

Karymshakov, Kamalbek

Working Paper

Determinants of export performance of SMEs in the Kyrgyz Republic

ADB Working Paper Series, No. 1152

Provided in Cooperation with:

Asian Development Bank Institute (ADBI), Tokyo

Suggested Citation: Karymshakov, Kamalbek (2020) : Determinants of export performance of SMEs in the Kyrgyz Republic, ADB Working Paper Series, No. 1152, Asian Development Bank Institute (ADBI), Tokyo

This Version is available at:

<https://hdl.handle.net/10419/238509>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by-nc-nd/3.0/igo/>



ADB Working Paper Series

**DETERMINANTS OF EXPORT
PERFORMANCE OF SMEs IN
THE KYRGYZ REPUBLIC**

Kamalbek Karymshakov

No. 1152
June 2020

Asian Development Bank Institute

Kamalbek Karymshakov is associate professor at the Finance and Banking Department of Kyrgyz-Turkish Manas University in Bishkek, Kyrgyz Republic.

The views expressed in this paper are the views of the author and do not necessarily reflect the views or policies of ADBI, ADB, its Board of Directors, or the governments they represent. ADBI does not guarantee the accuracy of the data included in this paper and accepts no responsibility for any consequences of their use. Terminology used may not necessarily be consistent with ADB official terms.

Working papers are subject to formal revision and correction before they are finalized and considered published.

The Working Paper series is a continuation of the formerly named Discussion Paper series; the numbering of the papers continued without interruption or change. ADBI's working papers reflect initial ideas on a topic and are posted online for discussion. Some working papers may develop into other forms of publication.

The Asian Development Bank refers to "Kyrgyzstan" as the Kyrgyz Republic.

Suggested citation:

Karymshakov, K. 2020. Determinants of Export Performance of SMEs in the Kyrgyz Republic. ADBI Working Paper 1152. Tokyo: Asian Development Bank Institute. Available: <https://www.adb.org/publications/determinants-export-performance-smes-kyrgyz-republic>

Please contact the authors for information about this paper.

Email: kamalbek.karymshakov@manas.edu.kg

The author is grateful to Shujiro Urata and Cassey Lee, as well as to the participants of the Asian Development Bank Institute conference "Trade, Global Value Chains, and Small and Medium-Sized Enterprises" (2020), for their valuable comments and suggestions.

Asian Development Bank Institute
Kasumigaseki Building, 8th Floor
3-2-5 Kasumigaseki, Chiyoda-ku
Tokyo 100-6008, Japan

Tel: +81-3-3593-5500
Fax: +81-3-3593-5571
URL: www.adbi.org
E-mail: info@adbi.org

© 2020 Asian Development Bank Institute

Abstract

Increased participation in global value chains is firmly related to the engagement of local producers in international markets through increasing sales in these markets. This study aims to examine factors affecting export performance of SMEs in the Kyrgyz Republic. Empirical estimations based on the Enterprise Survey data set reveal that correspondence with quality requirements, increasing participation of foreign capital in ownership of firms, availability of financial resources, and labor productivity are important determinants of exporting activities of SMEs. Along with this, firms in industries with a low technology level demonstrate relatively higher export activities. However, it can also be argued that SMEs do not have enough capability to adopt medium and high technology in their production process, which may lead to concern over the long-term sustainability of their competitiveness in international markets. These findings underline that government policy towards enhancing labor productivity, foreign capital participation associated with the higher availability of financial resources, and knowledge-supporting programs are important for the export of SMEs in the Kyrgyz Republic.

Keywords: SME, export, internationalization

JEL Classification: F14, L25, L26

Contents

1.	INTRODUCTION.....	1
2.	SMEs IN THE KYRGYZ REPUBLIC	2
3.	LITERATURE REVIEW	8
4.	DATA AND METHODOLOGY	9
4.1	Data Source	9
4.2	Methodology.....	10
4.3	Descriptive Statistics.....	13
5.	ESTIMATION RESULTS	14
6.	CONCLUSIONS.....	18
	REFERENCES	20
	APPENDIX.....	23

1. INTRODUCTION

Participation of local firms in global value chains (GVCs) in a developing country context has become increasingly important for export performance, increasing added value, and raising income (OECD 2012; Gereffi and Sturgeon 2013; Bamber et al. 2014). However, social and economic conditions in developing countries along with the capacity of firms may not be favorable for utilizing this opportunity. Local human capital development, sufficiency of infrastructure, industry maturity level, and experience in managerial skills corresponding to adapting to the challenges caused by participation in GVCs may condition successful integration of local producers into GVCs (Pietrobelli 2008; Bamber et al. 2014). Enterprises in developing countries face different challenges in the process of being integrated into GVCs. These issues are related to constraints in access to finance, a lack of managerial skills, difficulties in finding a qualified labor force, certification requirements, limited economies of scale, deficiency in information access, and evaluation for strategy development, etc. (Harvie and Charoenrat 2015; Fernandez-Stark, Frederick, and Gereffi 2012). Given these challenges, increasing participation of local firms in international markets and increasing their export remain important conditions for participation in GVCs.

The Kyrgyz Republic as a developing country in central Asia faces these challenges too. Its historical background and social and economic issues of the transition period have been reflected in the priority of making the private sector participate effectively in GVCs. In the economy of the Kyrgyz Republic, SMEs play the role of drivers of private sector development. In the last five years, almost 40% of GDP was generated by SMEs.¹ However, despite their potential, participation has not been sufficient for effective integration into GVCs (see, for instance, Vandenberg and Khan 2015). According to an evaluation of private sector development in this country, institutional environment, infrastructure development, and optimization of government regulation systems are priority issues (World Bank 2019). The importance of SMEs in the economy and their issues in regard to export performance make the Kyrgyz Republic an interesting case study.

Given the general objectives in terms of economic integration and export performance in the Kyrgyz Republic and, on the other hand, the challenges of integrating into GVCs in the transition period context, understanding the basic factors affecting firms' export activity is important. From this standpoint, it is highly relevant to analyze factors that explain firm engagement in international markets and increase their export. Most of the empirical literature on export performance in the case of the post-communist countries is limited with less focus on central Asian countries or includes broad discussions on export performance based on macroeconomic evaluations (see, for instance, Cieřlik 2014; Cieřlik, Biegańska, and Środa-Murawska 2016). In light of such a gap in the knowledge about the central Asian context, this study aims to examine factors affecting the export performance of SMEs in the case of the Kyrgyz Republic. The research of factors associated with exporting activities of SMEs is consistent with the long-term objectives of integration into GVCs and the economic development of the Kyrgyz Republic.

¹ <https://knews.kg/2018/09/28/natsstatkom-kyrgyzstana-podvel-itogi-deyatelnosti-malogo-i-srednego-biznesa-za-2017-god-chego-dobilis-predprinimateli/>.

This paper is structured as follows. The next section describes the main trends and developments in the SME sector in the Kyrgyz Republic. Section 3 provides a brief review of the relevant literature. Section 4 includes data, methodology, and descriptive statistics. Section 5 presents estimation results and finally Section 6 concludes.

2. SMES IN THE KYRGYZ REPUBLIC

Although the term “SMEs” is well known, the definition of SMEs diverges across-countries. In the Kyrgyz Republic, the definition of SMEs follows the Government Decree from 1998, with amendments in 2002, which defines SMEs by the number of employees and amount of annual turnover.² The National Statistical Committee of the Kyrgyz Republic (NSCKR) provides information about SMEs based on this classification. According to this classification, two different criteria are used for two subgroups by number of workers and annual turnover. Table 1 provides this classification based on number of workers.

Table 1: Definition of SMEs in the Kyrgyz Republic by Employee Number

	Agriculture, Hunting and Forestry, Fish Farming, Construction, Mining, Manufacturing, Production and Distribution of Energy, Gas, and Water	Trade and Repair Services, Hotels and Restaurants, Transport and Communication, Finance, Education, Healthcare, and Other Services
Large enterprises	201 and more	51 and more
Medium-sized enterprises	from 51 to 200	from 16 to 50
Small enterprises	up to 50	up to 15
Microenterprises	up to 15	up to 7

Source: Decree of the Government of the Kyrgyz Republic “On the basic scheme of the classifier of types of enterprises” # 78 of 17 February 1998 (with amendments from 29 August 2002).

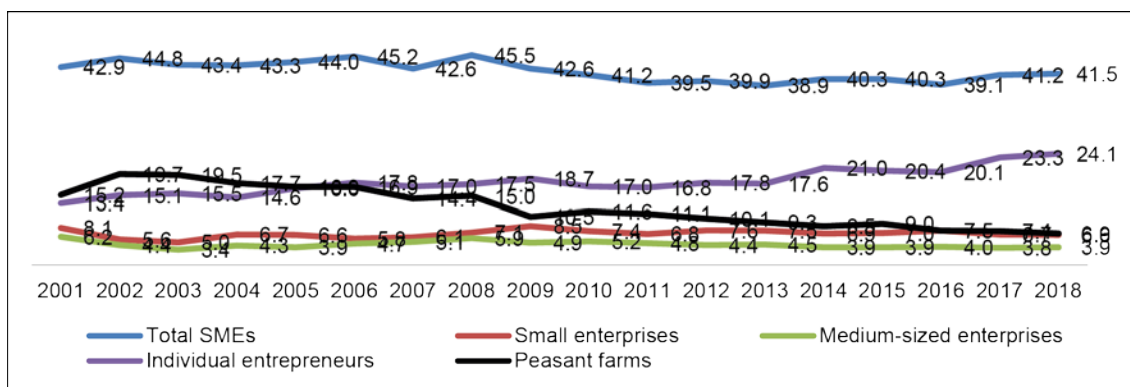
Following this definition, SMEs in the Kyrgyz Republic can be referred to as enterprises with up to 200 employees and up to 50 employees in nonservice and service sectors, respectively. However, the National Statistical Committee of the Kyrgyz Republic, as well as the SMEs defined in the standard above-mentioned definition, reports peasant farms and individual entrepreneurs too. The main argument of such an approach is that agricultural farmers based on household production activities and individual entrepreneurs represent a significant part of entrepreneurship in the Kyrgyz Republic, which cannot be neglected even though they are entrepreneurs without hired employees (Tilekeyev 2019, 2). Therefore, the information about SMEs below includes peasant farms and individual entrepreneurs.

