

# Effects of Monetary Policy on Business Startups and Trade Activities: Global Empirical Evidences

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## Abstract

The objective of this study is to examine the role of monetary policy in creation of new business entities and enhancement of external trade. The effectiveness of interest rate, banks' credit to private sector and other explanatory variables have been tested through a statistical model based on two simultaneous equations estimated by 20 years' data of 105 countries. This study provides a guideline for the policy makers to assess the strength of credit to private sector. It explores some important and interesting relations among the creation of new business entities, volume of external trade, lending interest rate and credit to private sector. It was further revealed that foreign direct investment complements the external trade. The quantification of the impacts of different modes of investment financing on business activities adds some new dimensions to economic literature. For policy makers, it identifies the transformation mechanism of monetary policy for enhancement in the business activities.

## Keywords

Credit to Private Sector, External Trade, Fixed Effect Model, Initial Public Offering, Monetary Policy, New Business Density, Panel Least Square, Quantitative Easing

## 1. Introduction

The COVID-19 crisis and revolutionary growth in information and communication technology (ICT) have initiated the necessity of several types of new busi-

nesses. The innovative process and expansions are required in health services, information technology, communication services, educational facilities, supply chain management and other such services where minimization of human interaction is required and possible. The growing use of e-money, crypto currencies and digital modes of payments may require new businesses in financial services industry. Similarly, the businesses related to supply chain industry, entertainment, tourism and travelling, environment, education and health related services may require creation of new business entities or subsidiaries of the existing entities. The crisis has initiated some new dimensions in investment financing for creation of new business entities and the subsidiaries of existing businesses. For instance:

1) The revolutionary growth in the information and communication technology (ICT) and growing use of e-money, crypto currencies and digital modes of payments require expansion and creation of businesses in fintech (financial technology) industry.

2) Similarly, the crisis has initiated the need of several new types of business processes in supply chain industry, pharmaceutical sector, entertainment, tourism and travelling, environment, education and health related services.

3) Many countries have used monetary expansion to protect the continuity of business activities in private sector. Several monetary incentives including soft loans and lowering interest rate policies have been introduced in various industrialized and developing countries. For instance, the central banks in the Eurozone, Japan, and the United States (USA) had stimulated the quantitative easing through large-scale purchases of treasury securities. The Bank of England has resumed quantitative easing by dropping its policy rate nearly to 0%. The bank advised the commercial banks to provide lending even at the zero percent interest rate, because reduction in lending can lead to the bankruptcies of business entities which will ultimately affect the banks. The central banks in Australia, Canada, and New Zealand have initiated quantitative easing in 2020. The quantitative easing policies have also been adopted by the central banks in Brazil, Chile, Columbia, Hungary, Indonesia, the Philippines, Poland, the Republic of Korea, Romania, South Africa, and Turkey (Shirai, 2020). The central banks of Pakistan, Bangladesh and India have reduced the prime rate of interests and provided several monetary incentives to their business enterprises. The reduction in cash reserve requirement (CRR), delayed repayment options and soft lending for payment of employees' remunerations are included in these policy measures. One of the common objectives of such policies was to avoid from massive unemployment.

These dimensions lead the rapid and enhanced promotion of startup companies. Though, high rate of failure of startup companies indicates attachment of high risk with financing for startup companies; their role in future cannot be ignored. Griffith (2014) has estimated that 90 percent of startups ultimately fail. According to Griffith (2014), the top five factors in failure are lack of consumer

interest in the product or service (42 percent), funding or cash problems (29 percent), personnel or staffing problems (23 percent), competition from rival companies (19 percent) and problems with pricing of the product or service (18 percent). They leave their employees with very little recourse to recoup lost income for worked time (Griffith, 2014).

The lack of resources, a little or no operating history, individuals with little practical experience are the common problematic areas associated with startups, but the successful companies may become large and influential entities in the industry. Successful startups have more chances to grow rapidly with limited resources. The “Right Timing” is considered the most important factor for the success of startups. Now, after the pandemic crisis, unhistorical big opportunities have been created for startups in the above-mentioned industries. Because of the lacking of operating history, absence of assets for pledge and unavailability of collateral guarantees, startups are funded by founders’ equity. Usually, they are unable to raise capital through general public unless they obtain approval from the regulators for an initial public offering (IPO). The revenue-based participation, funding from venture capital firms, angel investors and crowd funding may be substitute of initial public offering (IPO) for startup companies. But these options cannot fulfill the huge funding requirements for very large number of startups in the post pandemic world.

It is notable that changes in economic dynamics and social environment invite the creation of new business entities to cater the need of newly required products and services. This is a common phenomenon even before the pandemic crisis, but the COVID-19 pandemic has accelerated the need of startups and new business entities. The new products, services and business process may require startups or new business entities. Though the existing business entities may change their style of business and introduce new products and services, but the important thing is the provision of investable funds either for change in the existing businesses or creation of new businesses. The provision of new products and services plays an important role in the economic growth and determine the development ranking of the countries. The economies with surplus capital may invest in new businesses or enhancement in the existing businesses. The countries which do not have investable funds will have to face the decline in their domestic economic activities and GDP growth. This situation may lead to increase in unemployment and poverty. External borrowing, foreign direct investment and inducting money by public sector organizations may be possible options to boost domestic economic activities.

