Financial Instruments in Slovak Agriculture: Estimating Potential Multiplier Effect of Guarantees

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Abstract
The main objective of this paper is to estimate the multiplier effect of financial instruments in Slovak agriculture. Slovakia intends to implement guarantee schemes as one type of financial instruments (FIs) in the CAP programming period 2023-2027. FIs are modern, transparent and efficient form of support to cover investment needs of farmers. They combine the experience of commercial banks with the CAP subsidies, which are limited. FIs should cover the financing gap, which arose in Slovakia due to sub-optimal financing conditions for some types of farms. FIs can offer advantages for small and medium enterprises (SMEs), and farms, because they have similar difficulties with access to finance. In the first part of the paper, we evaluate the development of bank loans in Slovak agriculture over the period 2014-2020. Bank loans to farmers increased from 477,1 mil. EUR in 2014 to 900 mil. EUR in 2020. In the second part we describe the leverage effect of guarantees. Leverage effect is determined by multiplier, which depends on the guaranteed rate and guarantee cap rate. Based on these rates it is possible to determinate bank and guarantor’s shares on default risk. With a proposed allocation of 150 mil. EUR of FIs in form guarantees in Slovakia in 2023-2027(from CAP) and a multiplier of 5 it is possible to provide 750 mil. EUR in loans to farmers. Another 1 250 mil. EUR of bank loans could be provided to support agri-food sector. These loans will be supported by guarantees from Slovak state budget in volume 250 mil EUR. Use of guarantees is way, how to contribute to sustainability of farms and agri-food industry.

Keywords: financial instrument, bank loans, CAP, subsidies

JEL Classification: Q14, Q18, G21, G31, O13

1. Introduction
Bank loans play an important role in financing investments in agriculture. The largest provider of loans to agriculture worldwide is the World Bank (World Bank, 2005). There are several challenges and factors affecting the success of institutions providing financial services for agricultural activities (Andrews, 2006). Empirical analysis of rural credit market failure has been of key scientific and political interest (Petrick, 2005). Ciaian & Swinnen (2009) analysed the impact of subsidies on bank credit constraints, namely, that subsidies reduce the credit constraint, and thereby reduce inefficiencies in the economy. Pokrivčák (2002) analysed problems of Slovak farms with financing investments and bank loans during transition period. Most of the private farms in Slovakia cannot rely on bank credit. These farmers cannot get credit because they are high-risk customers of banks. Swinnen & Gow (1999) focused on potential roles of governments in solving some credit market failures through credit subsidies, loan guarantees and specialised agricultural lending institutions in Central and Eastern European countries. Financial market innovations have solved some of the credit market
problems. Currently, the preferred way to support access to finance are financial instruments (FIs).

In agriculture, public subsidies increase private investment, which otherwise are perceived too risky. Generally, there are several types of FIs. They have been implemented in CAP since 2000, but there are yet many barriers for their implantation in rural development policy (Wieliczko, 2019).

“FIs are increasingly important due to their leverage effect on the ESIF Funds, their capacity to combine different forms of public and private resources to support public policy objectives, and because revolving forms of finance make such support more sustainable over the longer term” (Regulation No 1303/2013 of the European Parliament and of the Council).

In the new CAP programming period 2023-2027, Slovakia plans to implement FIs in agriculture as a part of investment support to increase the efficiency of public funds. FIs can be targeted only in areas where a financial gap was identified. Financial gap is the mismatch between the higher demand for investment loans and the supply of commercial banks. In Slovakia FIs will be implemented through guarantees and investment grants connected with guarantees. Therefore, in the first part of our paper we focus on development of bank loans in Slovak agriculture and in the second part we describe the leverage effect of guarantees. Leverage effect is multiplying the amount of public funds and is an important advantage of FIs. We calculate the multiplier of guarantees and volume of loans, which is possible to provide based on 150 mil. EUR allocation planned in the new Common Agriculture Policy (CAP) in the period 2023-2027 in Slovakia.

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2. Data and Methods

The main goal of the paper is to estimate the multiplier effect of guarantees that will be achieved by:

1. Analysis of available literature focusing on investments in agriculture, financing gap, FIs and their advantages for SMEs and for farms with focus on guarantees supported by public funds.

2. Analysis of bank loans in Slovak agriculture in period 2014-2020. We analysed the structure of loans divided into short term up to 1 year, long-term (1-5 years) and long term (over 5 years) by using data of National bank of Slovakia (NBS). Firstly, we calculated the share of agriculture loans (including forestry and fishing) to all loans of all sectors in 2014-2020 and then we compared this share with share of agriculture in total GDP in Slovakia (all sectors). GDP was calculated by production approach at current prices in period 2014-2020 by using data of Statistical Office of the Slovak Republic (SOSR).

