis presented, it is little surprise that the past two winters have witnessed frequent crises in the provision of water and heat services in Russian cities. Over the past several years, tariffs for these services have increased at a fraction of inflation, and the bills based on these tariffs have often gone unpaid by local governments. The statistical analysis presented here confirms the highly politicized decisionmaking on tariff increases. It also indicates that tariffs have been restrained as a “shock absorber” to mitigate the impact of surges in inflation on the population.

Actually, politicization has been at two levels. The first is at the local level, as we have seen. But this pattern could not have been sustained without the complicity of national energy monopolies in tolerating unpaid bills from local communal service enterprises—and ultimately the municipalities. This policy began to be reversed only after the election of Vladimir Putin.⁸ Unfortunately, the Russian government has displayed great reluctance to take decisive action to put tariff setting on a rational footing, both in determining appropriate rates and in adopting them. Until this is done, more winters of crisis are likely in store.

⁸ See Hough (2001) for an excellent discussion of this implicit policy during the transition.

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