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Access to Finance, Firm Growth Performance, and Innovation Activity: Cross-Country Evidence from Enterprise Survey Indicators

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ABSTRACT

Access to Finance, Firm Growth Performance, and Innovation Activity examines how financial access and innovation activity relate to firm growth across countries. This study uses country-level Enterprise Survey indicators covering 146 countries from 2011 to 2020. The main objective is to assess whether access to finance improves firm growth performance and whether innovation activity moderates this relationship. Firm growth performance is measured mainly through real annual sales growth, while employment growth and labor productivity growth are used as supporting measures. Access to finance is represented through bank loan access, finance-related obstacles, loan rejection, and collateral requirements. Innovation activity is measured through product innovation, process innovation, R&D spending, market novelty, and technology adoption. The data were cleaned, reshaped into country-year observations, and analyzed using descriptive statistics, correlation analysis, regression analysis, and moderation analysis. The findings show that access to finance has a weak positive relationship with sales growth and a stronger relationship with productivity growth. Innovation activity shows limited direct influence on sales growth but is positively related to employment growth. The moderation effect is not supported, indicating that innovation activity does not significantly change the finance-growth relationship. The study concludes that finance and innovation are relevant to firm performance, but their effects differ across growth measures.

KEYWORDS: Access to finance, firm growth performance, innovation activity, Enterprise Survey indicators, cross-country analysis

1. Introduction

Finance is one of the most critical determinants of firm growth, particularly in developing countries, where firms might experience challenges in accessing finance, which might result in high collateralization requirements. The lack of sufficient finances might hinder firms' growth efforts by impeding their capability to invest in capital assets, engage in innovations, enter new markets, and increase production levels. Lack of finance might result in the postponement of investments and reliance on internal financing sources. Finance has remained an essential determinant of the growth performance of different firms from different economies. Past research studies reveal that finance has strong links with firm quality and survival (Chowdhury et al., 2022; Elouaourti & Ezzahid, 2023).

The significance of finance becomes more evident for small and medium-sized firms since these firms tend to have lower assets, less collateral value, and low bargaining strength towards banks and other financial institutions. Such businesses rely upon financing from outside sources to help in managing their working capital, adopting new technologies, and expanding their operations. Nevertheless, these firms face higher levels of credit rationing compared to large corporations. This rationing affects their capacity to engage in productive investments. Recently, researchers have pointed out that access to financing cannot be viewed as simply obtaining loans. Instead, it involves factors like institutional backing, government intervention, and advancements in financial technology. Government assistance and finance technology can enhance SMEs' financing opportunities, survival chances, and efficiency through information asymmetry reduction and increased credit rationing (Abu et al., 2025; Mei et al., 2024).

There are several aspects that comprise growth performance in firms. These include growth in sales, growth in employment, growth in productivity, growth in markets, and firm survival. Growth in sales highlights the firm growth in terms of revenue and market demand. Growth in employment highlights growth in the labor force as well as the scale of production. Growth in productivity highlights whether or not firms are growing to become more productive in resource conversion. Given the variability in the firm performance that could be highlighted based on various growth measures, it becomes relevant to study multiple performance indicators while studying growth and finance (Elouaourti & Ezzahid, 2023; Ahinful et al., 2023).

Innovation efforts are an equally important aspect in terms of corporate development. Innovation makes it possible for companies to come up with novel offerings, enhance their operational

efficiency, go digital, and become more competitive. Innovative firms might have easier times coping with market dynamics and growing profits through innovations. In addition, there is a strong connection between innovation and financial access due to the fact that innovations such as digitalization, research and development of products, and ICT adoption usually entail financial expenses. Innovations cannot be achieved without adequate finance. There is empirical evidence linking ICT adoption, digital innovation, and innovations to finance access and performance (Mushtaq et al., 2022; Hanelt et al., 2021; Ullah et al., 2021).

