

# INCLUSIVE FINANCE FOR SMEs IN SOUTH AFRICA AND ITS EFFECT ON GROWTH AND INEQUALITY

Lwanga Elizabeth Nanziri\*, Peter Wamalwa\*\*

October 2017

## Abstract

Quantifying the effect of financial constraints to firms is essential in our understanding of firms' economic contribution to growth and inequality. Using a micro-founded general equilibrium model and firm-level data from the World Bank Enterprise Surveys, this paper analyses the effect of relaxing financial constraints on investment in entrepreneurial talent, and macro-economic variables like GDP, total factor productivity (TFP) and inequality. We focus on three dimensions of financial inclusion: access, depth and intermediation efficiency to calibrate the model to South Africa. We find that relaxing participation and collateral constraints increases GDP by up to 3 percentage points and TFP by up to 2 percent. Inequality reduces by 1 – 3 percentage points, driven by both the extensive and intensive margins. In a regime of low initial intermediation costs, relaxing financial constraints might lead to an increase in monitoring costs due an influx of high risk talented but constrained entrepreneurs. Conversely, constrained entrepreneurs might refrain from borrowing and maintain a low leverage ratio to avoid being monitored, if intermediation costs are initially high. Overall welfare gains are attributed to an increase in the proportion of talented but constrained entrepreneurs, who take advantage of the relaxed financial constraints.

JEL Classification: E13; L26; O12; O16; O55

Key words: Financial Inclusion; SMEs; talent; Growth; Inequality; South Africa

---

*This version of the paper is work-in-progress, please do not cite.*

*\*Correspondence author, Centre for the Study of African Economies, Department of Economics, University of Oxford, UK. Email: [elizabeth.nanziri@economics.ox.ac.uk](mailto:elizabeth.nanziri@economics.ox.ac.uk).*

*\*\*School of Economics, University of Cape Town, South Africa. Email: [wamalwasp@gmail.com](mailto:wamalwasp@gmail.com)*

## 1. Introduction

Lack of sufficient finance is often cited as a major constraint for the growth of small (even micro) and medium enterprises (SMEs) especially in developing countries. Yet, these businesses play a pivotal role in social and economic development of a country (Beck and Cull, 2014; Aterido et al., 2009; Beck, Demirgüç-Kunt and Levine, 2007). For instance, 95% of global businesses fall in the SMEs category (Beck and Cull, 2014), while more than 50% of global employment happens in businesses that employ less than 100 people (Ayyagari et al., 2011). According to the Global Financial Inclusion Report, great strides have been made regarding access to finance at individual level (World Bank, 2013a). However, firm-level studies show that access to finance has not spread, especially to small businesses, due to both participation barriers as well as financial frictions, which are often country-specific (Demirgüç-Kunt et al., 2015; Dabla-Norris et al., 2015, Jang, Banicio and Chiyaba, 2014; Karpowicz, 2014). Hence the global impetus to increase financial inclusion, through efficient and sufficient intermediation as well as credit extension (Chakravarty and Pal, 2013; Sarma, 2015).

There is however, less focus on the role that access to finance can play in improving the skills of potential entrepreneurs and/or the potential employees. Empirical work on finance for SMEs, and its relationship with growth and inequality (see for instance Asiedu et al., 2013; Aterido et al., 2009; Demirgüç-Kunt and Levine, 2009; Beck et al., 2007; Greenwood & Jovanovic, 1990) often assumes a stock of entrepreneurial talent such that finance is invested in physical capital to increase productivity and subsequently reduce inequality. Yet there is evidence that entrepreneurial talent can be an obstacle to firm growth, even in the presence of financial access (Coad et al., 2016). While entrepreneurs can acquire new skills to enable them to move to competitive sectors of the economy (Guiso & Schivardi, 2014), heterogeneity in entrepreneurial talent can lead to different growth and inequality paths for countries (Murphy et al., 1991, Greenwood & Jovanovic, 1990).

This paper therefore, investigates the effect of relaxing financial constraints to enhance entrepreneurial talent for SMEs, on the country's growth and inequality. We argue that easing financial constraints can affect SME operations in two ways. Access to finance allows incumbent entrepreneurs and talented but credit constrained economic agents to set up firms and to make productivity enhancing investment. Individuals can also use finance to invest in human capital formation which augments their skills and talents, making them more employable by entrepreneurial firms. The combined effect of these mechanisms is potential economic growth and a reduction in income and wealth inequality.

The financial constraints considered relate to financial access (proxied by access to a line of credit), financial depth (determined by size of collateral constraints) and intermediation efficiency which is determined by the interest rate spread and the size of non-performing loans (NPLs) as a percentage of total loans. We then use a variant of the micro-founded general equilibrium and overlapping generation's model by Dabla-Norris et al. (2015) and calibrate it to South Africa. In our model, financial inclusion is assumed to affect growth and inequality by first, channelling more financial resources to entrepreneurs and individual to undertake productivity improving investment, which increases output. Secondly, efficient allocation of funds as a result of financial inclusion increases total factor productivity. Finally, by ensuring efficient contracting which minimises wastage of financial resources.

