Dealing with the bust in Vorkuta, Russia

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Dealing with the bust in Vorkuta, Russia

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ABSTRACT

This article traces the governance path affecting the boom-bust cycle in the Russian Arctic city of Vorkuta as a case study examining the role of institutional capacity and informality in mitigating the consequences of the cycle. The analysis examines the usefulness of various tools, including planning, policy, and informality. It also investigates the role of different actors, including the national and local components of the state and private corporations. The conclusion provides a typology of formal and informal land use tools. Soviet planners failed to foresee the bust and did not make provisions for it. Subsequently, the failure of national and local state policies to provide full solutions, combined with the absence of sufficient investment from private sector corporations, opened the door to a broad-ranging informality that encompasses policy-making, individual entrepreneurship, and associated conceptions of individual actions in society. The Soviet/Russian experience differs from that of other countries because in the last 100 years it has run the full gamut from a planned economy to unbridled capitalism. In cross-national comparison, it demonstrates the potential value of informal practices in situations where there is weak formal institutional capacity.

1. Introduction

Russian cities exist in a land use planning environment that is almost completely beyond their control. During the Soviet era, the state planned the entire economy and determined where and when to build cities and how they would develop. It also provided subsidies to help cities that could not survive solely on local resources. With the collapse of the Soviet system in 1991, the comprehensive planning apparatus simply evaporated and cities were left on their own. Residents had to figure out how to survive in the absence of the previous support they had received from the central state under socialism. Cities, such as Vorkuta in the Russian Arctic region, now had to draw on local resources and hope that the federal government would provide support through its national Arctic policy or that one of the big companies that grew out of the crumbling state would invest in local resources or infrastructure, creating new jobs to support the local population. The country moved from having a reasonably clear plan implemented by well-defined institutions using direct tools of control, even if not perfectly implemented, to living under a market-oriented economy in which a larger number of players were involved relying heavily on hybrid institutions and a variety of informal arrangements.

This article lays out a theoretical framework for analyzing the boom-bust experience of a Russian case study city by drawing on Evolutionary Governance Theory. After a discussion of the methods, it lays out the empirical evidence derived from the case study, delineating the evolution of the governance path while taking into account the Soviet and post-Soviet contexts. The conclusion layouts out a typology of land use tools and key actors in assessing institutional capacity for addressing boom-bust consequences and their management.

2. Theoretical framework

This analysis draws on Evolutionary Governance Theory (EGT), which examines the evolving interactions among actors, institutions, discourses and knowledge (Van Assche et al., 2019). While we do not attempt a full application of EGT here, we draw on several of its core tenets to illuminate a case study city from Soviet/post-Soviet Russia.

The first of these concepts is the idea of the governance path, which we use to obtain a more clear and comprehensive view of boom-bust cycles. In this context, governance is "the taking of collectively binding decisions for a community in a community, by governmental or other actors (Van Assche et al., 2015)." The elements and structures of governance develop along specific paths. From this perspective, governance is about the way societies make sense of their realities and govern them. A key theoretical insight derived from this approach that is relevant to our case study is that the specific evolution that the Soviet Union and post-Soviet Russia took did not include much planning for the decline of its Arctic cities. The absence of this kind of advance planning severely limited options for subsequent generations of residents who had to deal with the consequences of the boom-bust cycle.

A second key insight is "the importance of flexible institutional capacity in tempering boom and bust and allowing opportunities for adaptation (Van Assche et al., 2019)." Part of the problem caused by boom-bust cycles is that they reduce the capacity of the communities

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they affect to deal with their consequences. Those potentially helpful institutions that cease to exist or simply no longer function are "dead institutions." The EGT approach also stresses the importance of formal and informal institutions, a common topic in studies of the Soviet Union and Russia (Hale, 2011; Kosals and Maksimova, 2015; Ledeneva, 2006, 2013; Sakwa, 2011). Most importantly, while informal institutions are not always visible from the perspective of the state, their rise and flourishing can help mitigate some of the consequences of the boom-bust cycle.

A final insight is the focus on knowledge. Cities that can create new knowledge often have the ability to survive the boom-bust cycle. But creating this knowledge requires capacity and where that capacity does not exist, cities have few tools to mitigate the negative consequences of a bust in their primary industry.

The focus on actors in EGT helps illuminate our understanding of the boom-bust cycle in the Soviet/Russian context by shining a theoretical light on the main drivers of change in Arctic cities. At the extremes, state actors can be relatively coherent, centralized and able to muster resources or, alternatively, fractured at the national, regional, and local levels and short of resources to implement policies. They can also occupy a wide range of middle ground along this spectrum. In situations where the state allows them to operate, private sector corporations can play a role in the management of the boom-bust cycle. In contrast to an idealized version of the state, they care primarily about their own profits rather than the fate of the cities.

During the Soviet period, it was the centralized state based in Moscow that made policies for the Arctic. It determined what kind of resources to extract and how many workers would be involved in the operations. After the collapse of the Soviet Union, private companies took over this responsibility from the state and they were the ones to make the resource decisions (Heleniak, 2009). With the expansion of corporate power, city governments were largely left on their own since neither the federal state nor the corporations prioritized their interests. Certainly in these conditions there were few of the kinds of resources and planning used by shrinking American cities such as Pittsburgh and Detroit to address the deleterious consequences of the bust cycle that they faced (Ryan, 2012).

3. Methods

This article draws on extensive field research. During the summer of 2017 four of the five authors traveled to western Siberia to visit the cities of Vorkuta and Salekhard. There they conducted semi-structured interviews with numerous city and company officials to gain a greater appreciation for their efforts to deal with the boom-bust cycle. The article also draws on primary sources produced by local Vorkuta media and official sources to supplement the material obtained from the officials.

The analysis is constructed as a case study examining one Russian city that exemplifies the travails of the boom-bust cycle. The focus is on Vorkuta, a now semi-depopulated coal mining city that had experienced rapid growth in the 1930 s–1960 s. The empirical discussion maps the evolution of the governance path for Vorkuta from its founding in the Stalinist era through Putinism.

