What helps improve outcomes of industrial policy?

Evidence from Russia

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Abstract

In the context of most developing countries, the implementation of industrial policy faces significant challenges related to capacity, access to information, and governance limitations. This situation accounts for the absence of widely recognised success stories – instances where government agencies and policy instruments have an established track record of effectively pursuing national objectives within the realm of industrial policy. This highlights a significant gap in our understanding about which industrial policy tools can be effective in countries grappling with broader deficiencies in their national accountability systems. In this article, we delve into the state support programmes initiated by Russia's Industrial Development Fund (IDF) since 2014. These programmes aim to promote import substitution by providing industrial enterprises with low-interest rate loans. Notably, the IDF programmes differ significantly from most other industrial policy instruments employed by the Russian government in terms of their design, implementation principles, and outcomes. Between 2014 and 2017, the implementation of the IDF's programmes produced statistically significant results, fostering the growth of sales for the supported enterprises. Within our article, we shed light on the institutional features that contributed to the effectiveness of the programmes and enabled the IDF to maintain the integrity of their procedures for selecting beneficiaries and supporting them throughout project implementation. Our analysis has identified a set of institutional arrangements that can maximise the positive impacts of state support programmes while minimising the respective risks. Consequently, we believe that the successful Russian experience in administering the programmes for direct state support holds substantial value for a wide range of organisations compelled to implement government support programmes under less-than-ideal institutional conditions. Furthermore, the emergence of more effective industrial policy tools in Russia, such as the IDF, in the mid-2010s, may partially explain the increased resilience of the Russian economy in the face of large-scale international sanctions imposed in 2022 due to its war in Ukraine.

Key words: industrial policy, manufacturing firms, development institutions, , subsidies, Russia

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1. Introduction

It is broadly recognised in the literature that the implementation of industrial policies in the usual institutional environment of developing countries faces considerable capacity, informational, and governance constraints (Rodrik, 2008). While it is often relatively easy to suggest a potential policy solution to a specific market failure that significantly hampers business development, the implementation of such a policy in most cases faces significant risks of underperforming against its original promise. Thus, the primary challenge in the realm of industrial policy relates not to the question 'What to do?' but to 'How to do it?': how to design institutional arrangements that would maximise positive impacts of the proposed policy and minimise its potential adverse effects?

Research undertaken in the last two decades has helped identify several specific features of an effective design for public sector agencies to deliver industrial policy programmes. For instance, there has been a growing understanding that successful industrial development requires close coordination and joint learning between business, represented by large companies and business associations, and the state, represented by national and subnational authorities (Hausmann and Rodrik, 2002). However, in general, the experience of developing countries does not offer many successful examples of robust institutional solutions for enacting industrial policy. This explains sustained research interest in the identification of additional success stories – relatively effective government agencies and policy instruments employed to pursue national objectives in the area of industrial policy – and in the analysis of factors explaining their success. The Performance Management and Delivery Unit (PEMANDU) in Malaysia has been a popular example of such a success story (Sabel & Jordan, 2015). The PEMANDU has developed new forms of public–private collaboration and used them to make a measurable contribution to the implementation of certain critical taxation and regulatory changes in the core sectors of the Malaysian economy, as well as to the successful execution of several large and complex investment projects.

In this paper, we consider the example of good practice in the design and implementation of modern industrial policy programmes that has emerged over the last decade in Russia through the activities of the Industrial Development Fund (IDF). Since 2014, the IDF has been in charge of delivery of several programmes of targeted state support to Russian manufacturing companies. These state support programmes differ significantly from most other Russian industrial policy instruments in terms of their design, implementation principles, and outcomes. At least between 2014 and 2017, the period for which we have data, the implementation of the IDF's programmes produced statistically significant results, fostering the growth of sales for the supported enterprises.

In this paper, our detailed analysis of the IDF's activities sheds light on the fund's institutional features that contributed to the effectiveness of the programmes of concessional loans for industrial enterprises and the institutional innovations that have allowed the IDF to maintain the integrity of its procedures for selecting potential beneficiaries, supporting them throughout project implementation, and monitoring the outcomes. Unlike other similar institutions in Russia and other countries, the IDF has so far largely managed to safeguard its procedures from political and interest group influences, even after the replacement of the fund's executives and despite the general deterioration of governance and accountability mechanisms in the country. The emergence of more effective industrial policy tools in Russia, such as the IDF in the mid-2010s, may partially explain the increased resilience of the Russian economy in the face of large-scale international sanctions imposed on Russia in 2022 due to its war in Ukraine.

The paper has the following structure. The second section reviews the findings of earlier studies analysing the effectiveness of state support programmes for industrial enterprises implemented in Russia at different stages of market transformation. Then we discuss the main characteristics of the programmes implemented by the IDF and highlight the institutional features of the fund's operating procedures that distinguish it from other Russian entities involved in implementing industrial policy in Russia. Section 4 presents data on the two main enterprise

support programmes that were considered in the paper to assess the IDF's effectiveness. The results of empirical analysis are presented in the fifth section of the paper. Section 6 discusses the key issue of the institutional basis of the IDF's operations: to what extent is it consistent with the lessons from international good practice in conducting industrial policy? The seventh section discusses sustainability aspects of the IDF's operations, while the final section presents the conclusions.

2. Effectiveness of state support of enterprises in Russia in the context of international experience: Key findings from previous studies

As summarised by Dani Rodrik (2008) in the classic paper, the primary practical constraints undermining effectiveness of industrial policy are twofold. First, there is the informational constraint related to the government's inability to effectively identify the priority targets (firms or sectors) for state support: funding is unavoidably mistargeted and thus largely wasted. The second issue is that industrial policy in practice greatly raises the risks of corruption and rent seeking: it makes it much easier for certain groups within the private sector to extract benefits that distort competition and transfer rents to politically connected entities. Therefore, the literature has traditionally pointed out that direct state support programmes for enterprises carry significant risks of the inefficient use of public funds (Falk, 2007; Klette et al., 2000; Simachev & Kuzyk, 2020; Wallsten, 2000). In particular, the earlier research has highlighted the risks associated with the potential crowding out of private investment sources by public ones: the 'capture' of certain support programmes by traditional interest groups; the gradual erosion of the programmes' goals as, instead of helping the best and most-promising companies, in reality most state support goes to inefficient but influential ones; and the loss of the programmes' selectivity, as the majority of companies in the supported sector eventually start receiving assistance, which erodes the motivational effect of state support.[1]

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[1] There has been considerable empirical evidence to support these concerns, which recently has come from China (Cull et al., 2015; Harrison et al., 2019).

Over the last two decades, substantial progress has been made in measuring the actual effectiveness of various government programmes to provide direct support for business entities. There have been two, somewhat overlapping, main research streams in this area. The first has focused on support for firms' research and development (R&D) and innovation efforts (irrespective of the size of recipients), while the second stream has dealt with assessing the impact of state support for SME development (irrespective of the specific purpose of this support – improvements in firms' productivity, export performance, technology upgrades, etc.).

The broad findings from this literature in both cases are inconclusive. Simply put, all government programmes are not equally effective; the empirical results show a considerable heterogeneity. The impact of support on company performance strongly depends on the specifics of the sector, the scope of beneficiary firms' operations, ownership structure, and many other factors that are often study- and programme-specific.

For example, the results of most (but not all) empirical studies indicate a general positive impact of state support on companies' innovation activity: increases in R&D expenditure, patenting activity, and outputting of products new to the market. Zúñiga-Vicente et al. (2014) conducted a comprehensive review of the impact of R&D subsidies on private R&D investments by examining the results of 76 studies around the world carried out at the firm level since the early 1960s (most of which were published in the 2000s). Overall, the programmes with positive impacts prevailed: in 60% of cases, the crowding-in hypothesis (i.e., government spending facilitates additional private spending on R&D) could not be ruled out. The rest of the studies included in the survey found either subsidies crowded out private investments or they did not have significant effects (20% each).