SMEs play an important role in the economy of the Kyrgyz Republic. According to official statistics, the share of SMEs in GDP over the last 20 years varies above 40%, ranging from 45.8 in 2008 to 41.5 in 2018 (see Figure 1), which is generally higher than other countries in central Asia (Holzhacker and Skakova 2019, 6). Among SMEs, the highest contribution to GDP is related to activities of individual entrepreneurs – around 24% – while the share of peasant farms shows a decreasing tendency.

² Decree of the Government of the Kyrgyz Republic “On the basic scheme of the classifier of types of enterprises” # 78 of 17 February 1998 (with amendments from 29 August 2002).

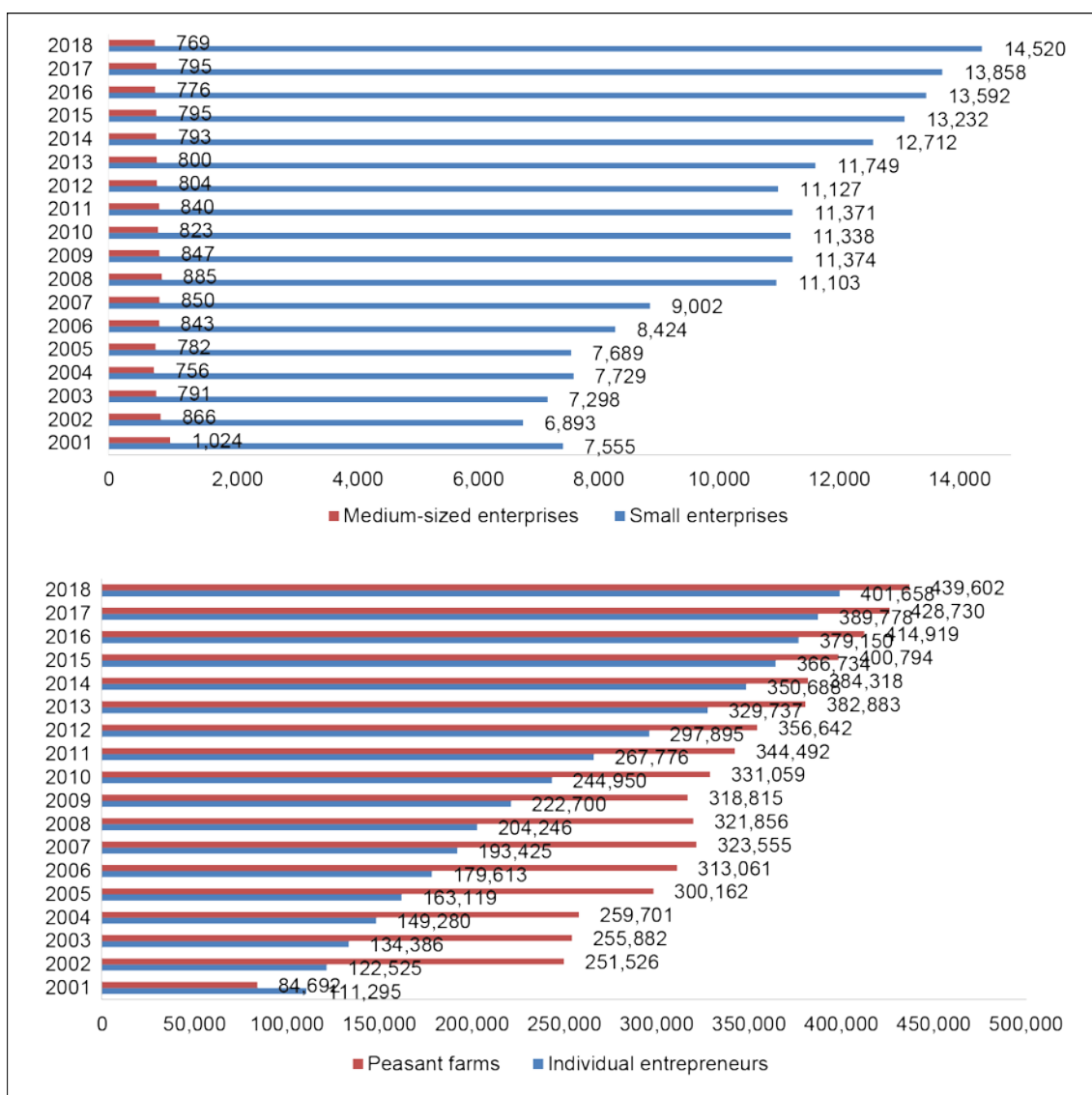
The contribution of small and medium-sized enterprises has been constantly around 4%–7% each.

Figure 1: Share of SMEs in GDP (in %, 2001–2018)



Source: National Statistical Committee of the Kyrgyz Republic (NSCKR).

Figure 2: Number of SMEs in the Kyrgyz Republic (2001–2018)

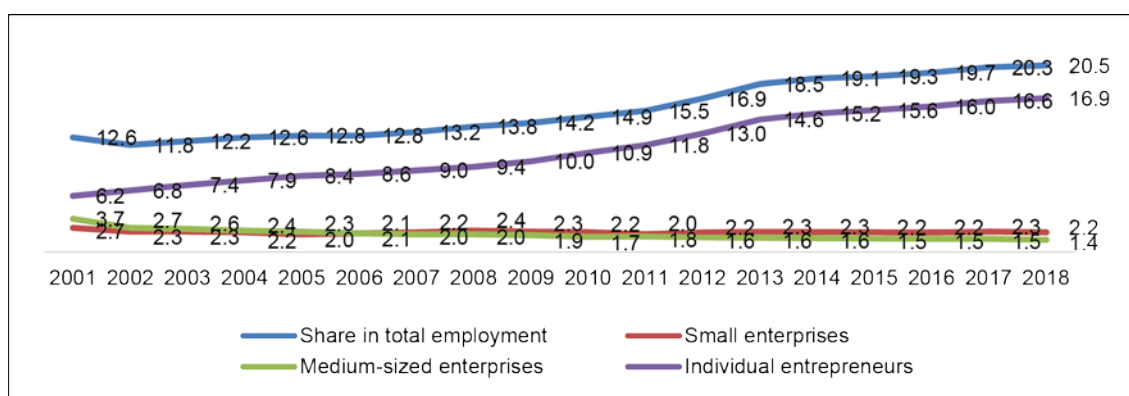


Source: National Statistical Committee of the Kyrgyz Republic (NSCKR).

Statistical data on the number of SMEs in Figure 2 show that individual entrepreneurs and peasant farms have been showing stable growth since the early 2000s. In 2018, peasant farms accounted for around 439,000 SMEs, and individual entrepreneurs for about 401,000. Small enterprises have been increasing too, though at a slower growth rate, from 11,000 in 2008 to 14,500 in 2018. However, the number of medium-sized enterprises is limited. Moreover, in the last five years it has shown a decreasing tendency, and in 2018 there were 769 medium-sized enterprises.³

SMEs are also an important source of job creation. The share of SMEs in 2018, excluding peasant farms, in total employment was 20.5% (see Figure 3). It should be noted that the stable growth of employment among SMEs was related to the growth of individual entrepreneurs, which in 2018 accounted for 16.9% of total employment.

Figure 3: Share of SMEs in Employment (% , 2001–2018)



Note: Employment of peasant farms is not included because of the unavailability of information.

Source: National Statistical Committee of the Kyrgyz Republic (NSCKR).

It can be seen from the description of trends that there is a large disparity in the growth of the number of individual entrepreneurs and that of small and medium-sized enterprises. One of the fundamental factors affecting this trend is the taxation and registration practices in the Kyrgyz Republic. One of the tax regimes set in the Tax Code of the Kyrgyz Republic is that of patent-based taxes.⁴ Being in two different forms, namely voluntary and mandatory, the patent system is applied to individuals involved in specific activities determined by the legislation. Those individuals using the patent tax are required to pay profit and sales tax. Therefore, it creates a favorable environment for individual entrepreneurs unless their turnover exceeds 8 million som (or approximately \$114,000). After this threshold they are not under the patent regime conditions and have to pay VAT and other taxes. Moreover, under the patent system, book-keeping is not required for entrepreneurs.