The required changing in business processes and dire need of innovations and inventions may lead to prioritization in the utilization of investable funds. The bridge financing, seed money and working capital may be used as employed capital in startups or new businesses or expansion and modification in the existing businesses. Moreover, the venture capital, bank loans, fund raising through bonds and equity markets and sponsors equities are the traditional approaches

to finance the new businesses, however such approaches may not be sufficient to support the newly business requirements in the contemporary environment. The enhanced credit to private sector may support the creation of new business entities. So, the use of domestic credit to private sector can be considered an important option. The effective role of monetary policy becomes more important in this scenario. This study is limited to examine the role of monetary policy in determination of the new business entities and trade activities, while influence of monetary policy was measured through lending rate of interest and the magnitude of credit to private sector. It describes that how monetary policy can play an effective role in creation of new business entities and promotion of international trade. We have examined the role of monetary policy in pre COVID-19 world to measure its net effectiveness without discretionary measures adopted by the governments during COVID-19 crisis. The study is based on empirical evidences.

The next section of this study describes the scope and findings of previous studies in recent past and discusses the role of monetary policy in creation of new business entities and promoting the trade activities. Section: 3 explains the data and methodology for empirical analysis. The empirical evidences and findings based on parameters estimated through statistical models have been explained in section: 4, while conclusions and some policy implications have been described in section: 5.

## 2. Literature Review and Hypothesis Development

The roles of credit financing, interest rates, ease of doing business and corporate governance in post pandemic scenario have been widely discussed in economic literature. The stability of banking sector in relation to the sustainability of current accounts and performance of manufacturing firms during the pandemic crisis has been examined by [Narayan & Juhro \(2022\)](#). They have identified the implications and direction of research for sustainable economic growth. The role of banks credit to private sector is one of the areas they identified for future research. In the present study we have focussed on this direction. In investigating the impacts of COVID-19, [Darjana, Wiryo, & Koesrindartoto \(2022\)](#) have identified that the COVID-19 outbreak has affected the banking sector through declining credit facility for working capital and investment in the real sectors, but not affected to consumers' credit or financing to SMEs.

There are multiple factors in creation of new business entities in a country. These factors may vary from time to time. Ease of doing business index can represent some important factors of the creation of new business entities. The governing laws, taxation, governance and regulatory environments are the ingredients of ease of doing business. By applying Heckman two-stage model on Chinese publicly listed firms, [Wang, Chang, & Wang \(2022\)](#) have covered the different aspects of corporate governance on business performance and enhancement of business activities. Despite the widely accepted role of credit fi-

nancing in enhancement of business activities, [Nguyen \(2022\)](#) have shown that leverage negatively affects non-performing loans. Their study emphasizes the significant role of the leverage ratio in dealing with non-performing loans at commercial banks in Vietnam during the COVID-19 pandemic.

[Mansour et al. \(2022\)](#) using a fixed effect regression model on Jordanian firms, have inferred that compliance with corporate governance guidelines is also an important determinant of business performance. While, [Konno \(2022\)](#) has recognized the role of company size and profitability in determination of business performance. On the other hand, [Duong et al. \(2022\)](#) employed Two-Stage Least Squares (2SLS) regressions and noted that increasing investor fear sentiment reduces stock returns during the pandemic. Their findings are consistent with the trade-off theory, the efficient market theory, the attention-driven theory, and prior literature.

[Tarawalie & Kpana \(2022\)](#) have recommended the growth in money supply and maintaining exchange rate stability for sustainability of domestic demand for non-tradeable goods and services. The role of central banks and monetary policy for sustainable growth in business activities have also been recognized by [Durrani, Rosmin, & Volz \(2020\)](#), [Skidelsky \(2020\)](#) and [Mehar \(2021b\)](#). An interesting conclusion regarding the interest rate determination was derived by [Wang & Hausken \(2022\)](#). According to their findings, the central banks choose negative interest rates when they realize that households are willing to pay the central banks for holding Central Bank Digital Currencies (CBDCs).

[Al-Mawsheki \(2022\)](#) has inferred that the current asset to total asset ratio negatively affected the firms' financial performance. His finding implies that manufacturing firms can increase their operating income by adopting an aggressive working capital investment policy. In the context of sub-Saharan African countries, [Ayenew \(2022\)](#) has inferred that only foreign direct investment has a significant and positive contribution to economic growth, while official development assistance and external debt affect economic growth negatively.

Though, previous studies have explained the relation between interest rate and investment, these relationships have been further described in the context of COVID-19. Based on these studies, the policy makers have been suggested to reduce the lending interest rates. The underlying assumption in these recommendations was to enhance investment activities to secure the employment and economic growth. The impact of interest rate policies on external trade was also an important consideration to secure the employment. However, in this study, we want to test the impact of interest rate on new business entities which has not been previously tested in post COVID-19 global scenario. Moreover, the relation between new business entities and external trade has also been tested in this study.

It is notable that in considering the importance of monetary policy it is a usual way to test the impacts of interest rates on GDP growth, investment and inflation. The traditional LM curve approach is adopted to study the implications of

monetary policy, while international financial institutions and monetary authorities in various countries recommend monetary expansion (or contraction) as part of their demand management policies. However, the objective of this study is to examine the role of monetary policy in creation of new business entities and trade activities. In this way this study fills the gap in existing literature.

### **Role of Monetary Policy in Creation of New Business Entities and Startups**

Some new dimensions of monetary policy have been observed during COVID-19 crisis; one of those is the expansion in soft credit policies by banking sector in different countries. One of the common measures which has been adopted almost every country during the pandemic crisis is the use of depositors' money to support the business activities through softness in lending to private sector. No doubt, the objective of such soft lending was to provide bridge financing and working capital to business entities to ensure continuity of their activities (Mehar, 2021a). The softness in lending policies was promoted by government intervention in monetary policies. It was observed that during the crisis, the governments all over the world have intervened in private business activities through tax exemptions, subsidies, quantitative easing in monetary policies, lowering interest rates, decline in cash reserve ratios (CRR) and enhancing credit to private sector.

