

## Financing Gap of Agro-food Firms and the Role of Policies

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### Abstract

The objective of this paper is to evaluate the position and financing needs of agri-food industry in Slovakia. There is a growth of agri-food sector which is reflected in growing demand for finance. Despite current favourable conditions on the financial market in Slovakia, some viable firms still face a credit constraint. Financing gap exists due to relatively high interest rates for some firms and due to their lack of sufficient collateral.

Based on the survey results and focus group meetings we estimate the financing gap. Results show that there is potential for a further expansion of the financing market, with a financing gap estimated at EUR 36.8 mil. Small firms suffer the most from the financing gap and they constitute 77.4% of the gap.

Financing gap and financing needs will be growing in the future. Firms need to increase investment to stay competitive on the market and need to adopt to changes in consumer preferences. This requires further investment into new technology and equipment. Tougher environmental requirements make firms invest into more environmentally friendly production processes. Furthermore, the sector is expected to be growing in the future. Financial instruments in the form of loan guarantees and interest rate subsidies would partly eliminate the existing financing gap. Small firms would benefit from simple and flexible financial instruments serving as guarantees for loans. Large firms would benefit from long-term loans supported by financial instruments. Policy-makers should place special attention on the use of financial instruments in agri-food sub-sectors with potential high value added and high employment.

### Keywords

Agri-food, demand for finance, finance providers, financing gap.

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### Introduction

Many viable firms suffer from lack of investment funds both in developing and developed countries (Ciaian et al., 2012; Lee and Chambers, 1986; Färe et al., 1990; Bhattacharyya and Kumbhakar 1996; Heltberg, 1998; Blancard et al., 2006; Rizov et al., 2013). In the EU context, credit constraint problems tend to be more pronounced in Central and East European Countries where financial markets are less developed and firms operate in less stable economic environment than in the old EU-15 member states (Swinnen – Gow 1999; OECD, 1999, 2001; Fidrmuc et al., 2013; Dries – Swinnen, 2004).

The investment theory derives credit constraints

on investment from information asymmetries on the capital market which drive a wedge between the costs of internal and external funds (Greenwald et al., 1984; Jensen and Meckling, 1976; Myers and Majluf, 1984). It includes rejected applicants as well as discouraged borrowers defined as firms that need external finance but do not apply for a bank loan because they fear their application will be rejected (Jappelli, 1990). Credit constraints result in financing gap defined as the unmet credit demand due to constrained or missing access to financing.

Credit constraint firms invest less and have lower allocative and technical efficiency (Feder, 1985; Feder et al., 1990; and more recently Blancard et al., 2006; Kumbhakar and Bokusheva, 2009;

Huttel et al., 2010). Empirical research agrees that improving access to credit is crucial in helping firms to deal with liquidity constraints and thus improve resource allocation in the economy (Love, 2003; Wurgler, 2000). Access to finance also enables firms to exploit growth and investment opportunities (Beck, Demirguc-Kunt and Maksimovic, 1999).

Literature identifies several impacts of credit constraints. Credit constrained firms have limited access to short-term finance or long-term finance. Short-term loans are not linked to investments and improve the cash-flow of the firm. Firms use long-term credit to purchase fixed assets and equipment and short-term credit to finance working capital. In the absence of long-term finance, a firm tends to favor investment in technologies with immediate payoff rather than adopting more productive technologies with delayed returns, due to fear of liquidation (Léon, 2020). Firms face a risk of a lack of liquidity when they finance long-term investment with short-term debt because creditors may refuse to roll over their credits (Diamond, 1991). Short investment horizon may have negative effect on firm performance, especially for small and young firms, which are credit rationed for long-term debt due to their inability to produce hard information (adequate records and accounts) and their limited relationship with banks (Demirguc-Kunt and Maksimovic, 1999; World Bank, 2016). Constrained firms planned, on average, more severe cuts in technology expenditures, capital expenditures, marketing expenditures and employment than unconstrained firms during the global financial crisis of 2008 (Campello et al., 2010). Study of Fabiani et al. (2015), based on data for 9 European countries in 2007–2009, shows that credit-constrained firms have bigger likelihood of cutting permanent and temporary jobs. In this regard, the financial stability of firms became an essential factor of employer value proposition evaluation in times of crisis (Egerová et al., 2021; Samoliuk et al., 2022), fostering enterprises to seek new responses to growing financial and personnel risks (Cepel et al., 2020). Constrained firms seek for alternative funding and Carbó-Valverde et al. (2016) found an increased share of trade credit for bank-constrained firms in Spain during the 2008 financial crisis.