Similarly, most studies of SME-support programmes found positive impacts on some indicators of performance but not others (Lopez-Acevedo & Tan, 2010). There have also been considerable differences in the programmes' success rates between developed and developing

countries. Most studies of programmes implemented by governments in high-income countries found positive impacts on either SMEs' sales or employment, and some found impacts on increased private investments, exports, and productivity. The share of successful programmes in the developing country studies has generally been lower: about half found positive impacts on SMEs' performance measured by sales, productivity, and exports. Cravo and Piza (2016) reviewed 40 evaluations of SME-support programmes in developing economies and found indicative evidence that, on balance, these government interventions helped improve firms' performance and create jobs.

Overall, over the last 15 years, the accumulated body of empirical results, based on rigorous impact evaluations of different types of enterprise support programmes implemented in different settings have significantly changed the prevailing attitudes within the research community and among policymakers regarding the general impacts of such programmes. As reflected in an Organization for Economic Cooperation and Development (OECD, 2007) study, less than 20 years ago, the prevailing views on the subject were much more negative: most government support programmes were seen as having little or no impact on the performance of recipients and did not warrant continued public funding. More recently, perceptions have shifted, with a growing recognition of generally positive and significant impacts of many (but not all) such programmes in various countries at different income levels.

What is somewhat surprising is that this recent progress in the evaluation of programme results has provided only limited clarification of the issues related to effective programme design. We have had by now many examples of government support programmes that are considered broadly effective, but these analyses rarely contain recommendations regarding the preferable design of such programmes. 'The literature offers surprisingly little guidance on the actual efficacy of the most common forms of SME support, either for direct beneficiaries or, more broadly, for markets and economies' (World Bank, 2014, p. xiii). As a result, '…our understanding of why

some programmes work, while others do not, and how programmes can be made more effective remains quite limited' (Lopez-Acevedo & Tan, 2010, p.11). 'Little is still known about which [government] interventions work best for SMEs and why' (Cravo & Piza, 2016, p. 1).

One possible explanation for this apparent gap in the literature is linked to the inadequate attention paid to the comparative analysis of the variation in effectiveness across different government support programmes, especially differences that could be linked to variations in programmes' implementation arrangements. Even in the most advanced studies that compared national programmes of business support in different countries of Latin America (Lopez-Acevedo & Tan, 2010; Crespi et al., 2015; Crespi et al., 2020), the analyses were limited to the identification of major differences in policy parameters across these programmes. To best of our knowledge, there has been no effort in the literature to link the variation in the effectiveness of government support for business development with the design of programme implementation arrangements, i.e., with how the government has addressed the primary practical constraints of effective industrial policy, especially the risks of corruption and rent seeking. Our paper attempts to close a portion of this gap.

Russia's experiences with enacting its industrial policy might be of considerable interest in this respect. On one hand, the Russian government is known for its propensity to spend large amounts of public funding on direct enterprise support in what is broadly considered to be a challenging governance environment, with perceived high risks of corruption and state capture. On another hand, since early 2022, the Russian economy has demonstrated a surprisingly robust performance despite facing a major (self-imposed) external shock associated with the invasion of Ukraine. The invasion triggered further tightening of the sanction regime aimed at undermining the Russian economy's ability to operate normally by limiting its access to commercial funding, export markets, and sources of major technology inputs and know-how, etc. The relative stability of the economy under these circumstances could be interpreted as indirect support for the

hypothesis that at least some industrial policy programmes in Russia implemented in the preceding period have been effective: they have helped the country fulfil its objectives associated with enhancing economic self-dependence and augmenting its sustainability under stress.

In Russia, a noticeable increase in the amount of state support, as well as the expansion of the kit of industrial policy tools used by the government to support industry and other sectors, has been observed since the mid-2000s. This increase was due, on the one hand, to the authorities' concern over the country's growing dependence on the exports of natural resources and, on the other hand, to the government's increased financial capacity owing to higher oil and gas prices. On the verge of the global economic crisis of 2008–2009, the provision of direct state support to enterprises became widespread; according to surveys, up to 40% of all large and medium-sized industrial enterprises in Russia received such support in 2008 (Yakovlev et al., 2020).

In the immediate aftermath of the global crisis, the scale of direct support to enterprises was reduced significantly due to the tightening of government budgets. However, after the aggravation of relations with the West in 2014, the financing of such programmes started recovering rapidly and by 2018 they had returned to the pre-crisis level. Total government expenditure on programmes that were explicitly recognised in the Russian federal budget in 2018 were estimated at RUB 367.7 billion, i.e., approximately 0.4% of the GDP (Simachev & Kuzyk, 2020).

Despite the prevalence of state support programmes in Russia, their effectiveness has rarely been explicitly assessed (Simachev & Kuzyk, 2020). This is largely due to the closed nature of most data on the distribution of state support. In addition, research on this topic in Russia, as in many other countries, has often focused on the contribution of state support to increasing the innovation activity of enterprises (e.g., Gokhberg et al., 2014; Simachev et al., 2017), while the impact of state programmes on the general economic performance of companies (sales, profits, labour productivity, etc.) has been studied less frequently. The Russian government has not yet

clearly requested an objective assessment of the effectiveness of the use of public funds to support enterprises. As for external observers, it is extremely difficult to carry out such an assessment, primarily due to a lack of systematic disclosure of information on the recipients, amounts, and results of state support provided to enterprises.

Nevertheless, based on the study of the results of support distribution among different types of enterprises, some authors have managed to identify the presence of major distortions in the distribution of state support, which, in the light of available international experience, are incompatible with the efficient use of public funds. In particular, according to numerous surveys, in the late 2000s, the main beneficiaries of such programmes were mainly large enterprises, state-owned companies, and companies providing return services to the authorities (Yakovlev, 2011).

At the same time, analyses of the institutional framework of Russian state support programmes have led other authors to the conclusion that most of these programmes are unlikely to be effective due to a lack of competition mechanisms in the distribution of support, transparency in the allocation of funds, and monitoring and evaluation of the outcomes (Kuznetsov & Simachev, 2014). In addition, well-known cases of systemic corruption in the use of state funds in Russia, for example, in the framework of public procurement (Mironov & Zhuravskaya, 2016), have created additional grounds for doubts about the effectiveness of state support. In general, there is a de facto consensus in the literature on the systematic inefficiency of Russia's industrial policy tools. However, it should be emphasised that the above-mentioned studies were mainly based on the data of the 1990s or 2000s.

3. IDF: Institutional features and specifics of loan disbursement mechanisms

The institutional basis of the current Russian system of state support distribution for the development of enterprises developed during the first half of the 2000s. As already mentioned, the system was shaped by rapid expansion of fiscal opportunities of the state driven by high energy

prices and by the leadership's concern about dependence on energy exports. The government openly favoured the state-led developmental model (Lane, 2008) and pushed for the introduction of new instruments of active industrial policy (including setting up state corporations, a development bank, and various sector-level support schemes), while simultaneously scaling up and modernising many traditional subsidy programmes that had been in place since the 1990s. This process brought about a system of state support that was quite fragmented and internally inconsistent. It included dozens of instruments, several of which suffered from insufficient clarity of design and non-transparent implementation arrangements (Kuznetsov & Simachev, 2014). Instruments of vertical industrial policy were the most popular. Their main beneficiaries have traditionally been large, long-established enterprises. Despite all pro-development declarations of Russian leaders, the allocation of state support at the federal level has remained badly affected by rent seeking.

After the global crisis of 2008–2009, the Russian government was forced to consolidate somewhat the system of state support because of the tightening of its budget constraints. As the overall scope of government assistance to manufacturing was reduced, it became even more concentrated, especially at the federal level, favouring large firms and enterprises with state ownership. As shown from the analysis of survey data, during that period, firms' lobbying potential and political connections became even more important determinants of the allocation of federal government support (Yakovlev et al., 2020).