This situation has two consequences. First, those under the patent system are motivated to show turnover below the threshold value, which means some part of their activity remains informal. Second, for entrepreneurs working under the advantageous conditions of patent regime transition into the upper size of enterprises (small, medium, and large),

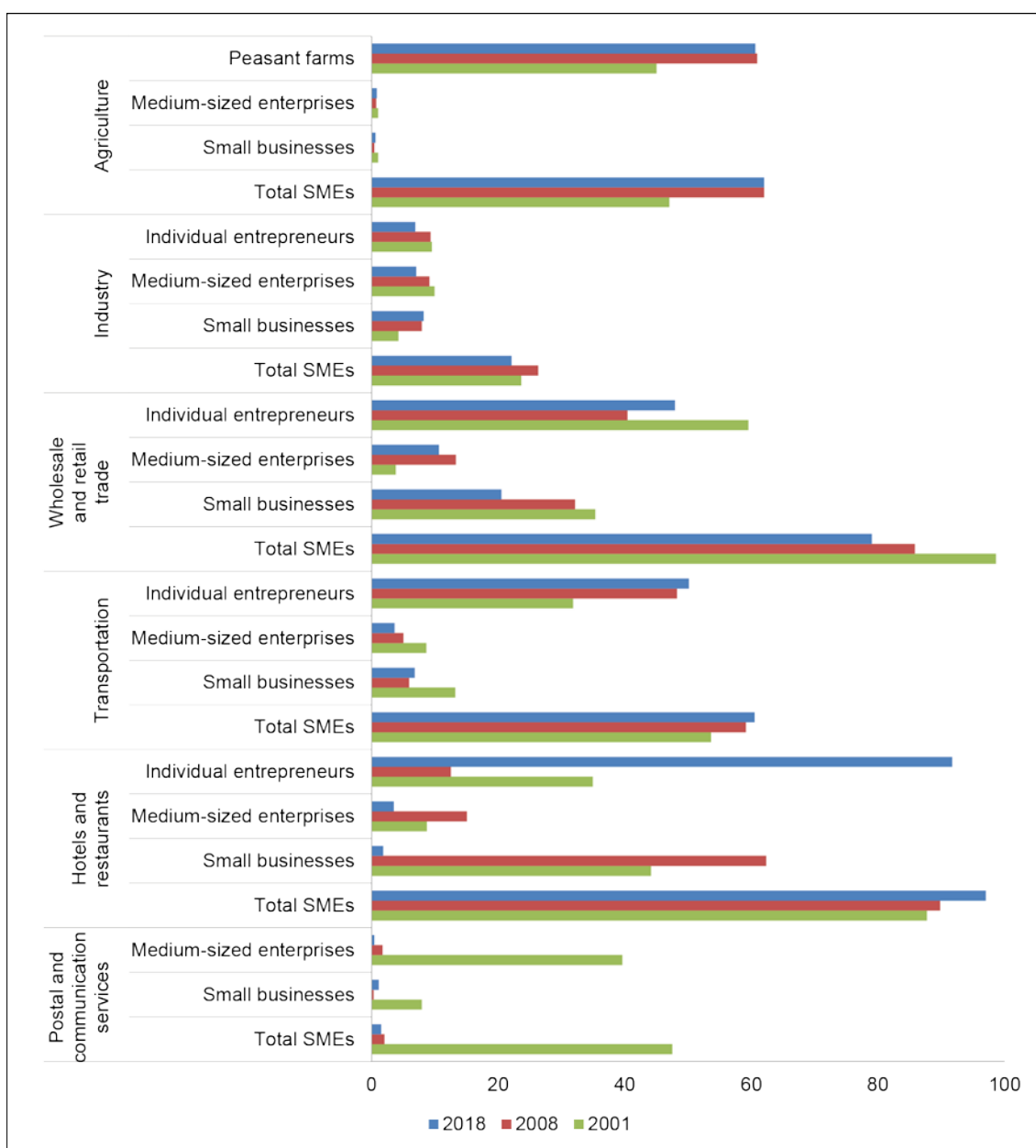
³ Although Holzhaecker and Skakova (2019, 7) note that the contribution of SMEs to GDP is underestimated because of the considerable share of informal economy in the Kyrgyz Republic.

⁴ In the term “patent-based taxes,” “patent” does not refer to the patents of intellectual property or some innovation activities. Rather, this term refers to a special tax regime where individuals may engage in entrepreneurial activities without other registration processes if these business activities are included in the list of patent-based activities.

the tax burden is increased. Because of this, individual entrepreneurs and microenterprises are growing, while the number of small, medium, and large firms is stagnating (Sahovic 2019).

If we compare the contributions of SMEs in employment and value added (GDP) in the Kyrgyz Republic's economy, it can be seen that the growing number of employees in SMEs does not result in a growth in the share of SMEs in GDP. This can be explained by the fact that an increasing number of individual entrepreneurs is not associated with increased productivity (Hasanova 2019). However, as mentioned above, contributions to GDP can be underestimated given the considerable number of informal economic activities, which is widespread among individual entrepreneurs.

Figure 4: Share of SMEs in Production Volume of Sectors of the Economy of the Kyrgyz Republic (%)

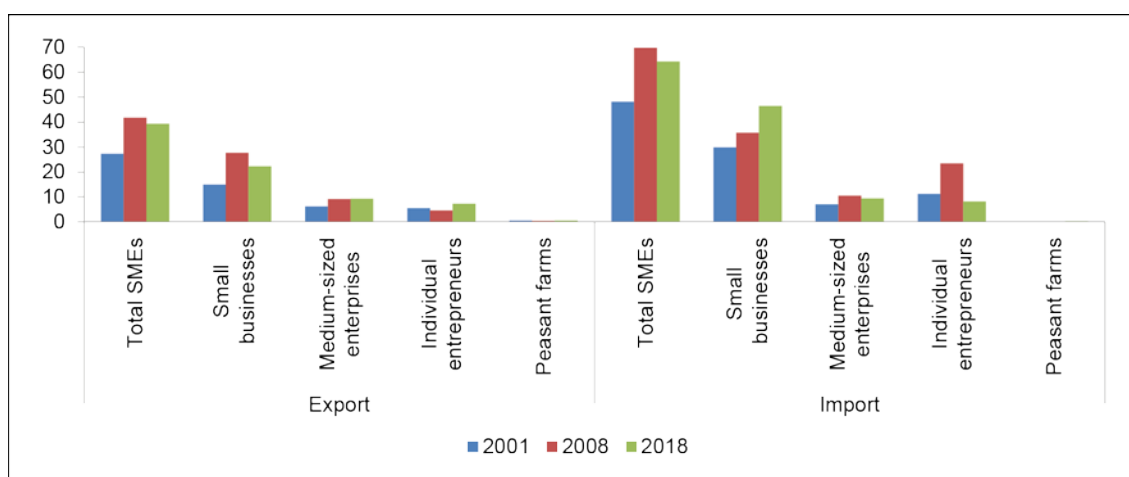


Source: National Statistical Committee of the Kyrgyz Republic (NSCKR).

The distribution of activities of SMEs across sectors of the economy indicates that they dominate in agriculture, wholesale and retail trade, and hospitality sectors. In particular, in agriculture it is almost fully represented by peasant farms, which account for 60% of the total agricultural production. Individual entrepreneurs have the highest share in trade, transportation, and hotels and restaurants. In particular, in the hotels and restaurants sector they generate almost 97% of production. However, in the industry sector, SMEs make the lowest contribution – about 21%.

The contribution of SMEs to the economy and productivity growth has a direct relationship with their participation in external trade activities. Successful application of new technologies and processing of completed goods necessitates import of goods and services, while participation in export increases value added.

Figure 5: Share of SMEs in Export and Import of the Kyrgyz Republic
(%, 2001–2018)



Source: National Statistical Committee of the Kyrgyz Republic (NSCKR).

SMEs in the Kyrgyz Republic constituted 39.3% of total export in 2018, and 64.2% of import. Both in export and import small enterprises have a higher share – 22% and 46%, correspondingly. The main export items of SMEs are agricultural products (fruits, vegetables, cotton) and textile products. The main export destinations of SMEs’ in the Kyrgyz Republic are countries of the Eurasian Economic Union (EEU). Although the Kyrgyz Republic’s membership of the EEU was expected to increase the exporting potential for producers in the country, recent challenges indicate that potential issues in this direction undermined these expected benefits. Thus, Hasanova (2019) notes that after gaining EEU membership, the share of individual entrepreneurs and peasant farms exporting to EEU countries increased considerably, while in contrast, the share of exports of small and medium-sized enterprises to EEU countries decreased.

Increasing integration in global value chains is necessary for participation in external trade activities in order to result in increased added value for SMEs. Although there is no systematic survey on measuring the integration of the Kyrgyz Republic’s SMEs into GVCs, Holzhaecker and Skakova (2019, 11) state that participation in GVCs in the Kyrgyz

Republic had a decreasing tendency. Total GVC participation in 2017 was estimated to be 44.9%, while in 2011 it was 52.4%.⁵

An overview of the current state of SMEs in the Kyrgyz Republic shows that they make an important contribution to production and employment. However, there is no evidence that the constant growth in the number of SMEs has generated analogous growth in productivity. Moreover, the growth of SMEs is mainly related to individual entrepreneurs and peasant farms, while the growth in the number of small enterprises has been comparatively limited. An analogous conclusion can be derived for their external trade and participation in GVCs. The development of the SME sector based on individual entrepreneurship does not provide a strong perspective of competitiveness among SMEs in export markets.

Corresponding government policies aimed at the development of efficiency and competitiveness among SMEs are necessary. There have been different government policy actions over the last 20 years aimed at SMEs, though their implementation and efficiency have been questioned. For instance, in 2007, the law “On State Support of Small Business” was adopted.⁶ However, its implementation was not effective. Recent support for SMEs in the Kyrgyz Republic was expressed in different programs related to the development of the private sector and government regulation. Thus, in the government program for private sector development for the years 2015–2017,⁷ policy for SMEs was not specified, but the main objectives of the program, such as the construction of effective dialogue between government and the private sector, was indirectly related to SMEs too. On the other hand, with amendments to the Tax Code in 2015, several measures towards decreasing the tax administration burden concerning SMEs were accepted. Thus, the frequency of reporting to the tax administration was reduced, the tax payment period for small entrepreneurship was changed, and an electronic system for tax reporting was introduced.

Though several actions in terms of changes in legislation and government regulations have been carried out, it can be argued that government policy specifically targeting SMEs was not implemented (Hasanova 2019). Recently, the government initiated the Program for Development and Support of SMEs for 2019–2023.⁸ As a result of this program it is expected to reduce the size of the informal economy, increase the contribution of SMEs to GDP and employment, increase public-private partnership programs, etc.⁹

In this program, two main problems for SME development are underlined: first, access to infrastructure (electricity, roads, water supply, etc.), and second, government regulatory burden. Along with this, several other issues are raised by policymakers and private sector representatives. Therefore, the issues hindering SME development can be briefly summarized as follows:

⁵ Holzacker and Skakova (2019, 11) note that the GVC participation index reflects the sum of the share of foreign value added in gross exports and the share of domestic value added in third countries' gross exports.