There are several determinants of credit constraints. Generally, credit constrained firms are small, have poor rating and low collateral (Campello et al., 2010). Based on survey covering 8,387 firms in 20 European countries, credit constrained firms in Eastern Europe have several common determinants with credit constrained firms

in Western Europe. Small and financially opaque firms as well as firms with alternative financing sources are less likely to apply for credit. In Eastern Europe a higher fraction of non-applicants seems to be discouraged by lending conditions, that is, high interest rates and tough collateral requirements, while in Western Europe more firms simply do not need loans (Brown et al., 2011). Based on analysis of loans to agri-food firms in Slovakia, small and medium sized enterprises operating in agri-food industry do not exhibit a higher default rate than other sectors. But highly indebted firms are more likely to default on their loan than other firms (Fidrmuc et al., 2013). Major credit constraints determinants of farmers in developing countries are distance to the formal credit sources, lending procedure, time lag, and interest rate as major constraints whereas land ownership reduces the constraints to access formal credit (Chandio and Jiang, 2018).

To deal with the problem of credit constraint Common Agricultural Policy of the European Union traditionally allows Member States to use investment grants to support specifically small and medium farms and food processing firms. In total 7,041 bil. EUR were spent on investment grants from CAP budget in programming period 2014 – 2020. In Slovakia investment support for food processing amounted to 202 mil. EUR including national co-financing (APA, 2021). The support was equally distributed between farms and agri-food firms.

The literature asserts a positive relationship between investment grants and productivity of credit constraint firms (Ciaian et al., 2012). For these firms, investment grants may provide an additional source of finance either directly by increasing firms' financial resources or indirectly through the improved access to formal credit.

European Commission attempts to deal with credit constraint with the use of Financial Instruments financed by European Agricultural Fund for Rural Development (EAFRD). Financial instruments are European Union measures of financial support provided on a complementary basis from the budget to address specific policy objectives of the Union. Such instruments may take the form of equity or quasi-equity investments, loans or guarantees, or other risk-sharing instruments, and may, where appropriate, be combined with grants. The financial instruments financed by EAFRD were introduced in 2013. In 2014 - 2020 only 7 countries implemented financial instruments in their CAP policies.

It is therefore interesting and useful for policy

makers and analysts to learn the extent of credit constraint in both primary agriculture as well as food processing industry to optimize the budget for investment grants to cope with the problem. The goal of this paper is to evaluate the extent of the credit constraint in the Slovak agri-food sector (food processing industry). In the paper we use data from a representative survey conducted by the EIB in 2019. The paper also provides information for policy makers and analysts on the types of financial instruments to be used to efficiently support agri-food firms. The paper is organized as follows. First section provides a short literature review, which is followed by session on methodology, data description and current state of the Slovak food processing sector, while the last part provides results, summarizes, and concludes.

## Materials and methods

In the paper we estimate the extent of the credit constraint in the Slovak agri-food sector based on a representative EU 24 wide survey conducted by the EIB in 2019. Data to calculate financing gap were obtained by a EIB telephone interviewing survey (EC, 2020). The questionnaire was divided into enterprise information part and financing part. In the enterprise information part respondents were asked for main business activities, location, size of the firm and legal status. In the financing part a maximum of 20 questions was asked depending on respondent's situation and experience with loan applications. Questions in the questionnaire had a form of both closed and open questions. The sample consisted of 50 agri-food firms in Slovakia and was a part of EU-wide survey of 2200 EU agri-food firms. The survey was designed to be statistically representative at national level. To confirm the survey results in 2019 we organized focus-group meetings with relevant food associations and commercial banks: Slovak Milk Union, Slovak Agricultural Chamber, Slovak Agricultural and Food Chamber, Slovak Poultry Union, Tatra Bank, VÚB bank, ČSOB bank

To analyse the financing gap, we first analyse the demand and the supply for finance of the agri-food industry.

Financing gap is the unmet credit demand due to constrained or missing access to financing. This definition includes:

- Rejected credit applications by banks.
- Discouraged credit applications, i.e., credit applications not submitted by the firm due to fear of rejection.

The calculation of financing gap is linked only to viable firms defined as firms with stable or growing turnover or firms not facing cost increase in 2018. The share of viable firms is based on the representative survey results performed in 2019 in Slovakia.

