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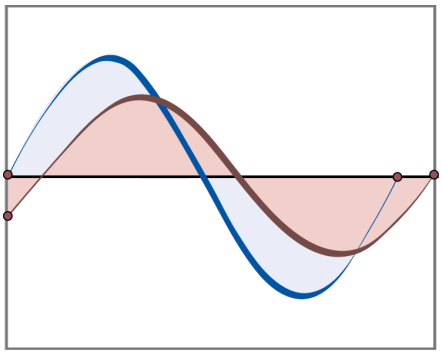

The Implications of New Financial Regulations on Small Business Financing in Trinidad and Tobago

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After sweeping amendments to legislative and supervisory frameworks in the wake of the last Global Financial Crisis (GFC), there is mounting concern that small business credit intermediation may be disproportionately affected. This research examines the influence of post-crisis financial regulations on Small and Medium Enterprise (SME) firms' funding access. Financial regulation can be directly estimated, through capital and liquidity requirements, but also indirectly by implicit costs. The study comprised commercial banks and non-bank financial institutions in Trinidad and Tobago, which extended credit to unincorporated enterprises over the period June 2011 to December 2020. A Generalised Method of Moments (GMM) approach applied to a dynamic panel model revealed that capital charges could have a significant adverse effect on small and micro-enterprise lending when compared to other channels of financial regulation.

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1. Introduction

Over the past decade, international financial regulatory agencies and national supervisory authorities have made significant strides in strengthening the global financial regulatory framework. However, as many countries have agreed to these reforms and are in various implementation phases, the impact of these modifications is becoming evident. Higher regulatory requirements have led to instances of financial institutions limiting financing for smaller businesses with obscure risk profiles. Funding constraints can adversely affect the small business enterprise sector, which has been the foundation of financial development and poverty alleviation efforts in emerging economies. The G20, through the Financial Stability Board, and other stakeholders have proposed frameworks and work plans designed to evaluate the impact of financial reforms and address any negative externalities. National supervisors are also keen to ascertain and resolve any domestic barriers to finance. This paper aims to examine both the direct and indirect channels of financial regulation and the corresponding impact on small business finance. Furthermore, the paper also provides recommendations for alleviating these effects through credit infrastructure development.

There is no universal definition for small business, and quite often, countries align categories to calibrate policy support effectively. Domestic small business classification is based on the number of employees and annual revenues[1]. However, employee size and sales do not always provide a complete picture since there are satellite offices with large, transnational parent companies which meet the small enterprise criteria. More importantly, several policy papers have focused on the features of small enterprises such as the high degree of informality, small-scale operations and those that cater primarily to the local demand (Wenner and Chalmers 2001). Other authors have classified small businesses as 'natural person' entities, which include family businesses and commercial households (Jin and Zhang 2019). Therefore, for the purposes of this study, small businesses refer to entities that are unincorporated with an informal structure.

Small businesses have a significant role in employment and economic development. Thus, there has been copious research into the definition and support for these businesses. Public policy has focused primarily on direct intervention, primarily through the use of government-funded resources. However, more recently, policymakers have recognised that reforms introduced in the wake of the 2008 global financial crisis (GFC) may have led some banks to classify

[1] The National Micro and Small Enterprise Policy outlined the parameters of the SME sector as follows: Mini-micro have one employee including owner/manager and sales turnover per annum of TT$250,000; Micro-enterprises have 1 to 5 employees and turnover of up to TT$1,000,000 and small enterprises have 6-25 employees and turnover of up to TT$8,000,000 (Ministry of Labour and Small Enterprise Development 2014).

smaller firms as higher risk and result in discriminatory funding allocation. Funding allocation bias can result in disproportionate funding pressures and sectoral instability for small enterprises, as banks are a primary source of external funding for these businesses. National authorities worldwide have not arrived at a consensus on appropriate policies which can aid small businesses in accessing mainstream finance. However, some regions have introduced measures that have sought to even the playing field between firms and facilitate funding for smaller businesses via the private sector. Internationally, one such instance is the European Central Bank's Small and Medium Enterprises (SME) supporting factor (SF). Domestically, capital adequacy regulations enacted in May 2020 included a lower risk-weight for small business exposures which met certain criteria[2]. These measures reduce the prudential capital required for such exposures with the expectation that it would incentivise banks to increase lending to the SME sector.

Post-GFC, policymakers worldwide were motivated to strengthen financial regulation and supervision. They believed that these efforts would contribute to more resilient financial systems and temper systemic risk. Despite the progress made by countries in introducing higher levels of capital and liquidity requirements, some sectors have experienced unnecessarily lower funding as a result. Increased barriers to finance have been illustrated by a perceptible contraction in loans extended by the ten largest US banks to small businesses after the 2014 energy price decline[3]. With limited options, small businesses must contend with higher finance costs or be completely forced out of the market. Given the importance of small businesses to financial development, policymakers often face a trade-off between ensuring small businesses receive adequate financing while mitigating banking sector credit risks.

Over the past years, Trinidad and Tobago has had similar objectives and experiences with respect to small businesses. Successive research and policy measures have focused on improving small businesses access to finance through public and private sector channels. However, the approach has been fragmented and split across government agencies and ministries. The Ministry of Labour[4], the Ministry of Trade and Industry and the Ministry of Finance have been the primary portals for governmental interventions in the sector. The National Entrepreneurship Company (NEDCO) and Exportt have also provided entrepreneurship support services. Private initiatives comprised the SME ratings provided by the regional credit rating agency, CARICRIS, and SME listing initiatives offered by the Trinidad and Tobago Stock Exchange. Furthermore, the terms micro, small and medium have been used interchangeably across the industry, which compounds the firms' difficulty in accessing resources.

[2] *The Financial Institutions (Capital Adequacy) Regulations, 2020* Section 11. https://www.central-bank.org.tt/sites/default/files/page-file-uploads/financial-institutions-capital-adequacy-regulations-2020_0.pdf

[3] Ruth Simon. " Big banks cut back on loans to small business: Small businesses get fewer loans from banks, turning to alternative lenders that charge significantly higher rates," The Wall Street Journal, November 26, 2015, https://www.wsj.com/articles/big-banks-cut-back-on-small-business-1448586637.

[4] The National Entrepreneurship Development Company Limited (NEDCO) oversight was ceded to the Ministry of Youth Development and National Service (MYDNS), effective September 2020. Trinidad and Tobago, Gazette (Extraordinary), No. 158, September 9 2020, 1413. Prior to that, the Ministry of Labour had responsibility for the sector.

Other than one-off measures, domestic bank financing for small businesses has been fraught with challenges. The CARICRIS SME tool was intended to help banks with SME credit assessment and loan pricing. Notwithstanding the launch of the facility in 2009, significant weaknesses in SME financing persisted. Even more recently, COVID-19 support measures such as the SME stimulus loan were criticised for inconsistencies, with micro businesses excluded in some instances. This research contributes to the literature on small business financing policy by assessing the influence of financial regulation and the role of the private sector in SME funding in the post-GFC period (2011 to 2020). Thus, policymakers can develop measures to alleviate funding pressures on small businesses without recourse to public funds. Consistent with several international studies, a Generalised Methods of Moments (GMM) estimator was applied to a dynamic panel model to ascertain the effect of financial regulation on banking system small business credit. Changes in capital, liquidity and implicit regulatory costs were used to estimate these variables response to legislation and thus the impact on small business lending. Financial sector legislative amendments have become more frequent and clustered after the Global Financial Crisis. As such, this approach allows for a more comprehensive evaluation of the impact on business lending.