4. Empirical analysis

4.1. Mapping Vorkuta's governance path

Vorkuta was founded as part of Stalin's notorious Gulag system of prison camps and was built primarily to house the camp leadership and prisoners as well as non-incarcerated workers extracting coal from the rich Pechora Basin. Critical to the USSR's WWII and post-war efforts, Vorkuta itself grew exponentially, while building satellite communities to serve the 13 coal mines surrounding the city, dubbed the "Vorkuta Ring." This growth continued until the area fell on hard times in the 1980s and 1990s. The collapse of the USSR in 1991 ended generous industrial and wage subsidies, without which Vorkuta coal could not compete with cheaper sources in the face of falling commodity prices. Today Vorkuta has lost a significant part of its population, dropping from 212,000 residents in 1986 to 77,000 in 2018.[1] Many of Vorkuta's satellite mining cities, some with peak populations over 15,000, were closed and abandoned. This sharp economic decline prompted a variety of social and governmental challenges, from rising criminality to austere cuts in public services.

Currently, the city retains some coal production, while also serving shift-workers who pass through on their way to oil and natural gas work sites farther north. A local economy has also developed, with farmers markets, bakeries, restaurants, and night-life concentrated within Vorkuta's urban core. In recent years, social problems such as criminality have fallen from their peak years in the 1990s, and city planners in Vorkuta began seeking an equilibrium in which the local economy was adequate to serve the population. By investing in maintaining the city center and diminishing services to the periphery, they aimed to become more efficient and slowly reduce outmigration, hoping to flatten out at about 60,000 population. The main hope for large-scale economic recovery rests on a resurgent boom in demand for Vorkuta's high-quality coking coal, used in steel smelting, rather than in energy production. A military base near the city is being upgraded and might have an impact on the city's future. However, the military expansion is a federal issue over which city officials have little control. In the absence of new demand for coal and a federal windfall, however, Vorkuta has little choice but to find a way to survive using existing local resources.

Overall, Vorkuta has dealt with its decline through informal policy-making and entrepreneurship. The city so far has not been able to attract significant and long-term funds from the federal or regional governments or from Russia's largest companies, including Severstal – an international steel conglomerate which now owns Vorkuta's mines. Rather, the survival strategy has focused on saving part of the infrastructure of the urban core of the city and the closure of outlying areas that were no longer viable. The city has also experienced the closure of several prominent institutions in the last few decades. Efforts to retain or redevelop a local university culture and other assets of a strong secondary economy have also not been fully realized. In the absence of external investment, city authorities have allowed and encouraged a blossoming of small business in the city center as a way of generating jobs for local citizens and providing services to the larger population of the region which the city serves, as well as people located in Vorkuta temporarily. This local business development makes Vorkuta stand out from some other Arctic cities in Russia where the authorities and local monopolies keep a much tighter control on commerce in order to maintain control of the money flows.

The discussion of the empirical material will proceed in the following way. The next section briefly describes the harsh climate of the Russian north, its isolation, and changing climate conditions. The following sections provide concise overviews of the boom-bust cycle and Vorkuta's decline. The discussion section examines agency in dealing with the boom-bust cycle, the rise and fall of efforts to create a knowledge economy, and the role of informality in helping to soften boom-bust cycle effects. The conclusion provides a typology of tools for addressing the cycle and the actors involved as part of a larger discussion of institutional capacity for mitigating the consequences of the bust.

4.2. Isolation in the harsh and changing arctic environment

The city of Vorkuta is located on the eastern foothills of the Polar

[1] Data for Vorkuta agglomeration, the population of the City if Vorkuta is 56,088 (2018). http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/afc8ea004d56a39ab251f2bafc3a6fce.

Ural Mountains at 67.5 °N latitude and 64 °E longitude, which is 150 km north of the Arctic circle and just 180 km south of the Arctic Ocean coast. As such, Vorkuta experiences polar night (11 days of complete darkness in December) and polar day (46 days in May-July). The region is characterized by a subarctic, moderate-continental, moderate-cold climate. The mean annual air temperature is -5.7 °C with average monthly temperatures ranging from +13 °C in July to -20 °C in February. Climatologically, the region has only 70 days with air temperatures above freezing and the winter lasts for at least eight months. The city periodically experiences a large swing of temperatures during both winter and summer periods (freezing is frequent in summer and thawing in winter), which imposes significant stress on the built environment. Vorkuta is surrounded by typical Siberian tundra, underlined by permafrost of variable thickness and ground-ice content. The permafrost is also present under the city, though its characteristics were greatly modified by anthropogenic influences. In general, the city permafrost is significantly warmer, and experiences pronounced degradation (Grebenets et al., 2012). Considering the harsh environmental conditions, the Vorkuta region has no agricultural potential. Several experiments to develop agriculture (e.g. dairy and vegetable farming) failed and Vorkuta is highly dependent on external food supplies. Unlike many Russian Arctic cities, Vorkuta is connected to the Russian Railroad system. However, the nearest permanent automobile road to mainland Russia is 700 km south of the city.

Over the last decades the Vorkuta region has experienced pronounced changes in climatic conditions. Since 1970, air temperature observed at the Vorkuta weather station has experienced a substantial and relatively consistent warming trend resulting in degradation of permafrost (Romanovsky et al., 2010). The combination of human- and climate-induced changes in permafrost conditions has contributed to a significant reduction in the ability of permafrost to carry the structural load of city buildings. At present over 50% of Vorkuta structures built on permafrost have dangerous levels of deformations (Kronik, 2016).

4.3. The booms & busts of Vorkuta

The main driver of development in Vorkuta has always been coal mining, the intensity of which was largely determined by external factors that caused a sharp rise, and an equally dramatic fall, in the city's economy. Vorkuta came into being as the result of two main factors. The first was the colossal growth of interest in the development of the Arctic which occurred in the USSR during the 1930s. This surge had great economic and political importance (McCannon, 1998). Many expeditions were sent to the Arctic and new transport routes were planned. Among other accomplishments, these explorations discovered large coal deposits in the Pechora Basin of the Vorkuta region in 1930.[2] In 1931 a settlement called “Rudnik” (“Mine”) appeared with the hope that it would become the “gem” of the future Vorkuta. The mine operated on forced prison labor, under the Gulag system instituted at this time for economic development of the remote North (Reisser, 2017). Vorkuta, which received the status of “city” in 1943, was in fact a network of mines, camps housing thousands of prison laborers, and settlements of “free persons” (non-prisoners) (Fig. 1).

The second factor, which helped to radically accelerate the development of the city, was the outbreak of World War II in 1941. Vorkuta’s boom under wartime conditions was typical for Arctic territories. Thanks to the fighting, the strategic or economic importance of some territories increased even if there were no economic reasons to develop them in peace time, helping to overcome barriers to development which might otherwise have been present. Just as Russia’s czarist state founded Murmansk during World War I to bypass blockaded transport routes in the Baltic Sea, Vorkuta grew as a “child of war" during the 1930s “Soviet Arctic boom” as planners anticipated future conflict.