The deterioration in Russia's relationships with the West after 2014 and the build-up of international sanctions triggered further adjustments to Russia's industrial policy. This time the shift was towards more effective state interventions and broader use of performance-based instruments for allocating state funding. The incentives for such policy changes were rooted in the new environment of international confrontation, in which the Russian economy was facing a severe challenge of import substitution. The authorities hoped to address this challenge by making

industrial policies more effective than in the past. The survey data suggest that during 2017–2018 the key determinants of state support allocation had indeed changed compared with earlier periods. For instance, major internal investments made by a company became an indicator that significantly enhanced the company's chances of receiving state support. At the same time, a firm's level of state ownership had lost its significance as a determinant of obtaining state support (Yakovlev et al., 2020).

The emergence of several new industrial policy instruments in Russia after 2014, including the IDF, was an important part of this new shift towards quality and effectiveness. As we show in the rest of this paper, several of these new instruments and programmes were much better designed than their predecessors and were indeed likely to perform more effectively. This is consistent with the finding by Simachev and Kuzyk (2020) – who, in general, are quite critical about incentive effects generated by most state support programmes in Russia – that among all beneficiaries of state support in Russia, the most positive and holistic changes have taken place in companies that received support from state development institutions such as the IDF.

The IDF was established by the Russian government in 2014. The IDF's main goal as a development institution is to support industrial enterprises in their implementation of investment projects to boost labour productivity and product quality, master new technologies, and substitute imports, etc. The key tool for achieving this goal is the issuance of preferential loans to enterprises under a wide range of sectoral and specialised programmes.

According to surveys conducted by the Russian Union of Industrialists and Entrepreneurs (RSPP), since 2017, the IDF has been the most sought after and one of the most recognisable development institutions in Russia (RSPP, 2021). In 2021, more than half of respondents to RSPP surveys were well informed about the fund's activities, and 44% had applied to the IDF for support.

Against the size of the Russian economy, the amount of funding provided to enterprises through the IDF is relatively small. In 2018, the IDF issued loans worth RUB 27.6 billion (approximately USD 450 million), which was less than 0.03% of Russia's annual GDP. At the same time, the Russian federal budget spending on direct support of industrial enterprises in 2018 was about 13 times higher (Simachev & Kuzyk, 2020).

Under most programmes, IDF loans are issued for up to 5 years. Interest rates range from 1% to 5% per year. Loan amounts can vary from RUB 5 million to RUB 2 billion, but the average loan size in recent years has been approximately RUB 200 million (about USD 3 million in 2020).[2] The IDF regulations provide for co-funding of projects with the borrower's own funds or commercial bank loans in the amount of at least 20% of the project budget. The average expected payback period of the projects in the IDF portfolio is 4 years.

The first loans were disbursed by the IDF in mid-2015.[3] Overall, during 2015–2022, the fund granted more than 1,270 loans, of which about 430 were fully repaid by loan recipients by the end of 2022 (IDF, 2022). The fund has been steadily expanding its activities both in terms of the amount of financing and the number of projects supported (Fig. 1). A slight decrease in the total number of projects and their funding in 2021 was due to a drop in the number of projects under the COVID-19 anti-pandemic programme from 112 to 19, while the numbers increased under other programmes. During 2015–2020, the share of SMEs among the IDF loan recipients consistently ranged between 35% and 40% of the total recipients, rising to 44% in 2021 (the fund has not yet disclosed such data for 2022).

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[2] https://frprf.ru/zaymy/ (accessed 14.12.2022) and IDF (2020).
[3] Since 2014, the IDF has also been the operator of the subsidy programme of the Ministry of Industry and Trade.
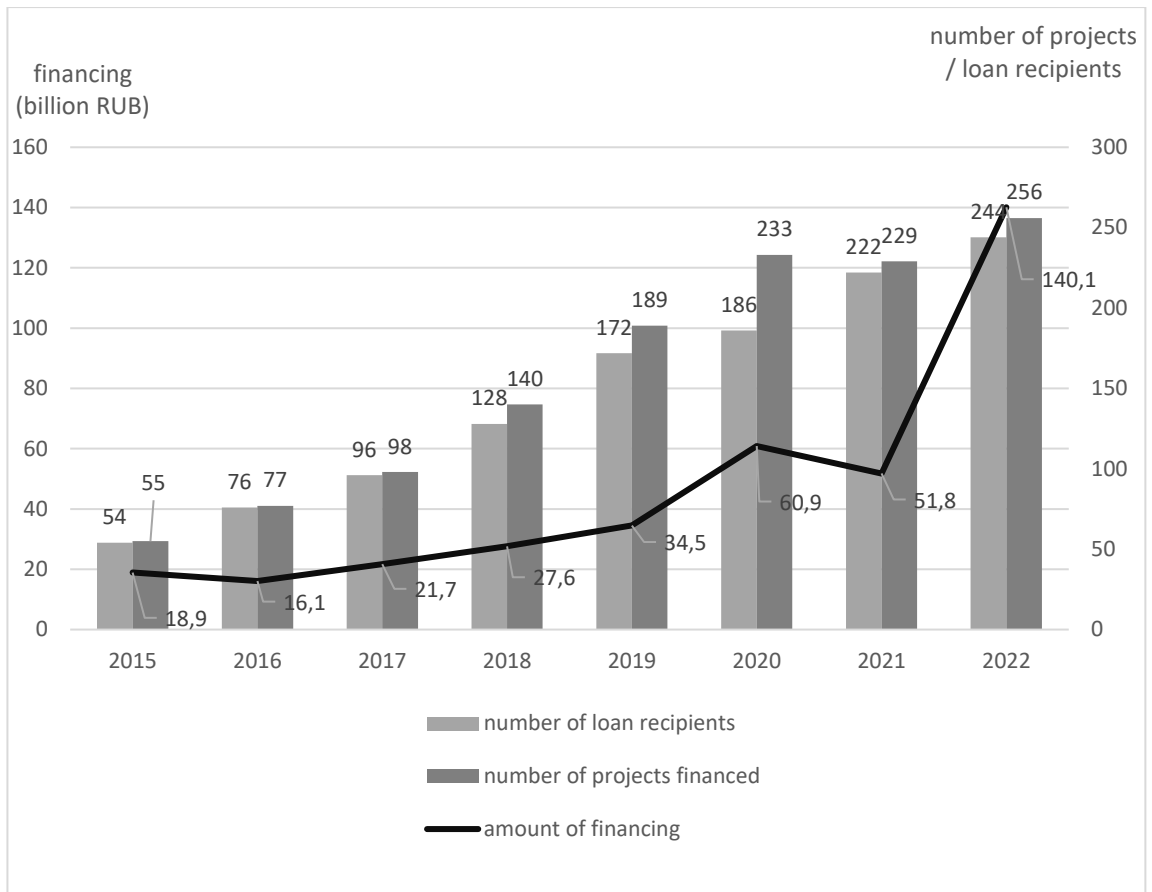
Figure 1. Trends in funding amounts, number of projects financed, and number of IDF loan recipients, 2015–2022.

Source: Based on data from the IDF (2020, 2021, 2022).

Over the period of IDF loan extension up to and including 2022, the mechanical engineering sector accounted for the largest number of projects (25%) and the biggest share of funds provided (35%). Other leading sectors included the medical and biopharmaceutical industry (18% by number of projects and 14% by volume of financing), chemical industry (15% and 13%, respectively), and metal processing and metallurgy (11% and 10%, respectively; IDF, 2022).