⁶ The law of the Kyrgyz Republic from 25 May 2007 No. 73 “On State Support of Small Business.”

⁷ Approved by Government Decree of the Kyrgyz Republic No. 129 of 18 March 2015.

⁸ <http://mineconom.gov.kg/ru/post/5672> (date of access 15.11.2019).

⁹ According to the latest information, however, this program has not been approved yet.

- Institutional inefficiency related to poor law enforcement and regulatory burden.
- Access to financial resources for SMEs still remains limited. Interest rates are high and SMEs have very limited opportunity to attract long-term cheap financial resources.¹⁰
- Lack of infrastructure. The geographic location of the Kyrgyz Republic necessitates the availability of corresponding infrastructure that creates conditions for the development of the private sector. The development of transportation corridors with alternative transportation modes is an important policy direction. In particular, recently debated government policies on trade logistic centers and certification are important for expanding the exporting potential of local producers (Hasanova 2019).
- Ineffective tax administration and patent system that do not create incentives for micro-SMEs to transform into small and medium-sized enterprises.
- Shortage of skilled labor force and a lack of skills among entrepreneurs.

3. LITERATURE REVIEW

The engagement of the majority of enterprises in developing countries in GVCs can be characterized by the export of primary goods or goods with a low level of processing (Pietrobelli 2008). One of the important challenges for local producers in a developing country context is that increasing participation in GVCs is a difficult task given the social and economic conditions in these countries. For most firms, the main market for which are local and national markets only, access to international markets is limited. Although increasing export and participation in GVCs of firms are different concepts, they are closely interrelated and increasing export potential can be considered important for SMEs in increasing their participation in GVCs. Therefore, from the standpoint of firm behavior, it is important to examine which factors affect engagement in international markets and increase the exports of SMEs. Under the assumption that increasing exports and participation in international markets are associated with higher value chain participation, understanding these determinants may provide evidence for identification of basic factors that are important for the participation of firms in GVCs.

Earlier literature on export performance notes external and internal factors (Aaby and Slater 1989). The former includes social and political conditions, while internal characteristics mainly consist of firm size, experience in exporting activities, and managerial characteristics (Baldauf, Cravens and Wagner 2000). Firm size is expected to make a positive contribution to export performance (Singh 2009). A firm's experience is noted to have a positive impact on the engagement of firms in international markets (Brouthers and Nakos 2005). However, some empirical studies argue that a firm's experience does not necessarily have a positive effect on export. On the contrary, younger firms facing cost disadvantages and obstacles to accessing resources in the national market compared to firms with longer experience may look for opportunities in international markets (Kirpalani and Macintosh 1980; Cooper and Kleinschmidt 1985). Some empirical studies assert that experience is not a prerequisite for a firm to be successful in regional or global export markets (D'Angelo et al. 2013). Along with these firm characteristics, the innovation activity of firms has been found to be an important

¹⁰ See, for instance, "Kyrgyzstan: Investment forum addresses problems of local SMEs," 3 June 2019. Available at: <https://www.timesca.com/index.php/news/26-opinion-head/21233-kyrgyzstan-investment-forum-addresses-problems-of-local-smes> (date of access 14/11/2019).

determinant of their competitive advantage in international markets, and, therefore, export performance (Basile 2001; Golovko and Valentini 2011).

The importance of internal factors is explored within the resource-based view (RBV) on the determinants of export performance. According to the RBV, a higher export performance of a firm can be explained by acquiring and exploiting the unique resources of the firm (Andersen and Kheam 1998; Dhanaraj and Beamish 2003). However, taking into consideration conditions in the emerging economies, Singh (2009) notes that the RBV is limited in explaining the exporting behavior of firms in emerging economies. Because they operate in different environments with scarce resources, other factors such as business group affiliation can be important.

Therefore, following empirical literature, general firm level and other environmental factors may condition the export performance of firms, although different environmental characteristics in developing countries may result in other factors being relatively important too. However, a review of recent literature shows that there are no systematic empirical studies on SMEs and their participation in global value chains in the case of the Kyrgyz Republic. A few studies focus on innovation activity and a general description of GVC participation (see, for instance, Karymshakov, Sulaimanova, and Aseinov 2019; Tilekeyev 2019). In light of this gap in the literature, the main objective of this study is to examine factors affecting the export performance of SMEs in the Kyrgyz Republic.

4. DATA AND METHODOLOGY

4.1 Data Source

This study is based on the data from the Enterprise Survey supported by the European Bank for Reconstruction and Development (EBRD), the European Investment Bank (EIB), and the World Bank Group (WBG). The survey includes questions about enterprises' organizational information, production, sales, obstacles, and innovation activities. In this study, two waves of the survey are used: 2013 and 2019. The former has been implemented within the fifth wave of the Business Environment and Enterprise Performance Survey (BEEPS) and included 270 enterprises. The latter wave was collected in the Kyrgyz Republic between December 2018 and July 2019, and included 360 enterprises. Out of the total sample, 115 enterprises are observed in both waves.

From the standpoint of the purpose of measuring the involvement of firms in GVCs, firms' characteristics should be taken into account. SMEs in the service sector are primarily focused on local consumers. Moreover, the participation of firms in services in international trade is different to that of firms in manufacturing industries. For instance, a trading company that is classified in services is engaged in trading products that are produced by manufacturers not by the trading company. Therefore, most empirical papers on GVC participation mainly focus on the manufacturing sector (Urata and Baek 2020). Following this argument, in this study the data set is limited to manufacturing industries.

Detailed analysis of GVC participation necessitates analysis of firms that engage both in importing inputs and exporting goods. However, in the final sample of the data set used in this study only 30 observations are indicated with both import and export information. Taking into consideration this small number, in this study the empirical analysis is based on the exporting status of firms. Therefore, it is assumed that firms' export increases their participation in value chains.

After data analysis and cleaning out missing values for some variables, the total final sample consists of 194 observations, of which 83 are from the 2013 wave and 111 from the 2019 wave. This can be seen as a relatively small sample size and, indeed, it can be interpreted as a potential limitation of this study. However, to the best of my knowledge, this survey is the only available data set containing detailed information at firm level. Therefore, using this data set for understanding the export performance of firms in the Kyrgyz Republic context is important.

For estimation purposes, firms will be classified by their size. The firm size criteria used in this study follow definitions given in the survey. Thus, the small firm category includes micro-firms with less than five employees and small firms with between five and 19 employees. Medium firms are enterprises with 20 to 99 employees and large firms have more than 100.

4.2 Methodology

The main objective of this study is to examine factors that have an impact on the activity of firms in local and national/international markets. The analysis is based on data from the 2013 and 2019 waves of the Enterprise Survey.

The survey questionnaire includes questions related to the export activity of firms. In particular, questions ask about shares of sales to national markets, indirect export, and direct export. These questions help us to understand the extent to which SMEs engage in international markets. From the perspective of value chains, it is assumed that selling product to international markets demonstrates higher value for producers and indicates a growing tendency of enterprises. Thus, our first outcome variable is the dummy variable that equals 1 if it exports (both directly and indirectly) and takes the value of 0 if it sells in national markets only.

Because of the dummy variable characteristic of the dependent variable we use a binary response probit model. Formally, the model is given below (Wooldridge 2009):

$$P(y_i = 1|x_i) = G(\beta_0 + \beta_1x_1 + \dots + \beta_kx_k) = G(\beta_0 + x\beta) \quad (1)$$

$$G(z) = \Phi(z) \equiv \int_{-\infty}^z \phi(v)dv \quad (2)$$

$$\phi(z) = (2\pi)^{-1/2}\exp(-z^2/2) \quad (3)$$

where G is the standard normal cumulative distribution function (cdf) and $\phi(z)$ indicates standard normal density, y_i is the discrete dependent variable, taking values of 0 or 1, indicating whether a firm exports or not, and x_i is the set of explanatory variables.

The second outcome variable is the share of exports in the total sales of a firm, values of which range from 0 to 100. To analyze determinants of sales in each of these options, the tobit model is applied (Wooldridge 2010).

$$z = w\delta + u \quad (4)$$

where z is the dependent variable indicating the share of export sales. In terms of export, both indirect export and direct export sales are taken into account. w is a vector of exogenous variables.

A detailed description of the variables is given in Table 2. Following the earlier literature on export performance and firm growth, the set of covariates used in the analysis covers managerial characteristics such as years of experience of the top manager and gender.

Another group of explanatory variables is firm characteristics that reflect location and years since establishment. Because of the regional disparity in the emerging country development context and insufficient infrastructure for transport and communication, firms located in large cities may have advantages in selling their product throughout the country. In order to encompass this potential effect, a dummy variable of whether the firm is located in a large city is used. Large cities are defined as those with a population of over one million. Years since establishment is included following the earlier literature indicating a possible negative effect on export performance (Kirpalani and Macintosh 1980; Cooper and Kleinschmidt 1985). Indeed, the net effect of firm experience is ambiguous, because firms with more years of experience can be expected to be successful in exporting, but this positive performance may diminish over time given the new challenges in international markets.

The organizational structure of firms may have an important impact on their performance. Because of this, among the factors a variable indicating the participation of foreign capital in the ownership structure is included. One of the important aspects of local producers being involved in exporting activities is the accordance with quality standards required for international trade. Indeed, given the attempt of the Kyrgyz Republic government to successfully integrate into the regional economy and increase export volume quality control and assurance it is considered an important policy direction (UNECE 2015). Following this, a dummy variable indicating whether firms have internationally-recognized quality certification is used among the explanatory variables.