After the Donbass region, the USSR’s main supplier of coal, fell to the invaders, the development of the Pechora field and a reliable transport connection to Moscow acquired urgent strategic importance. In the first months of the war, prison laborers rushed to complete construction of the Konosha-Vorkuta railway line. End-to-end transportation on the route began on December 1, 1941 (Reisser, 2017).

Given its birth as part of Stalin’s Gulag system, Vorkuta comprised two parts, the prison camp and the civilian city. A couple of years after the war ended, Vorkuta consisted of “a handful of monumental structures, a park and boulevard, and a series of haphazard spaces and buildings originally built as part of the camps (Barenberg, 2014).” Some of the released prisoners took advantage of economic incentives to remain in the city and continue to work the mines. City architect Vsevolod Lunev drew up the first plan for Vorkuta in 1948 with the help of a prisoner, emphasizing construction on non-permafrost land, where building would be cheaper and quicker than on the permafrost (Barenberg, 2014). Though little of the plan transitioned from paper to the actual city, 1950 saw the construction of a children’s hospital, which marked an evolution of the city away from being focused on the camp elite toward looking after the needs of its citizens. Between 1947 and 1953, Vorkuta doubled in size, growing from 30,127 to 68,553 (Barenberg, 2014). To attract more skilled labor, the city built clubs, libraries, and fitness centers.

Vorkuta’s development overcame the economic logic of the postwar period. Already in the 1960s, economists wrote about the low profitability of extracting coal in many Vorkuta-area mines, and the radius of coal exports was reduced due to the unprofitability of transportation over long distances (Slavin, 1961). Nevertheless, mining persisted with significant state subsidies to workers’ wages. In this instance the Soviet authorities had the resources to prevent a bust by simply subsidizing salaries from the state budget. The government at that time had little interest in the economic rationality of its actions.

The 1960 s–1980 s saw significant population growth in Vorkuta, with residence in the agglomerated region expanding to well over 200,000 (Barenberg, 2014). By 1962, the city had a new plan that took advantage of recent developments in building techniques and emphasized the need to build the city for Arctic conditions (Barenberg, 2014). The plan called for three new micro-districts in the city center and was actually implemented over the next decade, forming the core of the city that would remain in the bust period. The city expanded quickly to house its growing population; the first modern prefabricated buildings appeared in 1962. These structures came to dominate Vorkuta’s urban landscape, joining the older neoclassical buildings inherited from the Stalinist era (Fig. 2). Providing enough housing was a constant concern for city administrators, pushing them to continue aggressive urban growth. At one point the city even planned to grow to over 300,000 residents.

It was during this “golden age” that Vorkuta actively tried to develop a diverse economy to put the city on a more solid foundation. In 1960, the Vorkuta bread-baking complex opened; in 1964, the Vorkuta Dairy Plant; and in 1967, the distillery, becoming the Komi Republic’s first plant of this profile. There were some attempts at experimental agriculture, to grow wheat and hay for local dairy cows. However, economically these alternative industries were never profitable, and the city continued to rely solely on incomes from state subsidized coal production (Zamiatina and Piliasov, 2018).

Specialization in coal mining initially influenced the formation of Vorkuta as a network of settlements near mines, and Vorkuta from the start became an agglomeration of urban spaces. Around the central city (the official Vorkuta), a "halo" of settlements was formed, aptly named the "Vorkuta Ring." At its peak, this ring contained 13 coal mines, and more than 16 settlements, the largest of which consisted of more than 15,000 inhabitants (Fig. 3). However, following the collapse of the USSR, the coal industry was no longer sustainable in the absence of large state subsidies. Against the backdrop of the economic crash and

[2] Vorkutaugol JSC. “History.” Accessed May, 2018: http://vorkutaugol.ru/rus/about/history/index.phtml.

Fig. 1. The growing city, camp, and mines in Vorkuta.
Source: World War II Database/Pinterest.

Fig. 2. Examples of prefabricated buildings in Vorkuta.
Source: Britannica, Deviant Art.

political upheaval, coal enterprises began to collapse with tragic consequences. The first large-scale strikes among coal miners began in 1989 and reached exceptional proportions. In those years, Vorkuta became a symbol of extreme economic depression. As the rampant nonpayment of wages continued, Vorkuta's miners organized protests, not only in the city itself, but also in front of government buildings in Moscow. During this same period, the mass outflow of population from Vorkuta substantially increased. The turmoil of the 1990s and subsequent rapid decline of the coal industry, forced the now shrinking city onto a path of spatial compression.

In 2003, a small revival of Vorkuta's coal industry occurred when a Russian steel conglomerate, Severstal, purchased the local coal producer Vorkutaugol. In a departure from Soviet-era practices, the company took little responsibility for worker conditions outside the mines, as this was now generally considered a problem for the local government rather than the dominant corporation.

Similarly, Severstal invested little in the actual mines. In the summer of 2017, Soviet banners from the 1980s still adorned mine entrances, an indicator as to how little had been spent on fixed

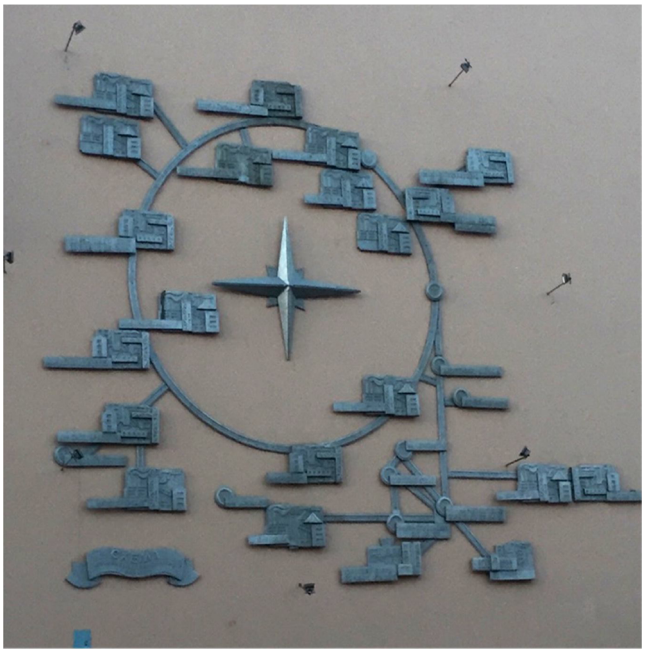

Fig. 3. The Vorkuta Ring, where the city center is designated by a cross surrounded by satellite settlements.
Source: Nikolay Shiklomanov.

infrastructure within the region since the 1980s. While coal production temporarily rebounded in the 2000s, the process became increasingly automated and required much less manpower. Moreover, several large mining disasters in 2015 and 2016 caused more closures, further reducing production and profitability. Severstal's acquisition of the mine did not result in the widespread recovery of the economy, as had been hoped. Instead, the decline in Vorkuta's population has been continuous, with ongoing emigration over the past decade.