We compute financing gap for four types of loans and three types of firms. We consider following loan types: short-term loans, medium-term loans, long-term loans, and credit lines. Based on Eurostat data we divide firms into small, medium, and large firms.

Calculation of financing gap can be divided into 4 parts:

### 1. Unmet credit demand share

It is a sum of a) the share of viable firms with rejected credit applications and b) the share of viable firms with discouraged credit application in the sample data.

$$\text{Unmet credit demand share} = \text{Rejection share} + \text{Discouraged Share} \quad (1)$$

a) Share of viable firms with rejected credit applications.

$$\text{Rejection share} = \frac{\text{Number of Viable Firm with rejected credit applications}}{\text{Total survey population}} \quad (2)$$

b) Share of viable firms with discouraged credit applications

$$\text{Discouraged share} = \frac{\text{Number of Viable Firm with Discouraged credit applications}}{\text{Total survey population}} \quad (3)$$

### 2. Total number of firms with unmet demand

To calculate the total number of firms with unmet demand we multiply rejection share plus discouraged share with the total number of agri-food firms in Slovakia according to Eurostat in year 2017.

$$\text{Total no. of firms with unmet demand} = (\text{Unmet credit demand share}) \times (\text{Total no. of firms}) \quad (4)$$

### 3. Loan size

An average loan size is estimated from the EU 24 wide survey results. The loan size is calculated separately for small, medium, and large agri-food firms for short-term, medium-term, long-term loans as well as for credit lines. To adjust the average size of loan in the EU to Slovakia, the purchasing power parity index is applied.

#### 4. Financing gap

The financing gap for each type of loan is calculated by multiplying total number of firms with unmet demand by loan size.

$$\text{Financing gap} = (\text{Total no. of firms with unmet demand}) \times (\text{Loan size}) \quad (5)$$

### Results and discussion

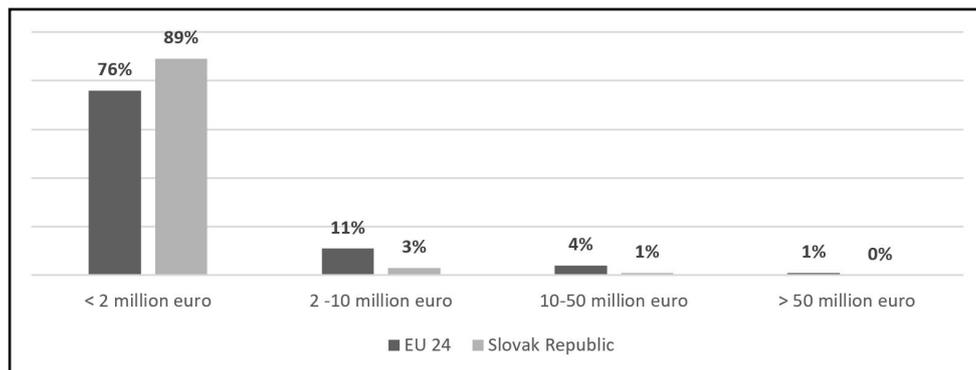
Slovak agri-food companies are smaller than the EU average when measured by sales. 89% of all respondents in the survey had sales below EUR 2 mil. per year and almost none had annual sales above EUR 10 mil. (Figure 1). In the EU 76% of surveyed companies had sales below EUR 2 mil. and 5% of all surveyed companies had higher annual sales than EUR 10 mil.

Average sales of the Slovak agri-food industry

either remained unchanged or increased in 2018 year, which was a better result than in the rest of the EU. Sales in Slovakia increased due to rising prices. Selling prices of agri-food industry increased for higher proportion of Slovak firms than for the EU firms (Figure 2).

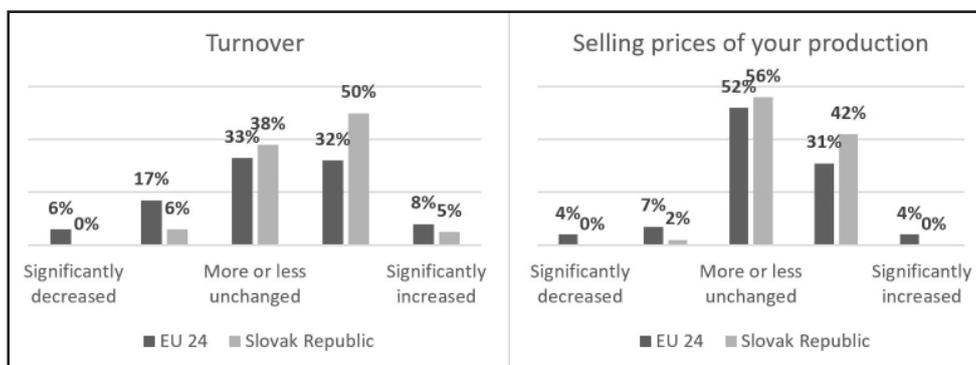
Survey results show that all requests for all types of loans by maturity were either satisfied by the banks or applications are still in the evaluation process. Some loans were declined by the applicants as not necessary (Figure 3). The situation in Slovakia is better than in the EU in this respect.

