



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

# Consequences of public financial aid for organizations providing guarantees for SMEs

**Halina Waniak-Michalak, Jan Michalak**

*Management Faculty, University of Lodz, Poland*

*corresponding e-mail: [halina\(dot\)michalak\[at\]uni\(dot\)lodz{d}pl](mailto:halina(dot)michalak[at]uni(dot)lodz{d}pl)*

*address: University of Lodz, Management Faculty, Matejki st. 22/26, 90-237 Lodz*

**Abstract:** The article aims to answer the questions of whether public intervention in the form of financial aid for guarantee funds is necessary. This study examines the consequences of the financial aid for guarantee funds in Poland at the beginning of the 2014-2020 EU budget in the light of state intervention theory. We investigate three possible effects for organizations providing guarantees for SMEs: changes in output (the value and number of guarantees), changes in the transaction scale (average guarantee) and changes in efficiency.

We use a panel regression analysis to verify the existence of such effects. The results show that grants lead neither to an increase in output (the number of guarantees or the total value of guarantees) nor to the improvement of multiplier or default ratios. We observe the positive impact of grants on the transaction scale and cost efficiency. We continue the discussion on the justification of state intervention in the market and the consequences of the public aid. The research shows that state intervention through public support for guarantee schemes has both advantages and disadvantages. In order to enhance the efficiency of the guarantee schemes, government intervention on behalf of private investors should be limited.

Our research has some limitations. The sample does not cover all the functioning guarantee funds, as there were financial statements that were not available and our study does not concern the whole EU budget period (2014-2020). The consequences of public financial aid for organizations providing guarantees for SMEs are rarely studied, therefore, the paper fills the research gap on the influence of public aid on guarantee funds functioning in European Union countries.

**JEL Classifications:** G2, H2, O16

**Keywords:** Finance, guarantee, support, grants, state intervention, public aid, small and medium enterprises

**Citation:** Waniak-Michalak, H., & Michalak, J. (2019). Consequences of public financial aid for organizations providing guarantees for SMEs. *Business and Economic Horizons*, 15(3), 474-489.  
<http://dx.doi.org/10.15208/beh.2019.26>

## 1. Introduction

The European Union supports regional development, research and innovation through grants and financial instruments. For many years the main form of public aid for SMEs were subsidies for business. The Lisbon European Council in 2000 decided to reduce public aid and concentrate on indirect support for small and medium enterprises (European Council, 2000). These grants were used to create guarantee funds to help small and medium-sized enterprises (SMEs) obtain bank loans and increase their creditworthiness. Such funds (or schemes) are popular public aid instruments and operate in South America, Europe, Southeast Asia, and North America and vary in such aspects as the relation to the borrower, private sector or the state, financing model or credit risk management (Gonzalez, Sanchez & Sobrino, 2015). Green (2003) noted that about 2250 guarantee schemes existed in 100 countries before 2003. Guarantee funds (that operate within such schemes) provide firms with guarantees that can be used as collaterals for loan

banks (Sanneris, 2015). Guarantee funds also assist entrepreneurs in completing the formalities associated with obtaining a loan, organize additional training, and also take responsibility for monitoring the borrower in order to strengthen their cooperation with banks. Their primary role is to reduce the market imperfections that result in a higher cost of capital for small and fledgling companies or even lack of access to capital (Garcia-Tabuenca & Crespo-Espert, 2010). Some researchers indicate that guarantees for SMEs achieve a more significant impact in less developed regions (Armstrong et al., 2014) and in the case of weaker companies (Garcia-Tabuenca & Crespo-Espert, 2010). Nevertheless, the guarantees, granted mostly within those schemes financed by public funds, enable the value of loans for small businesses to increase by up to 100% (Cowling, Robson, Stone & Allinson, 2018). Moreover, the guarantee schemes can reduce the cost of debt (Zecchini & Ventura, 2009) and help SMEs to improve their financial situation (D'Ignazio & Menon, 2013).

As most guarantee funds are financed by public money, it is necessary to investigate whether the resources are used effectively from the viewpoint of the parties involved, including the guarantor (Quinto Lanz & Tomei, 2017). According to previous results (Green, 2003), the guarantor should ensure maximum additionality in the long term. Additionality is defined as the capacity to cover the costs or the degree of leverage (Quinto Lanz & Tomei, 2017).

The significance of guarantee funds under the SME support policy will most likely grow in the EU's 2021-2027 budget, due to the following reasons. First, such funds are perceived as an effective instrument of capital gap reduction because they do not require large cash outflows and allow for a large multiplier effect (Chatzouz et al., 2017). Second, the forthcoming EU budget will be under considerable pressure due to the challenges related to Brexit, migration policy and climate policy. This may lead to a reduction of resources allocated to support of SMEs. Therefore, it is vital to understand the results of state financial aid for guarantee funds, especially at the beginning of the EU budget period.

We examine the performance of guarantee funds in Poland and the significance of public grants in financing their activities. We investigate whether constant public support for guarantee funds is necessary and what are the consequences of this state intervention. We also examine the performance of guarantee funds in Poland and test hypotheses on the influence of public grants on the output of guarantee funds, their efficiency and transaction scale. We use panel regression analysis to verify the hypotheses. Our sample consists of 92 observations for 32 guarantee funds in the years 2015-2017. The consequences of public financial aid for organizations providing guarantees for SMEs are rarely studied. Therefore, the paper fills the research gap on the influence of public aid on guarantee funds functioning in European Union countries. Schich, Maccaferri, & Cariboni (2017) realize that many assessments of the functioning of credit guarantee schemes rely almost exclusively on the self-evaluation conducted by organizations providing such instruments. They also highlight that the limited availability of relevant data is a significant obstacle in the rigorous assessment of the effectiveness and cost-effectiveness of guarantee schemes. We managed to overcome this impediment by collecting data through the private information agency Infoveriti.