The last major stimulant for economic growth in Vorkuta came with the construction of the nearby Bovanenkovo-Ukhta gas pipeline, which

was completed in 2017 (Saxinger et al., 2017). This episode is comparable, for example, to the revival of Fairbanks in the 1970s, when the laying of the Trans-Alaska pipeline contributed to an economic recovery and the development of many services. A military base outside Vorkuta has also seen recent investments, but the effect of this investment has been negligible on the local economy. Unfortunately, these state inputs have not sparked the revival that some planners hoped, with many improvements in the economic conditions being small and short-lived.

4.4. Explosive decline

The peculiarities of Vorkuta's functional specializations and economic development propagated dynamic urban planning changes. Since the 1990s, Vorkuta experienced intense compression of urban space, promoted by programs such as the Northern Restructuring Project financed by the World Bank and Russian Federal Government.[3] The most recently constructed buildings of the central core have been preserved, but most of the settlements in the "ring" were closed and abandoned. Within the center of the city, many of the early Stalinist buildings are only partially inhabited, while those built in the 1960s are still in use.

Forced budgetary austerity, as a result of the collapse of the USSR, combined with the emigration of large populations, left the city administration with a long back-log of maintenance issues. Especially in areas with permafrost, where insulation of the ground from building heat and snow removal are critical to the structural integrity of the buildings, ongoing maintenance is important. Without the population to inhabit apartment blocs and provide local tax income, the city was faced with the impossible task of maintaining local infrastructure. The degraded maintenance capability and lack of population to inhabit and maintain spaces directly resulted in the degradation of several neighborhoods in Vorkuta, according to city Chief Architect A.V. Ivashchenko (July 2017).

The collapse of the city's dominant industry has led to discussions stressing that once a city loses its main reason for existing, there is no point in continuing to support it. In 2017, former Vorkuta Mayor Igor Shpektor (mayor from 1998 to 2007) argued that "it is impractical to develop one-factory cities in the Arctic, built to extract hydrocarbons and other materials, when those resources are now depleted. Similarly, I don't think that it is practical to develop other industrial sectors in such cities."[4] However, efforts to implement the idea of simply closing Vorkuta and removing its residents following the end of the Soviet Union were not successful. Moreover, many residents have argued that it is worth saving such cities (Nuikina, 2014).

From 1998 to 2009 the Northern Restructuring Project worked to relocate Vorkuta residents with an $80 million loan provided by the World Bank, in cooperation with the Russian federal government and local administrations. This resettlement program was launched in combination with several other programs in a variety of Russian cities. These programs targeted consolidating non-viable settlements, and provided outmigration support to "socially vulnerable categories from generally viable settlements,"[5] and resulted in the mass depopulation of Vorkuta's outer ring. While this program was instituted in several other parts of Russia, including Norilsk and Susuman district, it was by far most effective in Vorkuta (Table 1). One notable case was the complete depopulation and destruction of the Promyshlennyi settlement (Fig. 4). With the closure of the mines and lack of alternative economic activities, residents were generally motivated to move. However, even in Vorkuta – where resettlement was most effective among the cities involved in the project – issues including lack of trained personnel, mistrust in the process and authorities, and lack of sufficient financing in the local budget resulted in "moderately unsatisfactory" project outcomes.

During the rapid decline of Vorkuta, many experts projected the city to disappear entirely (Barenberg, 2014). However, this did not happen, and the city looks increasingly likely to exist in some form far into the future. Most planners expected programs such as the Northern Restructuring Project to be far more effective, but they were held back, in part, by the "attachment to place" which built up in these communities. There is a distinct sense of pride in the history of these cities, their contributions to national well-being, and their "toughness." However, for many it is the lack of viable alternatives or a reliance on subsidized northern pensions, which keeps people from leaving. External economic and political factors continue to have a major influence on the development and managed decline of the city.

Politically, there is not much support for reinvestment in Vorkuta's infrastructure from regional or national authorities. While funding has been made available to facilitate the closure of cities and relocation of citizens, support for improvement projects has been less forthcoming. In contrast to their regional and national counterparts, local administrations have undertaken several popular initiatives to improve the quality of life. One notable project instituted by Mayor Shpektor in the 2000s involved fertilizing large swaths of green space in the city, including derelict building sites. Warming climate and planting campaigns allowed the growth of trees, which are not normal for the tundra environment, and has noticeably changed the urban landscape (Fig. 5). This greening of the city represented an ideological step forward for Vorkuta, which had often been labeled as hopelessly polluted and ugly. Shpektor also instituted projects renovating Vorkuta's historic theater and some other historical buildings. However, as Shpektor's comments quoted above make clear, he thought that these efforts ultimately were not enough to save the city.

Local resources are extremely limited. Following Russia's reform of the tax and budget codes in 1998, city administrations have a limited set of tools to influence the economy. Total tax income consists of 2–5% of the municipal budget and is constantly shrinking. The main tax instrument in the hands of the administration – the land tax – is insignificant (Leksin et al., 2005).[6]

In the city center of Vorkuta, a generally positive scenario has been realized. Thanks to its development as a city with a strong downtown surrounded by satellite cities for the key mines, Vorkuta has been able to preserve the nucleus of the city on the banks of the Vorkuta River, and along the railway (with some exceptions). However, even in the downtown area, some sacrifices had to be made in light of the declining population. To consolidate the remaining residents, the majority of the "historic" 1940 s–1950 s development has been abandoned and either partially demolished or left in a debilitated state. The satellite settlements have been more fully abandoned. Nevertheless, the city administration continues to worry about the lack of compactness for the downtown area and the financial burden this imposes on the local residents (Nuikina, 2014).

Overall, the concentric structure of the Vorkuta agglomeration, with its well defined downtown and satellite suburbs, can be considered a success; it allowed for the relatively easy transition to a more compact version of the city following a drastic reduction in the population, without much "emptiness" in the fabric of urban space. While gloomy ruins are common along the periphery, the city has been able to maintain a relatively comfortable urban environment in its center. The central urban areas of Vorkuta remain active, making the city seem

[3] http://documents.worldbank.org/curated/en/586881468303880427/pdf/ICR13430ICR0Bo1B01Official0Use01091.pdf (page 50).