Another programme that is open to a wide range of enterprises and implemented with the active participation of the IDF is the subsidisation of the interest on bank loans issued for investment projects in industry. This programme has been financed annually since 2014 and is one of the most thoroughly elaborated instruments of state support in industry (regulated by Russian Government Resolution No. 3, 03/01/2014). During 2015–2021, RUB 19 billion were provided to

enterprises as subsidies under this programme. Projects worth RUB 150 million to RUB 7.5 billion can be eligible for such subsidies if the term of the bank loan is not less than 3 years and its amount does not exceed 80% of the total project value. Up to 70% of interest payments are reimbursed for ruble loans, and up to 90% for loans in foreign currencies.

Under this programme, the main decisions on granting subsidies are made by an interdepartmental commission headed by the Russian Ministry of Industry and Trade. The IDF has the status of operator of this programme, a role that includes consulting and providing information support for enterprises at all stages of their interaction with the ministry (from the moment of filing an application), as well as examining applications for their compliance with the programme conditions. The fund also aggregates information on the implementation of supported projects, but this is as far as its role in monitoring their implementation goes. Due diligence of projects eligible for subsidies is carried out without involving the IDF Expert Council. This makes this programme significantly different from the soft loan programme, where all major decisions (and responsibility for their results) are owned by the IDF.

The two state support programmes implemented with the participation of the IDF analysed in this paper differ from each other both in the degree of IDF involvement in key decision-making and the level of the IDF's responsibility for the outputs of the supported projects.

The key principles guiding the IDF in its lending activities are: (a) loans are targeted (i.e., project objectives comply with the fund's programmes); (b) loans are repaid according to agreed schedules; (c) support is available to enterprises in all regions of Russia; and (d) the 'one-stop shop' principle is implemented in the administration of state support.

The main governance bodies of the IDF are the Expert Council, which makes decisions on financing most of the supported projects, and the Supervisory Board, which confirms the council's

decisions on the largest and most controversial projects and makes strategic decisions regarding the development of the fund.

The main procedures employed by the IDF to provide support to enterprises are detailed and well structured, and information about them is easily available to potential beneficiaries. The entire application review procedure by the fund takes no more than 5–6 months, of which 1.5 months on average are spent on due diligence. An important part of the projects' due diligence relates to the degree of compliance with the priority goals of Russia's industrial policy, and with the technological development priorities of the national industry formulated by the Russian Ministry of Industry and Trade. Verification of such compliance is based on an express assessment of the application and takes only a few days. It does not require the applicant to make serious investments in the preparation of project documentation.

Furthermore, the IDF staff organise specialised expert reviews – production, technological, scientific, technical, legal, financial, and economic reviews – as well as an examination of pledges offered as security for the application. A scientific and technical expert review of project applications is carried out by external organisations: the Skolkovo Center or the Republican Research and Consulting Expert Center. Other types of expert reviews are conducted by the fund's staff with the participation of members of the Expert Council. The fund has no more than 60 days to perform the full due diligence package. In practice, about 75% of all applications are rejected at the stages of initial assessment and specialised expert review.[4] In case of rejection, the fund's staff advise applicants on the aspects of the application that require revision so they can be resubmitted to the IDF.[5] Further decisions regarding the applications that have passed the preliminary review are made by the IDF Expert Council.

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[4] Interview with an IDF representative and the IDF (2022).

[5] Overall, the IDF has about 200 employees, approximately 60 of whom are engaged in project support and monitoring.

As of the beginning of 2022, the Expert Council consisted of 17 members, including representatives of the Ministry of Industry and Trade, leading banks (VTB, Promsvyazbank, Gazprombank), development institutions (VEB, Agency for Strategic Initiatives (ASI), Eurasian Development Bank), major business associations (RSPP, Business Russia, Russian Chamber of Commerce and Industry), and industry associations (in particular, the one representing the mechanical engineering and machinery sector), as well as the fund's executives. The council members undergo regular rotation; their term of office is 3 years, but there are no restrictions on re-entry into the council. The board meets regularly, once every 2–3 weeks, depending on the number of projects under review.

On average, about 95% of the applications submitted to the Expert Council for review are approved (IDF, 2020). Such a high success rate of project applications can be explained by their high-quality elaboration and significant rejection rate at the preliminary stages.

The IDF Supervisory Board is the body responsible for the fund's development strategy, overseeing its activities, and participating in decision-making in respect of the largest projects and projects with controversial expert opinions or conflicts of interest. At the beginning of 2022, the Supervisory Board consisted of 11 members, including representatives of the Ministry of Finance and the Ministry of Industry and Trade, state corporations (VEB, Rostekh, Russian Direct Investment Fund, business associations (RSPP, Opora Rossii), and the academic community (Russian Academy of Sciences, the Russian Academy for Foreign Trade). The board is headed by the Minister of Industry and Trade. The term of office of the Supervisory Board is 5 years. Additionally, according to the Supervisory Board by-laws, the proportion of representatives of state authorities and IDF employees should not exceed one third of its members. The board holds its meetings once every 1.5–2 months and at least once every quarter.

Once a project is approved, the IDF monitors its implementation by tracking the borrower's financial status on a quarterly basis and progress on the agreed project targets (revenue, taxes paid,

and job creation) on an annual basis. According to the estimate by the fund's employees, over 60% of borrowers experience situations when project implementation deviates slightly from the targets set out in their respective loan agreements. Usually, these deviations are addressed in the regular course of business. However, in the event of serious or systematic slippages from the payment schedule (occurring in 3–5% of all projects), the fund consults the Expert Council for discussion and approval of the project recovery and restructuring plans.

4. Baseline data, analysis logic, methodology, and hypotheses

Traditionally, the most popular approach used in the literature to analyse the effects of industrial policy has been based on matching algorithms – direct comparison of the performance of beneficiaries with that of similar enterprises that did not receive such support (see, e.g., Baghana, 2010; Cantner & Kösters, 2015; Montmartin & Herrera, 2015). This approach, originally proposed in Rosenbaum and Rubin (1983), removes most of the limitations of regression analysis and allows for more robust results. To the best of our knowledge, so far this approach has not been consistently applied to analysis of Russian data (based on company performance). In this paper, we used the propensity score matching algorithm.

The SPARK-Interfax information database was used as the main data source (see https://spark-interfax.ru/about). Its advantage is that it is used as a data source not only by researchers, but also by Russian enterprises, unlike similar foreign services. In practical terms, our implementation of the matching procedure and further analysis of the obtained results included the following steps:

- Data were gathered from the SPARK database on enterprises receiving support from the IDF and used to form a treatment group (TG)

- Key variables were chosen and then used to select enterprises for the control group (CG) for comparison with the TG enterprises

- The CG was formed using the statistical procedure of one-to-one matching (in which every TG enterprise is matched with one analogue for inclusion in the CG). Several versions of control samples were created by employing different methods of matching (corresponding to different versions of determining the 'distance'). The final version used in the paper corresponds to the nearest neighbour technique.

- Variables were chosen to compare the performance of TG and CG enterprises.

- Comparative analysis of the dynamics of TG and CG financial and economic indicators was conducted: group means were compared.

Our study focused on the performance of Russian industrial firms that received direct state support during 2014–2017 either through the IDF loan programme or through the interest rate subsidy programme (with IDF participation). The choice of the time interval 2014–2017 was because, according to the IDF regulations, all projects supported in that period were to be completed by the beginning of 2021. Therefore, there was an opportunity for direct assessment of the actual results of these projects based on the analysis of key financial performance indicators of the enterprises that implemented them with state support.

Regarding coverage, the original TG included the 210 enterprises that received support during 2014–2017 and for which information was available on the IDF website in mid-2020. These 210 enterprises included beneficiaries of both state programmes: (1) recipients of concessional loans from IDF funds (150 enterprises), and (2) recipients of budget subsidies for the payment of interest (73 enterprises). 13 enterprises received both loans and subsidies. However, a reduced sample of 140 enterprises was used for further analysis because SPARK did not have the necessary data for 56 enterprises (mostly new and small ones). Additionally, 13 very large enterprises (e.g., KAMAZ, one of the largest heavy truck manufacturers in Europe, an enterprise that in many respects is unique in Russia) were excluded from the analysis because it was impossible to find

suitable analogues, and one was excluded because a subsidiary of the company was already included in the sample.