In order to investigate the extent to which domestic financial regulation has impacted small business lending, the Literature Review (Section 2) examines theoretical and empirical research on credit access and small businesses. The Background, Section 3, outlines the channels through which financial regulation can limit business funding and explores the quality of small enterprise financing in Trinidad and Tobago. Next, in Section 4, the Methodology outlines the model used to assess the changes in banks' funding to small businesses in response to tighter financial regulation. Section 5 presents the results and discusses the associated implications. Lastly, Section 6 proposes policy recommendations and then concludes.

2. Literature Review

Although supervisors expect global financial reforms to improve the resilience of the international financial system in the long run, concerns remain about short-run costs. One such concern is the reduced funding to vulnerable businesses in the economy. Seminal SME literature has illustrated that small businesses are vital to the engine of economic growth. However, there is less empirical research regarding the impact of new regulations on smaller businesses, particularly in developing countries. The following section reviews the theoretical frameworks underpinning small business funding, then examines international policy and then empirical research. Lastly, Caribbean SME literature was examined for insights into the unique characteristics of the regional industry and its respective challenges. The objective here is to distil appropriate approaches which can assess whether regulation adequately supports businesses and develop protective policies.

Stiglitz and Weiss (1981) is one of the seminal pieces of research which uses the theory of credit rationing to explain why some firms have a more difficult time than others in accessing finance. Credit rationing refers to market

imperfections, even in equilibrium conditions, whereby lenders restrict which borrowers receive funding. Even if observationally identical borrowers are willing to pay higher interest rates, these restrictions persist because banks perceive them as less likely to repay. Including such loans in the bank's portfolio would increase the overall riskiness of the portfolio and result in lower expected profits. Furthermore, the authors suggest that tighter collateral requirements can magnify the adverse selection effects since banks can tend to overlook stable borrowers with lower equity levels in favour of potentially larger borrowers, even though they may be a higher risk. Stiglitz and Weiss (1981) caution, though, that the single-period model of analysis unnecessarily constrains the lender's options. In multi-period analysis, lenders are better able to screen borrowers and mitigate risks.

Subsequent research incorporated further distinctions into the credit rationing theory, which were applied in examining other challenges which small businesses face in accessing finance. Two notable findings relevant to this study emerged. One perspective addressed by the literature was the role of financial regulations in attenuating credit rationing and reducing adverse incentives. Originally, Stiglitz and Weiss (1981) proposed that regulatory interventions improved aggregate welfare and reduced bank risk. However, contemporary research proved that regulatory interventions could impose short-term costs to the credit supply, and policymakers should be cognizant of this. Agur (2011) suggests that policies must balance the costs of credit rationing with financial stability by finding optimal capital requirement levels. These findings are consistent with research from Conti, Nobili and Signoretti (2018), which has indicated that large and persistent shocks to bank capital in simulated cases of regulatory pressure had significantly negative effects on the credit supply in the short term. Moreover, supervisory measures targeted at relieving credit rationing for small businesses did not completely alleviate shortages. Mayordomo and María Rodríguez-Moreno (2018) found that the SME Supporting Factor (SF)[5] only alleviated credit rationing for medium-sized firms with a greater perception of safety than micro/small firms.

Takata and Udell (2007) added to the theoretical literature with the lending channel paradigm and then incorporated the impact of Basel standards on SME funding in Udell (2015). Furthermore, Udell (2015) analysed the new forms of lending technologies that could alleviate SME funding gaps. Takata and Udell (2007) examined the dynamic nature of lending channels in the Japanese Crisis. The authors defined the lending channel as a "*two-dimensional conduit through which SMEs obtain financing... (particularly one that) consists of a specific lending technology provided by a specific type of institution*". They found that the type of financial shocks ('credit crunch' or 'bubble'), as well as the lending firm characteristics, could result in heterogeneous changes to the lending channel. Udell (2015) extended the lending channel framework to Basel III and SME lending. 'Transparent' firms or SMEs with easily understood business models were more likely to benefit from financial statement-based lending than 'opaque' SMEs under Basel III.

[5]The EU introduced the SME SF as part of its banking legislation in 2014. It reduces the amount of regulatory capital for credit risk on exposures to SMEs by a factor of 0.7619. *Capital Requirements Regulation (CRR)* No 575/13 Article 501 https://eba.europa.eu/regulation-and-policy/single-rulebook/interactive-single-rulebook/4902.

Furthermore, Udell (2015) believes that government-guaranteed securitisation programs are insufficient to close the SME funding gaps because financial markets rely more on the government than on the business. The research suggested that movable collateral lending offers better access to funding amidst tighter financial regulation.

Small and micro-funding is particularly a concern for emerging market and developing economies (EMDEs) when formulating national policies. In 2019, the Financial Stability Board (FSB) published an evaluation of financial regulatory reform and the repercussions for SME finance. A worldwide survey of SME lending indicated that although financing has improved since the GFC, small businesses in EMDEs still experience considerable difficulty. Micro industries and start-ups with less credit history or tangible collateral report greater barriers to finance. Less sophisticated institutional frameworks and shallow financial markets limit financing sources and hamper financial inclusion. Greater regulatory burdens often induce banks to favour larger, more well-known firms when allocating funding. These findings are consistent with similar research of SMEs in EMDEs. World bank policy papers for Colombia (Stephanou and Rodriguez 2008) and the Middle East and North African (MENA) region (Rocha, et al. 2011) highlighted similar challenges in these areas. Both papers suggested policy measures that support SME funding access, such as the introduction of movable collateral registries and widening the scope of credit bureaus. Furthermore, the study indicated that SMEs stood to benefit when countries improved infrastructure, such as insolvency regimes or credit reporting systems. Notably, data constraints regarding SMEs were identified as a persistent challenge for EMDEs in all three papers.

Researchers have used a variety of econometric methods to examine the impact of regulation. Kanngiesser et al. (2017) applied a Bayesian VAR with sign restrictions to estimate the impact of capital increases on euro-area lending. The Bayesian approach to VAR estimation was applied to solve overfitting issues without artificially imposing coefficient restrictions (Ciccarelli and Rebucci 2003). Results indicated that when compared to mortgages, business lending experienced a greater decline in response to a credit supply shock and took longer to recover. Although this study does not distinguish between sizes of corporates, there is more than sufficient evidence to indicate that credit rationing and supply shocks will have a greater impact on small businesses as opposed to large and medium-sized enterprises (Jin and Zhang 2019).