The COVID-19 crisis has stimulated central banks to implement substantial monetary easing (Shirai, 2020). The central banks in the Eurozone, Australia, Canada, New Zealand, Japan, the United States (USA) and the Bank of England have initiated quantitative easing (QE). Central banks in Brazil, Chile, Columbia, Hungary, Indonesia, the Philippines, Poland, the Republic of Korea, Romania, South Africa, India, Pakistan and Bangladesh have also adopted quantitative easing (QE), despite some still maintaining relatively large positive interest rates (Shirai, 2020). In this discussion it is important that the state's involvement in private businesses was always an important debate in political economy. This debate become more important since financial crisis 2008, while fiscal and monetary interventions by several governments in developed and developing countries after COVID-19 have introduced some new dimensions in this debate. Many countries have initiated several monetary incentives including soft loans, lowering interest rates, lowering cash reserve ratio (CRR) and waiving transaction fees on internet banking etc. The objective of these policies was to avoid from closure of businesses and massive unemployment.

However, some analysts think that involvement of state to support some businesses and bail out packages to some industries facilitates the transfer of wealth to some businesses (Gunderson, 2020). In this way, the involvement of government is nothing more than the creating a way for utilization of money of some peoples for the benefits or protection of other peoples. Though, utilization of this money for the protection of other peoples may be more beneficial ulti-

mately for the depositors. The legitimacy of government's action to influence the use of depositors' money for protection and promotion of other businesses is one of the basic concerns of this research. What should be the criterion to determine the role of government in using the public money in commercial banks for protection and promotion of other businesses? This study addresses this question and tests the effectiveness of lending rate of interest and credit to private sector. The intervention by monetary policy will be justified if lowering interest rates and increasing credit to private sector promote the creation of new business entities and trade activities.

In establishing the relation between lowering interest rates and enhancement of business activities, the underlying assumption is that the lowering interest rates enhance the credit to private sector which improves the market liquidity. While market liquidity plays an important role in determination of investment. Some studies have defined the market liquidity as a residual of the change in money supply after deduction of public borrowing and time deposits (Mehar, 2001). This liquidity is generated through individual savings, corporate retained earnings, investable funds in financial institutions, and inflow of foreign investment. The fiscal support by the government to private sector can generate fiscal deficit. While, fiscal deficit is the basic reason for growing public debt. To finance their fiscal deficits, the governments offer gilt-edged securities, which divert funds from private equities to government bonds. An attractive offer in gilt-edged securities always creates a selling pressure in the equity market which leads to decline in the value of common stocks. It implies that fiscal support in crisis period will be ineffective because of crowding out effect. Another important aspect of the excessive use of public financing is the borrowing from commercial banks to finance fiscal deficit. Though, it provides an easy option to banks to lend public money to the government, which is the safest option from their point of view. It provides handsome risk-free rate of return to the banks. However, it can reduce the "Credit to Private Sector". In relation to the assets' valuation, Mehar (2001) has concluded that effect of credit to private sector on stock prices is stronger than fiscal support to private businesses.

Fairly a large number of studies have analysed the impacts of monetary policies adopted by several countries to protect their economies during the COVID-19 crisis. In views of some analysts, such policies may create severe problems in domestic and international markets. Krugman (2020), Rogoff (2020), Case & Deaton (2020), Nemoto & Morgan (2020), and Mehar (2021a) have identified the limitations of credit financing during the pandemic crisis, while *The Economist* (2020a) has advised that governments should find the right path between stimulus and restraint. How monetary policy provides an effective mechanism for economic growth it depends on the role of interest rates and domestic credit to private sector in enhancement of business activities. However, there are several mechanisms that make monetary policy a regressive option to manage the economies. The most important is the interest rate spread. A higher rate of in-

terest may lead the cost push inflation in those economies where producers are used to obtain financing facilities for their production process and inventory holding through working capital loans from the banking sector (Mehar, 2018a). The industries—such as sugar, textile, tobacco, and food, where availability of raw material depends on crop seasons, and the sales activities are spread over the year are likely to adopt working capital financing from banking sector; this situation will lead to higher inflation if interest rate increases. Naturally, the lower income groups will be the net loser, if such products are commonly used. For desirable outcomes of monetary expansion, the real rate of GDP growth (difference between nominal growth in GDP and rate of inflation) should not be less than the required rate of growth. This target can be achieved if monetary expansion leads the enhancement in business activities. The volume of external trade and creation of new business entities are the indicators of enhancement in business activities. If the effect of monetary easing on inflation is greater than its effect on growth, it will lead to a higher level of poverty in the economy, while a higher effect on growth can lead to alleviation of poverty. We used the following hypotheses to test:

**H1:** *Does the expansion of credit to the private sector play an important role in the creation of new businesses.*

**H2:** *Dose monetary policy can play an effective role in the crisis period.*

**H3:** *Dose the role of lending rates of interest and credit to the private sector in promoting international trade and the creation of new business entities.*

A regional comparison of domestic credit to the private sector and business start-up costs (Table 1) shows a large variation between high and low-income countries. It indicates that economic growth and development are associated with the provision of credit to the private sector and the initial costs of starting new businesses.