In Slovakia, 21% of agri-food firms applied for credit which is a smaller share than that in the EU (46%). Significantly smaller share of firms applied for all types of credit in Slovakia than in the EU (Figure 4).



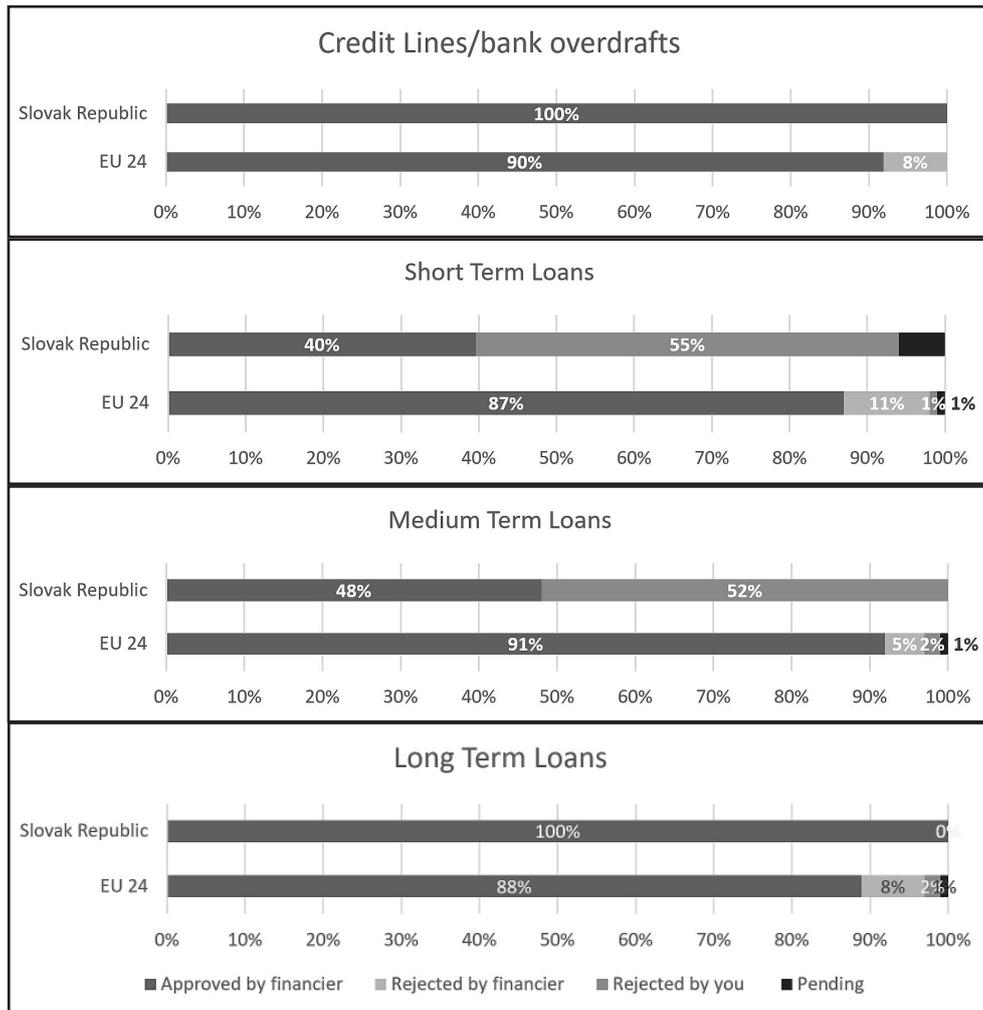
Source: agri-food survey, own calculations

Figure 1: What was the turnover (sales) of the company in 2018? (as % of respondents).