The role of innovation is now more relevant than ever for the growth of firms due to digitalization. Digitalization can help businesses communicate with their customers and suppliers more efficiently, facilitate online transactions, cut down operational costs, and increase market access. Digitalization could have an impact on financing as well, since digitalized companies would be able to generate better documentation, greater transparency, and decreased information asymmetries between the company and its financiers. Nevertheless, digitalization and innovation do not guarantee growth, but their influence depends on how adeptly the firm utilizes technology and the presence of complementary financial institutions. There has been recent research showing that digitalization, financing constraints, and performance are interrelated, particularly when companies encounter financing constraints (Kuang et al., 2023).

The connection between finance, innovation, and growth gained significance in the pre-COVID-19 era and afterward. The pandemic brought about uncertainties in the entrepreneurial finance market and presented survival and innovation-related concerns for the business world. In periods of crisis, the business environment may experience diminished demand, stringent financing, and limited resources for investments. However, innovation and digitization may be crucial to survival and recovery. Past studies examining crisis finance and innovation in the aftermath of a crisis have indicated that the effects of financial disruptions may affect entrepreneurial finance, R&D investment, and innovation processes (Brown et al., 2020; Roper & Turner, 2020).

This research analyzes the relationship between access to financing, growth, and innovation by applying cross-country Enterprise Survey indicators. The research employs country-year aggregates from the period 2011 to 2020. Indicators of access to financing include indicators like access to bank loans, finance-related constraints, rejection of loan applications, and collateralization. Firm growth performance indicators include sales growth, employment growth, and productivity growth. Indicators for innovation activities include product innovation, process

innovation, expenditure on R&D, novelty in the market, and adoption of new technologies. Enterprise data, similar to that provided by the World Bank, is ideal for analyzing cross-country firm growth trends since they offer comparable indicators across different countries and survey periods (Estrada-Lavilla & Ruiz-Navarro, 2024).

2. Objectives of the Study

- 1.To test the association between financial access and the performance growth of firms in different countries.
- 2.To analyze the impact of innovation activities on the performance growth of firms.
- 3.To analyze if innovation activities moderate the association between financial access and performance growth of firms.

3. Methodology

3.1 Research Design

This study will use a quantitative research design based on secondary data (Jeanpierre, 2022). The purpose is to examine how access to finance relates to firm growth performance and whether innovation activity changes this relationship.

3.2 Data Source

Data from the World Bank Enterprise Survey (2011-2020) is employed in the analysis. This data set provides enterprise survey variables at the country level from 2011 to 2020. It includes indicators such as firm finance, innovation, growth, ownership, infrastructure, and constraints of business (Jeanpierre, 2022).

3.3 Unit of Analysis

The unit of analysis will be the country-year observation. Each observation will represent one country in one year.

4. Variables

4.1 Dependent Variable

The dependent variable refers to Firm Growth Performance. Real sales growth will be considered for measuring dependent variables. Alternatively, firm employment growth and labor productivity growth could be employed as measures.

4.2 Independent Variable

Access to finance is the independent variable. Measures for the same include firms having a loan or credit line, using banks for financing investments, access to finance as a significant constraint, the loan rejection ratio, and collateral requirement. The constraint indicator will be reverse-coded. The higher the number, the more access there is to finance.

4.3 Moderator Variable

Innovation is the moderator variable. Measures for the same include product innovation, process innovation, R&D expenditure, introducing new products/services, and adopting foreign technology.

4.4 Data Preparation

Data cleaning will be done before analysis. Missing observations will be considered missing data. Data will be transformed such that each observation consists of one country per year. Finance and innovation measures may be standardized and used to form indices.

5. Model

The study will test whether innovation activity moderates the relationship between access to finance and firm growth performance. The model can be expressed as:

$$\text{Firm Growth} = \text{Access to Finance} + \text{Innovation} + \text{Access to Finance} \times \text{Innovation}$$

The interaction term will show whether innovation activity changes the strength or direction of the relationship between access to finance and firm growth.

6. Data Analysis

Descriptive statistics, correlation analysis, regression analysis, and moderation analysis will be applied to the analysis. The pooled ordinary least squares regression model will be used since the data are country-level and unbalanced.

7. Results

7.1 Overview of the Dataset

The data were prepared for further analysis. Where necessary, missing data points were deleted. Initially, the data were organized in indicator form, but this was reorganized into the country-year form, which meant that each country per year became one data point.