3. Analysis of CAP Strategic plan 2023-2027 - SLOVAKIA

4. Quantification of multiplier of the capped portfolio guarantee instrument. “The capped portfolio guarantee provides credit risk coverage to bank on a loan-by-loan basis, up to a guarantee rate, for the creation of a portfolio of new loans to SMEs up to a guarantee cap rate” (Robino, 2016). In case of capped portfolio guarantee instrument it is possible by Robino (2016) to calculate the multiplier using formula:

\[
\text{Multiplier} = \frac{1}{\text{guarantee rate}} \cdot \frac{1}{\text{guarantee cap rate}}
\] (1)
3. Results and Discussion

3.1 Development of bank loans in Slovak agriculture

The EU’s agricultural policy is a dynamic policy that responds to the new challenges faced by European agriculture. In recent years, the bioeconomy has also become the focus of EU level agricultural policies, which include agriculture and forestry. Farmers and foresters play an important role in developing the bioeconomy in Europe's rural communities. The bioeconomy is also linked to objectives in various areas, and one of them is to strengthen market orientation and increase competitiveness (Bioeconomy Cluster, 2020). Loans can be used by farmers to renew and modernize processing capacity, which will increase the competitiveness.

Slovakia has no experience with the use of financial instruments in agriculture. In the previous CAP programming period 2014-2020, financial needs associated with investments in agriculture were financed by farms (profit, depreciation, and another forms of equity) by subsidies or debt including bank loans or leasing.

Bank loans in agriculture increased significantly and doubled over the period 2014-2020 from 477.1 mil. EUR up to 900.6 mil. EUR. This increase was due to increased farm demand for bank loans, as well the willingness of banks to provide these loans. The trend in agriculture is in line with the overall increase in loans in Slovakia. The importance and share of agriculture in total bank loans increased from 1.14% to 1.35% (Table 1).

In general, the increase in bank loans may be related with expansion monetary policy of European central bank (ECB), which used in addition to traditional indirect instruments, non-traditional instruments, like quantitative easing. These instruments together have caused historically low interest rates that increase demand for loans. Unconventional monetary policy can support investment by reducing the incidence of credit restrictions, especially for large and old companies (Gómez, 2019).

Table 1: Bank loans in mil. EUR as of the end of the relevant year

|           | 2014  | 2015  | 2016  | 2017  | 2018  | 2019  | 2020  |
|-----------|-------|-------|-------|-------|-------|-------|-------|
| Agriculture | 477.1 | 543.2 | 650.3 | 712.4 | 746.1 | 913.3 | 900.6 |
| All sectors | 41 765.7 | 45 462.0 | 49 997.6 | 54 781.9 | 59 894.9 | 63 712.3 | 66 917.5 |
| Share of Agriculture | 1.14% | 1.19% | 1.30% | 1.30% | 1.25% | 1.43% | 1.35% |

Source: own processing based on data of National Bank of Slovakia (NBS)
Note: Agriculture includes forestry and fishing

The share of agriculture in total GDP decreased over the period 2014-2020 (Table 2). This may seem positive, as the literature states that developed countries have a lower share of agriculture in total GDP than developing countries (Arendonk, 2015). However, the decrease in absolute figures from 2095.1 mil. EUR in 2014 to 1618.5 mil. EUR in 2020 is showing an overall negative trend in the performance of Slovak agriculture. The sector is stagnating due to the structure of farms and CAP support focusing on direct payments.
Table 2: GDP value Slovakia in mil. EUR as the end of the relevant year

|        | 2014  | 2015  | 2016  | 2017  | 2018  | 2019  | 2020  |
|--------|-------|-------|-------|-------|-------|-------|-------|
| Agriculture | 2,095.1 | 1,755.9 | 1,818.4 | 1,765.4 | 1,922.6 | 1,568.2 | 1,618.5 |
| GDP     | 76,092.7 | 79,888.2 | 81,014.3 | 84,442.9 | 89,430.0 | 94,048.0 | 92,079.3 |
| Share of Agriculture | 2.75% | 2.20% | 2.24% | 2.09% | 2.15% | 1.67% | 1.76% |

Source: own processing according data of Statistical Office of the Slovak Republic (SOSR) calculated by production approach at current prices
Note: Agriculture includes forestry and fishing

A comparison of the share of agriculture in GDP and share of agriculture loans (including forestry and fishing) to all loans shows that, although agriculture contributes to GDP less, the share of loans for agriculture in total loans has slightly increased (Figure 1).