[4] http://gazetamv.ru/monogorod-monogorodu-rozn-igor-shpektor-napisal-statyu-dlya-mv.html.

[5] http://documents.worldbank.org/curated/en/586881468303880427/pdf/ICR13430ICR0Bo1B01Official0Use01091.pdf (page 50).

[6] See for example: http://www.vectoreconomy.ru/images/publications/2017/10/taxes/Shobey_Nikiforova.pdf.

Table 1
Assessment of the Project Outcomes of Northern Restructuring Project.
Source: Adapted from: (World Bank, 2010).

Territory	Projected out-migration		Actual out-migration		Realization of Projections	
	Households	Persons	Households	Persons	Households	Persons
Vorkuta	3,688	6,422	2,476	5,538	67%	86%

Fig. 4. The settlement of Promyshlennyi in 1984 and 2017 showing the results of the complete depopulation of this satellite city.
Sources: National Reconnaissance Office; Google Earth.

Fig. 5. In residential areas, shrubs and small trees have begun to grow due to a city-wide fertilization campaign, as evident by the changing height of the vegetation between the 1980s and 2017.
Source: PastVu.com; Nadezhda Zamyatina.

rather vibrant even if it is lacking many of the urban charms one might hope to find in a metropolitan area.

In terms of the prospects for future urban development, focusing on the downtown area is the best available option for effectively managing the "shrinking city" phase. However, given the likelihood that there will be little future demand for Vorkuta's coal, any future growth or re-development will need to be sustained on the basis of alternative industries.

5. Discussion

The empirical section of the article traced the governance path of Vorkuta. Now we can discuss in greater detail some of the key aspects of the city's boom-bust development highlighted by EGT.

5.1. Agency in addressing the boom-bust cycle

Mapping the evolution in governance for the Soviet Union and post-Soviet Russia requires tracing the considerable institutional capacity that existed within the Soviet Union and its nearly complete disappearance in post-Soviet Russia. During both the Soviet and post-Soviet periods, the federal government controlled almost all the tools available to address the boom-bust cycle, while the local authorities had few available resources. But as the Soviet collapse accelerated, the federal government lost access to these tools. To the extent that the Russian state has revived and now has access to greater funds, it has not chosen to spark a renaissance in Vorkuta. The local authorities lack financial tools to act, but have sought to rely on informal tools when possible.

The Soviets had an overall strategy for the country's development

and where each city fit in it. From the 1930s until his death in 1953, Stalin sought to achieve autarky by cutting the USSR off from the world market and using prison labor to develop natural resources. However, Stalin's successors cut the reliance on prison labor and defenses against the outside world began to decline as Leonid Brezhnev started to rely on oil exports in the 1970s (Gustafson, 2012). Despite the Soviet plan, the switch from coal to oil at the heart of the country's economy meant that Vorkuta went into decline even as oil regions elsewhere in the country began to boom. The reliance on oil exports also made the entire economy dependent on the vagaries of the international commodity markets, so while exporting oil seemed like a good plan for national development in the 1970s, it looked much worse in the 1980s, when international prices dropped.

EVG emphasizes the usefulness for tools to address the problems of a boom-bust cycle that are embedded within a larger set of institutions and strategy (Van Assche et al., 2019). Despite its focus on planning, the Soviet Union had no viable strategy for handling the decline in oil prices that undermined its oil-based development model. Thus, while the federal government could provide financial subsidies to Vorkuta in the 1970s, this burden became unwieldy in the 1980s. Due to its overall economic inefficiency, the Soviet Union collapsed, leaving in its wake Russia and 14 other newly formed countries.

The disruption of the Soviet Union's governing capacity and the emergence of a much weaker Russian government in its place led to dramatic changes in the fate of Russia's northern cities. Whereas the Soviets planned over the long term, city managers in the post-Soviet era could not rely on any consistent development strategy for the country or its various regions. Today prognostication is difficult because developments in Russia are unlikely to be linear or strictly cyclical, with outcomes that are hard to envision in advance (Zamiatina and Piliasov, 2018).

Similarly, they could not expect reliable support from the new natural resource companies that had acquired licenses to develop the country's underground riches. Instead, the cities had to rely on their own highly constrained resources and the ability of local leaders to make the best of these endowments. Cities across the country developed local plans and strategies running into the hundreds of pages, but they typically provided little practical guidance on how to achieve economic growth and improve living conditions.

Vorkuta's post-Soviet government faced extreme budget constraints which limited its ability to address the boom-bust cycle. In the 1990s, Vorkuta spent an unprecedented 40% of its budget on housing and social infrastructure (Zamiatina and Piliasov, 2018). The high cost of maintaining housing in the city was one of the driving forces pushing both the federal and city governments to support a thinning of the population. Despite the reduction of its miners, Vorkuta continued to serve as a regional hub for what was left of the coal mining industry in the north-west part of the Komi Republic. Additionally, it served as a hub for nearby reindeer herders as well. However, as the overall population in the region declined, Vorkuta also continued to shrink.

Fig. 6 provides a sense of the degree to which Vorkuta's local leaders have to rely on their own resources. Before the 2008 financial crisis hit Russia, the city could count on combined external support of its budget for 60% of its income. After the crisis, this support dropped to about 15%. The situation improved somewhat to about 40% in 2013/14. As Fig. 7 shows, during this time overall income for the city budget has fluctuated with the fortunes of the economy.

Local companies have sought to develop new business on the basis of Vorkuta's relatively lucky geography – it is at the end of the Russian railroad line and a launching point for workers heading to the new oil and gas fields farther north on the Yamal Peninsula. These workers often have money from their lucrative energy work (Saxinger et al., 2017). Accordingly, Vorkuta companies have sought to sell services to the transiting workers and to supply them with goods that will be useful to them both in their jobs and when they return home. While the migrant and shift workers themselves do not add much to the local economy, their purchases provide a living for some local merchants and service providers.

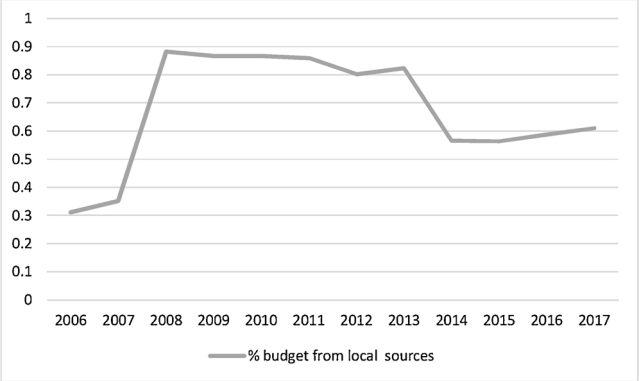

Fig. 6. Percent of Vorkuta Budget from Local Sources.
Source: Rosstat.