The GMM approach has frequently been used in the literature to examine the impact of the Basel framework on bank lending. The GMM estimator addresses endogeneity in dynamic panels (Arellano and Bond 1991). Endogeneity in financial variables typically occurs due to measurement errors, the simultaneity of dependent variables or unobserved/omitted variables. Although the research varied according to the variables and types of GMM estimators used, all papers examined the impact on lending rates and volumes. Predominantly, authors examined the impact of capital on lending rates and volume (Cosimano and Hakura 2011, Osei-Assibey and Asenso 2015). Other papers investigated the impact of capital requirements on default risk (Ashraf, Arshad and Hu 2016). A notable limitation in the literature is that very few works specifically examined small business lending. Particularly, Humblot (2014)

discovered that despite controlling for bank-specific characteristics, Basel III regulation had a negative impact on bank funding to SMEs. Furthermore, the author found that micro firms with short-term credits most felt the decline.

Regional and domestic studies on small businesses have been prolific, tracing as far back as the 1980s. Researchers have been motivated to dissect SME funding in hopes of understanding the sector, removing barriers to growth and improving overall economic development. Farrell, Najjar and Marcelle (1986) conducted a survey of corporate financing and the use of bank credit in Trinidad and Tobago. The study used a survey method to assess bank lending to businesses in Trinidad, which defined a small business as 10 to 50 employees and a medium enterprise was defined as 50 to 249 persons. Out of the sixty-eight firms which responded, 67.7 per cent were considered small and medium-sized businesses. The authors found that smaller firms, categorised by both employment size and revenue, relied more on commercial bank funding than larger firms.

Clarke, Stoddard and Shield (1995) and Finch and Stoddard (2003) later updated the survey and study. Although Clarke, Stoddard and Shield (1995) and Finch and Stoddard (2003) took issue with the small size and non-random sampling methods used in the 1982 survey, all three studies had broadly similar results. In Finch and Stoddard (2003), small and medium firms comprised 96.1 per cent of the sample, which was the highest proportion in all of the NSSCF studies. The authors noted that this was likely due to the structure of the business sector and a more accurate reflection of the distribution of firm size. Factors that constrained business expansion affected small businesses more disproportionately than large firms, such as the loanable funds and collateral. Additionally, firms still relied primarily on commercial banks for external funding, but the reliance on overdraft financing had declined.

Harris (2000) conducted a study on small and medium-sized industrial enterprises (SMIs) over the period 1990 to 1996. The study compared data from Trinidad and Tobago, Barbados and St. Lucia to examine the manufacturing industry's structure and evaluate policy instruments that promote SMIs. All three countries identified this sector as critical to national development. Some notable findings of the research included the significant contribution of SMIs to the manufacturing sector. In 1996, SMIs in Trinidad and Tobago accounted for 71 per cent of enterprises in the sector, 25 per cent of manufacturing's contribution to Gross Domestic Product (GDP) and 57 per cent of the sector's employment. Overall, the author recommended that SMIs should be registered, with clearer and more consistent definitions and distinctions between small and medium categories. Finally, authorities should upgrade SMI information systems to support surveillance and policy development.

More recent research examined the impact of Basel I regulation on lending in Trinidad and Tobago (Dhanessar, Ramlogan and Rahaman 2014). The authors used regulatory financial data over the period 1994 to 2014 to estimate a cointegrating vector error correction model. The study focused on commercial bank loans and did not specifically consider small businesses. Nevertheless, the results suggested that capital rules did have an adverse impact on the

aggregate credit supply, with business credit experiencing a greater and more sustained effect than either consumer or mortgage credit.

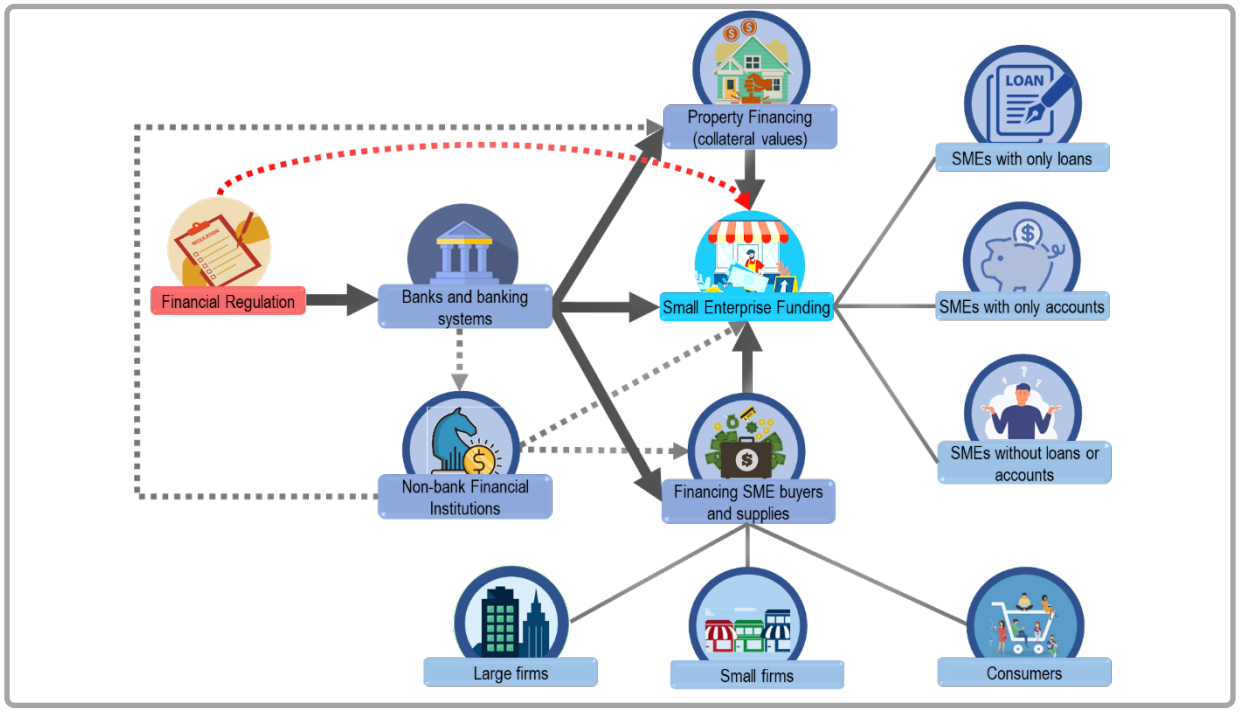
3. Background

A thriving small business sector can contribute significantly to a country's employment and GDP. In the initial stages of entrepreneurship, business owners generally rely on internal funds. However, past a certain point, small business expansion is usually funded by external sources, primarily banks. Thus, sustainable funding sources are critical to supporting the sector's expansion. Still, international supervisors are particularly concerned about the sector's funding, especially given the tighter regulatory environment post-GFC. The perception of higher or obscure credit risk in small businesses can increase the risk of credit rationing under these conditions. The following section discusses the extant issues surrounding small businesses access to finance. These issues include identifying the stylised transmission mechanism, contextualising the magnitude of SME financing challenges, outlining domestic policy and legislative framework and lastly, discussing initiatives in progress that address financing gaps.