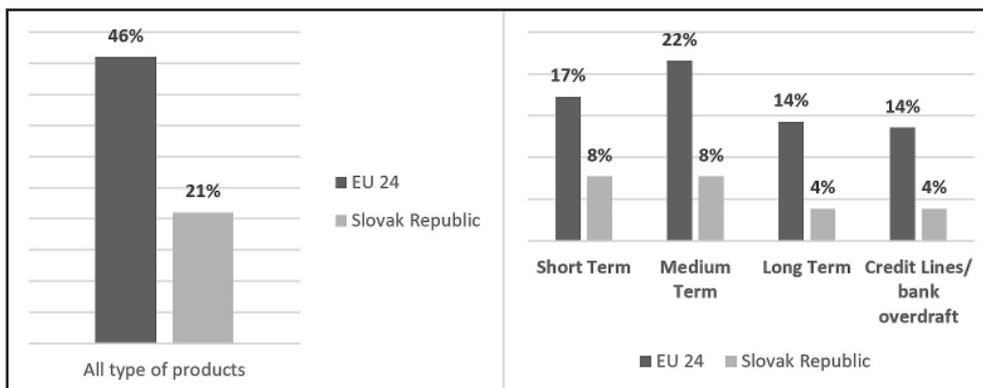
Source: agri-food survey, own calculations

Figure 2: Changes in company's key indicators (as % of respondents).



Source: agri-food survey, own calculations

Figure 3: Results of the application (as % of total applicants).



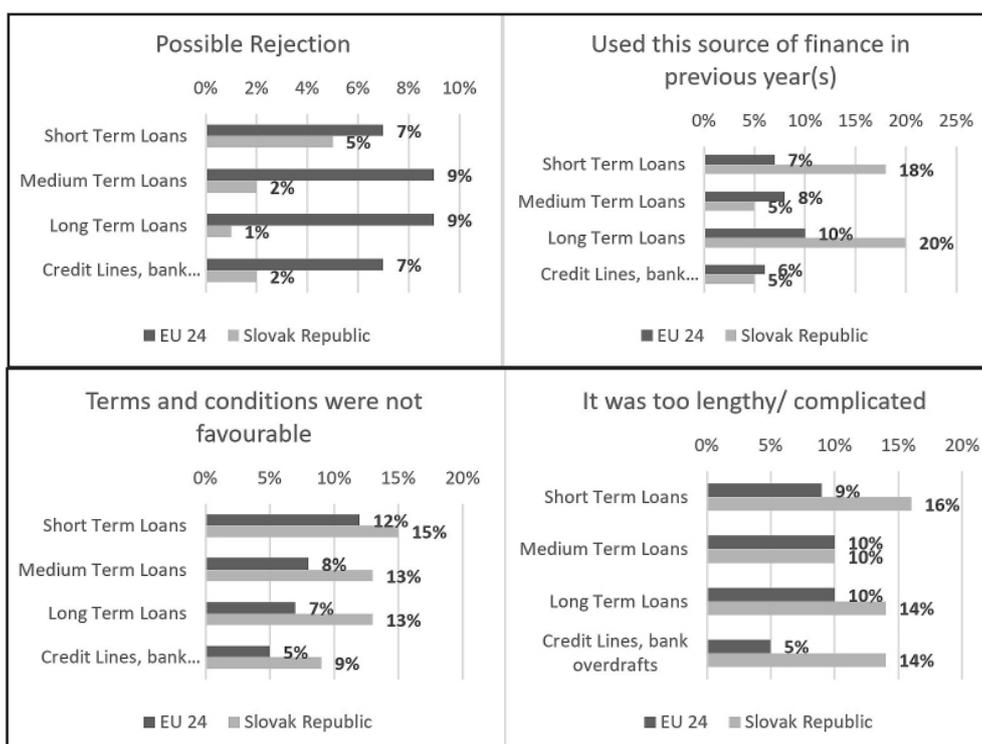
Source: agri-food survey, own calculations

Figure 4: Firms applying for finance in the last year and by maturity (as % of respondents).