There are two key results. First, we find that trade-offs have to be made when implementing financial inclusion policies. Relaxing participation or collateral constraints marginally boosts GDP by over 3 percentage points, TFP by up to 2 percent and inequality declines by between 1 and 3 percentage points. However, a significant relaxation of these constraints is likely to be counterproductive in that, financiers would have to increase the monitoring of NPLs due to the high number of high risk entrepreneurs attracted to the credit regime. This implies an increase in intermediation costs. On the other hand, if intermediation costs are already high, constrained entrepreneurs will not demand credit. They will instead maintain a low leverage ratio to avoid being monitored. Increasing intermediation efficiency, while it increases GDP, reduces TFP by 3.5% and increases inequality by 1 percentage point. This is because intermediation efficiency benefits incumbent entrepreneurs who are already wealthy, thus driving relative incomes further apart. Second, only a few talented but constrained entrepreneurs appear to take advantage of the favourable conditions in the credit regime. We assume that this could be due to lack of awareness of credit opportunities. Information asymmetry in the credit market is an established phenomenon (see Mullineux & Murinde, 2014), and in the SME sector in South Africa (Berry et al., 2002). Thus, financial inclusion policies would benefit from increasing awareness of credit facilities to minimise the negative effects of information asymmetry.

The rest of the paper is organised as follows: Section 2 provides an overview of the small business landscape in South Africa. This is followed by the theoretical underpinnings in Section 3 and related literature in reviewed in Section 4. The model is discussed in Section 5 and the results discussed in Section 6. Section 7 concludes.

## **2. The SME landscape in South Africa**

According to the first official report on SMEs, published by the Department of Trade and Industry (DTI) in 2008, South Africa had 553,491 enterprises in 2007, of which only 3.1% were classified as large enterprises (The DTI, 2008)<sup>1</sup>. Then based on the Quarterly Labour Force Survey (QLFS)<sup>2</sup>, there was an estimated 2.25 million SMMEs in 2015, with up to 75% of them operating in the informal sector (Bureau for Economic Research (BER), 2016). This shows a growth in SMMEs of only 3% between 2008 and 2015 as shown in Table 1, while the GDP per SMME increased by 8% over the same period.<sup>3</sup> The distribution of these enterprises is highly correlated with business activity. For instance, more enterprises were recorded in Gauteng and KwaZulu-Natal, which are business hubs of the country. Eastern Cape, Northern Cape and the North-West provinces are among the poorest in the country. However, North West province is also home to some of the country's largest mines. Mining and quarry, owing to huge capital requirements and ownership structure, tend to be large businesses or at least

---

<sup>1</sup> The classification of these enterprises is based on the size of the labour force, asset value or their annual turnover which differs among economic sectors. Appendix Table A1 gives an overview of South Africa's enterprises based on these classification criteria.

<sup>2</sup> The QLFS is conducted among individuals so large firms, which are often owned by multiple owners and are therefore less likely to form part of the QLFS sample

<sup>3</sup> The GDP to SMME ratio is used as an indicator for the economic environment they operate in. It is the constructed as the GDP per region(province) divided by the change in the number of SMMEs over the period 2008 – 2015 (BER, 2016).

formal, hence the higher proportion of formal enterprises in the North-West relative to its overall ranking in SMME population.

**Table 1:** The growth of SMMEs in South Africa between 2008 - 2015

	2008		2015	
	Formal	Informal	Formal	Informal
Eastern Cape	56579	154631	50670	141739
Free State	31040	76127	26224	60816
Gauteng	270093	405180	306231	465100
KwaZulu-Natal	102591	289347	74976	283165
Limpopo	24193	155001	28054	207512
Mpumalanga	29760	156814	35208	141129
Northern Cape	11450	11768	8534	9058
North West	25817	76855	27430	79153
Western Cape	114976	95212	110107	110188
Total	666501	1420933	667433	1497860

**Source:** Bureau for Economic Research (2016)

The highest turnover has been recorded in the mining sector while the lowest has been reported in the community and social services. According to BER (2016), this is an indication of challenges other than size (such as barriers to entry or initial costs), that prevent informal SMMEs from operating in economic sectors. The SMMEs' contribution to GDP value added, excluding the micro-enterprises, ranged between 18 – 22% over the period 2010 – 2015<sup>4</sup>. Therefore, performance as well as an increase in size the SMMEs may influence the GDP. Indeed, there is a positive correlation between the enterprise size, turnover and GDP. In particular, whereas there is a positive correlation between turnover of formal and informal SMMEs and GDP, the positive correlation is even higher between turnover of formal enterprises and GDP, increasing from 39 – 78% as shown in Table 2.