### 3. Data and Research Methodology

The major concern of this study is to determine the factors which contribute in the promotion of trade in goods and services, and the formation of new business entities. The monetary and credit factors are more important to determine these dimensions. We have determined the factors of the trade in goods and services as percentage of GDP through the following model, which is based on 2 equations. The factors of trade in goods and services as percentage of GDP (TRDG) can be written in the following linear form:

$$\text{TRDG}_{it} = \beta \text{DCPS}_{it} + \gamma \text{DBUS}_{it} + \delta X_{it} + \mu_i + \tau_t + \varepsilon_{it}$$

where “TRDG<sub>it</sub>” is trade in goods and services as percentage of GDP for country “i” in year “t”; and “DCPS<sub>it</sub>” is vector of the variable related to “Domestic Credit to Private Sector” from banks, non-banking financial institutions and other sources including public sector enterprises; “X<sub>it</sub>” is a vector of exogenous control variables; “μ<sub>i</sub>” denotes unobserved time-invariant heterogeneity at the country level; “τ<sub>t</sub>” is a time-fixed effect; and “ε<sub>it</sub>” is an independent disturbance term.



**Table 1.** Domestic credit and cost of business.

Region/ Group	Domestic Credit to Private Sector (% of GDP)		Cost of Business Start-up Procedures (% of GNI per Capita)	Startup Procedures to Register a Business (Number)
	2001	2020	2020	2020
Low income	7.6	13.1	47.6	7.1
Middle income	51.1	120.3	19.6	7.2
High income	138.0	164.0	4.2	5.2
Euro area	88.2	94.2	3.2	5.1
North America	167.7	216.6	0.7	4.0
World	124.0	147.4	19.8	6.6

Source: World Bank (2022).

The theoretical framework to describe the relations between the trade in goods and services as percentage of GDP (TRDG) and the domestic credit to private sector through different channels can be described as follows:

$$\text{TRDG}_{it} = f(\text{DBUS}_{it}, \text{FDI}_{it}, \text{LNDRAT}_{it}, \text{EASE}_{it}, \text{DCPS}_{it})$$

Where “DBUS” is the new businesses registered per 1000 people ages 15 - 64 during the year, “FDI” is the foreign direct investment, “LNDRAT” is lending rate of interest, “EASE” is the ease of doing business score ranging from 0 (lowest performance) to 100 (best performance), and “DCPS” is domestic credit to private sector. Relating the trade in goods and services as percentage of GDP (TRDG) to the aforementioned factor, the estimated both direct and indirect effects can be expressed as follows:

$$\begin{aligned} \frac{d\text{TRDG}}{d\text{DBUS}} &= \frac{\partial \text{TRDG}}{\partial \text{DBUS}} + \frac{\partial \text{GTRDG}}{\partial \text{DBUS}} \cdot \frac{\partial \text{DBUS}}{\partial \text{DCPS}} + \frac{\partial \text{GTRDG}}{\partial \text{DBUS}} \cdot \frac{\partial \text{DBUS}}{\partial \text{FDI}} \\ &+ \frac{\partial \text{GTRDG}}{\partial \text{DBUS}} \cdot \frac{\partial \text{DBUS}}{\partial \text{EASE}} + \frac{\partial \text{TRDG}}{\partial \text{LNDRAT}} + \frac{\partial \text{TRDG}}{\partial \text{FDI}} + \frac{\partial \text{TRDG}}{\partial \text{EASE}} \end{aligned}$$

To estimate the impacts of explanatory factors on the trade in goods and services and the number of new business entities registered in year “ $t$ ”, the following model has been established:

$$\text{TRDG}_{it} = \alpha_i + \beta_1 \text{DBUS}_{i(t-2)} + \beta_2 \text{LNDRAT}_{it} + \beta_3 \text{FDIG}_{it} + \beta_4 \text{EASE}_{it} + \beta_5 \text{DCPS}_{it} + \varepsilon_i \quad (1)$$

$$\text{DBUS}_{it} = \alpha_i + \beta_1 \text{DCPS}_{it} + \beta_2 \text{EASE}_{it} + \beta_3 \text{FDIG}_{it} + \beta_4 \text{LNDRAT}_{it} + \beta_5 \text{STRTCST}_{it} + \varepsilon_i \quad (2)$$

While, “TRDG<sub>it</sub>” is trade in goods and services of country “ $i$ ” in year “ $t$ ”, “DBUS<sub>i(t-2)</sub>” is two years lag of new businesses registered per 1000 people ages 15 - 64 in country “ $i$ ” in year “ $t$ ”, “DCPS<sub>it</sub>” is domestic credit to private sector as percentage of GDP in country “ $i$ ” in year “ $t$ ”, “LNDRAT<sub>it</sub>” is weighted average rate of interest for lending from banking sector in country “ $i$ ” for year “ $t$ ”, “FDIG<sub>it</sub>” is foreign direct investment in country “ $i$ ” in year “ $t$ ”, “EASE<sub>it</sub>” is the

ease of doing business score ranging from 0 (lowest performance) to 100 (best performance) for country “ $i$ ” in year “ $t$ ” and “STRTCST <sub>$it$</sub> ” is start-up cost for new business entities in country “ $i$ ” in year “ $t$ ”. **Table 2** describes the short names of the variables which have been used in this study, while interactions among the variables have been simplified in **Figure 1**.