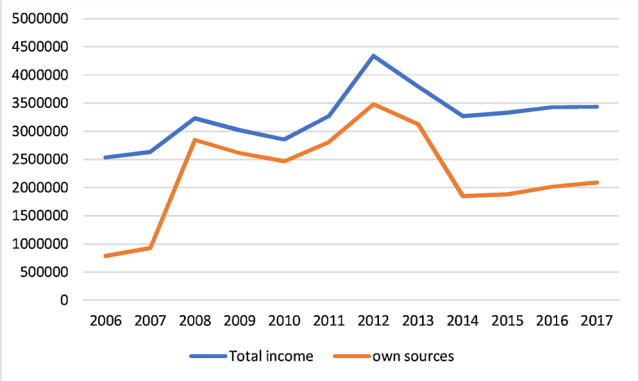

Fig. 7. Overall Vorkuta Budget Income (Thousand rubles).
Source: Rosstat.

5.2. Northern knowledge

Diversifying the urban economy is a promising strategy for resource towns to develop once their economy has busted. Unfortunately, Vorkuta's city managers were not up to this task. For a time, during the Soviet era, the city tried to transform itself into a knowledge hub that could supplement its coal production income with knowledge-based businesses. However, this effort to develop stable institutes of higher learning proved unsustainable.

In the Soviet period, Vorkuta began to play a significant role in the production of local northern knowledge. Institutes in the city conducted scientific research in the fields of permafrost, ecology, architecture, and a variety of other topics, generating products that were important not only for local application, but for use throughout the Far North. The models of panel housing developed by Vorkuta's engineers (working at the Vorkuta subdivision of Komigrazhdanproekt and the local PechorNIIproekt) were used in many other regions of the Far North of the USSR (Fig. 8).[7] In nearby Vorgashor, 66 five-story buildings were designed with special considerations for the stabilization of permafrost. The method is based on maintaining a year-round zero-degree temperature in the crawl space, therefore eliminating heat flux from the building to the top of the permafrost (Khrustalev and Nikiforov, 1990). Another advantage of this method is the minimization of the thermal effects on neighboring structures, which allows for increased building density and minimizes the city's footprint on permafrost. A rounded

[7] Interview with the city's chief Architect Vladimir Ivashchenko, July 2017.

Fig. 8. Vorkuta's innovative panel-building design. Vorkuta (right), Vorgashor (left).

face made the buildings more resistant to wind.[8]

The professional training of specialists for coal mining in Vorkuta began in 1944, when the Mining Technical School (now the Vorkuta Mining and Economic College) was established.[9] As the labor camps were closed in the early 1950s, a new population of young engineers and other skilled workers migrated to the city to fill vacant jobs. In 1954, the state mining corporation Vorkutaugol supported the foundation of the Vorkuta Mining College, and helped provide access to correspondence courses at a wide variety of Soviet institutions of higher learning.[10] In 1959, one of the best technical universities in the country – the Leningrad Mining Institute – opened a campus in Vorkuta. From 1962 on, this branch offered many full-time education programs. For several decades it was the leading university in the city. It trained about 600 students at a time (data for 2010)[11] until 2013, when the university – by then re-named the Vorkuta Mining Institute – was liquidated by an order of the Russian Federation Ministry of Education and Science. At present, a branch of Ukhta State Technical University functions in the city along with some other minor schools, but these do not compare to the scale of the former education system.[12]

In this way, Soviet Vorkuta grew from a coal-mining mono-profile city into something of a knowledge center for the development of northern technologies. Innovations sometimes spread thousands of kilometers, but others were kept in isolation under the Soviet system of limited information sharing. The fact that Vorkuta did not have its own university should not surprise the non-Russian reader: in the Soviet Union, most applied scientific research was not conducted in universities (as is customary in most countries), but in sectoral institutes - and those in Vorkuta were highly productive. The accumulated local knowledge in the fields of northern construction, planning, architecture, permafrost, and ecology was critical for long-term sustainability. Nevertheless, the dominant share of Vorkuta's economy relied on the coal industry, and much of the city's research focused on coal-related issues.

Why did Vorkuta, which possessed many scientific and production assets and a comfortable urban environment, not follow a trajectory like Fairbanks, Alaska, which rapidly evolved from a gold mining site to a university center (Cole, 2003). First, Vorkuta was saddled with a high proportion of workers employed solely in coal mining. A city with a more balanced employment structure might have survived the shocks more easily. The second reason was the tightly controlled Soviet administrative links between the city's chief coal mining enterprises and municipal social facilities. In post-Soviet mono-profile cities, the collapse of the city's central enterprise led directly to the collapse of many social services, declining food production (which was usually concentrated in "sponsored" farms affiliated with the enterprises), and the discontinuation of other critical functions. The third - and perhaps most important - reason may be Russia's overall reduced attention to, and investment in, the North that occurred in the 1990s. This policy shift embodied the sudden curtailment of numerous benefits and support systems unique to the northern regions, including subsidies to workers' wages and other incentives to attract populations northwards (Barenberg, 2014). The result was an exodus of well qualified workers in the early 1990s.

The collapse of the numerous scientific institutions in Russia's Arctic cities (including Vorkuta's architectural organizations) was triggered by the diminishing demand for northern local knowledge, not only on the local and regional levels, but on a national scale. The collapse of the centralized Soviet state support systems – not solely the unprofitability of the local extractive industry – significantly impacted the Russian North and Arctic in the 1990s. These circumstances destroyed much of Vorkuta's locally oriented economy and the applied institutes of knowledge production within the city. The failure of Vorkuta to develop as a contributor to the new knowledge economy undermined the future potential of the city.

5.3. Small business and informality in modern Vorkuta

As Vorkuta declined, its policy of condensing population into the urban core resulted in a rebounding of small business in a way that is uncommon in many other Russian cities. Often, licensing of businesses is tightly regulated by regional and local authorities in order to control a city's image, development, and economic system. An example is Salekhard, less than 300 km away and capital of the oil and gas rich Yamal-Nenets Autonomous Okrug. Over the past decade, authorities in Salekhard have undertaken an ambitious redevelopment plan, building luxury hotels, residences for the governor, administrative headquarters, and expansive institutional complexes to reflect the city's status as the "crown jewel" of a wealthy region which produces about 90% of Russia's natural gas. Partially as a result of this "branding," authorities in Salekhard strictly control the kinds and number of small businesses that can develop independently.