Our study adds to the debate on the functioning of instruments and organizations providing guarantees for SMEs. Regulators and policymakers could use the presented results and their implications to improve policies of support for SMEs (especially in European Union countries). The results show that grants for guarantee funds lead neither

to an increase in output (the number of guarantees or the total value of guarantees) nor to the improvement of multiplier or default ratios of guarantee funds. However, we observe the positive impact of grants on the transaction scale and cost efficiency of guarantee funds.

The remainder of the paper is organized as follows. Section 2 summarizes the relevant current literature on public aid (state intervention), the functioning of guarantee schemes and develops hypotheses. Section 3 presents the methodology, including empirical models. Section 4 describes the data, reports the results and includes the discussion. Section 5 provides the conclusions, limitations and potential further research topic.

## 2. Literature review and hypothesis development

State interventionism is either criticized, accepted or desired by academia and policymakers. Following the concept of an "invisible hand of the market", which is the basis of both classical and neoclassical economic theories, the market strives for balance. No state intervention is desirable as not only can such an activity interfere with market mechanisms, but it also leads to "negative freedom" - the freedom from interference by others. In the past, governments in various countries wasted a lot of resources due to the misallocation effects of policy-induced distortions and the macroeconomic mismatch of anticipated policies (Bardhan, 1990). There exist numerous situations when the "invisible hand of the market" did not work out and when the classical theory in guiding public policy was questioned (Greenwald & Stiglitz 1986, Khan & Aziz, 2011, Ru, 2018).

According to neoclassicists, only in the case of market failure could state intervention be justified (Boerger, 2016). Some researchers posit that the lack of governmental intervention would drastically diminish economic welfare when the economy is experiencing a phase of recession or transformation (Khan & Aziz, 2011). In the 1960s, the structuralist theory of development dominated post-war development theory with the notion that all underdeveloped economies suffer from market failure (Önis, 1995). Theorists such as Rosenstein-Rodan, Nurske, & Kuznets and many policymakers argued that only the state could implement the solution for the market failure problem. They suggested that the main task of the government should be to identify the critical obstacles for economic growth and remove them through an increase in the quantity of the factor that is lacking. They were convinced that any intervention taken by the government would automatically result in superior economic performance and improved welfare. However, they also overlooked the pressures of interest groups on the state and the absence of institutional and political foundations in underdeveloped countries that may bring about "state failure" instead of "market failure" (Önis, 1995).

Even if we assume that state intervention is justified in the case of a market failure, it is challenging to determine whether market failure takes place in a given situation (Hirschman, 1992). One of the premises for market failure is the existence of an unacceptable level of income inequality. However, according to neoclassical theory, income equality does not have to exist for the market to function effectively (Chang, 2001). The second vital sign that the "invisible hand" does not work is a non-competitive market. However, theorists such as Schumpeter or Marx posit that the non-competitive market is a result of technology development and should not be perceived as a feature of an unsuccessful economy. According to Kuznets (1955), the shifting of the labour force from low-productivity agriculture to high-productivity manufacturing should accompany

the process of economic development. Apart from failure of competition, other market failures include (Stiglitz, 2000): externalities (i.e. Industrial pollution that imposes costs on society), incomplete markets (situation when markets fail to provide goods or services even though the cost of providing it is less than what individuals are willing to pay) and information failures. One example of market failure is the credit rationing phenomenon existing in loan markets due to the imperfect information environment. When making credit decisions banks consider the interest rates, the risk involved in the loans as well as how their decisions may be subsequently affected by poor assessment or moral hazard. Besanko & Thakor (1987) argue that an imperfect information setting (information failures) leaves the potential for worthy borrowers with insufficient wealth to face rationing in the credit market. This leads to the phenomena of the capital gap, which is the amount of money needed to fund the ongoing operations and investments of companies, mostly SMEs. This capital gap phenomenon is used to justify government intervention in credit markets in the case of smaller firms. Intervention here includes three main types: investment subsidization programs, loan subsidization schemes and credit instruments, including loan guarantees.

Market failures are more common in periods of abrupt changes, i.e. transformation from one economic system to another. For example, in Poland, where communism collapsed in 1989, the financial system in the country at that time was monopolized, obsolete and inefficient. There existed a central bank in Poland, and there were about 1500 local cooperative banks, but none of them was able to carry out efficient lending on a larger scale. The problem being lack of capital. Therefore, loans for entrepreneurs or individuals were difficult to access or were very expensive. Large state-owned enterprises collapsed, causing massive unemployment (almost 20%), and there was a shortage of products, services, capital (Kaliński, 2005). Opening a business was relatively easy. However, the critical issues for the development of entrepreneurship included: lack of experience, lack of specific competencies and, to a large extent, severely limited access to capital. Because of the predominant public ownership of capital in the previous economic system, citizens did not have assets that could serve as collaterals for loans.

As Nurske (1953) writes, poor societies may have problems escaping poverty because their resources are too small to increase their stocks of reproducible capital. However, as some researchers prove (Arrow, 1962), the growth of the economy depends only in part on the stock of reproducible physical capital or employment in manufacturing. Arrow (1962) also argues that growth is more significantly related to the ability to learn and the efficiency of production. The argument that easy access to capital is sufficient to solve economic problems is a naïve one. No matter how valuable the capital stock, economies differ in their abilities to absorb new technologies and know-how (Datta-Chaudhuri, 1990).