In this study, we supposed that new businesses and entrepreneurship is a critical part of enhancement in trade activities. The formation of new business entities promotes the trade (imports and exports) activities in subsequent years. The determinants of the trade in goods and services (TRDG) and formation of new business density (in terms of new registrations per 1000 people ages 15 - 64) have been analysed through macroeconomic data ([World Bank, 2022](#)). We have hypothesized that new business density (DBUS) in past years, lending rate of interest (LNDRAT), domestic credit to private sector as percentage of GDP (DCPS), ease of doing business score (EASE) and foreign direct investment as percentage of GDP (FDIG) are the determinants of the trade in goods and services (TRDG). While, new business density (DBUS) is determined by the domestic credit to private sector (DCPS), ease of doing business score (EASE), foreign direct investment (FDIG), lending rate of interest (LNDRAT) and startup cost (STRTCST). The data for these variables have been extracted from the World Development Indicators ([World Bank, 2022](#)).

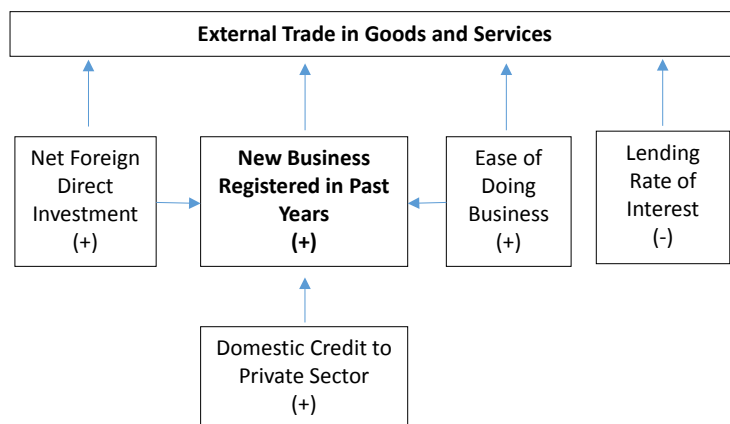
According to the definition, the new businesses density (DBUS) is the number of new limited liability corporations registered in the calendar year. To measure this activity, annual data is collected directly from the company registrars on the number of newly registered firms over the past years. In calculating the average startup cost of new business entities (STRTCST), the fundamental premise is that the economic activity requires good rules and regulations that are efficient, accessible and simple to implement. Thus, sometimes there is more emphasis on more regulations, such as stricter disclosure requirements in related-party transactions. When the regulations are tedious, levels of informality are higher, which comes at a cost. This indicator can help policymakers to understand the business environment in a country. Data on startup costs are collected by the World Bank with a standardized survey that uses a simple business case to ensure comparability across the economies. The data from surveys are subjected to numerous tests for robustness, which lead to revision or expansion of the information collected. Cost to register a business is normalized by presenting it as a percentage of gross national income (GNI) per capita ([World Bank, 2019](#)).

Domestic credit to private sector (DCPS) refers to financial resources provided to the private sector by all sources including banks, non-bank finance companies, public sector lending institutions, investment companies, leasing companies, money lenders, insurance corporations, pension funds, and foreign exchange companies. The data on domestic credit provided to the private sector are taken from the financial corporation’ survey of the International Monetary Fund’s ([International Monetary Fund, 2020a](#)).

**Table 2.** List of variables.

Short Name	Description
DBUS	New business density (new registrations per 1000 people ages 15 - 64; It is a proxy of the numbers of startups)
DCPS	Domestic credit to private sector (% of GDP)
DCPSB	Domestic credit to private sector by banks (% of GDP)
DCPSF	Domestic credit provided by financial sector (% of GDP)
EASE	Ease of doing business score (0 = lowest performance to 100 = best performance)
FDIG	Net inflows of foreign direct investment (% of GDP)
GROW	GDP Growth Rate (%)
LNDRAT	Lending interest rate (%)
PCI	GDP per capita (current USD)
STRICST	Cost of business startup procedures (% of GNI per capita)
TIMERQ	Time required to start a business (days)
TRDG	External Trade (% of GDP)

Source: World Bank (2022)

**Figure 1.** Determinants of trade in goods and services.

Foreign direct investment (FDIG) are the net inflows of investment to acquire 10 percent or more of voting stock in a company operating in an economy other than that of the investor. It is the sum of equity, retained earnings, long-term debt, and short-term debt. Lending rate (LNDRAT) is the bank rate that usually meets the short- and medium-term financing needs of the private sector.

The effectiveness of explanatory variables has been tested through the above-mentioned statistical model based on 2 simultaneous equations. Twenty years' data (from 2001 to 2020) for 105 World Bank's member countries have been applied to estimate the parameters through panel least square technique. The data for some variables were not available for the other member countries. Due to this limitation, we could not include all the member countries in this analysis. **Table 3** and **Table 4** present the descriptive statistics and correlation matrix to test the normality of data and existence of multicollinearity. Two different ap-

proaches have been adopted to estimate both the equations. In first approach, we adopted a panel least square (PLS) technique on unbalanced data, while in second approach a panel least square (PLS) technique with time fixed effect model has been applied. Five alternative options have been applied in each approach. The objective of these alternative options is to test the robustness of parameters. Some falsification tests have also been performed by adding and subtracting some additional explanatory variables in these alternative options.