Financial regulation can impinge upon small business financing channels both directly and indirectly (Figure 1). The degree of influence financial regulation has on financial access will vary based on whether the business has loans, deposit accounts or neither. Small operations with no credit or financial history can find it particularly difficult to access general financial services when the nature of the sector is predominantly relationship-based (Udell 2015). The most direct effects occur via financial institutions since amplified prudential and reporting requirements have magnified the regulatory burden. By extension, this has increased both the cost and availability of small business funding.

Additionally, increased regulation can also affect the trade credit and real estate collateral values, indirectly limiting funding even further. Finally, an expectations channel between financial regulation and small businesses is another indirect route that can similarly limit funding access. As financial institutions anticipate closer supervisory scrutiny, they are less likely to extend support or consideration to small businesses.

Figure 1: Financial Regulation Transmission Channels - Conceptual Framework

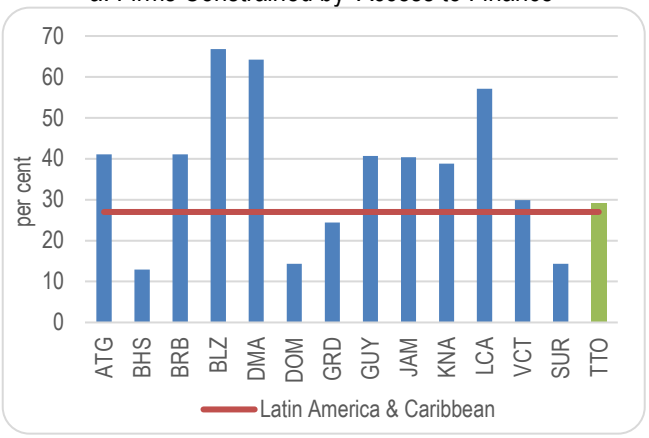


Source: Adapted from Fišera, Horváth and Melecký, 2019.
Note: The solid black arrow represents direct interactions, the dotted black arrow represents indirect interactions, and the dotted red arrow denotes an expectations channel.

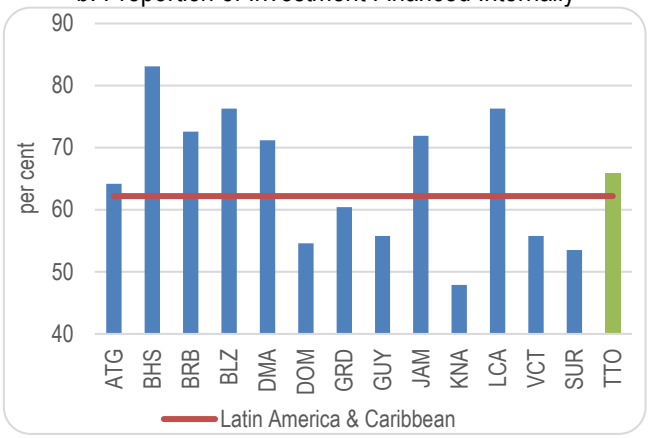
Supervisors can utilise a country's relative performance on financial access indicators to identify and address financing gaps. Overall, businesses in Trinidad and Tobago are not unduly hindered by funding access since only 29 per cent of firms indicate it is a major constraint (Figure 2a). Additionally, a relatively low proportion of firms surveyed use external financing (34 per cent) or rely on banks (37 per cent) for capital investments (Figures 2b and 2c). Collateral requirements are relatively accommodative when compared to the CARICOM but are still substantial at 1.4 times the loan value on average and applied across 88 per cent of the loan portfolio (Figure 2d and 2e). Although funding is relatively accommodative, firms' preference for internal funding, low reliance on banks and considerable collateralisation requirements can hint at higher barriers to finance for small businesses.

Figure 2: World Bank Surveys - Access to Finance Statistics for the CARICOM

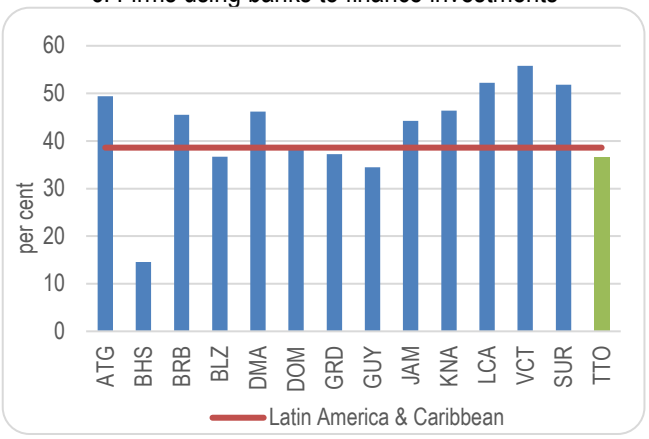
a. Firms Constrained by 'Access to Finance'



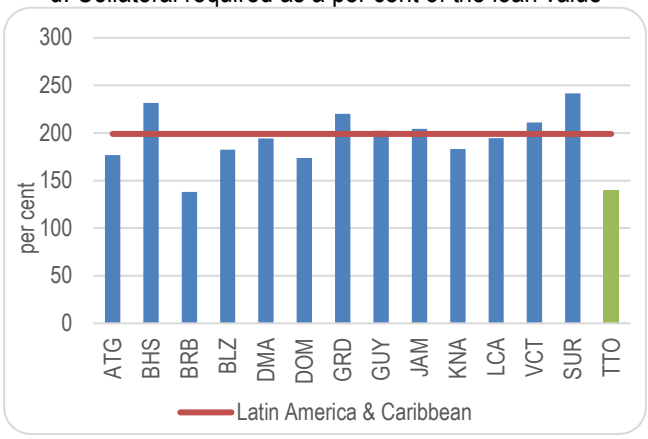
b. Proportion of Investment Financed Internally



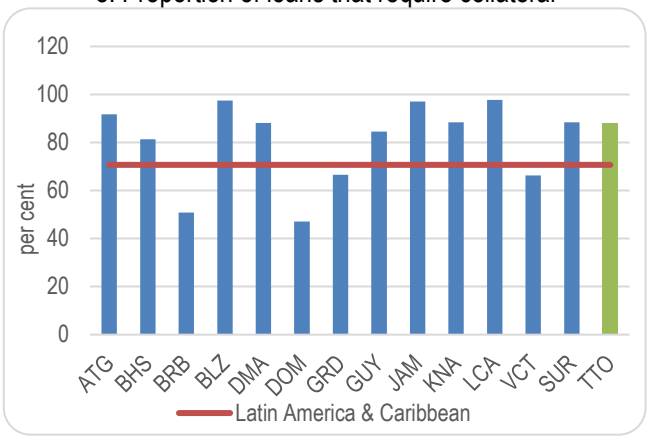
c. Firms using banks to finance investments