The issues described above were noticed by public institutions, including the Polish Government, the World Bank, the European Community and the U. S. Congress. The proposed solution to such market failure was the creation of loan and guarantee schemes. Such schemes were introduced in Poland in the years 1992-2003 within several programs - as presented in Table 1.

Guarantee funds in Poland function as non-for-profit organizations, limited non-profit companies, foundations, chambers of commerce, and associations. Guarantee funds in Poland typically support SMEs that operate in a given territory, usually in the region where the fund has its office. In order to apply for a guarantee, beneficiaries need to fulfil

several conditions, e.g. the timely payment of taxes and social insurance. They are also not allowed to conduct activities considered harmful to the environment or unethical (e.g. gambling or tobacco production).

TABLE 1. SUPPORT PROGRAMS FOR THE DEVELOPMENT OF LOAN  
AND GUARANTEE SCHEMES IN POLAND

NAME OF THE PROGRAM	RESULTS	VALUE OF PUBLIC INTERVENTION
Canadian-Polish Enterprise Programme	Canadian-Polish Enterprise Foundation	7 mln EUR
Phare	Eight guarantee funds	2.6 mln EUR
Polish-British Program of Entrepreneurship Development.	Two guarantee funds	5 mln EUR

Source: Own elaboration.

Firms use these guarantees to secure both investment and operating loans. Most guarantee funds do not limit the scope of the investment, so companies have flexibility in the type of investments that can be financed by the loan (such as the purchase of fixed assets or renovations). The range of guarantees is wide, with differentiated financial conditions. Companies wishing to use the guarantees must provide documented evidence that they have been in operation for longer than three months, meaning startups are excluded.

According to the data from the National Association of Guarantee Funds, 43 guarantee funds functioned in Poland at the end of 2017 (National Association of Guarantee Funds, 2016). The total capitalization of guarantee funds in 2017 was approximately EUR 255 million. Most guarantee funds operate within the National System of Services for Small and Medium-sized Enterprises. Their main goal is to support the development and promotion of entrepreneurship. In consequence, such funds offer consultancy for companies in the areas of innovation, environmental protection, financial management, energy management, the use of information technology, marketing and sales as well as credit guarantees.

Until 2007, guarantee funds were mainly financed by money from the EU's SOP ICE program (Sectoral Operational Program Improvement of the Competitiveness of Enterprises). In 2007, the task of financing development using financial instruments (including guarantees) was transferred to the local government level. Each region in Poland created a program for financing institutions or tools for the development of entrepreneurship. During the 2004-2013 period, guarantee capital systematically grew; however, from 2014, the value of equity started to decrease, mostly due to the negative financial results of the funds. At the same time, the value of guarantees grew, as a consequence of an easing of access to external funding. In 2014, the value of guarantees dropped, which may have been caused by the ending of the previous EU budget and a delay in the distribution of EU grants from the next EU budget.

After 2014, guarantee funds continued to be co-financed under the 2007-2013 EU budget. Regional governments transferred funds from 2007-2013 EU budget for guarantee activities in subsequent years. At the same time, funds had to account for the grants received in the previous budget. Some funds were even forced to return grants as a result of failure to provide the required number of guarantees or due to missing other targets (one of the guarantee funds had to reimburse a grant of 30 million PLN). Those events

influenced the amount of the equity of funds and their ability to support SMEs in the upcoming years. In 2016, regional governments did not organize any new competitions for organizations supporting SMEs, as money from the EU 2014-2020 budget would not be available until the beginning of 2017. In the EU budget period 2014-2020, funds for subsidized loans/guarantees are granted on a tender basis (and not on a competition basis, as had been the case previously). Tenders are won by those organizations that offer the lowest price for the management of the scheme, while having relevant experience in the provision of guarantees. The tenders are not only open to guarantee funds, but also other entities. Entities that generate revenues from other sources are often able to offer lower prices for the management of schemes than traditional guarantee funds. They can set up a consortium with small guarantee funds to demonstrate experience in granting guarantees. In subsequent tenders, they may no longer need to cooperate with small funds, because they can show expertise in offering such instruments. The tender procedure significantly extends the implementation period of instruments and, in consequence, may reduce the possible leverage (multiplier effect).

The scale of operations and the significance of guarantee funds have been increasing since Poland's accession to the EU. The guaranteed loans consist of 1.33 % of the value of bank loans granted to SMEs under normal conditions (Table 2). The value of guarantees has increased both in value and share in loans value, which may suggest that SMEs in Poland need the guarantees more than ever before.

TABLE 2. VALUE OF LOANS AND GUARANTEES IN POLAND

Year	Value of loans for SMEs in EUR**	Value of active guarantees in EUR	Loans granted as a result of the guarantees of guarantee funds in EUR	Total support of loan and guarantee funds in % of bank loans
2006	25,8 billion	98,1 million	186,6 million	0.72%
2016	46,5 billion	325,4 million	619 million	1.33%

Source: Own elaboration on the data of National Association of Guarantee Funds and General Statistics Office in Poland.

Note: \* 1 EUR= 4,3 PLN, balance sheet value of bank loans and non-banking loans.

In many countries, guarantees are financed by public funds from governmental or EU programs. Schich, Maccaferri, & Cariboni (2017) argue that the effects of such support are not satisfactory, as many companies that use the guarantees are on the brink of bankruptcy and the loans are necessary just for survival on the market and do not allow further investment or development. In consequence, the cost of the support programs for such firms may outweigh the benefits. The "invisible hand of the market" may also occur when the company goes bankrupt. Therefore, policymakers could follow neo-classical economists, and not invest public funds in supporting companies on the edge of bankruptcy. Following the approach of neoclassical economists, such intervention is unjustified and even harmful. Some policymakers in Europe, after the financial crisis in the first decade of XXI century, eagerly follow neo-classical economists, and do not allocate public funds for such intervention.