In Vorkuta, the city administration has taken a more lenient approach to the development of independent businesses in the downtown area. With large companies, the regional and national governments, and major institutions unwilling to make major investments in the city, officials have looked to spontaneously created small businesses to fill the gap. These businesses provide employment and income to citizens and deliver taxable revenues for the city. The small businesses create opportunities in what is essentially a vacuum. The difference in approaches by these cities is apparent in municipal statistics, which show that Vorkuta has many more stores providing consumer services, one

[8] Interview with the city's chief Architect Vladimir Ivashchenko, July 2017.
[9] http://www.вгэкспо.рф/.
[10] https://www.ugtu.net/podrobnaya-istoriya-ugtu.
[11] "Vorkuta will grow old after the closure of the local mining institute." *Komi Online*. Accessed March 2017: https://komionline.ru/news/23454/41016.
[12] "The Whole Truth about the Meeting of Vyacheslav Geizer at the Mining Institute of Vorkuta. *Red Flag.* Accessed March 2017: https://komikz.ru/news/science-and-education/6206.

Fig. 9. Informal Street Vendors in Vorkuta, July 2017.
Source: Nikolay Shiklomanov.

store per 373 residents, compared to Salekhard's one store per 507 city dwellers. Conversely, Salekhard has many more fairs and slots for vendors at fairs, however these are regulated, being contained and concentrated within a two-story indoor hall in the central area of the city. Most of Salekhard's restaurants stood empty, and a panoramic restaurant purpose built onto the bridge across an artificial river in the new governmental area went bankrupt. In contrast, the restaurants in Vorkuta were bustling, while it was common in summer 2017 to see vendors selling fruits, berries, and other products in an informal setting from blankets and tables set up in the street (Fig. 9). Moreover, there was a distinct pride among locals in the existence of a bakery which had been operating continuously since the 1950s. While other, richer cities, might have higher retail trade turnover per capita or higher spending, this is only a sign of their greater overall wealth. The policy of promoting small business development as a substitute for state and institutional investing is quite rare in the context of the Russian Arctic. The "Putinist Code" in Russia seeks to maintain control of social processes to ensure the longevity of the regime (Taylor, 2018). However, the success and challenges of the informality being undertaken in Vorkuta could be a valuable lesson when devising city level policy to manage the future declines that threaten any economy undergoing boom-bust cycles.

Nevertheless, the success of Vorkuta's small business should not be exaggerated. This is a survival strategy adopted because there are no other options. In fact, the main planning documents for the Arctic typically do not broach the topic of entrepreneurship (Zamiatina and Piliasov, 2018). The level of small business development in the Arctic and in Vorkuta in particular remains tiny and Vorkuta derives little tax income from these efforts (Piliasov and Zamiatina, 2016). Moreover, state-led efforts to encourage entrepreneurship in Vorkuta have little positive impact (Zamiatina and Piliasov, 2018). One major constraint on small business is a national law which requires employers in the north to pay higher salaries and provide employee vacations in southern parts of the country once every two years. These requirements can make hiring additional workers prohibitively expensive.[13] Although this problem has been discussed repeatedly at the federal level, it has yet to be resolved.

The suffocating small business regulations demonstrate a clash between the institutions of the past and current market realities. The Soviet era policies of providing economic incentives to encourage workers to live in the high north remain intact. Yet the federal government no longer wants to shoulder these financial burdens and has sloughed responsibility off to the employers in order to avoid having to take the politically unpopular decision of cancelling these worker benefits all together. The scope of the problem is clear in the statistics for business development in Vorkuta: As of January 1, 2014, there were 2218 small and medium business enterprises in Vorkuta, including 7 medium sized enterprises, 62 small businesses, and 2149 individual enterprises.[14] In this sense, Vorkuta is a good example of a city whose boom and bust cycles are greatly determined by external factors, among which the key one is Russia's national policy toward the North and Arctic. At the core of Vorkuta's most recent strategic development plan, adopted in 2014, is development of the economy with a strong focus on developing small and medium enterprises.[15] However, there are few ideas in the Strategy for implementing the plans beyond attracting more subsidies from the federal and regional Komi Republic budgets.

Ultimately, the activities of individual street entrepreneurs is just the most visible portion of the informal economy in Vorkuta. As Jeremy Morris has argued, we should not simply view informality as a distinct phenomenon with clearly defined boundaries. Instead, "informality and informal economic practices closely relate to other forms of informal organization within networks and political and civic structures (Morris, 2019)." Specifically, the kind of informality on display in Vorkuta includes a variety of labor and economic activities, fuzzy forms of state monitoring and regulation, and the social acceptance of these practices by residents themselves to explain what they are doing and how their activities fit into larger societal practices. These informal practices are highly dynamic and subject to change as conditions warrant (Aliyev, 2017).

6. Conclusion

This tracing of Vorkuta's governance path allows us to draw some broader conclusions about managing boom-bust cycles by means of planning and land policy instruments. First, we lay out a typology of land use tools for managing the boom-bust cycle. Then, we examine the actors involved. Finally, we examine the implications for institutional capacity.

6.1. Land use tools for managing boom and bust

The Soviet/Russian case demonstrates the importance of institutional capacity and how decisions made in one era shape the options available in the next for managing the boom-bust cycle. Here we can develop a typology of tools for managing the boom-bust cycle (Table 2). First we examine the formal tools of planning, subsidies, diversification, corporate and state investment, and international programs. Then we examine a variety of informal solutions, including urban design, fuzzy policy making, entrepreneurship, and simply refusing to move.

In terms of planning, even if the state has full control of the economy, its ability to avoid the boom-bust cycle is only as good as the forecasting done by its planners. The experience of Vorkuta shows the value and limits of planning in dealing with boom and bust cycles. At the national level, Vorkuta was the result of the overall planning that the Soviet government devised to speed the industrialization of the largely undeveloped country the Bolsheviks inherited from the czars. Vorkuta's coal mines fed the broader national plan, but this plan did not take into account that Vorkuta's coal would eventually become unprofitable to mine. The result was the grinding inefficiency of the Soviet system that ultimately led to its demise.

In this situation, the managers of the Soviet economy had to rely on extensive state subsidies and it was these infusions of money that propped up the Vorkuta economy during the 1960s through the 1980s,

[13] Stenogramma Zasedaniia Gosudarstvennogo soveta po voprosam razvitiia malogo i srednego biznesa [Stenogram of the meeting of the State council on questions of the development of small and medium business], April 7, 2015, http://www.kremlin.ru/events/president/news/49214.