d. Collateral required as a per cent of the loan value



e. Proportion of loans that require collateral

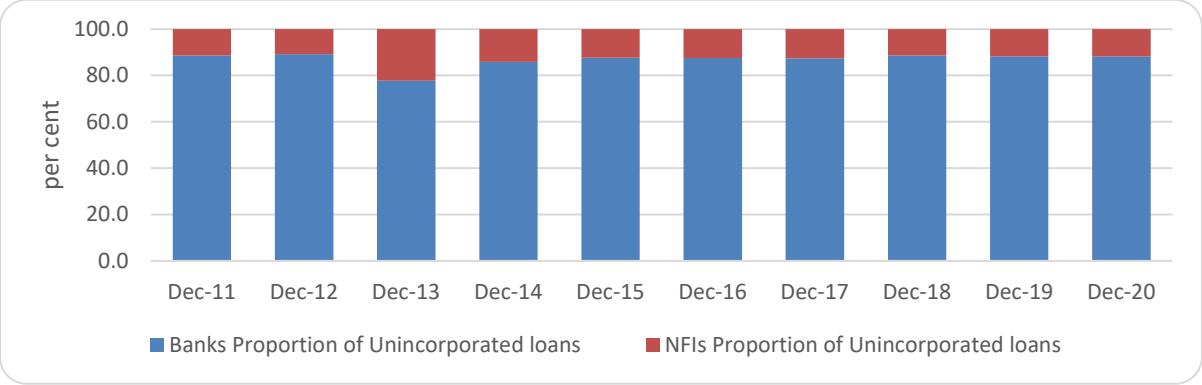


Source: World Bank Enterprise Surveys.

Note: Indicators are computed using data from manufacturing firms only. Country codes are formatted as follows – Country (survey year) – ISO 3-digit code: Antigua and Barbuda (2010) – ATG; The Bahamas (2010) – BHS; Barbados (2010) - BRB, Belize (2010) - BLZ, Dominica (2010) - DMA Dominican Republic (2016) - DOM; Grenada (2010) – GRD; Guatemala (2017); GTM; Guyana, CR (2010) - GUY; Jamaica (2010) - JAM; St. Kitts and Nevis (2010) - KNA; St. Lucia (2010) - LCA; St. Vincent and the Grenadines (2010) - VCT; Suriname (2018) - SUR; Trinidad and Tobago (2010) – TTO.

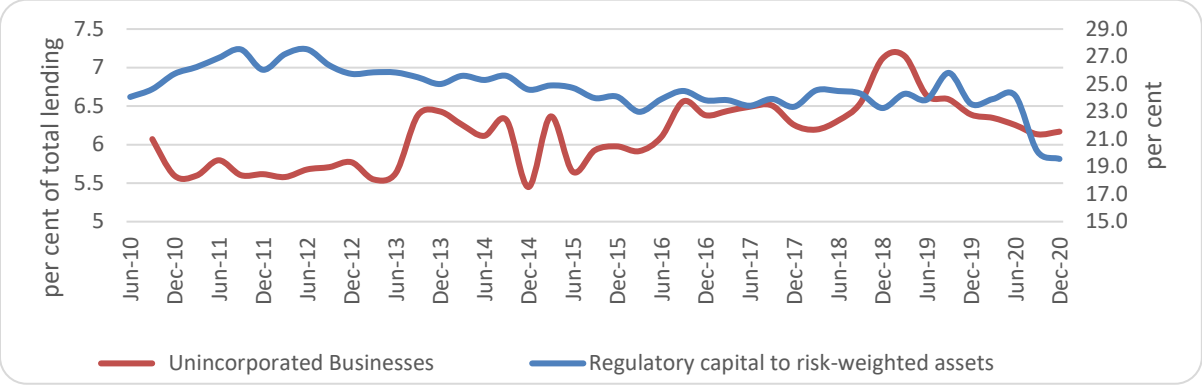
Although national SME funding policies have received considerable attention, they remain predominantly public sector driven and somewhat fragmented. Disjointed policy support, coupled with stricter bank regulations, can inhibit the efficient distribution of funds to the small business sector. Small businesses have been reluctant to participate in projects such as the SME stock exchange listing in 2012 or SME credit ratings in 2014. This apathy is most likely attributable to the high reliance on commercial bank loans (Figure 3) and the onerous requirements for obtaining exchange listings and ratings. Heightened regulatory control and adverse economic conditions can exacerbate credit rationing for small businesses, especially in young firms with opaque business models. Figure 4 demonstrates this trade-off, in that a declining trend in CAR ratios across the period has been accompanied by a higher proportion of small business credit, on average.

Figure 3: Unincorporated business loans - Commercial banks vs. Non-bank financial institutions (NFI) market share, December 2011 – December 2020



Source: Central Bank of Trinidad and Tobago.

Figure 4: Banking System Regulatory Capital vs. Proportion of Credit extended to Unincorporated Businesses, June 2010 – December 2020



Source: Central Bank of Trinidad and Tobago.
Note: Left axis indicates loans to unincorporated businesses as a proportion of total lending. The right axis shows the capital adequacy ratio (CAR).

Both the Government and the Central Bank have a role to play in banking sector regulation. The Ministry of Finance and the Parliament are responsible for the enactment of legislation, while the Central Bank is responsible for the

development and recommendation of the regulatory framework as well as supervisory oversight of banking institutions. As the international financial environment and corresponding regulatory guidance evolves, the domestic legislative framework has had to adapt accordingly. Table 1 below highlights the significant legislative changes since Basel I regulations which have contributed to tighter regulatory conditions for the banking system. Such amendments have been vital to the modernisation and fortification of the financial system. However, supervisory policies should ensure that risk assessment mechanisms do not unjustly penalise smaller businesses from accessing finance.

Table 1: Trinidad and Tobago's Banking Sector Regulation Highlights, 1994 – 2020

DATE ASSENTED/ IMPLEMENTED	REGULATION/ GUIDELINE TITLE	SUMMARY OF MAIN FEATURES
MAY 2020	Financial Institutions (Capital Adequacy Regulations) 2020	1. Basel II - Pillars 2 and 3. 2. Capital Conservation Buffer 3. Leverage ratio 4. Higher minimum capital adequacy ratio (CAR) for domestic systemically important banks (D-SIBS)
JANUARY 2018	IFRS 9 ECL Framework.	The International Financial Reporting Standard for Financial Instruments (IFRS 9) became effective January 1, 2018. IFRS 9 introduced the Expected Credit Loss (ECL) to provision for potential losses earlier.
MARCH 2017	Tax Information Exchange Agreements 2017 (United States of America)	This formalised the tax information exchange agreement between Trinidad and Tobago and the United States of America (US). It requires financial institutions to report to the Board of Inland Revenue using the US Foreign Account Tax Compliance Act (FATCA) framework.
JANUARY 2010	Financial Obligations Regulation, 2010 (Amendment)	This subsidiary legislation to the Proceeds of Crime Act, 2009 addresses AML/CFT measures.
DECEMBER 2008	The Financial Institutions Act, 2008	This Act repealed the Financial Institutions Act 1993. The Act primarily amends the powers of the Central Bank to conduct consolidated supervision of banking groups and apply prudential limits at the group level.
JULY 1994	Financial Institutions (Prudential Criteria) Regulations 1994	This regulation introduced the Basel I framework and corresponding prudential criteria.