As loan and guarantee funds still operate in Poland and are still supported with public funds, we decided to research additional public support (grants) for guarantee funds. We investigate three possible effects: change in output (the value and volume of grants), change in the transaction (grant) scale and change in efficiency.

The efficiency of the guarantee and loan funds is the ability to assure the maximum outcomes with the given amount of resources. According to Cowling & Clay (1995, p. 142), loan-guarantee schemes should primarily generate a cost-effective job/wealth generation package and operate at maximum efficiency and effectiveness (Raith, Staak, & Starke, 2010).

There exist three most commonly used measures of guarantee funds efficiency: the equity multiplier (leverage), cost efficiency ratio and default rate (Cowling & Clay 1995, European Commission, 2006). The equity multiplier is the relation between the value of outstanding guarantees and the equity. The equity multiplier shows how efficiently the equity of the guarantee fund is used. As guarantee funds pay out money in the event of problems with the repayment of loans, they can obtain high levels of leverage (multiplier effect) in comparison with loan funds. According to the European Commission (2006), the equity multiplier is an essential indicator of the successful operation of a guarantee fund as it measures the impact of the endowment of equity of a scheme on lending activity. A reasonable level for a mature guarantee scheme with a well-diversified portfolio should reach six to seven times (European Commission, 2006). The second efficiency measure is the cost-efficiency ratio. It is calculated as total operating costs divided by the number of guarantees granted by a given fund and shows the average cost of a loan - so the lower it is, the more efficient the given fund is. The third efficiency measure is the default rate, which is calculated as the share of paid guarantees in outstanding guarantees. The percentage of paid guarantees in outstanding guarantees means that the guarantees were issued to SMEs. It also lowers the equity of guarantee funds and lowers the multiplier ratio in the long term. In consequence, a high default rate shows the low allocative efficiency of the fund. Deelen & Molenaar, (2004) suggest that in the case of efficient guarantee funds the default rate should be below 2% of the average outstanding guarantee amount per year.

The article aims to assess the consequences of public financial aid for guarantee funds at the beginning of the 2014-2020 EU budget, using the example of Poland. Most guarantee schemes and guarantee funds in European countries (European Commission, 2006) were established with public funds (e.g. grants from the European Union and international programs) to facilitate entrepreneurs' access to external capital and were made available on a non-commercial basis. More recently, the majority of them have used the support of the EIF or regional programs for recapitalization. As mentioned earlier, in the years 2014-2016 guarantee funds in Poland had difficulty accessing additional external financing, which was caused by the ending of the previous EU budget and a delay in the distribution of EU grants from the new one. It resulted in a reduction in the scale of some of their activities.

Financial aid is understood as the sum of grants recognized in the profit and loss statement, and recapitalization as the change in equity excluding the net income for the year and the change in principal equity (thus eliminating the influence of private funds).

In the case of funds which received public financial aid, the following three types of effects (consequences) are possible:

1. change in output (the value and volume of grants),
2. change in the transaction (guarantee) scale,
3. change in efficiency.

In line with the goals of the policy of the European Union and the Polish government, additional public financial aid for guarantee funds should translate into an increase in their output measured by the value and number of granted guarantees (Chatzouz, Gereben, Lang, & Torfs, 2017). A higher value and number of granted guarantees should, in turn, contribute to the reduction of the capital gap for small and medium enterprises, which is the desired effect of the European Union and the Polish government. With this in mind, we have made the following hypotheses:

**H1.** *Public financial aid increases the output of guarantee funds*

**H1.1.** *Public financial aid increases the value output of guarantee funds*

**H1.2.** *Public financial aid increases the volume output of guarantee funds*

We distinguish between the volume and the value output of the guarantee funds' activity and measure the value output by the value of guarantees granted and the volume output by the number of guarantees granted.

There also exists another possible effect of obtaining public aid by guarantee funds. Guarantee funds which received public financial aid for granting guarantees, may decide to increase the scale of their transactions (average size of granted guarantees). Such a decision may be caused by an increase in the amount of one of the resources (capital) held, while other resources (labour, equipment) remain unchanged. By increasing the scale of the transaction, funds may achieve the objectives set by the European Union and the Polish government - thereby raising the value of guarantees and reducing the capital gap without increasing the scale of operations limited by access to labour resources and equipment (Dvouletý, 2017). With regard to the transaction scale effect, we consider the average value of guarantees, being the result of transactions occurring between three parties: SMEs, banks and guarantee funds. We posit that public aid which increases guarantee funds' financial resources also enhances the creditability of guarantee funds and thus enables them to negotiate higher loans for SMEs secured with said guarantees (Gonzales, 2015). In this way, both the value of a single (average) loan and guarantee should increase.

Based on this reasoning, we form the following hypothesis:

**H2.** *Public financial aid increases the transaction scale of guarantee funds*

Obtaining public financial aid may also affect the efficiency of the guarantee funds. As mentioned before, the effectiveness of the functioning of guarantee funds is usually measured by three ratios: the multiplier ratio, cost efficiency ratio and default ratio (Cowling and Clay 1995, European Commission, 2006). The impact of public aid on these indicators may be both positive and negative. If capital was the limiting resource, its increase could improve efficiency assessed by the measures mentioned above. However, if the limiting resources are well-qualified employees or access to equipment and software, then obtaining additional financing may adversely affect the efficiency measured by the indicators mentioned above.