Among these 140 enterprises, about 40% were micro- and small enterprises with annual revenues up to RUB 800 million. The sample represented 23 industries (defined by two-digit codes of economic activities under the All-Russia classifier of types of economic activities (OKVED)), but 40% of all enterprises were classified as machinery building companies. Metallurgy (18% of all enterprises), chemicals and plastics (16%), and manufacture of pharmaceutical products and preparations (11%) were also well represented in the final sample. The loan beneficiaries were located in 36 Russian regions.

The amount and structure of support received from the state in the sample under study are characterised by the following parameters. In the initial TG (out of 210 enterprises), the average size of the loan received was RUB 275 million (USD 4.6 million), and the average size of the subsidy amounted to RUB 114 million (USD 2.05 million). In addition, 13 enterprises received both types of support.

In the final TG (140 enterprises), 101 enterprises received loans (average size, RUB 256 million or USD 4.1 million), and 49 enterprises received subsidies (average size, RUB 95 million or USD 1.5 million). 10 enterprises received both types of support. It can be noted that there were practically no differences in the average size of loans between the initial and final TGs, but the average size of subsidies in the final TG was about 15% smaller (i.e., the enterprises that dropped out of the analysis received bigger subsidies on average).

On average, the enterprises included in the final TG had demonstrated quite high growth rates at the time of being granted state support. The average annual nominal increment of their revenue for the 2 years preceding the support amounted to 14%. Considering the average inflation

rate in 2012–2015, estimated by Rosstat to be 6.3%,[6] the real average revenue growth rate for TGs amounted to approximately 8% per year. This is the revenue-weighted average annual growth rate. The unweighted average annual nominal growth rate for these companies was even higher and amounted to 39% for the TG. This is explained by the fact that our sample included many fast-growing small enterprises, among them 13 firms with an average growth rate exceeding 100% per year. The proportion of loss-making enterprises (in terms of profit before tax in the year of support provision) in the TG was 16.4%. It is worth noting that the share of already exporting firms in the TG was quite high, but average export volumes were small and amounted to just under 8% of sales revenue.[7]

Comparison with the average characteristics of the general population of Russian firms operating in the same industrial sectors showed that (before receiving state support) the enterprises represented in the TG were, on average, more financially stable and grew faster. For example, the proportion of loss-making firms in the general population totalled 21% in 2014 and 23% in 2015, while the average nominal unweighted growth rate for the comparable range of firms in the general population in 2012–2014 ranged between 8% and 10%.

Table 1 presents the main characteristics of the enterprises included in the final TG, with a breakdown by recipients of subsidies and loans. The table shows that these two groups of beneficiaries were similar in terms of average growth rates in the previous period, average profitability category, and proportion of enterprises with foreign shareholders. At the same time, there are noticeable differences in other parameters: first, the beneficiaries were larger (in terms of average revenue, share of micro- and medium-sized enterprises, etc.), but the differences in size were statistically significant only for expenditure on non-current assets (which characterises

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[6] According to the producer price index for 'Industry' economic activity, December vs. December.

[7] Data on companies' export revenues were obtained from the database of customs declarations of the Russian Federal Customs Service.

investment spending). It can also be noted that there were considerably more mechanical engineering enterprises among the recipients of loans.

Table 1. Main characteristics of 140 firms in the TG at the time of receiving support, by type of support.

Matching variables	Loans (N = 91)	Subsidies (N = 39)	Loans and subsidies (N = 10)
Revenue (mln rub)	2011.1 (2499.4)***	2122.9 (2225)	2328.5 (1431.3)
Revenue growth, times	1.40 (0.935)	1.35 (0.642)	1.36 (0.754)
Profitability category*	2.38	2.44	2.10
State owner (%)	1.10	5.13	0.00
Foreign owner (%)	10.99	12.82	40.00
Machinery (%)	40.66	17.95	70.00
Other variables			
Share of micro- and small enterprises (%)	46.15	28.21	20.00
Share of unprofitable firms (%)	16.48	12.82	30.00
Profit before tax (mln rub)	139.2 (541.5)	107.2 (266.2)	132.7 (852.2)
Investments (mln rub)	133.4 (215)	334.2 (356.8)	722.3 (818.7)
Share of firms being exporters** (%)	59.34	58.97	20.00
Export to revenue ratio (%)	7.36	10.74	1.88

Note. * The following coding was used: 1 = unprofitable firms (profitability to sales −3% or less), 2 = break-even (profitability between −3% and +3%), 3 = profitable (profitability +3% or more).
** A firm was categorised as an exporter if it reported any exports at least in 1 of the 2 years preceding the year of support.
***Standard errors in brackets

In order to form the general sample of enterprises from which the companies for the CG were selected, information on all enterprises operating in 2011–2015 and having the same OKVED codes as the companies in the TG was downloaded from the SPARK database. After excluding the firms in the TG, about 120,000 industrial enterprises remained in the general sample. Among those, 140 enterprises with the closest (relative to the TG enterprises) values for the following six variables were selected as the CG by the matching procedure described previously:

- Size: natural logarithm of annual revenue in the year before the receipt of support

- Growth rate: average annual revenue growth rate for the 2 years prior to the year of support

- Financial status: profitability category (through the ratio of annual profit before taxes to average revenue for 3 years): is the company profitable, breaking even, or loss-making?

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- Industry: aggregated OKVED code[8]

- State stake in the capital

- Foreign stake in the capital

This set of variables ensured sufficient comparability of enterprises in the treatment and control samples. At the same time, we did not control the enterprises' region of location, as in many cases it was impossible to find a pair of enterprises with the same characteristics in terms of size, industry, and region in the database. Neither did we control for the variable labour productivity, as no database on Russian enterprises available to us had full information on the actual number of employees.

The main characteristics of the CG are presented in Table 2. The comparison against other indicators (those that were not used in the formation of the CG) shows that, on the whole, we managed to ensure a high degree of comparability between the TG and CG in the period before support was provided. Differences in average investment and average profit were statistically insignificant. The only significant difference concerns the share of exporting firms (which was noticeably lower in the CG), which is broadly consistent with our assumption that more active and advanced firms are more likely to seek support from the IDF.

Table 2. Main characteristics of the treatment and control groups before receiving support, averaged across the two samples.

Matching variables	Treatment	Control
Revenue (mln rub)	2064.9 (2353.4)***	2086.3 (2453.5)
Revenue growth, times	1.39 (0.846)	1.325 (0.803)
Profitability category*	2.38	2.38
State owner (%)	2.14	2.14
Foreign owner (%)	12.89	12.89
Machinery (%)	36.43	36.43
Other variables		
Micro- and small enterprises (%)	39.29	39.29

[8] From 23 original industry codes, we moved to 14 aggregated codes; including the consolidation of six different types of machinery building presented in the original list into three aggregated groups: (a) computers and electrical equipment, (b) transport engineering, and (c) all other mechanical engineering.

Unprofitable (%)	16.43	20.71
Profit before tax (mln rub)	119.4 (493.9)	59.7 (1178.3)
Investments (mln)	227.5 (292.5)	258 (1187.6)
Exporters** (%)	60.71	49.29
Export to revenue (%)	7.72	6.66

Note. *, **, ***, see notes to Table 1.

The next section presents a comparison of the average performance results of enterprises in the TG and CG 3 years after the year of support. The following six indicators were used to compare the dynamics of the performance results between the two groups:

- Revenue for the year

- Profit before tax for the year

- Net assets at the year end

- Expenditure on non-current assets (indirect assessment of the enterprise's investment expenditure) for the year

- Exports for the year

- Shares of exporters in each group

We estimated average annual growth rates (for revenue and expenditure on non-current assets) or average annual increment rates (for profits, net assets, and exports). To analyse the dynamics of the shares of exporters, we estimated the changes in the annual average share for each group. The following tables show the differences between the group averages for the TG and CG, along with the values of the averages for the initial indicators.