Empirical literature emphasizes that labor productivity is an important determinant of a firm's engagement in GVCs (Urata and Baek 2020). It can be expected that labor productivity will have a positive impact on the export of firms. Thus, labor productivity is used in the set of explanatory variables and measured through sales divided by the number of employees.

External factors have an important influence on the performance of firms. Although different external factors may have a considerable impact, bearing in mind the focus of this study, namely manufacturing industries and recent reports on private sector development, two potential determinants can be mentioned: access to electricity and the availability of financial resources. In particular, increasing production of manufacturing industries is accompanied by higher electricity consumption. Because of this, responses to the question "how much of an obstacle is electricity to operations of this establishment?" is used to approximate access to electricity. Also, the total number of open lines of credit and outstanding loans is used to indicate the position of enterprises in terms of the availability of financial resources.

Generally, the performance of enterprises varies by sector of the economy. The growth dynamics and export performance of enterprises may depend on the technology level required for production. For firms operating in industries with a high technology level it may take a longer time and more resources for them to expand to the national and international level, while for firms in less capital-intensive industries with a low technology level it can be less costly to expand to new markets. We follow the classification of industries by EUROSTAT used by Grodzicki (2014) and use different categories for sectors with a low technology level and those with a medium or high technology level.

Along with the fact that these characteristics can be considered important determinants of the export performance of enterprises, the magnitude of these effects may vary by

firm size. Therefore, estimations are performed for the total sample consisting of two waves of the survey and for each wave of the survey distinctively. As mentioned above, given the focus of this paper on manufacturing industries, one of the potential limitations of this study is the relatively small sample size. The number of observations may not be enough for understanding the underlying characteristics and differences of SMEs and large firms in their export performance. Taking into consideration this potential issue, each sample is estimated by its total size (model 1); model 1 is extended with the inclusion of the dummy variable of whether the firm is an SME (model 2); and model 3 represents estimations of the SME subsample only.

One may argue that the availability of two waves of the survey would make it suitable for panel data estimations. However, the number of observations with available variables valid for both years of the survey is very limited. Therefore, empirical estimations are focused on cross-sectional estimation techniques.

Table 2: Description of Variables

Dependent variable	
Export	0 – firm does not have export sales, 1 – firm has export sales
Share of export	Share of export in total sales
Explanatory variables	
<i>Manager characteristics</i>	
Gender	0 – manager is male, 1 – manager is female
Experience	The years of experience of the top manager in the sector
<i>Firm characteristics</i>	
Years since establishment	Years since establishment of the firm
Foreign capital participation in the ownership structure	Firm has private foreign individuals or companies as owner (0 – no, 1 – yes)
Quality certificate	Does establishment have an internationally recognized quality certification? (0 – no, 1 – yes)
Number of credit lines	Total number of open lines of credit and outstanding loans
Access to electricity	How much of an obstacle is electricity to operations of this establishment? 0 – no obstacle; 1 – minor obstacle; 2 – moderate obstacle; 3 – major obstacle; 4 – very severe obstacle
Innovation in process	During the last three years, has this establishment introduced any new or significantly improved methods for the production or supply of products or services? (0 – no, 1 – yes)
Labor productivity	Productivity of labor as the ratio of sales to number of employees
Manufacturing industries with medium and high technology levels	Firm operates in industry with medium and high technology level following EUROSTAT classification (Grodzicki 2014) (0 – no, 1 – yes). These sectors are chemicals, rubber, plastics, fuel, basic metals and fabricated metal, machinery, electrical and optical equipment, transport equipment
Large city	Firm is located in a city with a population of over 1 million (0 – no, 1 – yes)
SME	Firm is small or medium sized (0 – no, 1 – yes)

Source: Enterprise Surveys. Available at: <https://www.enterprisesurveys.org/en/data>.

4.3 Descriptive Statistics

Descriptive statistics of variables used in the estimation are given in Table 3. The distribution of the estimation samples by exporting status shows that most companies sell their product in national markets, and only 31.44% of firms based on pooled data (total of 2013 and 2019 survey data) have export activities. It should be noted that this share increased from 27.71% in 2013 to 34.23% in 2019. This share is lower for SMEs and accounts for 23.53% in terms of the pooled data. From these data it can be argued that compared to large firms, SMEs have a relatively lower engagement in international markets. Another indicator of firms' engagement in international markets in this research is the share of exports in the total sales of firms. Generally, about 85% of sales of pooled data belong to national markets. The share of export in total sales showed an increasing trend from 13.49% in 2013 to 16.22% in 2019. In both years of the survey, SMEs have a lower share of export sales compared to the total sample.

Table 3: Descriptive Statistics

	Total (2013 and 2019 Waves)		2013 Wave		2019 Wave	
	Total Sample	SMEs	Total Sample	SMEs	Total Sample	SMEs
Observation	194	153	83	71	111	82
Dependent variable						
Export (1 = firm is exporting, 0 = no; in %)	31.44	23.53	27.71	23.94	34.23	23.17
Share of export sales (% of total sales, mean)	15.05	10.74	13.49	11.54	16.22	10.03
Firm and manager characteristics						
	Mean	Mean	Mean	Mean	Mean	Mean
Experience of the manager	18.43	17.65	18.41	18.24	18.44	17.13
Years since establishment	23.60	20.73	20.61	20.49	25.84	20.94
Number of credit lines	0.39	0.32	0.20	0.17	0.53	0.45
Access to electricity	1.42	1.44	1.34	1.35	1.48	1.52
Labor productivity	899,340. 6	823,319. 8	848,024. 2	804,004. 0	937,712. 3	840,044. 4
	%	%	%	%	%	%
Female manager	23.20	23.53	21.69	21.13	24.32	25.61
Foreign participation	19.07	18.30	19.28	19.72	18.92	17.07
Certificate	24.74	18.95	26.51	22.54	23.42	15.85
Innovation in process	38.14	36.60	38.55	35.21	37.84	37.80
Manufacturing industries with medium and high technology level	40.72	40.52	38.55	39.44	42.34	41.46
Location in large city	34.54	33.99	43.37	42.25	27.93	26.83
SME	78.87		85.54		73.87	

Source: Enterprise Surveys. Available at: <https://www.enterprisesurveys.org/en/data>.

In terms of managerial characteristics, female managers account for about 23%. The SME subsample shows almost the same share of female managers as in the total sample in both waves of the survey. In terms of years of experience, pooled data statistics indicate that managers have 18.43 years of experience. However, in both years of the survey, managers of SMEs have slightly less experience than managers in the total sample, although the difference between the total sample and SMEs is not large. In almost all samples managers have experience in the range of 17–18 years.

As regards firms' establishment history, firms in pooled data have 23.6 years. It can be stated that on average SMEs are younger. Based on the pooled data, SMEs have been established for 20 years, while it is about 23.6 years for the total sample. This difference is much larger in the 2019 survey data: The total sample has been established for 25 years, while it is 20.9 years for SMEs – a difference of more than four years. Based on these statistics, it can be argued that large firms have a longer history of establishment. To some extent, this can be explained by the post-Soviet background of the Kyrgyz Republic, which had a long social and economic transition period in 1990. Therefore, the emergence of the private sector along with the transition policies took place in the 1990s. Most large firms have roots in old state-owned enterprises that were reorganized into large firms with private sector participation after privatization processes, while small firms mostly emerged through the creation of entrepreneurial skills and population activities at later stages of the transition period.

The participation of foreign capital in the ownership structure of firms is one of the important determinants of entrepreneurs' performance. In general, foreign participation in the ownership of firms according to pooled data accounts for 19.07%. According to the total sample data, this share does not vary significantly over the survey years. From 2013 to 2019, foreign participation slightly decreased for both samples. Thus, in 2013 this share for the total sample was 19.28%, while in 2019 it accounted for 18.92%. Also, according to 2019 data, the share of foreign participation among SMEs decreased to 17.07% from 19.72% in 2013.

The number of credit lines used to approximate the availability of financial resources shows that generally SMEs have a lower number of credit lines. In terms of the other variables related to firms' characteristics, there is no large difference by survey waves and sample types. Process innovation by firms does not demonstrate large variation by survey years and is in the range of 35%–38%. SMEs have a slightly lower share of innovation activity than in the total sample. Analogously, location in large cities does not indicate significant differences, although in 2013, the survey data share of firms located in large cities was relatively higher.

5. ESTIMATION RESULTS

Marginal effects from the probit model estimation results are presented in Table 4. Results are presented for pooled data and by survey waves (2013 and 2019), with each of them being estimated based on the total sample (model 1 and model 2) and SMEs (model 3) only. Total sample estimations are performed with and without the inclusion of the SME dummy variable. The dependent variable in these estimations is the dummy variable indicating whether a firm exports goods or not.

Empirical findings indicate that generally managerial characteristics do not have a significant impact on the exporting status of firms. Only the results of the SME subsample in pooled data and 2013 data show that SME firms with a male manager have a higher probability of exporting than those with a female manager.

Foreign participation in the ownership structure of firms has a positive effect on their involvement in international markets. This finding is confirmed only in two waves of pooled data estimations. It shows a positive impact on estimations when SMEs are controlled too. Based on these results, it can be argued that foreign capital is one of the important determinants of firms' export performance. Having foreign capital participation in the ownership structure of a firm increases the probability of firms selling products in international markets by approximately 15 percentage points.