Therefore, for the efficiency measure we will use the equity multiplier (ratio of the value of outstanding guarantees and equity). We propose the following hypothesis:

**H3.** *Public financial aid influences the efficiency of guarantee funds*

and

**H3.1.** *Public financial aid increases the efficiency of guarantee funds measured with the equity multiplier*

According to Schich, Maccaferri, & Cariboni (2017), the potential benefits of support programs introduced by public entities need to be weighed against their costs. A traditional cost efficiency measure is the average cost of guarantees calculated as the total sum of guarantees divided by the total operating cost. The most efficient in this sense are funds with the lowest average guarantee cost. In a situation where the number of guarantees issued rises due to obtained grants and, at the same time, the total operating costs remain the same, cost efficiency increases. We form the following hypothesis:

**H3.2.** *Public financial aid increases the cost efficiency of guarantee funds*

Obtaining grants may influence another efficiency measure - the default rate calculated as the share of paid guarantees in outstanding guarantees. After receiving grants, some guarantee funds may tend to issue guarantees to enterprises with a higher credit risk than they previously accepted.

Moreover, E.U. grants may require the supporting of particular groups of entities that are excluded by the market thereby bringing about important costs, such as increased moral hazard or implicit subsidies (Abraham & Schmukler, 2017). We posit that public financial aid for guarantee funds increases their default rate, and we form the following hypothesis:

**H3.3.** *Public financial aid increases the default rate of guarantee funds (decreased allocation efficiency)*

### 3. Methodology

To evaluate the financial results of guarantee funds we used data from the financial statements of 32 guarantee funds for the period 2015 to 2017 (i.e. all the funds for which financial data were available, for the whole period).

To verify the hypotheses, we developed six panel regression models:

$$VGR_{i,t} = \alpha + \beta \times Grant_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

where  $\beta$  is a coefficient, while  $\varepsilon_{i,t}$  represents the error for the value of guarantees in guarantee fund  $i$  in year  $t$ . The VGR is a dependent variable - the value of guarantees provided by guarantee fund  $i$  in year  $t$ . We lagged the independent variable - Grants - assuming that it takes time to implement the grant and reach the goals included in the grant agreement (Veiga & Pinho, 2007). We calculated the value of the dependent variable as the sum of grants recognized in the profit and loss statement in year  $t - 1$ , and recapitalization as the change in equity excluding the net income for year  $t - 1$  and the change in principal equity (thus eliminating the influence of private funds).

$$NGR_{i,t} = \alpha + \beta \times Grant_{i,t-1} + \varepsilon_{i,t} \quad (2)$$

$NGR$  is a dependent variable calculated as the number of guarantees provided by guarantee fund  $i$  in year  $t$ .

$$AVGR_{i,t} = \alpha + \beta \times Grant_{i,t-1} + \varepsilon_{i,t} \quad (3)$$

*AVGR* is a dependent variable - the average value of one guarantee provided by guarantee fund *i* in year *t* calculated as the value of guarantees provided by a guarantee fund divided by the number of guarantees.

$$MU_{i,t} = \alpha + \beta \times Grant_{i,t-1} + \varepsilon_{i,t} \quad (4)$$

*MU* is a dependent variable - equity multiplier for guarantee fund *i* in year *t*. We calculated the value of the dependent variable by dividing the value of outstanding guarantees and the equity of guarantee fund *i* in year *t*.

$$AVC_{i,t} = \alpha + \beta \times Grant_{i,t-1} + \varepsilon_{i,t} \quad (5)$$

*AVC* is a dependent variable -the average cost of one guarantee in fund *i* in year *t*. We calculated the value of the dependent variable as a ratio of the value of operating costs and the number of guarantees in guarantee fund *i* in year *t*.

$$DEF_{i,t} = \alpha + \beta \times \ln Grant_{i,t-1} + \varepsilon_{i,t} \quad (6)$$

*DEF* is a dependent variable - default rate for guarantee fund *i* in year *t*. We calculated the value of the dependent variable as the share of paid guarantees in outstanding guarantees of guarantee fund *i* in year *t*. We used the logarithm of the variable grant in the model 4 because the dependent variable (*DEF*) takes the values in a range 0-1.

#### 4. Empirical results and discussion

Initial analysis shows a wide variety in the output and efficiency of guarantee funds in Poland (see Table 3). Active guarantee funds exist that grant more than two thousand guarantees a year and guarantee funds that grant only a few guarantees a year. Similarly, the amount of granted guarantees varies dramatically, from PLN 219 thousand to over PLN 148 million.

Only 25% of guarantee funds reached an equity multiplier higher than 2. However, the efficiency measured with the default rate is low. The share of paid guarantees in outstanding guarantees does not exceed 14.6%, but it is higher than the average expected loss (9%) in relation to the guarantee agreements signed in 2016 (European Court of Auditors, 2017).