The choice of a 3-year period for which we could compare the performance of the two groups was determined by the implementation timelines of the projects for which state support was provided. Since the project implementation timelines may not exceed 3 years under the terms of IDF financing, it was assumed that by the end of that period the new equipment purchased and installed with state support should have started to produce new products. This, in turn, should have had a positive effect on the economic performance of the beneficiaries of state support. Since the

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TG projects were financed in the period 2015–2017, we analysed the changes in the relevant indicators between the end of 2015–2017 and the end of 2018–2020, respectively.

First, we compared the performance for both complete samples. Then we compared the performance for individual subgroups in the TG, categorised according to the size of the beneficiary firms. Finally, we compared group averages depending on the support programme: loans or subsidies. All our comparisons were made in two ways:

A: Based on weighted averages (by firm size). This approach focused on the cumulative effect of each programme. In this case, a typical question to which a response can be received is: Did the aggregate size of revenues, profits, exports, etc., of the firms receiving support grow faster than the corresponding aggregate characteristics of those in the CG? Importantly, the weighted averages reflect primarily the performance of the largest firms.

B: Based on ordinary (unweighted) averages.[9] This comparison focused on the effect of the programme for a typical firm in the sample. The key questions in this case are: What were the dynamics of revenues, profits, exports, etc., at an average-sized firm in the TG? What differentiates it from the corresponding dynamics in the CG? The unweighted averages for our sample reflect the performance of small firms in a greater measure.

An important advantage of unweighted averages is the possibility of using statistical criteria for assessing the significance of differences for the mean parameters of both groups. This enhances the validity of conclusions about the significance/insignificance of differences between the groups (i.e., on the presence or absence of a significant effect of state support programmes).

The main preliminary hypotheses regarding the findings of our study consist of the following:

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[9] Differences between weighted and unweighted averages arise only for variables from the first group (revenue and value of assets).

- If state support programmes are effective, beneficiaries will, on average, demonstrate faster growth in revenues, profits, investment, and export activity than firms in the CG.

- The effect for small enterprises receiving support will be more pronounced, on average, than for large firms (due to the 'base effect' as well as a larger relative amount of support, e.g., compared to their revenues).

- Recipients of IDF loans will, on average, perform better than subsidy recipients because the selection process for loan recipients is more rigorous, involves more detailed project due diligence, and is better protected from administrative interference. In addition, the implementation of projects based on IDF loans is subject to regular monitoring.

5. Main empirical results

Table 3 presents the main set of results of our comparison of the TG and CG. According to our findings, the TG is slightly ahead of the CG in terms of the dynamics of sales revenue, which means that state support did have a small aggregate financial effect. However, the unweighted average annual revenue growth rates for enterprises that received support turn out to be about 3.5 times higher than in the CG (18% and 4% per annum, respectively). This difference is statistically significant ($p<1\%$) and constitutes evidence of a significant positive effect of state support on sales growth at a typical company. However, the comparison of other indicators does not provide convincing evidence that performance based on other (non-growth) dimensions was significantly different for firms in the TG compared to those in the CG.

Table 3. Comparison of the averages for treatment and control groups : groups as a whole (N=140).

	Treatment mean	Control mean	Treatment N	Control N	p-value
Weighted average growth rate per annum, times					
Revenue-weighted	1.13	1.10			
Investments-weighted	1.01	0.84			
Unweighted average growth rate per annum, times					
Revenue-unweighted	1.18	1.04	135	133	**0.00**
Investments-unweighted	1.07	1.15	88	69	0.36

Unweighted average absolute growth per annum (millions of rubles)				
Net assets	177.60	84.63	136	136	**0.05**
Profit before taxes	38.32	22.71	135	134	0.57
Value of exports	16.32	23.86	108	90	0.22
Change in the share of exporters, percentage points (pp)	1.61	0.89	140	140	0.64

Note: Statistically significant results presented in bold.

Table 4 presents results similar to the TG and CG comparison, but with a breakdown of support beneficiaries by size (the size of their revenues in the year preceding the provision of state support). Except for large firms, revenue growth among support beneficiaries was, on average, significantly higher than that among their CG peers.

Other differences between the TG and CG were not so pronounced and varied significantly depending on the group. At the same time, despite the obvious heterogeneity of the results, the comparison shows a general trend in favour of the performance of state support beneficiaries. For example, in all size groups, the increase in net assets was higher for support beneficiaries than for the CG (albeit these differences were statistically significant only in micro- and large businesses). This indicates a relatively slower growth of the total debt of support beneficiaries. Among other significant effects, we should highlight the faster increase in the share of exporting firms in the TG than in the CG among the micro-enterprises. The comparative analysis of the dynamics of expenditure on non-current assets, in contrast, shows that for medium-size enterprises the receipt of state support was accompanied by a decrease in investment spending, while their peers from the CG were building up their investment expenditure.

In our view, the underperformance of large firms within the sample is not surprising. In general, they were not supposed to participate in the IDF programmes, which were designed primarily to support medium-sized companies. The average size of an IDF loan was too small to make a statistically significant difference to a big corporation. A further shift in budget allocation within the IDF programmes in favour of smaller businesses would be highly beneficial for the overall programme impact.

Table 4. Comparison of treatment and control groups: breakdown by the size of beneficiaries.

	Treatment mean	Control mean	Treatment N	Control N	p-value
Micro-firms, N = 18					
Weighted annual relative growth, times					
Revenue-weighted	1.54	1.15			
Investments-weighted	0.83	-			
Unweighted annual relative growth, times					
Revenue-unweighted	1.52	1.10	18	13	**0.01**
Investments-unweighted	1.07	-	5	-	-
Unweighted annual absolute growth, millions of rubles					
Net assets	65.43	−61.18	18	15	**0.08**
Profit before tax	1.12	−71.00	18	13	0.34
Value of exports	7.06	−1.56	10	4	0.17
Share of exporters, pp	8.33	0.00	18	18	**0.05**
Small firms, N = 37					
Weighted annual relative growth, times					
Revenue-weighted	1.24	1.09			
Investments-weighted	0.95	1.44			
Unweighted annual relative growth, times					
Revenue-unweighted	1.16	1.00	36	36	**0.00**
Investments-unweighted	1.21	1.20	20	14	0.99
Unweighted annual absolute growth, millions of rubles					
Net assets	17.34	8.30	37	37	0.76
Profit before taxes	−1.13	−5.54	36	37	0.79
Value of exports	1.06	1.79	26	18	0.71
Share of exporters, pp	−1.35	4.05	37	37	0.10
Medium-sized firms, N = 37					
Weighted annual relative growth, times					
Revenue-weighted	1.12	1.05			
Investments-weighted	0.91	1.09			
Unweighted annual relative growth, times					
Revenue-unweighted	1.10	1.03	36	36	**0.04**
Investments-unweighted	0.97	1.24	26	19	**0.08**
Unweighted annual absolute growth, millions of rubles					
Net assets	64.83	29.31	36	36	0.30
Profit before taxes	19.12	3.96	36	36	0.34
Value of exports	42.04	22.93	28	24	0.51
Share of exporters, pp	1.35	0.00	37	37	0.64
Large firms, N = 48					
Weighted annual relative growth, times					
Revenue-weighted	1.12	1.09			
Investments-weighted	1.02	0.83			
Unweighted annual relative growth, times					
Revenue-unweighted	1.12	1.06	45	48	0.11
Investments-unweighted	1.08	1.09	37	36	0.92
Unweighted annual absolute growth, millions of rubles					
Net assets	444.46	230.52	45	48	**0.08**
Profit before taxes	100.13	83.92	45	48	0.82
Value of exports	11.08	35.71	44	44	0.53
Share of exporters, pp	1.56	−0.52	48	48	0.40

Note: Statistically significant results presented in bold.