The data include variables on firm growth, access to finance, and innovation activities. The purpose was to analyze the association between access to finance and firm growth, and whether there was any modification by innovation activity. From Table 1, it is evident that the data set provided adequate data for such an analysis.

Table 1: Dataset Summary After Cleaning and Reshaping

Dataset item	Value
Raw observations	16,795
Indicators	115
Countries	146
Years covered	2011–2020
Country-year observations after reshaping	159
Complete observations used in the main regression	154
Countries used in the main regression	111

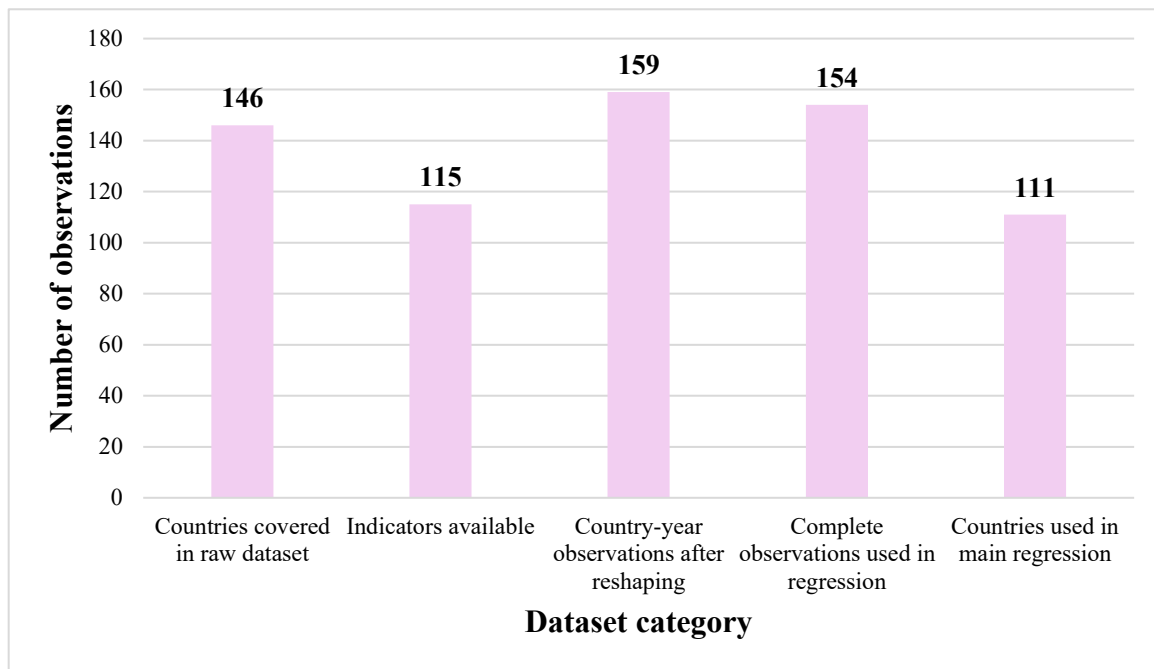


Figure 1: Dataset Coverage Used for Analysis

7.2 Descriptive Results

These descriptive results indicate the trend of the key variables employed in the analysis. The firm's growth performance was assessed based on the sales growth variable. In addition to sales growth, there is employment growth and productivity growth. It seems from Table 2 that employment growth exceeds sales growth.

Table 4.2: Descriptive Statistics of Main Study Variables

Variable	Mean	Minimum	Maximum
Real annual sales growth	0.71	-56.10	27.80
Annual employment growth	4.18	-4.70	19.80
Labor productivity growth	-3.02	-62.10	9.90
Finance index	0.01	-1.64	1.63
Innovation index	-0.02	-1.38	1.82