Table 4: Estimation Results for Probit Models on Probability of Exporting (Marginal Effects)

	Total (2013 and 2019 Waves)			2013 Wave		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Gender of CEO (1 = if female)	-0.0495 (0.0736)	-0.0459 (0.0718)	-0.140* (0.0811)	-0.131 (0.124)	-0.138 (0.119)	-0.232* (0.132)
Experience of CEO (in years)	0.00189 (0.00239)	0.00191 (0.00230)	0.00227 (0.00262)	0.00259 (0.00340)	0.00232 (0.00331)	0.00386 (0.00360)
Years since establishment	0.00260 (0.00198)	0.000677 (0.00210)	-0.00427 (0.00352)	-0.00889 (0.00777)	-0.00969 (0.00765)	-0.00925 (0.00795)
Foreign capital participation in the ownership structure	0.155** (0.0730)	0.136* (0.0716)	0.0963 (0.0781)	0.147 (0.117)	0.153 (0.115)	0.0883 (0.117)
Certificate for export	0.275*** (0.0609)	0.230*** (0.0631)	0.183** (0.0719)	0.160 (0.105)	0.130 (0.106)	0.0815 (0.113)
Number of credit lines	0.0995** (0.0438)	0.0718* (0.0430)	0.0796 (0.0578)	0.0855 (0.111)	0.0490 (0.109)	0.0567 (0.118)
Access to electricity	0.0281 (0.0192)	0.0301 (0.0187)	0.0295 (0.0202)	0.0144 (0.0321)	0.0154 (0.0313)	0.0312 (0.0335)
Innovation in process	-0.0794 (0.0673)	-0.0815 (0.0652)	-0.0308 (0.0716)	-0.0459 (0.111)	-0.0657 (0.109)	0.00613 (0.115)
Labor productivity	3.35e-08 (2.07e-08)	2.90e-08 (2.04e-08)	1.83e-08 (2.09e-08)	-3.42e-09 (3.96e-08)	-5.62e-09 (4.10e-08)	-7.12e-09 (3.53e-08)
Manufacturing industries with medium and high technology level	-0.0589 (0.0644)	-0.0680 (0.0633)	-0.143** (0.0696)	-0.0635 (0.101)	-0.0752 (0.100)	-0.203* (0.105)
Large city	-0.0377 (0.0673)	-0.0404 (0.0662)	-0.0462 (0.0744)	-0.0931 (0.106)	-0.0911 (0.104)	-0.0720 (0.111)
SME		-0.206*** (0.0708)			-0.216* (0.122)	
2019 year	0.0113 (0.0637)	-0.00223 (0.0623)	-0.0277 (0.0659)			
Observations	194	194	153	83	83	71
	2019 Wave					
	Model 1	Model 2	Model 3			
Gender of CEO (1 = if female)	-0.00457 (0.0889)	0.00697 (0.0880)	-0.0580 (0.102)			
Experience of CEO (in years)	0.00157 (0.00324)	0.00181 (0.00308)	-0.00212 (0.00394)			
Years since establishment	0.00337* (0.00201)	0.00158 (0.00220)	0.000607 (0.00319)			
Foreign capital participation in the ownership structure	0.137 (0.0922)	0.107 (0.0909)	0.120 (0.101)			
Certificate for export	0.375*** (0.0723)	0.325*** (0.0762)	0.302*** (0.0885)			
Number of credit lines	0.0873** (0.0443)	0.0629 (0.0437)	0.0711 (0.0719)			
Access to electricity	0.0254 (0.0240)	0.0267 (0.0232)	0.0176 (0.0261)			
Innovation in process	-0.1000 (0.0846)	-0.0917 (0.0814)	-0.0442 (0.0913)			
Labor productivity	6.84e-08** (3.01e-08)	5.96e-08** (2.95e-08)	4.33e-08 (3.44e-08)			
Manufacturing industries with medium and high technology level	-0.0334 (0.0803)	-0.0374 (0.0774)	-0.0958 (0.0898)			
Large city	0.00481 (0.0850)	0.00664 (0.0846)	-0.0312 (0.0956)			
SME		-0.166** (0.0829)				
2019 year						
Observations	111	111	82			

Standard errors in parentheses. * p < 0.05, ** p < 0.01, *** p < 0.001.

Source: Author's calculations. Enterprise Surveys. Available at: <https://www.enterprisesurveys.org/en/data>.

Having a certificate of quality significantly increases the probability of exporting. This strong positive effect exists both in total sample and SME subsample estimations, especially in 2019 survey data. These findings support the argument that it is one of the fundamental policy goals to increase the capacity of SMEs and support their attempt to implement certification procedures. Given the current integration process within the Eurasian Economic Union and attempts to increase export volume, correspondence with quality control and assurance is an important determinant for export.

The number of credit lines has a statistically significant impact in the case of the total sample of two waves and 2019 wave estimations only, though this is not valid when controlled for SMEs. This may be related to the small sample size. However, from the standpoint of total sample results, this finding to some extent confirms the argument that the availability of financial resources is an important determinant for export performance.

Labor productivity has the expected positive sign, but statistically significant effects are observed only in 2019 survey data estimations. This limited evidence may be related to the small sample size. Nevertheless, based on these findings, it can be argued that labor productivity increases the probability of firms exporting goods.

Other explanatory variables, i.e. access to electricity, innovation of firms, and location in a large city, do not have a statistically significant effect on the exporting status of firms. This can probably be for a few reasons. First, the sample size used for estimations may be limited in terms of reflecting this information. Second, the low level of occurrence of some activities, such as the possible low intensity of innovation among firms, may produce significant results.

Manufacturing industries with a medium or high technology level indicate a negative effect compared to industries with a low technology level, which is significant for SMEs in pooled data and 2013 wave estimations. This finding may be related to the fact that for SMEs, the adoption of new technology for production in these industries is relatively costly, given the financial and other constraints they usually face in a developing country context. Moreover, the competitive environment in industries with a high technology level in international markets can be strong. Because of this, SMEs in sectors of the economy that necessitate the use of a medium or high level of technology may demonstrate lower engagement in international markets. On the other hand, those sectors with a low technology level may be more convenient for SMEs' engagement and for increasing their exporting potential.

The inclusion of the SME dummy variable as given in model 2 shows a statistically significant negative impact. This implies that compared to large firms, SMEs have a lower probability of exporting. This is expected given the general lower tendency of SMEs to engage in the export of goods. Moreover, in manufacturing industries, larger firms have better prospects for expanding production.

Estimation results from the tobit model on shares of export sales are given in Table 5. Generally, estimation results are in line with the probit model on the exporter status. Gender of manager and firm year since establishment show a negative impact on increasing the share of export in total sales. Putting it differently, firms with a male manager have a higher probability of having a higher share of export sales than those with a female manager. Also, firms that have been established for longer demonstrate a lower probability of increasing their share of export sales. This latter finding to some extent supports previous arguments that firm experience may have been negatively associated with export performance. This may be explained by the possible impact of those manufacturing firms that have a longer history of establishment originating since the beginning of the transition period in the Kyrgyz Republic but currently do not demonstrate a competitive position in international markets.

Table 5: Estimation Results for Tobit Models on Share of Exports in Total Sales (Marginal Effects)

	Total (2013 and 2019 Waves)			2013 Wave		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Gender of CEO (1 = if female)	-4.066 (4.258)	-3.935 (3.935)	-9.219** (4.436)	-7.140 (8.051)	-7.455 (7.331)	-11.347 (7.810)
Experience of CEO (in years)	0.092 (0.122)	0.104 (0.119)	0.172 (0.141)	0.096 (0.203)	0.086 (0.194)	0.199 (0.207)
Years since establishment	0.133 (0.104)	0.006 (0.099)	-0.280* (0.155)	-0.552 (0.414)	-0.587 (0.412)	-0.629 (0.433)
Foreign capital participation in the ownership structure	10.153** (4.037)	9.534*** (3.647)	3.210 (3.734)	9.958 (7.012)	10.029 (6.736)	4.660 (7.037)
Quality certificate	12.077*** (3.277)	9.398*** (3.354)	7.277* (3.732)	9.011 (5.811)	7.000 (5.922)	4.739 (6.084)
Number of credit lines	3.847** (1.640)	2.805* (1.531)	2.329 (1.515)	1.796 (5.606)	-0.018 (5.390)	-1.702 (5.765)
Access to electricity	1.097 (1.039)	1.221 (0.989)	1.040 (1.008)	0.954 (1.881)	0.986 (1.804)	0.778 (1.896)
Innovation in process	-6.662* (3.410)	-6.724** (3.338)	-2.858 (3.336)	-4.377 (5.297)	-4.995 (5.065)	-2.154 (5.212)
Labor productivity	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Manufacturing industries with medium and high technology level	-2.707 (3.852)	-3.440 (3.671)	-7.477* (4.222)	-1.245 (6.022)	-2.201 (5.589)	-8.922 (5.958)
Large city	-0.511 (3.479)	-0.772 (3.307)	-2.863 (3.519)	-4.509 (5.356)	-4.074 (5.196)	-4.335 (5.314)
SME		12.681*** (3.773)			-12.211** (5.905)	
2019 year	0.088 (3.780)	-0.810 (3.653)	-1.899 (3.631)			
Observations	194	194	153	83	83	71
	2019 Wave					
	Model 1	Model 2	Model 3			
Gender of CEO (1 = if female)	-4.033 (5.402)	-3.295 (5.051)	-8.618 (5.610)			
Experience of CEO (in years)	0.103 (0.141)	0.137 (0.137)	0.032 (0.155)			
Years since establishment	0.154 (0.119)	0.021 (0.113)	-0.078 (0.132)			
Foreign capital participation in the ownership structure	8.813 (5.593)	7.783 (4.967)	4.076 (4.703)			
Quality certificate	15.137*** (4.220)	12.498*** (4.484)	10.247** (4.567)			
Number of credit lines	3.756** (1.707)	2.943* (1.595)	2.186 (1.437)			
Access to electricity	0.609 (1.212)	0.745 (1.170)	0.468 (0.997)			
Innovation in process	-6.800 (4.166)	-6.747 (4.102)	-2.533 (3.661)			
Labor productivity	0.000* (0.000)	0.000 (0.000)	0.000 (0.000)			
Manufacturing industries with medium and high technology level	-2.188 (5.069)	-2.632 (4.920)	-5.896 (5.423)			
Large city	2.547 (4.801)	2.195 (4.550)	-0.736 (4.441)			
SME		-11.806** (4.944)				
2019 year						
Observations	111	111	82			

Standard errors in parentheses. * p < 0.05, ** p < 0.01, *** p < 0.001.