Between 1 and 5% of firms (depending on the type of loans) have not applied for a loan because of the fear of rejection. In the EU about 7% of agri-food firms have not applied due to the reason of the fear of rejection, which is significantly higher number

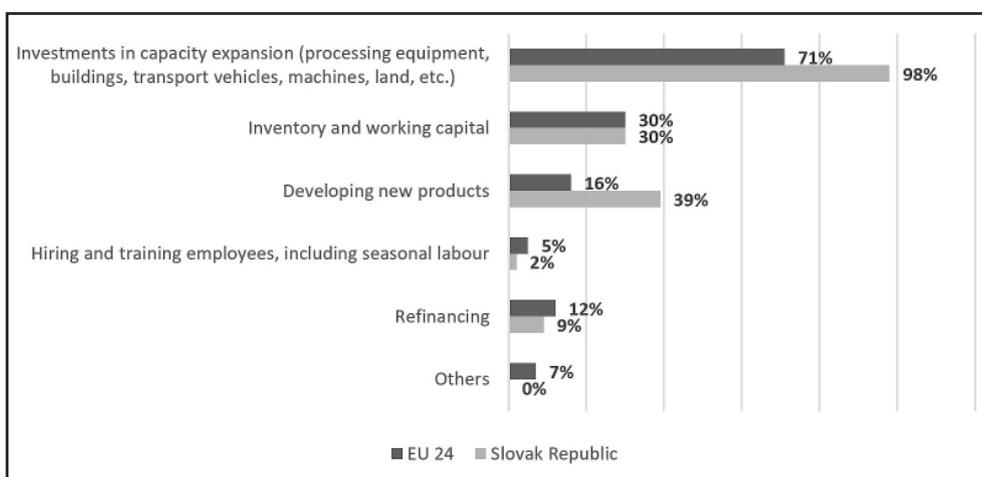
than in Slovakia (Figure 5).

However, in Slovakia higher percentage of firms than in the EU did not apply for loans because they used funds from previous year, due



Source: agri-food survey, own calculations

Figure 5: Reason of no application (as % of non-applicants).



Source: agri-food survey, own calculations

Figure 6: For what purpose(s) did your enterprise need the finance? (as % of total applicants).

to non-favourable conditions or due to lengthy and complicated procedures. Up to 15% of firms did not apply for loans in Slovakia due to non-favourable conditions and up to 16% due to lengthy and complicated procedures.

Up to 98% of all applicants in Slovakia used loans to expand capacity, while 39% of applicants applied for a loan to develop new product and 30% to obtain working capital (Figure 6).

In addition to the problem of access to finance, which was experienced by 9% of Slovak firms in agri-food industry, there were other problems the sector was facing: 29% of firms in Slovakia (28% in the EU) had problems with the access to qualified labour, 24% of firms in Slovakia (20% in the EU) struggled with regulatory and administrative constraints, 18% of firms both in Slovakia and the EU had difficulties to access

the market, and 22% of firms in Slovakia (35% in the EU) had to deal with high production costs (Figure 7).

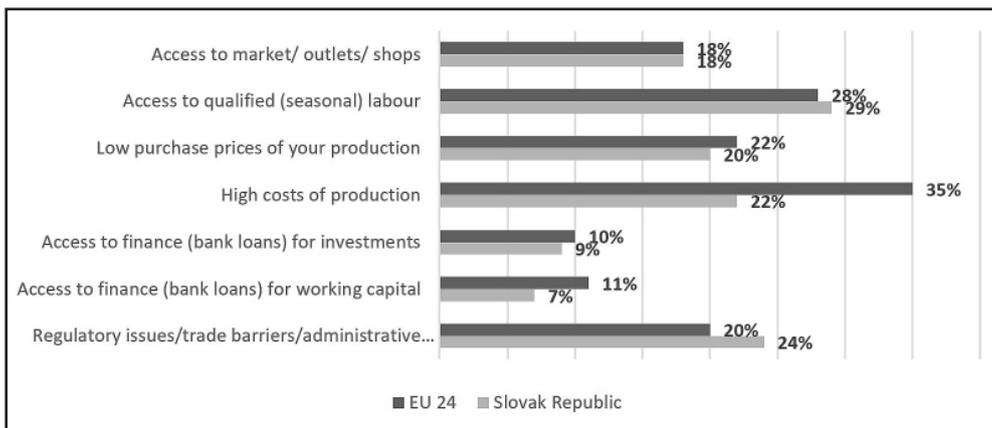
In Slovakia 33% of agri-food firms while 43% of those in the EU would have their financing problems alleviated by lower interest rates, 28% in Slovakia and 32% of firms in the EU stated that financing problems would be reduced by guarantees provided by the government and for 24% of Slovak firms (26% of EU firms) affordable equity funding is important for dealing with financing problems (Figure 8). Respondents also state other reasons that would improve their access to finance: loans with longer maturity, loans with flexible repayments or insurance products.

There are 27 banks in Slovakia and food processing sector is financed by all of them. Currently the banks have a sufficient liquidity. Financing of agri-food is only constrained by credit and risk limits.