TABLE 3. DESCRIPTIVE STATISTICS (VALUES IN PLN)

	Description	N	Mean	Std. Dev.	Min	Max
Grant	2017 grants <sub>t</sub> + (equity <sub>t</sub> +	32	582,216	1,294,311	,00	6,411,148
	2016 financial result <sub>t</sub> -	32	678,322	1,628,703	,00	8,860,701
	2015 equity <sub>t-1</sub> )	28	812,395	1,340,290	,00	4,856,629
	Total	92	685,699	1,419,880	,00	8,860,701
VGR	2017 value of guarantees <sub>t</sub>	32	30,945,000	36,806,853	591,000	148,966,000
	2016	32	28,925,041	37,960,746	219,000	145,694,000
	2015	28	25,072,011	32,860,761	641,000	129,702,000
	Total	92	28,455,013	35,757,111	219,000	148,966,000
NGR	2017 number of guarantees <sub>t</sub>	32	247	301	4	1227
	2016	32	287	437	2	2229
	2015	28	169	192	6	795
	Total	92	237	331	2	2229
AVGR	2017 value of guarantees <sub>t</sub> /	32	160,677	137,758	40,631	712,702
	2016 number of guarantees <sub>t</sub>	32	136,799	109,231	3,898	504,400
	2015	28	169,867	97,772	28,375	435,642
	Total	92	155,781	115,281	3,898	712,702
MU	2017 value of outstanding	32	1.77	1.78	.16	7.79
	2016 guarantees <sub>t</sub> / equity <sub>t</sub>	32	1.52	1.43	.07	5.49
	2015	28	1.30	1.30	.11	6.16
	Total	92	1.54	1.52	.07	7.79
AVC	2017 operating costs <sub>t</sub> /	31	66,379	114,214	2254,30	466,546
	2016 number of guarantees <sub>t</sub>	31	96,927	193,195	2274,41	817,598
	2015	28	45,059	59,992	3951,72	243,058
	Total	90	69,455	133,866	2254,30	817,598
DEF	2017 paid guarantee <sub>t</sub> /	31	1.61	2.58	.00	8.60
	2016 outstanding	31	1.92	2.65	.00	11.10
	2015 guarantee <sub>t</sub>	28	1.95	3.09	.00	14.60
	Total	90	1.82	2.74	.00	14.60

The most active funds, which provided the biggest number of guarantees, owe their success to the diversity of the offer and granting of tender guarantees, factoring and for the liabilities due to the proper performance of the contract for which there is a growing demand. The reasons for limiting the number of granted guarantees are various. Some funds have low equity and therefore, cannot provide a large number of guarantees. Others are in the process of liquidation, and yet more funds are gradually changing their business profile from credit guarantees to granting loans.

A cause of the financial difficulties for some small guarantee funds was the program launched in 2013 by Bank Gospodarstwa Krajowego of the portfolio of de minimis guarantees. The program was attractive to banks and borrowers. Initially, Gospodarstwa Krajowego planned to offer it till the end of 2015. Ultimately, however, it was extended twice and operated until the end of 2017.

In order to verify the hypotheses, we used robust panel regression analysis for the data of 32 guarantee funds in Poland, for the period 2015 to 2017. We chose these years because of the availability of all the data that we wanted to analyze. The results of the regression analysis are presented in the Table 4 and 5.

TABLE 4. PANEL REGRESSION ANALYSIS

VARIABLES	(1) Model 1 VGR	(2) Model 2 NGR	(3) Model 3 AVGR
Grant <sub>t-1</sub>	0.880 (0.548)	-1.71e-06 (4.37e-06)	0.0101** (0.00398)
Constant	2.575e+07*** (534,647)	236.6*** (4.337)	140,800*** (3,989)
Observations	90	87	86
R-squared	0.041	0.000	0.185
Number of ID	32	32	32

Note: Robust standard errors in parentheses. \*\*\* -  $p < 0.01$ , \*\* -  $p < 0.05$ , \* -  $p < 0.1$ .

TABLE 5. PANEL REGRESSION ANALYSIS

VARIABLES	(4) Model 5 MU	(5) Model 6 AVC	(6) Model 4 DEF
ln(Grant <sub>t-1</sub> )	2.97e-09 (1.26e-08)	-0.0120*** (0.00397)	-0.505796 (0.448279)
Constant	1.487*** (0.0124)	101,587*** (3,981)	8.64644 (6.27412)
Observations	87	86	84
R-squared	0.000	0.056	0.061
Number of ID	32	32	32

Note: Robust standard errors in parentheses. \*\*\* -  $p < 0.01$ , \*\* -  $p < 0.05$ , \* -  $p < 0.1$ .

The obtained results do not confirm the existence of a positive impact from public aid (obtaining grants) on the output of the guarantee funds. The result is statistically insignificant both for the amount and the value of guarantees granted (posited in Hypotheses 1.1. and 1.2.). This implies that the receipt of public aid does not automatically translate into an increase in output in the year following the grant year.

Our results confirm the existence of a positive impact of obtaining grants on the average amount of guarantees granted by funds (transaction scale effect). This result is statistically significant, therefore, there are no grounds for rejecting Hypothesis 2.

This result is in line with expectations, since by increasing the scale of the transaction, funds may achieve the objective set by the European Union and the Polish government. The goal was to raise the value of guarantees and reduce the capital gap without increasing the scale of operations which are limited by access to labour resources and equipment (Dvouletý, 2017). Increasing the scale of transactions brings with it the following positive effects. First, it facilitates cooperation with banks, as it increases the credibility of guarantee funds and reduces cooperation costs from the point of view of bank managers. Second, the increase in the scale of transactions granted allows the support of larger, and potentially more innovative, projects by SMEs.

In the case of the impact of public aid on the efficiency of guarantee funds, our results confirm the existence of such dependence only in the case of cost efficiency. There are no grounds to accept Hypothesis H3.1 supposing the positive impact of grants on equity multiplier. Thus, the main objective of the European Union and the Polish government was not achieved.

The H3.3 hypothesis, assuming the impact of grants on default ratio, was also not confirmed. Our results do not indicate any increase in the significance of the effect of moral hazard or the granting of guarantees for riskier projects. However, such an effect may occur over a longer period.