Source: Author's calculations. Enterprise Surveys. Available at: <https://www.enterprisesurveys.org/en/data>.

The SME dummy has a strong negative sign, suggesting that SMEs demonstrate a lower probability than large firms in the level of export engagement Innovation in process

demonstrates statistically significant negative impact in results of total sample estimations. This can be explained by the fact that while being costly for firms, the impact of innovation may provide return at least in the medium term, but not immediately. Also, labor productivity does not show a strong positive influence. Based on these findings, it can be stated that there is not enough evidence to argue that innovation and labor productivity increase the level of export. Nevertheless, in interpreting empirical results, one should take into consideration the potential issue of the relatively small sample size.

In line with previous results, foreign capital participation and the number of credit lines have a strong positive impact on the share of export sales. In line with probit model results, industries with a medium or higher technology level show a negative sign in the sample of SMEs, though at a lower level of statistical significance and only in the case of pooled data.

6. CONCLUSIONS

This study aimed to examine factors affecting firms' export in the case of the Kyrgyz Republic. The empirical analysis is based on two waves of the Enterprise Survey (2013 and 2019).

Estimation results indicate that one of the important determinants of export performance of SMEs is correspondence with quality standards reflected by having a certificate of quality. This factor is significant both in terms of being an exporter and the level of export. Also, increasing participation of foreign capital in the ownership of firms is associated with a higher involvement of firms in international markets. The availability of financial resources is found to be positively associated with exporting status and the share of exports.

Increasing the export production and competitiveness of firms in international markets is associated with improvements in labor productivity. This argument is supported by empirical findings, though this is limited to one survey wave only. This finding underlines the importance of measures oriented towards increasing labor productivity for firms' objective of being successful in international markets. Estimation results confirm that industries with a low technology level are more convenient for SME expansion. However, it can also be argued that SMEs do not have enough capability to adopt medium or high technology in their production process, which may lead to concern over the long-term sustainability of their competitiveness in international markets.

Although this study attempts to examine basic determinants of firms in explaining their export performance, the main assumption is that if a firm sells product in international markets, then their participation in value chains is increasing. However, given the limited data, this study does not use detailed information about the participation of firms in stages of production. Further analysis based on detailed information about firm participation in production processes would allow proper discussions on the movement along the value chain. Another potential limitation of this study is that given its focus on manufacturing industries, it is based on a relatively small sample size. Therefore, in interpreting empirical results, one should take into account its special focus on manufacturing firms and the potential issue of sample size.

The findings of this study have several policy implications for increasing participation of firms in GVCs. First, the implementation of quality control and assurance processes for SMEs is an important determinant for their export activities. However, most SMEs may not have enough experience and technology to correspond to these requirements. This may have a serious negative impact on their exporting prospects. Therefore,

government policy to provide information about quality requirements, infrastructure to implement these processes, and support with the transfer of new technology that would facilitate correspondence with quality requirements are necessary measures for the medium term. In particular, gaining knowledge about exporting activities (standards and regulations, markets) can be targeted through the SME support programs.

Second, the participation of foreign investment in firms' ownership structure and the availability of financial resources are important for leveraging in value chains. Government policy oriented towards attracting foreign investment and improving the general investment climate should be associated with transferring knowledge and skills for local producers in carrying out partnerships with foreign firms. Enhancing access to financial resources for SMEs should be among the priorities of government policy objectives. Given the importance of medium- and high-technology-level industries for upgrading to national and international markets, financial services can be specified within these sectors of the economy.

Third, improvements in the capacity of firms to transform with new production technologies with a higher level of participation in product processes should be associated with increasing labor productivity. Here, it is important to support technology transfer with a focus on new production techniques that would allow the increase of labor productivity. Along with this, the development of soft infrastructure for SMEs that would improve the quality of workers would make a positive contribution to labor productivity.

REFERENCES

- Aaby, N. E., and Slater, S. F. 1989. Management influences on export performance: a review of the empirical literature 1978–1988. *International Marketing Review*, 6(4): 7–26.
- Andersen, O., and Kheam, L. S. 1998. Resource-based theory and international growth strategies: an exploratory study. *International Business Review*, 7(2): 163–184.
- Asian Development Bank (2019). CAREC Integrated Trade Agenda 2030 and Rolling Strategic Action Plan 2018–2020.
- Baldauf, A., Cravens, D. W., and Wagner, U. 2000. Examining determinants of export performance in small open economies. *Journal of World Business*, 35 (1): 61–79.
- Bamber, P., Fernandez-Stark, K., Gereffi, G., and Guinn, A. 2014. *Connecting Local Producers in Developing Countries to Regional and Global Value Chains: Update*. OECD Trade Policy Papers, No. 160, OECD. Publishing, Paris.
- Basile, R. 2001. Export behaviour of Italian manufacturing firms over the nineties: the role of innovation. *Research Policy*, 30(8): 1185–1201.
- Brouthers, L. E., and Nakos, G. 2005. The role of systematic international market selection on small firms' export performance. *Journal of Small Business Management*, 43(4): 363–381.
- Cieślík, E. 2014. Post-communist European countries in global value chains. *Ekonomika*, 93(3): 25–38.
- Cieślík, E., Biegańska, J., and Środa-Murawska, S. 2016. The intensification of foreign trade in post-socialist countries and their role in global value chains. *Acta Oeconomica*, 66(3): 465–487.
- Cooper, R. G., and Kleinschmidt, E. J. 1985. The impact of export strategy on export sales performance. *Journal of International Business Studies*, 16(1): 37–55.
- D'Angelo, A., Majocchi, A., Zucchella, A., and Buck, T. 2013. Geographical pathways for SME internationalization: insights from an Italian sample. *International Marketing Review*, 30(2): 80–105.
- Dhanaraj, C., and Beamish, P. W. 2003. A resource-based approach to the study of export performance. *Journal of Small Business Management*, 41(3): 242–261.
- Fernandez-Stark, K., Frederick, S., and Gereffi, G. 2011. *The Apparel Global Value Chain: Economic Upgrading and Workforce Development*. Duke Center on Globalization, Governance & Competitiveness.
- Gereffi, G. and Sturgeon, T. 2013. *A Global Value Chain Perspective on Industrial Policy and Development in Emerging Markets*. Duke J. Comp. & Int'l L., 24, 433.
- Golovko, E., and Valentini, G. 2011. Exploring the complementarity between innovation and export for SMEs' growth. *Journal of International Business Studies*, 42(3): 362–380.
- Grodzicki, M. J. 2014. Productivity convergence in manufacturing in the European Union: the role of economic structure. *Research in Economics and Business: Central and Eastern Europe*, 5(2). 5–30.

- Harvie, C., and Charoenrat, T. 2015. SMEs and the rise of global value chains. “Integrating SMEs into Global Value Chains”, in Asian Development Bank, Asian Development Bank Institute Integrating SMEs into Global Value Chains: Challenges and Policy Actions in Asia. Mandaluyong City, Philippines: Asian Development Bank, 2015.
- Hasanova, S. 2019. *Strengthening Competitiveness of Small and Medium-Sized Enterprises and Enhancing Their Integration into Regional and Global Value Chains in Kyrgyzstan*. UNESCAP National Workshop on Investment and SME Development in Kyrgyzstan Bishkek, 22–25 October 2019. Available at: https://www.unescap.org/sites/default/files/Strengthening%20competitiveness%20of%20SMEs_final_English%20version_Savia.pdf (date of access: 6/11/2019).
- Holzacker, H. and Skakova, D. 2019. *Kyrgyz Republic Diagnostic*. EBRD, May 2019.
- Karymshakov, K., Sulaimanova, B., and Aseinov, D. 2019. Determinants of innovation activity of small and medium-sized enterprises in small post-Soviet countries. *Business and Economics Research Journal*, 10(1): 1–12.
- Kirpalani, V. H., and Macintosh, N. B. 1980. International marketing effectiveness of technology-oriented small firms. *Journal of International Business Studies*, 11(3): 81–90.
- OECD. 2012. *Global Production Networks and Employment: A Developing Country Perspective*. Paris Organisation for Economic Co-operation and Employment. TAD/TC/WP (2012) 29.
- Pietrobelli, C. 2008. Global value chains in the least developed countries of the world: threats and opportunities for local producers. *International Journal of Technological Learning, Innovation and Development*, 1(4): 459–481.
- Sahovic, T. “What’s holding back the Kyrgyz Republic private sector?”, Brookings Institution, Future Development Blog, Thursday, July 25, 2019. <https://www.brookings.edu/blog/future-development/2019/07/25/whats-holding-back-the-kyrgyz-republic-private-sector/> (accessed 10 March 2020).
- Singh, D. A. 2009. Export performance of emerging market firms. *International Business Review*, 18(4): 321–330.
- Tilekeyev, K. 2019. Leveraging SME Finance through Value Chains in the CAREC Landlocked Economies: The Case of the Kyrgyz Republic. ADBI Working Paper 972. Tokyo: Asian Development Bank Institute. Available: <https://www.adb.org/publications/leveraging-sme-finance-through-value-chains-carec-landlocked-economies-kyrgyz-republic>.
- United Nations Economic Commission for Europe “Regulatory and Procedural Barriers to Trade in Kyrgyzstan: Needs Assessment”, United Nations, New York and Geneva, 2015.
- Urata, S., and Y. Baek. 2020. The Determinants of Participation in Global Value Chains: A Cross-Country, Firm-Level Analysis. ADBI Working Paper 1116. Tokyo: Asian Development Bank Institute.
- Vandenberg, P., and Khan, K. 2015. *Global value chains along the New Silk Road*. Asia Development Bank Institute. ADBI Policy Brief, (2015-02).
- Wooldridge J. M. 2009. *Introductory Econometrics: A Modern Approach* (4th ed.), USA: South-Western, p. 865.