Total outstanding bank loans and leasing

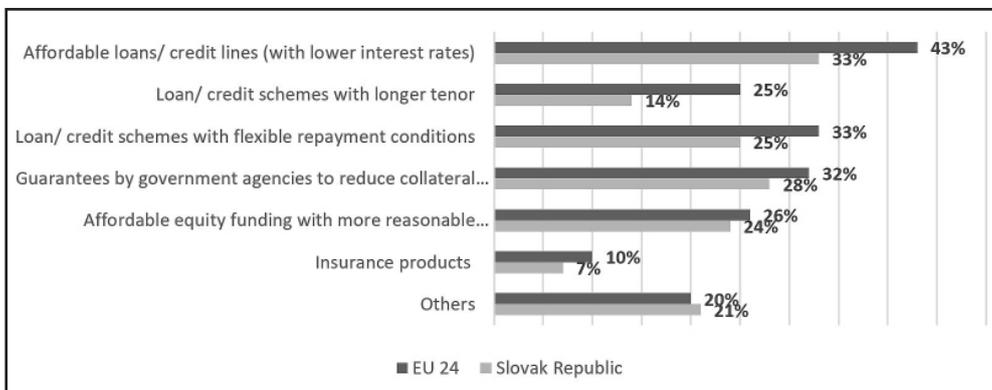
in the agri-food sector amounted to EUR 668 mil. in 2018. The National Bank of Slovakia does not report specifically agri-food and therefore we use a database of the Ministry of Agriculture (POTRAV). In 2018, the volume of loans in the food processing industry reached EUR 649 m, which was 4.8% increase from the previous year. Short term loans amounted to EUR 339 mil. which is 52.2% of total loans. Loans with maturity over 1 year make 47.8% of all loans in food processing industry.

Leasing companies play a minor role when compared to the banks in providing of finance to firms in Slovakia. In 2018, the volume of leasing offered to agri-food for machinery and equipment amounted to EUR 18.7 m, which is about 5% of financing of the agri-food sector. Leasing is used by food processing companies to finance highly specific machinery. Slovak Guarantee and Development Bank offers loans to agri-food sector too in form of subsidized loans for small and medium size enterprises.



Source: agri-food survey, own calculations

Figure 7: Did your company experience any of these difficulties in the last year (2018)? (as % of respondents).



Source: agri-food survey, own calculations

Figure 8: Drivers reducing difficulty for your company to access finance (as % of respondents).

After stagnation of loans in the post crisis period, in 2016 loan volume started to increase in Slovakia. In 2018 loans to industry grew annually by 5%, which is above the median growth rate in the EU. Last years, long-term loans started to decline which was partially compensated by higher growth of short-term loans

In Slovakia, the share of debt is relatively high (53% in 2018). It is significantly higher than the median in the region of Central and East Europe and higher than the median of all EU member states. Debt to equity ratio, however, declined in 2018 as in the other member states. High financial leverage exposes firms to higher risk when economic growth turns negative. However, rising revenues affected positively development of other financial indicators of firms. In Slovakia, the share of failed loans is declining reaching 3,59 % of all loans, which is the lowest level in the post crisis period. This reflects stable macroeconomic environment in Slovakia. Out of EU countries, Slovakia, Czech Republic and Poland reported the highest growth of loans to firms.

Additionally, agri-food sector benefits from Common Agricultural Policy Pillar II. Measure 4.2. The budget for the measure was in the period 2015-2018 EUR 162.5 mil. There has been only one call in this period and in total 387 agri-food firms were supported. Maximum grant volume was EUR 2 mil. per beneficiary and EUR 10 mil. in case of collective projects. However, 109 firms which did fulfil criteria

of the call with total demand EUR 45 mil. were not supported due to limited budget.

### The financing gap and its drivers

Table 1 shows the results of financing gap calculations according to equations 1 – 5 described in Materials and Methods.

The financing gap for the Slovak agri-food sector is estimated at EUR 36.8 mil. (Table 2). On average it is EUR 10,600 per firm. However, unmet financing needs are concentrated in specific segments of the sector. The financing gap mainly concerns small firms. The type of loans for which the gap is the largest are short term and long-term loans. The financing gap as estimated from the survey represents approximately 5.5% of the total outstanding loan volume to the sector.