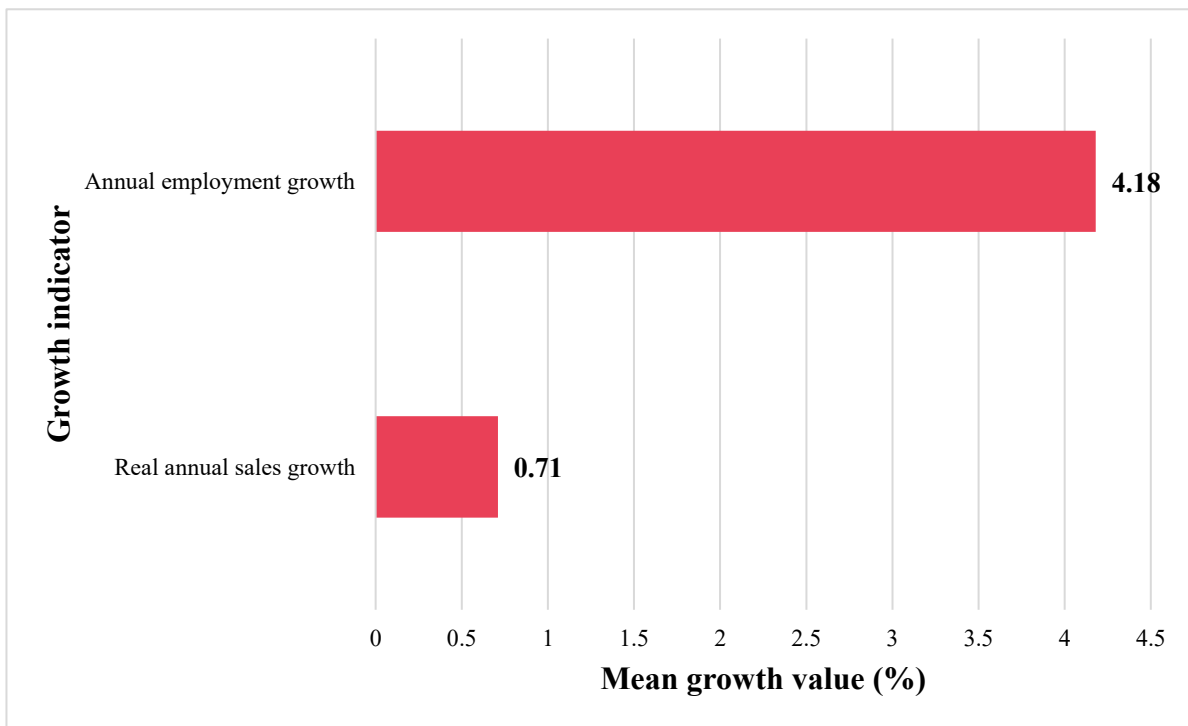


Figure 2: Average Positive Firm Growth Indicators

It can be noted that average growth in sales is positive yet slow. The growth rate in employment is positive on average as well. The average growth rate in productivity is negative; hence, productivity performance lags behind the employment growth rate.

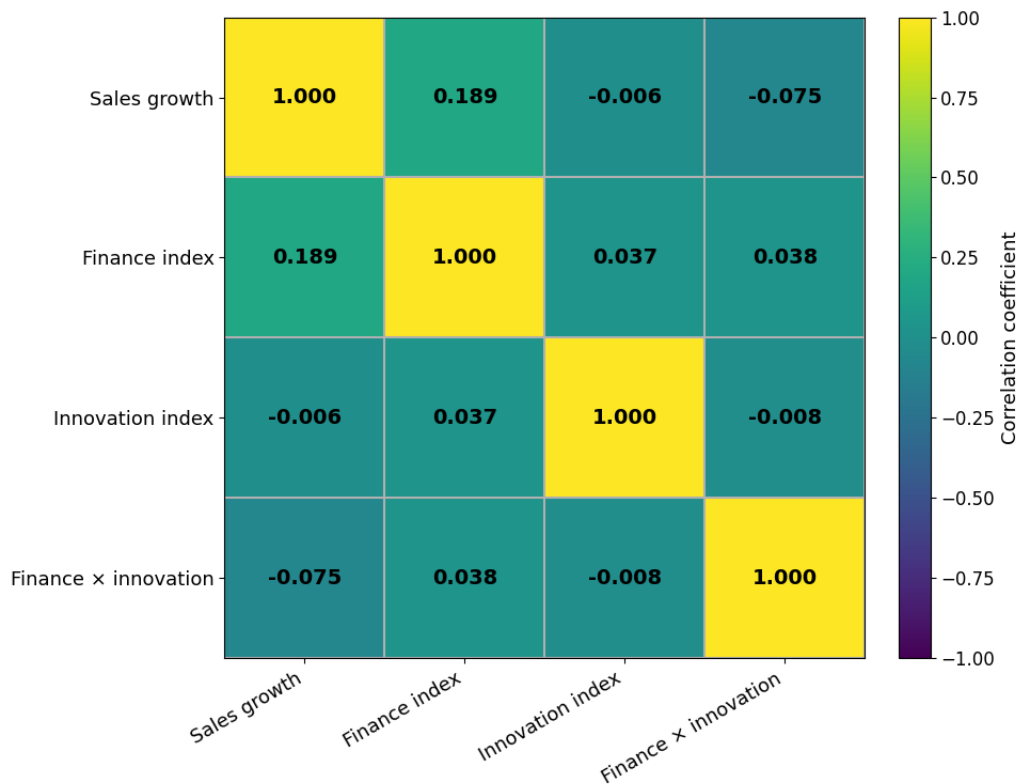
The indices of finance and innovation are close to zero since they are formed out of standardized variables. Higher finance index values represent better financing opportunities. Higher innovation index values represent higher levels of innovation activity.