![Figure 7: Share of agriculture in GDP and total bank loans](image)

Table 3 shows the structure of bank loans in Slovak agriculture. The structure was dominated by short-term loans with a maturity up to 1 year. Farms use these loans to bridge the timing mismatch between their short-term operating needs and collection of subsidies (in form of direct payments). Generally, subsidies are paid by Agricultural Paying Agency (APA) at the end of year. Banks usually use subsidies as a guarantee for loans. Long-term loans are important in terms of investment development. We can observe that their share in total farm loans is increasing, especially with maturity over 5 years. Their share was almost 50% in year 2020 while in 2014 the share was only 30.4%. The increase in the volume of loans significantly correlated with the implementation of the CAP II. pillar and measures related to investments. Banks also assessed the risks of investments and did co-finance investment projects of farmers. Investment activities of farmers were significantly fluctuating over time due to irregularity of calls related to investment measures of CAP in Slovakia (Ministry of Agriculture and Rural Development of the Slovak Republic, 2022). The literature asserts a positive relationship between investment grants and productivity of credit constraint firms (Ciaian, Falkowski & Kancs, 2012). Investment grants may provide an additional source of finance in non-repayable forms or indirectly through the improved access to bank loans.
Table 3: Structure of bank loans in Slovak agriculture in mil. EUR as of the end of the relevant year

|                      | 2014  | 2015  | 2016  | 2017  | 2018  | 2019  | 2020  |
|----------------------|-------|-------|-------|-------|-------|-------|-------|
| short term (to 1 year) | 239.9 | 272.9 | 274.9 | 286.4 | 306.1 | 343.5 | 304.2 |
| long term (1-5 years) | 92.2  | 102.0 | 146.2 | 170.8 | 170.6 | 207.4 | 158.2 |
| long term (over 5 years) | 144.9 | 168.3 | 229.2 | 255.3 | 269.4 | 362.4 | 438.1 |
| short term (to 1 year) | 50.3% | 50.2% | 42.3% | 40.2% | 41.0% | 37.6% | 33.8% |
| long term (1-5 years) | 19.3% | 18.8% | 22.5% | 24.0% | 22.9% | 22.7% | 17.6% |
| long term (over 5 years) | 30.4% | 31.0% | 35.2% | 35.8% | 36.1% | 39.7% | 48.6% |

Source: own processing according data of National Bank of Slovakia (NBS)

3.2 Guarantees as form of FIs in Slovak agriculture

The guarantee is “A written commitment to assume responsibility for all or part of a third party's debt or obligation or for the successful performance by that third party of its obligations if an event occurs which triggers such guarantee, such as a loan default.” (European Commission, 2014).

Kulawik, Wieliczko & Soliwoda (2018) state some quantitative and qualitative advantages of FIs compared to subsidies. To quantitative advantages belong the multiplier effect (only credit guarantees), the leverage effect and the revolving effect. Qualitative include increasing the potential for some firms with low credit rating.

The leverage effect – “the leverage effect of Union funds shall be equal to the amount of finance to eligible final recipients divided by the amount of the Union contribution” (Commission Delegated Regulation (EU) No 1268/2012). In many publications is multiplier effect used as a synonym to leverage effect. Multiplier effect was formalized by John Maynard Keynes in the 1930s. The concept is now universally accepted among economists and applies to changes in exogenous demand for any industry's output (Rusu & György, 2011).

In case of guarantees it is important how the risk is shared between bank and guarantor. Risk sharing can be at the individual loan level (guarantee rate), or at the level of the portfolio, when losses on individual loans are paid to the bank within a total limit, then we speak about a capped portfolio guarantee instrument (fi-compass, 2019).

Bank’s and guarantor’s shares on default risk size is determined by guaranteed rate, guarantee cap rate and total loans’ amount (Figure 2). The guarantee cap rate is determined in ex ante risk assessment (it is not equal the ex-ante analysis for implementation of FIs in a given country). By the default of loan, the bank asks for payment of the guarantee at the rate agreed, but the bank will recover debts from the debtor. Recovered amounts will be shared between bank and guarantor as per the risk sharing agreements.
The minimum multiplier of guarantees as form of FIs is 5, which we can calculate:

\[
\text{Multiplier} = \frac{1}{\text{guarantee rate}} \times \frac{1}{\text{guarantee cap rate}} = \frac{1}{0.8} \times \frac{1}{0.25} = 5
\]

According to the lending police of Commission Implementing Regulation (CIR) 964/2014 portfolio has include new loans (no refinancing) up to EUR 1.5 mil. EUR with maturity 1 to 10 years.