[14] Strategiia sotsial'no-ekonomicheskogo razvitiia munitsipal'nogo obrazovaniia gorodskogo okruga "Vorkuta" na period do 2020 goda [Strategy for the Social-Economic Development of the City of Vorkuta through 2020]. 2014, p. 33. http://xn–80adypkng.xn–p1ai/city/strategic-management/the-strategy-of-socio-economic-development-of-the-constituent-vorkuta/?ELEMENT_ID=3228 retrieved August 27, 2018.

[15] Strategy…, p. 76.

Table 2
Land Use Planning Tools for Managing Boom-Bust Cycles.

Formal	Informal
Planning	Urban design
State subsidies	Fuzzy state policy making to allow spontaneous activities
Attempts to diversify the economy	Individual entrepreneurship
Corporate investment	Squatting/attachment to place
State investments (military bases)	
International organization programs (World Bank)	

until the Soviet system collapsed. Such subsidies were only possible when the Soviet leaders had access to money that they were willing to spend on propping up a city that had essentially lost its reason to exist. The post-Soviet Russian state at both the national and local levels lacked the capacity and resources to respond to the crisis caused by the city's bust in any coherent way.

Even as the Soviet state provided subsidies, it tried to implement another tool – diversifying the economy. In the case of Vorkuta, such efforts failed because they were not able to generate sufficient local and sustainable support.

A related tool was efforts to attract investment from large corporations or through state-led projects that were not directly focused on developing the Vorkuta economy. The large Russian metals firm Severtal invested in local coal mining, other entities built pipelines, and the state built a military base nearby. However, none of these projects generated sufficient follow-on projects to stimulate the local economy. Despite the resources spent on the new infrastructure, it did not stimulate sufficient economic activity to spark a revival in Vorkuta's fortunes.

With the failure of such formal tools, Vorkuta has largely had to rely on a variety of hybrid and informal institutions to ensure the survival of its shrinking city. This system is effectively a form of adaptive government in which the city has had to adjust as best as possible to trends taking place at the national level and in commodity markets over which it has little control. Vorkuta first benefitted from a lucky quirk in its urban design that allowed it to concentrate the city in a downtown center as its coal mines closed around the periphery. This outcome was not planned, but had a significant positive impact on the city's ability to survive its shrinkage.

Given their inability to attract federal subsidies or substantial investment projects that would create significant quantities of good local jobs, city officials began to rely on a fuzzy, informal kind of policy-making in which they essentially closed their eyes to the kinds of spontaneous activities that they had previously banned in order to maintain social control. Where the official economy could not provide jobs, individual entrepreneurship has begun to fill the gaps. The top-down Russian government has essentially had to hand over responsibility for economic development to individuals who seek out whatever opportunities they can find. This approach includes a wide range of informality encompassing policy-making, entrepreneurial activity, and new forms of conceptualizing the role of individuals in Russian society. Given their attachment to Vorkuta, many of its residents sought to remain in the city even if it did not make economic sense for them to do so.

6.2. Changing actors and changing roles

The Russian case similarly sheds light on the role of different actors in mitigating the boom-bust cycle. The key players in Vorkuta shifted from national policy makers and state managers during the Soviet era to city-level authorities and private corporations in the post-Soviet era. As the state's formal institutional capacity deteriorated, the mix of formal and informal practices shifted as well providing more space for the informal.

The multilevel Russian government means that the cities of the North and Arctic region are heavily influenced by the federal government's Arctic policy. This policy changes with the changing desires in Moscow and fluctuates in ways that the people living in Arctic cities have little influence over. During the Soviet period, the north benefitted from extensive state subsidies that kept many people in the region. The policy of the Soviet Union was to develop the Arctic and the national leadership was willing to devote its resources to this task. The Soviet collapse ended these financial flows because Russia's federal government simply did not have the resources available to continue the policy of northern development. However, even in these conditions of austerity, minimal levels of support continue as the Russian government wants to avoid the possibility of social unrest and seeks to buy off the population.

Given that the federal government is an unreliable partner and is focused on many more issues than ameliorating the effects of Vorkuta's boom-bust cycle, the city necessarily has to fend for itself as best it can at a time when federal resources are constrained to the point where the Russian government was forced to raise the pension age in the summer of 2018. At the city level, planning was only intermittently effective and an inability to influence developments at the international, national, and regional level limited its usefulness. Plans from the 1960s that concentrated new development in the city center were implemented and ensured that when the city began to shrink, there was a logical core around which it could consolidate. Vorkuta's 2014 plan demonstrated the limited ability of the city to manage its own fate because it depended heavily on economic development from increased state subsidies and greater investment from private companies. The only real local task that the city government could accomplish on its own was to relax controls and turn a blind eye to spontaneous entrepreneurship.

Beyond the state, corporations can play a role in helping to revive Vorkuta. Nevertheless, the city's post-Soviet experience has been what one would expect in a capitalist society – companies are willing to invest where they can make a profit, but they are focused on their own needs and are typically unwilling to boost local conditions unless it is directly in their interests. Small and medium business, which does have an interest in the local conditions, can play a role here. But the Russian state at both the national and local levels remains suspicious of them as a source of independent power and only grudgingly is willing to allow their development. However, to the extent that they have been able to carve out a space for themselves, individual entrepreneurs have worked to mitigate the consequences of Vorkuta's bust.

6.3. Institutional capacity

The case of Vorkuta shows the difficulty of dealing with boom-bust cycles even as the nature and strength of institutional capacity changes. The USSR had relatively strong planning tools at the national level and was able to implement its decisions at the local level given the overall strength of its state political and economic institutional capacity.

The collapse of the USSR led to a reduction in state resources and increased the responsibility of local actors. City officials have few formal resources and are largely left to their own devices by higher level authorities. Vorkuta's Mayor Spekhtor was a popular and authoritative leader who sought to use the limited resources at his disposal to diversity the local economy and attract outside businesses. Despite his charisma, his policies were not enough to halt the on-going shrinkage and he ultimately expressed frustration at the futility of trying to revive a city built for coal mining in a world where few wanted its coal.

The result is that the city authorities have had to essentially relinquish efforts at control and allow spontaneous entrepreneurship to fill the void. Today, the main land planning tool for Vorkuta is a wide-ranging informality that encompasses a form of policy-making that

gives free reign to a mélange of formal and informal business and labor arrangements, where formal and informal practices are intertwined in ways that are difficult to disentangle.

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