7.3 Relationship Between the Main Variables

Correlation analysis was done to show the simple association among firm growth, financing, innovations, and the association between financing and innovations. According to Table 3, there is a very weak positive association between financing and sales growth. Figure 3 suggests that access to finance has a weak positive relationship with sales growth, while innovation activity and the finance–innovation interaction show very weak relationships with sales growth.

Table 3: Correlation Between Sales Growth and Main Study Variables

Relationship	Correlation result
Sales growth and finance index	0.173
Sales growth and innovation index	-0.006
Sales growth and finance $\times$ innovation	-0.075

**Figure 3. Correlation Heatmap of Main Study Variables**

It can be seen that there exists a weak positive association between financial access and sales growth. It shows that an increase in the availability of finance will lead to some extent of sales growth.

There is a very weak correlation between innovation activities and sales growth. There is a weak correlation between interaction and sales growth as well. The findings imply that innovation activities do not significantly influence the relationship between financial access and sales growth.

7.4 Regression Results

Regression analysis was employed to evaluate the key hypotheses using a more formal approach. Growth in sales was adopted as the primary dependent variable. Table 4 indicates that finance has limited explanatory power on growth.

Table 4: Summary of Regression Results

Model	Main finding	Coefficient	P-value	Result
Finance-only model	Access to finance has a weak positive relationship with sales growth	2.566	0.062	Marginally significant
Finance and innovation model	Access to finance remains weakly positive after innovation is added	2.589	0.066	Marginally significant
Moderation model	Innovation does not significantly change the finance-growth relationship	-1.696	0.444	Not significant
Year-control model	The moderation result remains unsupported after considering year differences	-3.861	0.172	Not significant

From the above regression findings, it can be said that there is a positive association between access to finance and sales growth in firms; however, the correlation coefficient is relatively low. There is no strong association between innovation and sales growth. It was found that the interaction effect between finance and innovation does not exist.

8. Discussion

It is found that access to finance has a positive impact on the firm's growth performance. It implies that the factor of access to finance still plays a significant role in facilitating firm development. Yet, it does not imply that the presence of the factor alone ensures positive growth results. The reason for this might be that firms might need finance to acquire inputs, develop, innovate, etc. In addition, the impact of finance might be conditioned by the efficiency of resource usage. For this reason, the impact of finance on sales growth is marginally insignificant. Generally speaking, the

finding confirms that financing factors affect firm growth, although the magnitude of this impact might differ among countries and industries (Yao et al., 2022).