The obtained results confirm the relationship between the amount of grants received and the lower cost of granting guarantees assumed in Hypothesis H3.2. This outcome is consistent with the result for the transactions scale, as the increase in the transactions scale is often associated with a reduction in the average transaction cost.

Our observations on the changed procedures for grants (tenders instead of competitions) and the results of regression may also suggest that the number and structure of funds will change in the future. Weaker and less efficient funds located in out-of-the-way locations may be liquidated, which may partially restrict access to guarantees in some regions.

## 5. Conclusions

The article aims to assess the results and role of state intervention in supporting organizations providing guarantees for SMEs. We evaluated the performance of guarantee funds backed with public money by answering two questions of whether constant public support for guarantee funds is necessary and what are the consequences of public aid for guarantee funds. Our analysis has led to the conclusion that the cost efficiency of guarantee funds increases with the increase of public grants. However, the output of guarantee funds does not depend on the received public aid. The benefits for the economy from the existence of the guarantee schemes for SMEs may be measured through additionality, i.e. the number of jobs generated and maintained as a result of the activity of the guarantee schemes or incremental credit volumes due to the guarantee program (OECD, 2017). However, for the economy to receive the benefits, it is necessary to keep the organizations providing guarantees stable and efficient. Our research, along with other studies, shows that state intervention through public support for guarantee schemes has advantages and disadvantages. In order to enhance the efficiency of the guarantee schemes, government intervention on behalf of private investors should be limited (Abraham & Schmukler, 2017). However, some organizations providing guarantees need constant capital injections from the government to stay sustainable and keep outcomes at a desired level (Abraham & Schmukler, 2017).

In our research, we observed two main consequences of public aid to the guarantee funds operating in Poland. The first one was an increase in the scale of the transaction (the average size of the guarantee granted). The second was an increase in cost-effectiveness (reduction of the average cost of the guarantee). We did not observe any impact of receiving guarantees on the total number and value of granted guarantees. Our results do not confirm the effect of the amount of public aid on the multiplier ratio or the default ratio. It proves that the primary strategy of guarantee funds is to focus on providing larger loans. This effect can be seen positively. Increasing the value of guarantee loans allows for the faster and, potentially, more innovative development of SMEs. The negative

consequence, in turn, is the lack of an increase in the number of supported enterprises. It was also not possible to achieve the assumed higher multiplier effect level, which was one of the most important objectives of the European Commission and the Polish government when awarding grants for guarantee funds. The results may suggest that increasing equity capital for guarantee funds without providing the other necessary resources (qualified personnel, hardware and software) are insufficient to achieve an increase in the scale of operations or a significant increase in the effectiveness of the guarantee funds.

Hence, public financial aid does not fulfil the main goal of public representatives (the value and number of financial instruments). Our research supports the thesis that public aid should be augmented with the creation of the appropriate legal environment and providing technical assistance. Subsidies or grants should not be the primary source of financing organizations providing guarantees, and the eventual aim of a guarantee scheme should be independence and self-sufficiency (Wilcox & Yasuda, 2008).

To this end, we consider both public support for such schemes and the results of the guarantee funds. These issues are of importance not only to researchers, financial experts and economists but also those politicians who make decisions that influence the development of SMEs.

In general, although the study has reached its aims and provides interesting results, our investigation still faces some limitations. Our sample does not cover all the functioning guarantee funds, as there were financial statements that were not available. Moreover, the financial statements of some of the funds were simplified and did not reveal personnel costs, thus preventing us from using methods of pure technical efficiency, such as Ong et al. (2003) did. In addition, our study does not cover the whole EU budget period (2014-2020).

Concluding, we suggest some interesting routes for further research on organizations providing guarantees for SMEs. First, we intend to continue our study to cover the whole EU budget period (2014-2020). Second, we advocate the use of a more international sample to make our results more generalizable, however, due to the difficult access to data (Schich, Maccaferri, & Cariboni, 2017) we put forward the need for the use of bigger international research team. Third, we advocate a new study on the characteristics and operations of the most efficient funds (those with the highest multiplier ratios) to create recommendations to improve the policies for support of SMEs and the functioning of organizations providing such aid.

### *Acknowledgement*

The research is financed by the National Science Centre in Poland and is part of a project titled "Financing the development of loan and guarantee funds" - grant number 2016/23/B/HS4/00348.