Table 5 presents the differences in the impact of state support depending on the type of state support received. Although there were no statistically significant differences in most indicators,

the positive effects of state support that we identified above through the analysis of the entire sample were generally more pronounced in the performance of loan recipients than in subsidy recipients. In addition, we ran an extra test on differences in differences (Table 6) to measure the significance of differences between two incremental effects of state support depending on the type of support programme. This suggested a significant difference in the investment impacts of the two programmes: all negative effects of state support on investments were associated with subsidy recipients, while for loan recipients the results revealed little difference in investment trends between the TG and CG.

Table 5. Comparison of treatment and control groups: breakdown by type of state support.

	Treatment mean	Control mean	Treatment N	Control N	p-value
		Loans, N = 91			
		Weighted annual relative growth, times			
Revenue-weighted	1.11	1.08			
Investments-weighted	1.10	0.79			
		Unweighted annual relative growth, times			
Revenue-unweighted	1.18	1.03	87	85	**0.00**
Investments-unweighted	1.21	1.15	52	38	0.65
		Unweighted annual absolute growth, millions of rubles			
Net assets	149.98	61.40	88	88	0.12
Profit before taxes	25.41	19.97	87	86	0.89
Value of exports	3.84	18.49	69	55	0.57
Share of exporters, pp	1.37	1.65	91	91	0.89
		Subsidies, N = 39			
		Weighted annual relative growth, times			
Revenue-weighted	1.14	1.10			
Investments-weighted	0.88	1.00			
		Unweighted annual relative growth, times			
Revenue unweighted	1.14	1.06	38	38	**0.08**
Investments unweighted	0.83	1.17	29	25	**0.01**
		Unweighted annual absolute growth, millions of rubles			
Net assets	206.11	121.10	38	38	0.39
Profit before taxes	34.03	27.93	38	38	0.81
Value of exports	49.01	33.79	29	28	0.62
Share of exporters	1.92	0.00	39	39	0.52
		Loans and subsidies, N = 10			
		Weighted annual relative growth, times			
Revenue-weighted	1.22	1.12			
Investments-weighted	1.01	1.08			
		Unweighted annual relative growth, times			
Revenue-unweighted	1.34	1.07	10	10	**0.10**
Investments-unweighted	1.07	1.10	7	6	0.83

Unweighted annual absolute growth, millions of rubles				
Net assets	312.34	150.46	10	10	0.40
Profit before taxes	166.98	26.23	10	10	**0.08**
Value of exports	7.71	26.37	10	7	0.12
Share of exporters, pp	2.50	-2.50	10	10	0.35

Note: Statistically significant results presented in bold.

Table 6. Differences in differences: comparisons of the effects of state support depending on the programme.

	Loans			Subsidies			T-stat (N)
	TG	CG	Difference	TG	CG	Difference	
Revenue growth, times	1.18	1.03	0.15	1.14	1.06	0.08	0.47 (38)
Investment growth, times	1.21	1.15	0.06	0.83	1.17	−0.34	**0.07** (25)

6. Discussion: IDF experience in comparison with good international practice

Our interviews with employees of the IDF and members of the IDF Expert Council shed light on the basic elements of the fund's institutional features that lower the risks of inefficient use of public funds and, at the same time, create enabling conditions for the fund to achieve the state industrial policy goals. These important institutional features include the following:

- Openness: The fund's programmes imply broad and non-discriminatory access to state support for almost all companies in the manufacturing industry. Although the IDF regulatory documents contain a list of sectors not eligible for financing, it appears to be quite short and well-reasoned. In recent years, the list of sectors eligible for IDF loans has been further expanded and efforts have been made to make IDF loans more easily available to SMEs.

- Selectivity: The fund's programmes remain highly selective and customised, and set sufficiently high requirements on potential beneficiaries in terms of the project investment efficiency.

- Protection from lobbying and corruption: The central role in the decision-making on loan disbursements is played by the fund's Expert Council, which consists of a big group of

experts who are independent of the IDF and the Ministry of Industry and Trade and have an impeccable professional reputation. The council's decisions are made by open voting following a collective discussion of projects and consideration of the results of independent expert reviews. The combination of information openness and collective decision-making in the IDF is quite effective in preventing external players from influencing the distribution of loans. It makes little sense for the key players involved in the distribution of IDF funds to engage in lobbying in favour of specific companies: the potential risks to their professional reputations from such lobbying would outweigh the relatively small potential financial gains quite significantly. By and large, the Expert Council model, which is unique for Russia, largely predetermines the quality and sustainability of the IDF project portfolio.

- Administrative efficiency: The fund's internal procedures for interacting with applicants are constantly monitored and refined, e.g., through regular client surveys. Information on the procedures used is easily accessible, all necessary documents are provided by clients online, and potential borrowers have wide access to the services of the IDF's counselling centre. The eligibility criteria for the fund's programmes are few and simple to understand. According to the estimates of the fund staff, the total time it takes for the IDF to make a loan decision from initial application to disbursement averages less than 5 months.

- Internal competition: Internal competition between individual IDF sector programmes stimulates efficiency and accelerates the transfer of innovations between programmes.

- Implementation monitoring: Loan agreements with borrowers require continuous monitoring of project implementation by the IDF, which includes regular reporting, visits to project sites by IDF staff, the possibility of using non-financial instruments to support borrowers, re-discussion of individual projects at the Expert Council in case of significant deviations from the terms of the loan agreement, and direct financial sanctions for non-compliance with the terms of the agreements.

Special rules and procedures in the IDF practice deserve special mention, as they further limit the effect of possible political pressure on the process of reviewing project applications. Such rules include, for example, the Expert Council's categorical refusal to consider support letters from regions and business associations. In addition, if there is a conflict of interest, the Expert Council member concerned does not take part in voting on the project. Furthermore, in the event of disagreement in the assessment of the project between the Expert Council and sectoral departments of the Ministry of Industry and Trade, the issue is considered at a meeting of the fund's Supervisory Board attended personally by the Minister. This also limits the possibilities for direct lobbying of projects.

The described institutional features of the IDF are well in line with the general principles of effective state industrial policy (Rodrik, 2008; Sabel, 2006). It should be noted that, according to modern concepts, the effectiveness of the industrial policy is not only determined by the rationality of the organisation of direct state support to the private sector in the form of subsidies and benefits, but is, to a greater extent, related to the success of the strategic cooperation between public and private entities aimed at identifying constraints to economic development, and developing and implementing corrective actions to mitigate these constraints. The key function of state development institutions within the framework of this approach is to establish effective interaction between the parties in jointly identifying the main constraints and emerging opportunities.

In this respect, it should be emphasised that the IDF has made considerable headway in building long-term partnerships with key stakeholders. In fact, the fund's activities are based on the principles of public–private partnership. According to the fund's rules, the share of representatives of public institutions in the Supervisory Board and Expert Council is limited and constitutes fewer than half of the total number of their members. The remaining members directly represent the commercial sector (primarily large banks) and major business associations.

The fund has developed a fairly effective system of communications with potential borrowers and other stakeholders, which includes diverse tools such as (1) regular surveys of clients and partners of the fund; (2) long-term partnership agreements with regional authorities, in the implementation of which the central role is played by regional IDFs; (3) the availability of its own advisory centre, which helps potential borrowers prepare applications; and (4) a multifunctional communication platform: the State Information System for Industry,[10] operated by the IDF.

7. Sustainability risks: lessons from the experience of the Agency for Strategic Initiatives

Our previous analysis suggests that the IDF programmes provide additional growth opportunities for participating enterprises. We see reasons for this effectiveness in the IDF institutional features, which coincide with many key requirements traditionally considered in the literature for the organisation of effective state industrial policy programmes. However, the question remains open about the sustainability of the observed positive trends: how great are the risks of institutional degradation of the IDF, especially in a situation where the development of national institutions is no longer a priority for the political leadership of the country?