In the proposed CAP Strategic plan for period 2023-2027 – SLOVAKIA wants to implement FIs for farmers. One of the components will focus on guarantees. The proposal states that investments will be supported also by using of modern FIs. FIs can increase time flexibility, transparency of support and reduce administrative burdens, too. The use of FIs should contribute to the competitiveness growth of Slovak farmers. The investments should be supported by 340 mil. EUR, and of that 278.7 mil. EUR in form of FIs. The following FIs are proposed:

1. FIs in form of the guarantees in volume 150 mil. EUR, which represents 30 mil. EUR per year.
2. FIs in forms investment grants connected with guarantees in volume 128.7 mil. EUR, which means 25.74 mil. EUR per year. In this case, the investment grants are meant in the form of interest subsidies or forgiveness of part of the principal in bank loans.

According to the CAP Strategic plan for period 2023-2027 Slovakia are eligible final recipients:

1. All business entities operating in agriculture (farming agricultural land or keeping live animals or processing their own crop or livestock production), including entities established for cooperation in the field of storage, production of goods, sale of goods.
2. All entities starting a business in agriculture.
3. Producer organizations (recognized according to EU and Slovak legislation).

Common condition for all final recipients: entities keep simple or double entry bookkeeping.
In Slovakia is planned to implement capped portfolio guarantee instrument (with guarantee rate 80% for losses on individual loans), with multiplier 5. With an allocation of 150 mil. EUR in FIs in form guarantees, it will be possible to provide 750 mil. EUR new loans for farms in 5 years. These new loans could cover an estimated financial gap in Slovak agriculture. It is estimated between 140 and 316 mil. EUR annually. Small farms (up to 20 ha) have up to 60% share in the financial gap. The financial gap of young farmers is between 25.3 and 110.4 mil. EUR (fi-compass, 2020). The total support of investment is planned 878.7 mil. EUR (150*5 +128.7 mil. EUR).

A similar FI is also prepared to support agri-food sector in Slovakia. It will be covered from state budget in total amount of 250 mil. EUR (25 mil. EUR annually). Providing of loans will take place over a period of 10 years (2022-2031). The guarantee will cover 20% of the amount of provided loans with 80% guarantee rate for each loan and is expected to also have a multiplier effect 5 and generate new bank loans in volume 1 250 mil. EUR. The loans will be used for the renewal and modernization of food processing. Government aims on increase the competitiveness of the sector and bring more Slovak food on shelves of retailers (Ministry of Agriculture and Rural Development of the Slovak Republic, 2022).

In addition to the leverage effect caused by the multiplier, guarantees also have a revolving effect. To calculate this revolving effect, it is important to estimate first the multiplier and other determinants like level of default loans and recovery rate of these default loans. We will focus on revolving effect in our other research.

4. Conclusion

FIs are modern, transparent and efficient form of support of investment needs of enterprises, which can be used for farms to increase their access to finance and cover investments need. There are several forms of FIs, like grants, equity, debt, guarantees. Guarantees combine the experience of commercial banks with the limited EU funds and can bring many advantages for farmers. The demand for finance is increasing in Slovak agriculture. Volume of loans did double over 7 years and agriculture is an interesting sector for banks. This is confirmed also by the increasing share of bank loans for agriculture in total bank loans. On the other hand, the share of agriculture in total GDP is decreasing. The banks usually have used volume of direct payments as the guarantee.

Guarantees as one form of FIs are intended for farmers, who have no access to bank loans. They are intended for small, young and new farmers. These farmers have the highest financing gap in Slovakia. The using of guarantees is way, how to contribute to sustainability of farms and agri-food industry. Guarantees are agreement between guarantor and banks. Important part of this agreement is their risk sharing. Risk sharing can by at the individual loan level (guarantee rate), or at the level of the portfolio, when losses on individual loans are paid to the bank within a total limit. Such an FI is called a capped portfolio guarantee instrument. In the new CAP programming period Slovakia plans to implement such a FI with total allocation of 150 mil. EUR in form of guarantees EUR. With multiplier 5.00 it is possible to provide 750 mil. EUR in new loans in period 2023-2027. Similarly, Slovak government will support agri-food sector with additional loan volume 1 250 mil. EUR until 2031. These loans could cover a major part of the financing gap in Slovak agri-food sector.
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