It should also be noted that innovation activity does not exhibit a clear association with sales growth within the context of the core regression model. However, this result cannot be construed to indicate that innovation is inconsequential. In this instance, it means that innovation may not necessarily be linked to sales growth at a national level when analyzed using an aggregated dataset. Innovation takes time to bear fruit within the market context. Innovation may take effect by affecting productivity, employment composition, production capabilities, or competitiveness before being reflected in sales growth. Prior research has indicated how innovation may impact organizational performance via multiple pathways (Anwar & Sun, 2024; Reddy et al., 2021).

These robustness tests offer an insightful explanation. The relationship between innovation and employment growth was positive, whereas the relationship between finance and labor productivity growth was more evident. This implies that the impact of finance and innovation could vary across multiple aspects of business development. Innovation could spur businesses to employ more employees, adopt new procedures, or increase their production operations. Financing can assist businesses in achieving high productivity levels by investing in improved machinery, technology, or working capital. Thus, this study confirms the multidimensionality of firm performance, and it should not solely be assessed based on sales growth (Kijkasiwat & Phuensane, 2020).

However, the hypothesis of moderation was not accepted. This is because there was no statistically significant interaction effect of financial access and innovation activities on the model. It means that the data does not reveal whether innovation activities enhance or reduce the connection between financial access and the growth performance of firms. One way that this could be explained is by stating that both financial access and innovation activities might not interact with each other in this set of data. Financial access is used for general corporate purposes and not innovation. In such a situation, finance helps meet operational requirements and not product development or technological upgrades (Santos et al., 2024).

Alternatively, the other reason for this finding might be that the innovation indicator measures adopted in this research are proxy indicators. The innovation indicator measured innovations such as product innovation, process innovation, research and development expenditure, newness in the market, and adoption of foreign technology. While these measurements are able to determine innovation effort, they are unable to determine innovation quality, innovation intensity, innovation

success, and managerial competence. Innovation can contribute to improved performance through efficient internal mechanisms, proper organizational culture, and a good management information system (Le et al., 2020). This may explain why the innovation-growth relationship was limited in the results.

Innovation generally requires financing because research and development projects come with uncertainties and risks. This small effect is therefore possibly associated with financing constraints because under such conditions, businesses tend to opt for alternative ventures rather than investing in innovation projects. The experimental literature on this matter supports the notion that financing constraints can affect innovation and R&D decisions (Czarnitzki & Giebel, 2025). Therefore, access to finance may support innovation-led growth only when the finance is suitable for long-term innovative activity.

Additionally, the results must be considered in light of the type of data used in the study. In this case, the dataset contains country-level aggregations of measures, and not individual firms' behaviors. This means that it may happen that correlations between variables that were significant on the firm level are weaker when using a country-level dataset. Moreover, the data set does not allow for the separation of SMES and all other companies; hence, there are no results regarding SMEs directly. Because the size of the firm affects its financing and innovations (Kijkasiwat & Phuensane, 2020; Yao et al., 2022).

In general, the findings imply that financing is somewhat positively associated with growth, whereas innovation contributes less to growth. The unconfirmed moderating role implies that innovation cannot enhance the positive relationship between financing and growth automatically. In order to achieve better outcomes from financing, businesses require proper innovation skills, efficient utilization of finances, institutional support, and commercialization capabilities. Further research should consider using firm-level data, a sample of SMEs, and an innovative performance indicator, like innovation intensity, patent filing, technology spending, or successful commercialization (Ponta et al., 2021). The discussion references are drawn from the uploaded reference list.

9. Conclusion

This paper sought to investigate the impact of finance access, firm performance, and innovation activities on each other at the country-level through the Enterprise Survey data between 2011 and

2020. The results indicate that there is a positive but weak association between financial access and firm performance, particularly regarding the sales growth rate and the labor productivity growth rate. It seems that innovation activities had little direct effect on the sales growth rate; however, it was relatively effective in terms of employment growth rates. It was found that the moderation hypothesis was rejected, indicating that innovation activities did not have a moderating role in the finance-firm performance relationship. The findings imply that access to finance alone might not be sufficient to achieve strong firm performance without utilizing such finance properly. Likewise, innovations might not necessarily enhance the sales performance of a firm if its commercialization skills, managerial competencies, and market situations are not appropriate for that purpose. The study suffers from some limitations due to its reliance on country-level aggregated data without focusing on SMEs only.

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