**Table 3.** Descriptive statistics.

Parameter	New Business Density (DBUS)	Domestic Credit to Private Sector (DCPS)	Domestic Credit from Banks (DCPSB)	Domestic Credit from Financial Institutions (DCPSF)	Ease of Doing Business (EASE)	Foreign Direct Investment (FDIG)	Lending Rate (LNDRAT)	Per Capita Income (PCI)	Start-up Cost (STRTCST)	Time Required (TIMERQ)	External Trade (TRDG)
No. of Observations	1630	3252	3509	756	947	3642	2591	4151	2958	2958	3628
Mean	3.3	51.3	47.4	72.5	61.3	9.7	12.8	1,701,187	48	33	91.8
Median	1.6	38.6	36.3	55.6	61.3	3.0	10.6	46,876	15	20	80.4
Minimum	0.0	0.0	0.0	5.0	20.0	-1275.2	0.0	173	0	1	0.2
Maximum	39.0	304.6	304.6	344.4	87.2	1704.6	118.4	417,710,353	1540	697	863.2
Standard Deviation	4.6	44.1	40.5	59.0	13.9	68.3	9.4	11,570,431	107	48	59.5
Skewness	2.9	1.4	1.6	2.0	-0.4	12.5	3.3	21	7	8	3.4
Kurtosis	11.2	2.2	3.2	4.8	-0.3	304.2	19.5	585	75	98	21.0

**Table 4.** Correlation matrix.

Variable	Start-up Cost (STRTCST)	Ease of Doing Business (EASE)	Time Required (TIMERQ)	Domestic Credit from Banks (DCPSB)	Domestic Credit from Financial Institutions (DCPSF)	Domestic Credit from Banks (DCPSB)	Lending Rate (LNDRAT)	Per Capita Income (PCI)	Foreign Direct Investment (FDIG)
Start-up Cost (STRTCST)	1								
Ease of Doing Business (EASE)	-0.5809	1							
Time Required (TIMERQ)	0.2781	-0.4268	1						
Domestic Credit from Banks (DCPSB)	-0.3241	0.6591	-0.2208	1					
Domestic Credit from Financial Institutions (DCPSF)	-0.2346	0.4906	-0.2450	0.9289	1				
Domestic Credit from Banks (DCPSB)	-0.3120	0.6500	-0.2263	0.9549	0.7578	1			
Lending Rate (LNDRAT)	0.3504	-0.3805	0.1421	-0.4070	-0.5238	-0.3993	1		
Per Capita Income (PCI)	-0.0373	-0.0102	0.0547	0.0577	0.0092	0.0640	-0.0066	1	
Foreign Direct Investment (FDIG)	-0.0109	0.0054	-0.0334	0.1979	-0.1410	0.2161	-0.0342	-0.0156	1

## 4. Results and Discussion

Economic theory has explained the impacts of investment on economic growth. Economic literature has discussed the impacts of fiscal policies and investment on economic growth. Keynes (1936), Dimand (1988), Gordon (1990) and Hicks (1967) have explained the relation between economic growth and investment in macroeconomic context. While the role of monetary policies and credit financing have been largely described by Stein (1982) and Montecino & Epstein (2015), Mehar (2018b) and Kindleberger (1970). Their works have described the impacts of investment and credit to public and private sectors in broader context. However, in this study we have tested the impacts of credit to private sector and investment on the creation of new business entities and enhancement of trade activities. We are interested specifically to identify the role of credit financing in enhancement of trade and business activities. Inderst (2018) have identified the role of private investment in infrastructure development. Mehar (2005) had provided a model to test the role of credit financing as a substitute of equity. No study is available to measure and identify the impact credit financing on the creation of new business entities and to identify the role of new business entities in enhancement of trade activities. This study has filled this gap. As it has been mentioned earlier that we hypothesized that credit to financing played an instrumental role in creation of new businesses and trade enhancement.

Tables 5-8 depict the empirical evidences based on regression analysis. The alternative options have been applied to check the robustness in estimated parameters. Some falsification tests have been conducted by adding and subtracting the additional explanatory variables. Except startup cost (STRTCST), all the betas are significant and robust, which reflect the effects of explanatory variables on trade in goods and services (TRDG) and formation of new business entities (DBUS). These results indicate significance of parameters and overall goodness of fit in the equations. The results are completely consistent in both the approaches: panel least square on unbalanced data and panel least square with time fixed effect model.

Based on the empirical evidences, it is inferred that lending rate of interest (LNDRAT) negatively affects the trade in goods and services (TRDG). It implies that importers and exporters of goods and services use the credit facilities for their business activities. The role of lending rates of interest is significant, robust and consistent in all alternative estimations. It is notable that the declining credit delivery to the real sectors by banking industry during Covid-19 crisis has also been observed in some studies. Darjana, Wiryono, & Koesrindartoto (2022) have found that credit facility for working capital and investment were influenced by the pandemic in Indonesia, but not consumption credit or SME credit.

Another important and interesting conclusion is the significant positive effect of the formation of new businesses (DBUS) in past years on the trade in goods and services (TRDG). The more startups (DBUS) lead more trade as percentage of GDP (TRDG). It implies that higher number of business entities promote the

trade openness. In this way, it improves the trade linkages among the countries. In first option, we used one-year lag of the formation of new businesses ( $DBUS_{(t-1)}$ ) to explain the volume of trade in goods and services (TRDG). However, two-year lag ( $DBUS_{(t-2)}$ ) was used in the subsequent options which shows a higher level of significance. The foreign direct investment (FDIG) and ease of doing business scores (EASE) have positive associations with the trade in goods and services (TRDG), which is quite obvious. The higher level of foreign direct investment (FDIG) establishes the linkages among the countries which may promote their mutual trade. Similarly ease of doing business facilitates the imports and exports of goods and service.

This conclusion confirms the findings of Ayenew (2022) who has investigated the impact of foreign financial inflows on the economic growth. According to his findings, foreign direct investment has a significant and positive contribution to economic activities.