Wooldridge, J. M. 2010. *Econometric Analysis of Cross Section and Panel Data*.
MIT Press.

World Bank, 2019. *Doing Business: Regional Profile Europe and Central Asia (ECA)*.
Available: <https://www.doingbusiness.org/content/dam/doingBusiness/media/Profiles/Regional/DB2019/ECA.pdf>.

APPENDIX

Table A1: Estimation Results for Probit Models on Probability of Exporting (Coefficient Estimates)

	Total (2013 and 2019 Waves)			2013 Wave		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Gender of CEO (1 = if female)	-0.173 (0.258)	-0.168 (0.263)	-0.558* (0.329)	-0.435 (0.417)	-0.478 (0.421)	-0.868* (0.519)
Experience of CEO (in years)	0.00660 (0.00837)	0.00699 (0.00844)	0.00906 (0.0105)	0.00861 (0.0114)	0.00803 (0.0116)	0.0144 (0.0137)
Years since establishment	0.00912 (0.00701)	0.00247 (0.00767)	-0.0170 (0.0141)	-0.0296 (0.0264)	-0.0336 (0.0273)	-0.0345 (0.0305)
Foreign capital participation in the ownership structure	0.542** (0.263)	0.496* (0.267)	0.384 (0.316)	0.490 (0.400)	0.531 (0.409)	0.330 (0.440)
Quality certificate	0.964*** (0.243)	0.840*** (0.251)	0.728** (0.303)	0.533 (0.364)	0.451 (0.377)	0.304 (0.425)
Number of credit lines	0.349** (0.159)	0.262 (0.160)	0.317 (0.234)	0.285 (0.372)	0.170 (0.380)	0.212 (0.442)
Access to electricity	0.0983 (0.0683)	0.110 (0.0696)	0.118 (0.0819)	0.0477 (0.107)	0.0535 (0.109)	0.117 (0.127)
Innovation in process	-0.278 (0.238)	-0.298 (0.241)	-0.123 (0.286)	-0.153 (0.370)	-0.228 (0.379)	0.0229 (0.429)
Labor productivity	1.17e-07 (7.36e-08)	1.06e-07 (7.56e-08)	7.29e-08 (8.38e-08)	-1.14e-08 (1.32e-07)	-1.95e-08 (1.42e-07)	-2.66e-08 (1.32e-07)
Manufacturing industries with medium and high technology level	-0.206 (0.227)	-0.248 (0.233)	-0.569** (0.287)	-0.211 (0.339)	-0.261 (0.351)	-0.759* (0.417)
Large city	-0.132 (0.236)	-0.148 (0.242)	-0.184 (0.297)	-0.310 (0.359)	-0.316 (0.364)	-0.269 (0.417)
SME		-0.751*** (0.274)			-0.748* (0.447)	
2019 year	0.0397 (0.223)	-0.00815 (0.228)	-0.110 (0.263)			
Constant	-1.349*** (0.304)	-0.500 (0.433)	-0.666 (0.430)	-0.189 (0.635)	0.626 (0.808)	-0.0983 (0.766)
Observations	194	194	153	83	83	71
Pseudo R2	0.186	0.218	0.181	0.0978	0.126	0.129
	2019 Wave					
	Model 1	Model 2	Model 3			
Gender of CEO (1 = if female)	-0.0189 (0.369)	0.0300 (0.380)	-0.284 (0.497)			
Experience of CEO (in years)	0.00651 (0.0135)	0.00780 (0.0133)	-0.0104 (0.0194)			
Years since establishment	0.0140 (0.00856)	0.00682 (0.00952)	0.00297 (0.0156)			
Foreign capital participation in the ownership structure	0.567 (0.389)	0.461 (0.395)	0.585 (0.497)			
Quality certificate	1.553*** (0.388)	1.401*** (0.394)	1.476*** (0.509)			
Number of credit lines	0.362* (0.192)	0.271 (0.193)	0.348 (0.355)			
Access to electricity	0.105 (0.101)	0.115 (0.102)	0.0858 (0.128)			
Innovation in process	-0.414 (0.356)	-0.395 (0.357)	-0.216 (0.448)			
Labor productivity	2.84e-07** (1.31e-07)	2.57e-07* (1.33e-07)	2.12e-07 (1.71e-07)			
Manufacturing industries with medium and high technology level	-0.138 (0.333)	-0.161 (0.335)	-0.468 (0.443)			
Large city	0.0199 (0.352)	0.0286 (0.365)	-0.153 (0.467)			
SME		-0.716* (0.374)				
2019 year						
Constant	-1.801*** (0.444)	-1.029* (0.593)	-1.169** (0.576)			
Observations	111	111	82			
Pseudo R2	0.329	0.355	0.319			

Standard errors in parentheses. * p < 0.05, ** p < 0.01, *** p < 0.001.

Source: Author's calculations. Enterprise Surveys. Available at: <https://www.enterprisesurveys.org/en/data>.

Table A2: Estimation Results for Tobit Models on Share of Exports in Total Sales (Coefficient Estimates)

	Total (2013 and 2019 Waves)			2013 Wave		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Gender of CEO (1 = if female)	-15.28 (16.18)	-14.83 (14.99)	-45.90** (22.51)	-30.09 (34.45)	-31.55 (31.37)	-55.64 (38.73)
Experience of CEO (in years)	0.344 (0.461)	0.392 (0.451)	0.856 (0.711)	0.403 (0.865)	0.365 (0.827)	0.975 (1.026)
Years since establishment	0.500 (0.394)	0.0219 (0.373)	-1.395* (0.779)	-2.325 (1.729)	-2.483 (1.718)	-3.083 (2.102)
Foreign capital participation in the ownership structure	38.15** (15.29)	35.95** (13.85)	15.98 (18.70)	41.97 (30.73)	42.44 (29.90)	22.85 (35.16)
Quality certificate	45.38*** (13.03)	35.43*** (13.15)	36.23* (18.95)	37.98 (24.75)	29.62 (25.27)	23.24 (29.45)
Number of credit lines	14.46** (6.319)	10.57* (5.866)	11.60 (7.788)	7.572 (23.79)	-0.0769 (22.81)	-8.347 (28.26)
Access to electricity	4.121 (3.923)	4.605 (3.749)	5.177 (5.038)	4.019 (7.897)	4.172 (7.574)	3.817 (9.239)
Innovation in process	-25.03* (12.87)	-25.35** (12.70)	-14.23 (16.72)	-18.45 (22.09)	-21.14 (21.32)	-10.56 (25.46)
Labor productivity	5.12e-06 (4.40e-06)	3.95e-06 (4.25e-06)	3.93e-06 (5.59e-06)	-3.68e-06 (6.73e-06)	-4.21e-06 (7.47e-06)	-3.93e-06 (5.66e-06)
Manufacturing industries with medium and high technology level	-10.17 (14.52)	-12.97 (13.88)	-37.23* (21.29)	-5.249 (25.43)	-9.314 (23.65)	-43.75 (29.56)
Large city	-1.920 (13.08)	-2.909 (12.48)	-14.26 (17.47)	-19.00 (22.67)	-17.24 (22.15)	-21.26 (26.20)
SME		-47.81*** (14.46)			-51.67* (26.09)	
2019 year	0.331 (14.21)	-3.050 (13.70)	-9.443 (18.00)			
Constant	-73.55*** (20.39)	-16.89 (24.53)	-32.60 (31.14)	-8.859 (50.34)	46.36 (51.63)	12.38 (57.66)
Observations	194	194	153	83	83	71
Pseudo R-squared	0.0431	0.0546	0.0484	0.0294	0.0392	0.0338
	2019 Wave					
	Model 1	Model 2	Model 3			
Gender of CEO (1 = if female)	-14.24 (19.28)	-11.63 (17.99)	-44.71 (29.64)			
Experience of CEO (in years)	0.365 (0.498)	0.485 (0.487)	0.163 (0.807)			
Years since establishment	0.545 (0.425)	0.0756 (0.401)	-0.402 (0.684)			
Foreign capital participation in the ownership structure	31.12 (19.56)	27.47 (17.34)	21.15 (24.51)			
Quality certificate	53.46*** (16.03)	44.11*** (16.59)	53.16** (24.38)			
Number of credit lines	13.26** (6.119)	10.39* (5.703)	11.34 (7.630)			
Access to electricity	2.152 (4.300)	2.628 (4.160)	2.426 (5.194)			
Innovation in process	-24.02 (14.88)	-23.81 (14.68)	-13.14 (19.13)			
Labor productivity	1.02e-05 (6.37e-06)	8.11e-06 (6.41e-06)	1.30e-05 (1.12e-05)			
Manufacturing industries with medium and high technology level	-7.728 (18.02)	-9.288 (17.49)	-30.58 (28.70)			
Large city	8.996 (16.91)	7.746 (16.05)	-3.817 (23.01)			
SME		-41.66** (17.48)				
2019 year						
Constant	-76.81*** (21.46)	-30.00 (28.51)	-56.69 (34.62)			
Observations	111	111	82			
Pseudo R-squared	0.0668	0.0778	0.0808			

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Source: Author's calculations. Enterprise Surveys. Available at: <https://www.enterprisesurveys.org/en/data>.