In this section, we discuss the issue in the context of comparative institutional analysis: we compare the evolution of the IDF with that of another relatively successful Russian development institution, the ASI.[11] The ASI was established in 2011 to enable rapid and significant improvements in Russia's investment climate (and to improve Russia's place in the global Doing Business ranking). It was assumed that the ASI would be able to organise effective interaction

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[10] The State Information System for Industry http://gisp.gov.ru (GISP) is a Russian system of interconnected information services for subjects of industrial activity, created to improve the efficiency of information exchange on the status of industry. One of the popular services within the GISP system is the State Support Measures Navigator, which provides users with up-to-date information on a variety of existing state support tools.

[11] The ASI is often described in the literature as one of the few successful institutional innovations in Russia's recent economic history (Freinkman & Yakovlev, 2015).

between various government agencies responsible for specific sectoral aspects of business regulation and ensure active participation of businesses in discussing possible reform options, developing concrete solutions that would suit both the government and business, and subsequent monitoring of their implementation. We believe that the history of the ASI's evolution is of considerable interest in the context of the risk of the IDF losing its current institutional advantages.

It should be emphasised that the earlier study (Freinkman & Yakovlev, 2015), which mainly focused on the ASI's success factors in the initial period of its existence, exposed the risks of a possible degradation of this institution through its absorption by the surrounding bureaucracy. Many of these risks materialised after Andrei Nikitin, the first ASI head, was transferred to the position of governor of the Novgorod region in early 2017. In recent years, the ASI has become virtually indistinguishable from most other Russian government institutions at the federal level and has rather quickly lost its initial innovativeness and flexibility. How great is the risk that in the medium term the IDF will follow suit?

At first glance, this risk seems quite significant, since there are many similarities in the histories of both organisations and their activities during the initial stages after their establishment. Both were founded to address specific priority industrial policy tasks of the Russian government and were initially focused on active cooperation with business. Both organisations were granted a relatively high degree of administrative autonomy at their creation. Both managed to bring together, on a competitive basis, strong management teams regarded by peers as highly professional. There are even some similarities in the biographies of the first heads of these organisations, Alexei Komissarov at the IDF and Andrei Nikitin at the ASI: before joining the civil service, they both had many years of successful experience in Russian business.

Despite these important similarities, we think that the role of political factors in the history of the ASI's creation was fundamentally higher than in the IDF, and this excessive politicisation was the key reason for the ASI's vulnerability as an effective development institution. From the

first day of its existence, the ASI received too much political attention; the agency was perceived as a project supported personally by President Putin, and the ASI's senior directors were appointed by orders of the Russian president.[12] At first, all this provided the ASI with additional political weight and opportunities for faster adoption of key government decisions, facilitating interagency approvals.

However, ultimately, this politicisation of the agency turned into a liability for the ASI's sustainable development. Nikitin as the ASI Director General had little control over ASI senior directors appointed by the Russian president. Under such circumstances, it was unlikely to expect that, after Nikitin left ASI, his successor would continue the development course he had chosen.

There is another difference between the two agencies that we consider even more important. From the very beginning, Komissarov paid much attention to the institutional aspect of the IDF's development: creation of formal internal rules and procedures by which the fund was to operate, and, above all, procedures that would ensure effective selection and implementation of the fund's projects. Such rules were developed to regulate the conduct of the IDF staff and to use the newly developed mechanism of independent expert reviews. The combination of the IDF rules and procedures became an important filter for dismissing weak projects. However, at the same time, they formed an institutional basis for the fund's activities and ensured stability and continuity in its development. In contrast to the situation with the ASI, after Komissarov left in 2017, the IDF continued to develop successfully, its reputation among state support beneficiaries and the professional expert community remained strong r, and the fund managed to steadily expand the scope of its activities.

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[12] Compared to ASI, the status of the IDF has always been much lower and never rose above the level of the Minister of Industry. This allowed the fund's management to avoid excessive political hype (and related additional attempts of external lobbying) around specific decisions to support certain IDF projects.

The ASI has never prioritised the development of formal internal procedures regulating the agency's activities in terms of implementing its core functions and making extensive use of external expertise. The ASI's internal mechanisms have always been much less elaborated and much less transparent, especially for external observers. In our opinion, this is the main reason for the differences observed in the institutional sustainability of the two organisations. The institutional basis of the ASI was rather weak, and the decrease in support received by the ASI from the political leadership triggered its degradation. The transparency of the IDF rules and procedures has, in contrast, demonstrated its effectiveness and become the basis for the fund's administrative and functional stability, allowing it to survive its first change of leadership and a number of other external shocks rather painlessly.

8. Conclusions

Our analysis shows a positive effect of both state support programmes implemented with the participation of the IDF, above all on sales growth. Revenue growth for a typical enterprise that received support in 2014–2017 was much higher than for a similar enterprise in the CG. At the same time, we found significant heterogeneity in the performance of enterprises that received state support and a concentration of positive effects in a relatively small number of the most successful firms.

Our empirical results are partially consistent with the preliminary hypotheses formulated at the beginning of the paper. In particular, the effect of state support did depend on the size of the firm (it was much more significant for small and micro-enterprises). Apparently, greater concentration of state support in small enterprises (relative to the scale of their activities) provided additional return on funding received under state programmes.

At the same time, recipients of IDF loans on average demonstrated better performance than participants of the subsidy programme. Enterprises that received IDF loans showed relatively

higher sales growth rates and better investment dynamics in the 3 years following the year of support. The convincing gap in the performance of loan recipients (a programme that follows a full set of internal IDF procedures) and subsidy recipients (a programme that only partially leverages the IDF institutional capabilities) provides further evidence of the effectiveness of the principles underlying the selection and support of investment projects implemented within the IDF framework.

The research literature on state support effectiveness has traditionally evaluated the results of the respective programmes, while issues related to effective organisation of the implementation of state support programmes remain under researched. As a result, it is difficult to find in the literature success stories of organisations that have accumulated practical experience and have a positive track record of effective allocation of state support and control over the use of allocated funds. This lack of knowledge about the available positive practical experience is especially noticeable in developing countries, where efficient delivery of state support faces additional challenges driven by broader weaknesses in national accountability frameworks. In this regard, the successful Russian experience in administering programmes for direct state support holds substantial value for a wide range of organisations compelled to implement government support programmes under less-than-ideal institutional conditions.

Our analysis has identified key institutional arrangements in the IDF's internal procedures that contributed to an overall improvement in the efficiency of the fund's decisions on the allocation of state support and control over the use of allocated funds. Moreover, these institutional innovations (relative to the managerial and administrative arrangements prevailing in Russia's public administration) have allowed the IDF to maintain, over the course of 9 years, the integrity of its procedures for selecting and supporting the beneficiaries of its programmes, despite the overall deterioration of governance and accountability arrangements.

The unusual internal procedures of the IDF, which have ensured its institutional sustainability and unexpected effectiveness, are manifested in the following:

- *Openness* through non-discriminatory access to state support for applicants

- *Selectivity and high standards* with regard to the minimum level of project efficiency

- *Protection from lobbying and corruption* directly related to the quality and independence of project appraisal, collective decision-making, and control over possible conflicts of interest

- *Administrative efficiency*

- *Internal competition* between individual programmes within the IDF context

- *Continuous monitoring* supplemented by financial sanctions for non-compliance with agreements with the fund

These institutional features of the IDF are well aligned with the general principles of creating an effective state industrial policy (Rodrik, 2008; Sabel, 2006). We also believe that the emergence of such industrial policy tools in Russia in the mid-2010s can partially explain the increased resilience of the Russian economy in the face of large-scale international sanctions imposed on Russia in 2022 due to its war in Ukraine.

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