Financing gap exists for some firms due to relatively high interest rates, while other firms suffer from the lack of sufficient guarantees and of less diverse supply of financing instruments. According to a survey validated by focus group of experts from agri-food and banking sectors, 33% of firms in Slovakia while 43% of those in the EU would have their financing problems alleviated by lower interest rates, 28% in Slovakia and 32% of firms in the EU stated that financing problems would be reduced by guarantees provided by the government and for 24% of Slovak firms (26% of EU firms) affordable equity funding is important for dealing with financing problems. Respondents also state other reasons that would

		Short-term Loans	Medium-term Loans	Long-term Loans	Credit lines/ bank overdraft
1. Unmet credit demand share	Share of rejected credit applications	0.65%	0.65%	0.00%	0.00%
	Share of discouraged credit applications	9.79%	0.65%	18.14%	4.90%
	Sum of shares of rejected and discouraged applications	10.44%	1.30%	18.14%	4.90%
2. Total number of firms with unmet demand	Small firms	161	20	180	76
	Medium firms	13	2	22	6
	Large firms	5	1	8	2
3. Loan size	Small firms	€ 103,469	€ 141,645	€ 401,753	€ 116,828
	Medium firms	€ 822,021	€ 774,055	€ 2,153,277	€ 625,438
	Large firms	€ 810,592	€ 1,355,713	€ 3,805,692	€ 1,272,000

Source: survey results, own calculation

Table 1: Financing gap calculation in the agri-food sector.

Size Category	Loan Maturity	Financing gap
Financial gap for SMALL firms	Short-term	9 452 409
	Medium-term	5 685 752
	Long-term	9 453 583
	Credit Line	3 881 009
TOTAL Small-scale Firms		<b>28 472 754</b>
Financial gap for MEDIUM firms	Short-term	2 762 036
	Medium-term	1 142 805
	Long-term	1 863 594
	Credit Line	764 184
TOTAL Medium-scale Firms		<b>6 532 620</b>
Financial gap for LARGE firms	Short-term	513 472
	Medium-term	377 343
	Long-term	620 945
	Credit Line	293 001
TOTAL Large-scale Firms		1 804 760
TOTAL FINANCING GAP		36 810 134

Source: survey results, own calculation

Table 2: Total financing gap in Slovak agriculture (EUR).

improve their access to finance: loans with longer maturity, loans with flexible repayments or insurance products.

In Slovakia, financing gap is also driven by non-favourable conditions of loans as well as by lengthy and complicated procedures of loan application. Higher percentage of firms than in the EU did not apply for loans because they used funds from previous year, due to non-favourable conditions or due to lengthy and complicated procedures. Up to 15% of firms did not apply for loans in Slovakia due to non-favourable conditions and up to 16% due to lengthy and complicated procedures.

According to focus group, financing needs as well as financing gap will increase in the future due to rising investment demand caused by enhanced environmental concerns that require investments due to changing consumer preferences as well as due to growing international competition.

## Conclusion

Viable firms in agri-food sector in Slovakia experience credit constraint. Out of financing gap of EUR 36.8 mil. long term loans make EUR 11.9 mil., medium-term loans EUR 7.2 mil. and the rest (EUR 17.7 mil.) is linked to short-term loans and credit lines. Small firms with number of employees up to 49 have the highest financing gap (77.4% of the total financing gap).

Financial instruments proposed by the European Commission are intended to cope with the credit constraint of agri-food firms to increase investment and competitiveness of agri-2014 – 2020 financial instruments were not implemented in Slovakia. New Common Agricultural Policy of the European Union for years 2023 – 2027 expects from member states to offer financial instruments for farms.

Small firms will specifically benefit from guarantees while interest rate subsidies might improve access to finance and higher investments for both small as well as medium and large firms.

Financial instruments might provide agri-food firms with greater flexibility and lower administrative cost compared to current investment grant system existing within Rural Development Programme. The current system suffers from low frequency of calls for proposals, high administrative burden. Time-consuming evaluation and monitoring create significant costs that could be partially eliminated by the system of support via financial instruments (Pokrivcak et al., 2020).

There is a growth of agri-food sector which is reflected in growing demand for finance. Despite current favourable conditions on the financial market in Slovakia, some viable firms still face credit constraints. Financing gap exists due to relatively high interest rates for some firms and due to their lack of sufficient guarantees. It is expected that financing gap and financing needs

will be growing. Firms need to increase investment to stay competitive on the market. Changes in consumer preferences require firms to invest into new technology and equipment. Tougher environmental requirements make firms invest into more environmentally friendly production processes. Furthermore, the sector is expected to be growing in the future.

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