Source: Central Bank of Trinidad and Tobago and Ministry of Legal Affairs
Note: Legislative amendments are only noted if there are material changes in the Act. There were several minor amendments to the Financial Obligations Regulations between 2009 and 2020.

Despite specific dates of enactment, regulations have a cumulative effect and a broad impact on multiple financial indicators (Elliott, Salloy and Oliveira Santos 2012). According to their risk profile, regulatory reform can affect banks through direct intervention by targeting higher capital reserves or more liquid assets. However, supervisors need to consider the implicit costs of regulation, which are the operational expenses accompanying regulatory compliance. These compliance costs include administrative burdens and substantive costs (OECD 2014). Substantive costs include implementation costs, new technology, training and materials required to be compliant with the law. Administrative burdens are the costs of meeting disclosure requirements. These costs can refer to staff and consultancy costs to ensure that institutions meet reporting obligations. These costs are often referred to as the 'regulatory burden' of reform and increase the operational expenses of the bank, potentially weighing on profits and limiting resources.

When banks are faced with a regulatory shock, they may explore a number of balance sheet adjustments. Van Roy (2008) outlined three main actions that banks could take to raise the CAR ratio. They could increase capital levels, de-risk their portfolio or sell off their assets. He extended this theory to illustrate that the CAR growth rate could be decomposed into a capital growth rate, a total asset growth rate and a credit growth rate. In Table 2, the highest growth in the CAR ratio in Trinidad and Tobago occurred due to higher capital growth. The Basel I Framework, implemented in 1994, implies that the introduction of capital rules did have an impact on banks' balance sheets. However, the results are less clear cut when it comes to liquidity ratios or regulatory burden. These ratios highlighted that in the absence of direct regulatory tightening, the period marked by the Global Financial Crisis and ensuing CL Financial failure had the greatest impact on these variables. Notably, the 2016-2020 period showed elevated loan loss provisions, which implies that ECL requirements may indeed have an impact on commercial bank variables.[6].

Table 2: Average Annual Percentage Change in Commercial Bank Financial Indicators, 1995 – 2020

	1995 to 2000	2001 to 2005	2006 to 2010	2011 to 2015	2016 to 2020
CHANGE IN CAR	**3.97**	**-0.82**	**2.06**	**-0.91**	**-1.81**
Due to Change in Capital	7.77	4.74	5.21	1.31	1.31
Due to Change in Total Assets	4.07	4.92	4.89	2.30	1.23
Due to Change in Risk	-0.30	0.65	-1.74	-0.06	-0.07
CHANGE IN LIQUIDITY RATIO	**-0.49**	**-0.83**	**1.98**	**-0.28**	**-0.40**
Due to Change in Liquid Assets	2.50	4.25	7.38	2.59	0.69
Due to Change in Short-term Liabilities	4.60	6.56	1.13	0.09	1.18
Change in professional expenses	5.09	1.85	-3.29	7.34	1.80
Change in loan loss provisions	-1.16	1.65	8.92	1.84	4.95

Source: Central Bank of Trinidad and Tobago

4. Data and Methodology

The study incorporated quarterly data over the period June 2011 to December 2020, which was sourced from Central Bank regulatory reports and financial soundness indicators (FSIs)[7]. The scope of the analysis covered both commercial banks and non-bank financial institutions (NFIs), which extended loans to small businesses. Out of the total banking system, only six banks commercial banks and six NFIs participated in small business lending, which constitutes fifty per cent of banking sector institutions.

Next, measurement of financial regulation and small business lending required proxy variables from banking system reports. Peer studies influenced the selection of these proxies. Private sector non-financial loans to unincorporated businesses denoted small business lending extended by the banking system. Across the literature, financial regulation

[6] IFRS 9 requires banks to recognise expected rather than incurred credit losses, leading to earlier recognition and possibly higher loan loss provisions (Restoy and Zamil 2017).

[7] Summary statistics are available in Appendix A1.

proxies are heterogeneous, but this study examined the impact of changes in capital, liquidity.[8], professional expenses and provisioning. Regulatory dictums can directly target capital, liquidity and provisions, but professional expenses can also be used as a valid, albeit indirect measure of regulatory burden (Cosimano and Hakura 2011, Giordana and Schumacher 2012, Zheng, et al. 2017). The IMF FSI ratios for Regulatory capital to risk-weighted assets and Liquid assets to short-term liabilities measured capital and liquidity, respectively. The Statement of Income and Expenses and the Statement of Condition provided professional expenses and provisions data. All variables denoted in absolute values were transformed using the natural logarithm, while variables denoted in percentages remained in levels[9].

The causal relationship is defined by a dynamic panel model with a GMM estimator (Arellano and Bond 1991, Arellano and Bover 1995) since it controls for endogeneity and lowers bias in short panels. The model can be specified in equation 1 as follows:

$$y_{it} = \sum_{j=1}^{q_y} \lambda_j y_{i,t-j} + \sum_{j=0}^{q} \beta_j x'_{i,t-j} + e_{it} \quad (1)$$

where $i = 1,2, \dots, N$ represents the institutions and time periods are denoted by $t = 1,2, \dots, T$

The specification describes the dependent variable (y), small business lending, as a function of its lagged values, a matrix of weakly exogenous regressors (x) and the error term e_{it}. The regressors consist of capital (CAR), liquidity (LIQ), professional expenses (PROFEXP) and total provisions (PROVISIONS). The random disturbance term, e, is comprised of unobserved unit-specific heterogeneity or fixed effects, α, and the idiosyncratic error, u, which should be identically and independently distributed.

Dynamic panel data is vulnerable to possible endogeneity between the lagged dependent variable and error term. To eliminate the fixed effects in the data, the Arellano-Bond method suggests transforming the dynamic panel through first differencing and using the lagged regressors as instruments, known as 'difference GMM'. However, if there is high persistence in the model, difference GMM can suffer from a 'weak instrumentation' problem, resulting in downward bias in the autoregressive coefficient. Blundell and Bond (1998) is commonly used to augment the Arellano-Bond estimator with a 'system GMM' which estimates simultaneously in differences and levels with each one separately instrumented. However, system GMM is subject to over instrumentation since it amplifies the number of instruments required. The model then becomes unstable when the instruments exceed the number of cross-sections.

[8] The Basel III framework outlines minimum liquidity requirements for banking institutions via the Net Stable Funding Ratio and Liquidity Coverage Ratio. In a study of French SME lending, Humblot (2014) revealed that liquidity did significantly affect small businesses' access to loans.

[9] The transformed variables underwent Dumitrescu-Hurlin Panel Causality Tests to determine whether lagged values of the proposed regressors impacted SME lending. Results are available in Appendix A2.

A less common option for transforming the model is the forward orthogonal deviation (FOD) method introduced Arellano and Bover (1995). The authors showed that theoretically, GMM estimators are unbiased and invariant to the transformation method used to adjust for unit-specific heterogeneity once the transformation matrix is upper triangular and all instruments are used. Empirically, the choice of instruments becomes limited when T increases relative to N since too many instruments can increase the bias of the GMM estimator (Roodman 2009). Hayakawa (2009) established that in finite samples, the FOD GMM estimator has a distinct advantage over first differencing based on smaller absolute bias.