The results of first equation have been presented in Table 5, Table 6. It has been concluded that domestic credit to private sector (DCPS) plays a significant positive role in the formation of new business entities (DBUS). This result is consistent in all alternative options in both the approaches. This important hypothesis has been tested by three alternative definitions of the credit to private sector: 1) overall domestic credit to private sector (DCPS), 2) domestic credit to private sector by financial institutions (DCPSF), and domestic credit to private sector by banks (DCPSB). The conclusions are similar in all three scenarios.

**Table 5.** Dependent variable: DBUS, panel least squares (unbalanced), No. of countries: 105; total observations: 356, sample: 2001 - 2020.

Explanatory Variable	Option: I		Option: II		Option: III		Option: IV		Option: V	
	$\beta$	T-Statistics	$\beta$	T-Statistics	$\beta$	T-Statistics	$\beta$	T-Statistics	$\beta$	T-Statistics
Constant	-6.663***	-4.644	-6.797***	-4.710	-6.721***	-4.555	-6.183***	-4.284	-15.228***	-3.419
DCPS	0.052***	8.735	0.045***	7.505	0.045***	7.487				
DCPSB							0.057***	8.734		
DCPSF									0.013*	1.796
EASE	0.109***	4.872	0.112***	5.027	0.111***	4.952	0.096***	4.373	0.252***	4.493
LNDRAT	0.018	0.769	0.010	0.435	0.011	0.456	0.014	0.598	0.009	0.141
STRTCST	0.004	0.630	0.002	0.214	0.002	0.257	0.001	0.186	-0.011	-0.327
FDIG			0.118***	4.809	0.117***	4.753	0.096***	3.906	0.155	1.363
TIMERQ					-0.0030	-0.255	-0.003	-0.255	-0.011	-0.507
Adjusted R <sup>2</sup>	0.4448		0.4771		0.4757		0.499		0.3984	
F-statistic	72.1074		65.4100		54.3727		59.9124		12.8096	
Akaike Info Criterion	5.2964		5.2427		5.2482		5.1994		5.2242	
Schwarz Criterion	5.3509		5.3083		5.3247		5.2758		5.3981	
H-Q Criterion	5.3181		5.2688		5.2786		5.2298		5.2947	
D-W Statistic	0.0828		0.1595		0.1588		0.1417		0.0621	

“ $\beta$ ” indicates Coefficient; “T” indicates T-Statistics, \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

**Table 6.** Dependent variable: DBUS, panel least squares (fixed effect model), No. of countries: 105; total observations: 356, sample: 2001 - 2020.

Explanatory Variable	Option: I		Option: II		Option: III		Option: IV		Option: V	
	$\beta$	T-Statistics	$\beta$	T-Statistics	$\beta$	T-Statistics	$\beta$	T-Statistics	$\beta$	T-Statistics
Constant	-6.595***	-4.547	-6.712***	-4.608	-6.644***	-4.467	-6.113***	-4.203	-15.228***	-3.419
DCPS	0.053***	8.688	0.046***	7.502	0.046***	7.484				
DCPSB							0.058***	8.727		
DCPSF									0.013*	1.796
EASE	0.108***	4.747	0.110***	4.885	0.109***	4.819	0.095***	4.257	0.252***	4.493
LNDRAT	0.018	0.765	0.010	0.433	0.011	0.452	0.014	0.595	0.009	0.141
STRTCST	0.004	0.627	0.002	0.249	0.002	0.287	0.002	0.221	-0.011	-0.327
FDIG			0.119***	4.823	0.118***	4.768	0.097***	3.928	0.155	1.363
TIMERQ					-0.003	-0.232	-0.003	-0.233	-0.011	-0.507
Adjusted R <sup>2</sup>	0.4405		0.4734		0.4719		0.4962		0.3984	
F-statistic	40.9201		40.6613		36.0504		39.7412		12.8096	
Akaike Info Criterion	5.3126		5.2581		5.2636		5.2145		5.2242	
Schwarz Criterion	5.3996		5.3565		5.3729		5.3235		5.3981	
H-Q Criterion	5.3472		5.2972		5.3071		5.2578		5.2947	
D-W Statistic	0.0818		0.1588		0.1581		0.1406		0.0621	

" $\beta$ " indicates Coefficient; "T" indicates T-Statistics, \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

**Table 7.** Dependent variable: TRDG, panel least squares (unbalanced), No. of countries: 97; total observations: 400, sample: 2001 - 2020.

Explanatory Variable	Option: I		Option: II		Option: III		Option: IV		Option: V	
	$\beta$	T-Statistics	$\beta$	T-Statistics	$B$	T-Statistics	$\beta$	T-Statistics	$\beta$	T-Statistics
Constant	34.386**	2.287	31.863**	2.085	36.338**	2.292	30.959*	1.866	30.232*	1.809
DBUS(-1)	3.370***	6.252								
DBUS(-2)			3.210***	6.048	2.850***	4.891	3.205***	6.015	3.176***	5.898
FDIG	2.935***	10.688	2.935***	10.602	3.050***	10.761	2.938***	10.563	2.936***	10.542
EASE	0.571**	2.543	0.629***	2.7890	0.479*	1.912	0.638***	2.718	0.654***	2.743
LNDRAT	-0.735***	-3.039	-0.779***	-3.106	-0.706**	-2.519	-0.780***	-3.104	-0.778***	-3.094
TIMERQ							0.020	0.141	0.023	0.156
PCI									-1.08E-07	-0.396
DCPS					0.091	1.261				
Adjusted R <sup>2</sup>	0.4553		0.45148		0.4560		0.4500		0.4489	
F-statistic	84.3671		82.4718		66.2160		65.8164		54.7549	
Akaike Info Criterion	10.2397		10.2508		10.2548		10.2558		10.2604	
Schwarz Criterion	10.2896		10.3010		10.3159		10.3160		10.3307	
H-Q Criterion	10.2595		10.2707		10.2790		10.2797		10.2883	
D-W Statistic	0.5062		0.5017		0.5029		0.5028		0.5022	

" $\beta$ " indicates Coefficient; "T" indicates T-Statistics, \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

**Table 8.** Dependent variable: TRDG, panel least squares (fixed effect model), No. of countries: 97; total observations: 400, sample: 2001 - 2020.