## References

- Abraham, F., & Schmukler, S. L. (2017). *Are public credit guarantees worth the hype?* Research & Policy Briefs (no. 11), 1-4. Washington, DC: World Bank.
- Armstrong C., Craig B., Jackson W. E., & Thomson J. B. (2014). The moderating influence of financial market development on the relationship between loan Guarantees for SMEs and local market employment rates. *Journal of Small Business Management*, 52(1), 126-140.
- Arrow, K. J. (1962). The economic implication of learning-by-doing. *Review of Economic Studies*, 29, 155-173.
- Bardhan, P. (1990). Symposium on the State and Economic Development. *Journal of Economic Perspectives*, 4(3), 3-7.
- Besanko, D., & Thakor, A. V. (1987). Collateral and rationing: sorting equilibria in monopolistic and competitive credit markets. *International economic review*, 28(3), 671-689.
- Boerger, L. (2016). *Neoclassical Economics*. Retrieved March 18, 2019, from <https://www.exploring-economics.org>
- Chang, H.-J. (2001). *Breaking the Mould. An Institutionalist Political Economy Alternative to the Neoliberal Theory of the Market and the State*. Retrieved March 18, 2019 from the United Nations Research Institute for Social Development. Retrieved June 21, 2019, from <http://www.unrisd.org>
- Chatzouz, M., Gereben, A., Lang, F., & Torfs W. (2017). Credit Guarantee Schemes for SME lending in Western Europe. *EIF Working Paper* 2017/42, Retrieved June 21, 2019, from <http://www.eif.org/>
- Cowling, M., Robson, P., Stone, I. & Allinson G. (2018). Loan guarantee schemes in the UK: the natural experiment of the enterprise finance guarantee and the 5 year rule. *Applied Economics*, 50 (20), 2210-2218.
- Cowling, M. & Clay, N. (1995). Factors influencing take-up rates on the Loan Guarantee Scheme. *Small Business Economics*, 7(2), 141-152.
- D'Ignazio, A. & Menon, C., (2013). The causal effect of credit guarantees for SMEs: Evidence from Italy. *Bank of Italy Temi di Discussione. Working paper*, 900, 1-42.
- Datta-Chaudhuri, M. (1990). Market failure and government failure. *Journal of Economic Perspective*, 4 (3), 25-39.
- Deelen, L. & Molenaar, K. (2004). *Guarantee funds for small enterprises. A manual for guarantee fund managers*. Retrieved April 30, 2019 from <https://www.researchgate.net>
- Dvouletý, O. (2017). Effects of soft loans and credit guarantees on performance of supported firms: Evidence from the Czech Public Programme START. *Sustainability*, 9 (12), 1-17.
- European Commission (2006), *Guarantees and mutual guarantees. Best Report*. Retrieved April 30, 2019, from <https://ec.europa.eu/>
- Garcia-Tabuenca, A. & Crespo-Espert, J.J. (2010). Credit guarantees and SME efficiency. *Small Business Economics*, 35, 113-128.
- Gonzalez, P.P., Sanchez, H.M. & Sobrino, J.N.R. (2015). *Guarantee systems. Keys for their implementation*. Madrid: AECA.

- Green, A. (2003). Credit guarantee schemes for small enterprises: an effective instrument to promote private sector-led growth? *Unido (United Nations Industrial Development Organization) SME Technical Working Papers Series*, 10, 1-88.
- Greenwald, B. C., & Stiglitz, J. E. (1986). Externalities in economies with imperfect information and incomplete markets. *The quarterly journal of economics*, 101(2), 229-264.
- Hirschman, A. (1992). *Rival views of market society and Other Recent Essays*. Cambridge: Harvard University Press.
- Kaliński, J. (2004). Gospodarka Polski w procesie transformacji ustrojowej (1989-2002)[ Polish economy in the process of political transformation (1989-2002)]. *Bank i Kredyt*, 1, 7-37.
- Khan, S.M. & Aziz, G. (2011). Neoclassical versus Keynesian approach to public policy - the need for synthesis. MPRA. Retrieved March 18, 2019, from: <https://mpra.ub.uni-muenchen.de>
- Kuznets, S. (1955). Economic growth and income inequality. *The American Economic Review*, 45 (1), 1-28.
- Ong H-B., Habibullah M.S., Radam A. & Azali M. (2003). Evaluating a credit guarantee agency in a developing economy: a non-parametric approach. *International Journal of Social Economics*. 30 (1/2), 143-152.
- Önis, Z. (1995). The limits of neoliberalism: toward a reformulation of development theory. *Journal of Economic Issues*, 29 (1), 97-119.
- European Council. (2000). *Presidency conclusions Lisbon European Council 23 and 24 March 2000*. Retrieved June 8, 2019, from <http://kbn.icm.edu.pl>
- Quinto Lanz L. and Tomei P.A. (2017). Building trust in a guarantee fund in a challenging institutional environment. *Revista Ibero-Americana de Estratégia (RIAE)*, 16 (3), 90-110.
- Raith, M. G., Staak, T. & Starke, Ch. (2010). The goal achievement of federal lending programs. *Small Enterprise Research*, 17 (1), 43-57.
- Ru, H. (2018). Government credit, a double-edged sword: evidence from the China Development Bank. *The Journal of Finance*, 73 (1), 275-316.
- Sanneris, G. (2015). Support of SME's in Italy: case of Confidi, experience and perspectives of evolution. *St. Petersburg State Polytechnical University Journal. Economics*, 228 (5), 7-19.
- Schich S., Cariboni J., Naszodi A. & Maccaferri S. (2017). Evaluating publicly supported credit guarantee programmes for SMEs. Retrieved April 30, 2019, from <http://www.oecd.org>
- Schich S., Maccaferri S. and Cariboni J. (2016). Un moment opportun pour l'évaluation des coûts et bénéfices des garanties de crédit et la relance des politiques de soutien aux PME [Timely Opportunity to Evaluate Costs and Benefits of Credit Guarantee Interventions to Reinvigorate Policy Support for SMEs]. *Revue d'économie financière*, 123, 279-296.
- Stiglitz, J. E. (2000). *Economics of the public sector* (3rd ed.). New York: W.W. Norton & Company.
- Veiga, L.G., & Pinho, MM. (2007). The political economy of intergovernmental grants: Evidence from a maturing democracy. *Public Choice*, 133(3-4), 457-477.
- Wilcox, J., Yasuda, Y., (2008). *Do government loan guarantees lower, or raise, banks' non-guaranteed lending? Evidence from Japanese Banks*. The World Bank Workshop, Retrieved April 30, 2019, from: <http://siteresources.worldbank.org>
- Zecchini, S. and Ventura, M., (2009). The impact of public guarantees on credit to SMEs. *Small Business Economics*, 32, 191-206.