Instead of removing the first lag, the FOD method subtracts the average of all forward observations and ensures that the errors are serially uncorrelated. Lagged values can now be used as valid instruments because they are not included in the transformation. In the transformed FOD model, the idiosyncratic error term can now be expressed in equation 2 as:

$$\tilde{u}_{it} = c_t \left[u_{it} - \frac{(u_{i(t+1)} + \cdots + u_{iT})}{(T-t)} \right], \text{ where } t = 1, \ldots, T-1 \tag{2}$$

The factor $c_t = \sqrt{(T-t)/(T-t+1)}$ equalises the variance and thus maintains orthogonality in the transformed errors. In a balanced panel, the stacked levels regression can then be transformed using the forward orthogonal deviations operator described in equation 3:

$$F_t = diag\left[\frac{T-1}{T}, \ldots, \frac{1}{2}\right]^{\frac{1}{2}} \begin{bmatrix} 1 & -\frac{1}{T-1} & -\frac{1}{T-1} & \ldots & -\frac{1}{T-1} & -\frac{1}{T-1} & -\frac{1}{T-1} \\ 0 & 1 & -\frac{1}{T-2} & \ldots & -\frac{1}{T-2} & -\frac{1}{T-2} & -\frac{1}{T-2} \\ \vdots & \vdots & \vdots & & \vdots & \vdots & \vdots \\ 0 & 0 & 0 & \ldots & 1 & -\frac{1}{2} & -\frac{1}{2} \\ 0 & 0 & 0 & \ldots & 0 & 1 & -1 \end{bmatrix} \tag{3}$$

In order to estimate the model parameters, the GMM estimator makes assumptions about the moments of random variables referred to as "moment conditions". Coefficients can be accordingly estimated by a set of equations that approximate population moments by using sample moments. A precondition for identifying the regression coefficients is the "order condition" $K \geq L$, which requires that the number of instrumental variables (L) must be greater than or equal to the number of explanatory variables (K). Given the relatively small sample size, the second-order lagged values of the regressors were used. Thereafter, a quadratic form in moment conditions can be constructed using an LxL weighting matrix to derive the GMM objective function, which follows in equation 4:

$$J(\hat{\beta}) = N\bar{g}(\hat{\beta})' W \bar{g}(\hat{\beta})' \tag{4}$$

where $\bar{g}$ is the sample moment condition and W a p x p matrix of population moments.

An unbiased GMM estimator is consistent[10] and asymptotically efficient. Since $\widehat{W}_T$, the estimated weighting matrix, can influence the asymptotic variance, the optimal GMM estimator is one in which the matrix converges to the inverse of the long-run covariance matrix S (equation 5):

$$p\,lim\,\widehat{W}_T = S \tag{5}$$

Given the objective function and optimal matrix weight, the unbiased two-step efficient GMM estimator can be summarised as follows in equation 6:

$$\hat{\beta}\left(\hat{S}^{-1}\left(\widehat{W}\right)\right) = arg\min_{\beta} N\,\bar{g}(\beta)'\hat{S}^{-1}\left(\widehat{W}\right)\bar{g}(\beta) \tag{6}$$

where $\hat{S}^{-1}\left(\widehat{W}\right)$ is used to update the one-step estimate of the long-run covariance matrix. For this paper, a heteroscedasticity consistent weighting method was used to estimate the optimal weighting matrix.

5. Results and Discussion

Table 3 highlights the results of the estimation using the Arellano-Bover FOD-GMM and compares it to the Arellano-Bond FD-GMM. Given that instrumental variables selection was constrained, the best model under each estimator was selected by varying the instruments and evaluating the level of bias. Coefficients for both methods are highly statistically significant, as expected. Thus, past values of small business lending will evidently be influential in future periods. However, the autoregressive coefficient for the FOD-GMM is higher, suggesting that there is downward bias in the FD-GMM model. This is corroborated by the lower RMSE for the FOD-GMM estimator, which suggests that this method minimises the absolute bias[11] and is the most efficient.

The FOD-GMM showed that the lagged CAR has a negative and statistically significant effect on small business lending. Both the direction and the value of the impact of CAR on credit is consistent with many other studies on the effects of capital regulation on credit (Cosimano and Hakura 2011, Gavalas and Syriopoulos 2014). Although an increase in lagged LIQ did not have an adverse impact and is statistically significant, it is not as influential as other variables. This finding is in contrast to research conducted by Gambacorta and Mistrulli (2003) and Humblot (2014), which indicated that changes in banks' liquidity had a negative and sizable impact on banks in Italy and France, respectively. In the Italian study, the impact was particularly severe for banks that already had low liquidity levels. The difference can be attributed to the excessively liquid market conditions in Trinidad and Tobago over the period examined. Administrative expenses and provisioning also showed statistically significant results but did not have an adverse effect on small enterprise financing. This result can be attributed either to the banks' high pass-through of

[10] Consistency implies that once a number of observations are sufficiently large, estimated parameters will converge in probability to the population value.

[11] Hayakawa (2009) recommends the use of RMSE to compare the absolute bias of the estimation method.

costs to clients when expenses increase or the improved risk management and lending technologies[12] which would benefit smaller enterprises.

Table 3: Estimated Impact of Financial Regulation Variables on Small Business Lending, 2011-2020[13]

	FOD-GMM	FD-GMM
SME_{t-1}	0.774543***	0.764582***
CAR	-0.035977***	-0.014153***
LIQ	0.004792***	0.002704***
PROFEXP	0.093668**	0.160178
PROVISIONS	0.069853***	0.078058
No. of Observations	444	444
Instrument Rank	12	14
Root Mean Squared Error (RMSE)	0.451120	0.668883
J statistic	6.485515	11.19467
Arellano-Bond AR(1) test		-1.961365**
Arellano-Bond AR(2) test		1.378483

Source: Author's estimation

Note: Forward Orthogonal Deviations Transformation Method (FOD-GMM), FD-GMM (First difference transformation method). ***, ** and * denotes p-value significance at 1 per cent, 5 per cent and 10 per cent levels.

Robustness tests indicate that both models are adequately specified. As previously mentioned, if the order condition is met, then the model will be at least exactly identified or over-identified ($K \geq L$). The J-statistic is the value of the objective function given by the GMM estimator. The estimator is considered efficient, and the overidentifying restrictions are correctly specified when J is minimised. Sargan's test gives the J-statistic and follows a chi-squared distribution $\chi^2_{j,p-k}$, where j is the value of the objective function, p is the instrument rank and k is the number of endogenous variables. The null hypothesis states that the over-identifying restrictions are valid and the statistic is asymptotically efficient. The corresponding p-values for the statistic FOD-GMM and FD-GMM are both non-significant. Therefore, the null hypothesis is not rejected and the conclusion can be drawn that the models are correctly specified.