Explanatory Variable	Option: I		Option: II		Option: III		Option: IV		Option: V	
	$\beta$	T-Statistics	$\beta$	T-Statistics	$\beta$	T-Statistics	$\beta$	T-Statistics	$\beta$	T-Statistics
Constant	35.369**	2.314	33.153**	2.129	37.639**	2.326	32.068*	1.908	31.204*	1.843
DBUS(-1)	3.361***	6.203								
DBUS(-2)			3.196***	5.987	2.825***	4.826	3.189***	5.953	3.155***	5.824
FDIG	2.953***	10.680	2.958***	10.609	3.066***	10.748	2.962***	10.572	2.960***	10.554
EASE	0.556**	2.440	0.610***	2.659	0.457*	1.781	0.621***	2.609	0.639***	2.645
LNDRAT	-0.744***	-3.054	-0.789***	-3.120	-0.710**	-2.516	-0.790***	-3.119	-0.788***	-3.107
TIMERQ							0.025	0.173	0.028	0.189
PCI									-1.24E-07	-0.451
DCPS					0.095	1.306				
Adjusted R <sup>2</sup>	0.4513		0.4479		0.4521		0.4465		0.4453	
F-statistic	42.0216		41.1499		36.6710		36.4895		32.7933	
Akaike Info Criterion	10.2568		10.2672		10.2720		10.2722		10.2771	
Schwarz Criterion	10.3466		10.3575		10.3736		10.3726		10.3871	
H-Q Criterion	10.2925		10.3030		10.3123		10.3119		10.3204	
D-W Statistic	0.5017		0.5011		0.5028		0.5024		0.5018	

" $\beta$ " indicates Coefficient; "T" indicates T-Statistics, \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

The insignificant relation between the numbers of new business entities (DBUS) and business startup cost (STRCST) is surprising. Similarly, impact of lending rate of interest (LNDRAT) on the formation of new businesses (DBUS) is also insignificant. Perhaps, the current lending rate of interest reflects the short-term phenomena related to the cost of doing business, while startups and new corporate entities are established on the basis of long-term business planning. In interpreting the effect of lending rate of interest (LNDRAT) on the formation of new businesses, it is noteworthy that data of the lending rates are collected by the International Monetary Fund ([International Monetary Fund, 2020b](#)) as representative interest rates charged by the banks. Various interest rates coexist in an economy and their differences are based on the position and status of creditors and debtors. In some economies interest rates are set by the regulators, while some interest rates are offered to the borrowers as a part of incentives introduced by the government in a special package to promote some industries. The role of interest rate cannot be examined in such cases. In establishing new businesses (DBUS), the ease of doing business (EASE) is more important, which has been proved in this study. Another important finding is the positive impact of the foreign direct investment (FDIG) on establishing the new businesses (DBUS).

## 5. Conclusion and Policy Implications

The legitimacy of government's action to influence the use of depositors' money



for protection and promotion of other businesses has always been an important concern in economic policies. The question has become more important during COVID-19 crisis when states' intervention in lending by commercial banks was widely observed all over the world. One of the basic concerns of this research is to assess the impacts of the role of government in using the public money in commercial banks for protection and promotion of other businesses. This study justifies the intervention by monetary policy because lowering interest rates and increasing credit to private sector has promoted the creation of new business entities and trade activities.

It is noteworthy that previous studies have explained the relation between interest rate and investment. Based on these studies, the policy makers have been suggested to reduce the lending interest rates during the COVID19 crisis. However, the relation between interest rate and creation of new business entities have not been tested explicitly in previous studies. The study fills this gap in the existing literature. Similarly, in this study, we have tested the impacts of interest rate and the magnitude of the credit to private sector on external trade. Moreover, a relation between the new business entities and the magnitude of external trade has also been established.

The empirical evidences reveal some important and interesting relations among the creation of new business entities, volume of external trade in goods and services, lending rate of interest and credit to private sector. The more business entities at present means the more volume of external trade in near future. The higher lending rate of interest discourages the external trade, while foreign direct investment promotes the trade volume. It indicates that foreign direct investment complements the external trade.

The study provides a guideline for the policy makers to assess the significance and strength of the credit to private sector in creating new business entities. The results justify the use of credit enhancement to increase the number of startups and business entities. The foreign direct investment and ease of doing business significantly facilitate the creation of new business entities.

It is an implied conclusion in the study that monetary policy can play an important role in establishing the trade linkages among the countries. The provision of domestic credit to private sector and lending rate of interest are two important components of the monetary policy, which play an important role in establishing new business entities and promotion of external trade. The external trade volume is an indicator of trade openness and linkages, while the inflow of foreign direct investment also determines the external trade volume.

Based on this analysis it can be recommended that enhancement in credit to private sector can support the business activities during the economic depression, lock down period due to COVID-19, and such other crisis. The international financial institutions (IFIs) and policy makers should focus on this aspect of the financing during global recessionary trends.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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