First difference transformation removes first order lags from current observations to remove fixed effects from the panel data but can result in serially correlated residuals. The presence of autocorrelation means that the estimator will lose consistency and the model will require even longer lags for instrumentation. The Arellano-Bond test evaluates serial correlation in the residuals for linear GMM regressions on panel data. Negative first-order autocorrelation in residuals (AR(1) measure) is standard and does not affect consistency. However, the second-order serial correlation in differences (AR(2)) statistic signals first-order serial autocorrelation in levels. The FD-GMM AR(2) p-value is non-significant and the null hypothesis of zero autocorrelation in the first-differenced errors at order 2 is not rejected. The small cross-sectional size of the sample did not allow for the estimation of AR statistics for the FOD-GMM.

[12] The universe of lending technologies includes financial statement lending, asset-based lending, factoring, equipment lending, leasing, real estate-based lending, small business credit scoring, crowdfunding and trade credit (Udell 2015).

[13] Tests were conducted in Eviews.

6. Recommendations and Conclusion

Due to its economic importance, small enterprise development is a significant priority in EMDE national policies. However, less sophisticated institutional frameworks and shallow financial markets exacerbate small enterprise difficulties with funding and hamper financial inclusion. Small businesses or start-ups with less tangible collateral and limited credit history have reported greater barriers to finance and difficulty in expanding their operations. Domestically, the public sector has principally concentrated on direct policy measures through the use of government-funded resources and state enterprises. Although there have been several attempts to develop private sector funding through equity financing, small enterprise external funding is still dominated by commercial banks. Therefore, public sector policies that ease barriers to finance in the banking sector appear to be the most effective allocation of resources at this time until capital market access could be further developed.

Two broad policy approaches (direct and indirect) can be considered to alleviate regulatory barriers to small enterprise financing. Direct support measures include regulatory amendments that incentivise small enterprise lending (credit supply measure) or simplify compliance measures for small enterprise clients (credit demand measure). Although the requirements are simplified, they must not be less conservative to limit regulatory arbitrage and mitigate systemic risk. Domestically, the Basel II/III small business enterprise risk-weight factor of 75 per cent is a good starting point. However, more private sector interventions are required to alleviate heavy recourse to public sector initiatives.

Other measures considered indirect are aimed at developing the broader financial infrastructure (FSB 2019). Enhanced credit information systems and access to collateral regime reform can reduce the transaction costs which financial institutions incur in extending small enterprise credit. A comprehensive credit infrastructure with appropriate legislative amendments and resources can facilitate a wider range of secured transactions. Thus, improving small enterprises' access to finance while strengthening banks' risk management.

One such measure is the introduction of a centralised, online and notice-based credit registry[14], which reduces financial risk by ensuring there is an accurate evaluation of borrowers' repayment capacity. This agency is in contrast to privately owned and operated credit information companies, called credit bureaus or consumer reporting agencies. Credit registries, on the other hand, were generally developed to support supervisors in evaluating sectoral risks. Thus, they are valuable in supporting regulation and oversight of the banking industry. More importantly, credit registries help borrowers to build a credit history or "reputational collateral", which can be used to access credit. Studies based on the Middle East and North African region found that credit registries and information systems improved the private sector's quality of small enterprise lending (Rocha, et al. 2011).

[14] Credit registries are public sector agencies that monitor loans made by regulated financial institutions.

Another related but distinct facility is a collateral registry, which secures movable assets and eases small enterprises' access to financing by using non-traditional assets as security (World Bank Group 2019). Collateral registries can broaden access to credit, as well as reduce interest rates and extend loan maturities for small enterprises. Movable assets refer to working capital and trade assets, which include accounts receivable or bills of lading, as well as fixed assets such as machinery. On average, small businesses in the developing world have 78 per cent of assets invested in movable assets, which puts them at a disadvantage in accessing bank lending (Love, Pería and Singh 2016). The credit registry is responsible for notifying creditors of the claim and establishing priority of claims over the asset so that it cannot be double pledged, which reduces collateral risk. A modern, secured transactions framework and legislation is a fundamental prerequisite for the registry's authority and registered claims to be recognised. Trinidad and Tobago's 2020 IMF/World Bank FSAP report recommendations have also supported this approach.

While financial regulatory reform has contributed to a more resilient global financial system, preliminary evidence suggests certain reforms have the potential to limit small enterprise access to funding. This practice is predominant where international financial regulatory reforms influence banks to hold more capital without consideration for the jurisdictional idiosyncrasies, which can exacerbate negative externalities. There is significant room for co-ordination of financial system regulation and small enterprise policies in the domestic sphere. Ideally, financial sector policies should incorporate 'carve-outs or support mechanisms which aid small business lending and mitigate credit risks. Remedying small enterprise funding challenges can contribute to realising the dual objectives of safeguarding financial stability and encouraging small enterprise growth. Allocating resources to strengthening transaction-based financing infrastructure can improve regulatory efficiency while reducing reliance on public sector financing.

These findings offer timely and empirically-based recommendations to reduce welfare losses from financial regulation. As such, authorities should further develop the domestic credit market infrastructure for small enterprises by using available lending technologies without sacrificing the progression of a modern financial regulatory framework. Improved credit intermediation technology is particularly critical to ensure that small enterprises can access adequate bank credit in the wake of the COVID-19 pandemic and, by extension, support the sector's long-term sustainability.

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Appendix

A1 Descriptive statistics

	MEAN	MEDIAN	MAXIMUM	MINIMUM	STD. DEV.	OBS.
SME	10.37266	10.79501	13.97283	0.000000	2.334680	468
CAR	27.78269	27.09779	54.62965	9.645265	9.609964	468
LIQ	42.53293	28.16233	348.1327	7.918469	48.81442	468
PROFEXP	8.005483	7.619233	10.97880	0.000000	1.753105	468
OTHEXP	10.25816	9.917230	13.66835	6.723832	2.171022	468
PROVISIONS	10.20700	10.21369	13.53822	5.834811	2.093654	468

Correlation

	SME	CAR	LIQ	PROFEXP	OTHEXP	PROVISIONS
SME	1	-0.4439	-0.3455	0.5733	0.6597	0.6462
CAR	-0.4439	1	0.2916	-0.4482	-0.6226	-0.3830
LIQ	-0.3455	0.2916	1	-0.1251	-0.3288	-0.1250
PROFEXP	0.5733	-0.4482	-0.1251	1	0.8390	0.6677
OTHEXP	0.6597	-0.6226	--0.3288	0.8390	1	0.7910
PROVISIONS	0.6462	-0.3830	-0.1250	0.6677	0.7910	1

A2 Dumitrescu-Hurlin Panel Causality Tests

NULL HYPOTHESIS	Lags	Zbar-Stat
CAR does not homogeneously cause SME	2	5.02776***
LIQ does not homogeneously cause SME	2	7.69765***
PROFEXP does not homogeneously cause SME	2	3.57801***
OTHEXP does not homogeneously cause SME	2	2.56975***
PROVISIONS does not homogeneously cause SME	2	3.60357***

Note: ***, ** and * denotes p-value significance at 1 per cent, 5 per cent and 10 per cent levels.