A large number of South Africans are employed in the services SMMEs, which tend to be informal and low cost, i.e. require low cost of entry compared to say, mining which is for large enterprises (BER, 2016). At the same time, the majority of the SMMEs are in the wholesale and retail (domestic sector) and the accommodation sectors. This implies that making finance accessible to the informal enterprises would have a high potential of creating employment and thus close the income inequality gap in South Africa from an extensive margin perspective.

<sup>4</sup> This figure is comparable to say India where MSMEs contributed up to 17% (FY11). See <https://www.ibef.org/download/SMEs-Role-in-Indian-Manufacturing.pdf>

**Table 2:** Distribution of SMMEs in South Africa by economic sector between 2008 – 2015

	<u>2008q1</u>	<u>2015Q2</u>		Turnover (2015Q1)	GDP (2015Q2)	Turnover per SMME
	<b>Total</b>	Formal	Informal	R million	R million	R million
Agriculture	87820	0	0	n/a	35213	n/a
Mining	2696	0	2199	35256	69421	16.03
Manufacturing	267817	62657	138801	658740	111672	3.27
Electricity, gas & Water	4252	6656	801	7488	38647	1
Construction	252233	77098	222143	229016	38804	0.77
Trade & Accommodation	974093	186798	757669	1160560	129144	1.23
Transport & Communication	122370	56620	76514	134152	87612	1.01
Finance & Business services	236740	172423	99289	571384	183430	2.1
Community	227243	105181	200444	111424	50982	0.36
Other	7569	0	0	0	70711	0
<b>Total</b>	<b>2182823</b>	<b>667433</b>	<b>1497860</b>	<b>2908020</b>	<b>815636</b>	<b>1.29</b>

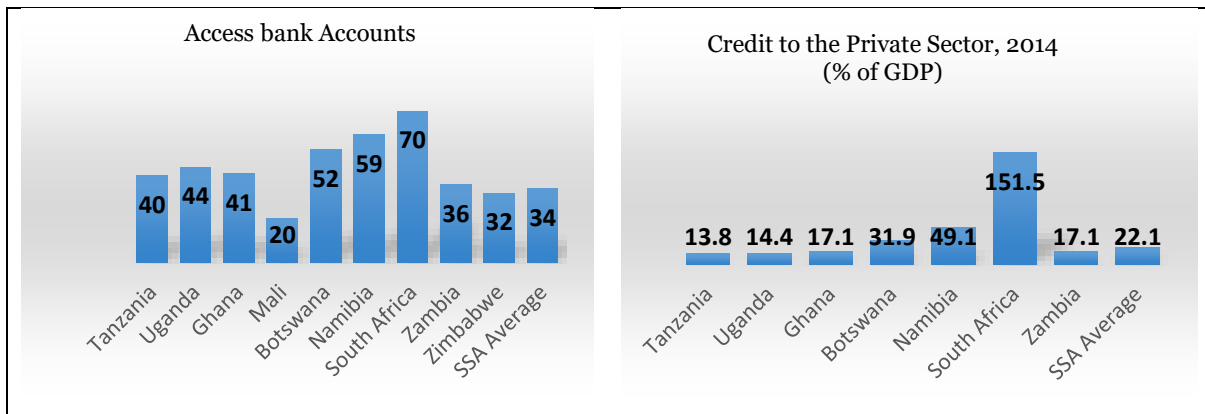
**Source:** Bureau for Economic Research (2016).

**Note:** turnover is annualized.

To unlock the potential contribution of enterprises sector' towards growth and poverty reduction, the South African government made a few reforms. The National Small Business Act of South Africa (NSBSA) of 1996 was amended in 2003 to offer the financial and regulatory guidelines for the business sector. Through the Financial Sector Charter of 2003, barriers to financial access (such as costs and documents for opening and operating bank accounts, or for obtaining credit, Usury Act of 1968) were removed.<sup>5</sup> Thus far, access to financial services in South Africa is high both in the Southern Africa Development Cooperation (SADC) region and on the continent, as shown in Figure 1. Given the historical exclusion of most South Africans, and to circumvent the possibility of further exclusion due to lack of collateral, the National Credit Act of 2005 was passed along with formation of credit bureaus to create credit records that can be used to secure more credit. Furthermore, in 2015, the tax policy was amended in favour of small businesses (see SME South Africa, 2015) and more recently, a full Ministry of Small Enterprises was formed.

<sup>5</sup> For more on the Financial Sector Charter and the Usury Act (1968) see African National Congress (1994). this Act legalized credit rationing by charging high interest rates for small borrowers subsequently leading to financial exclusion

**Figure 1: Access to Finance in selected African Countries**

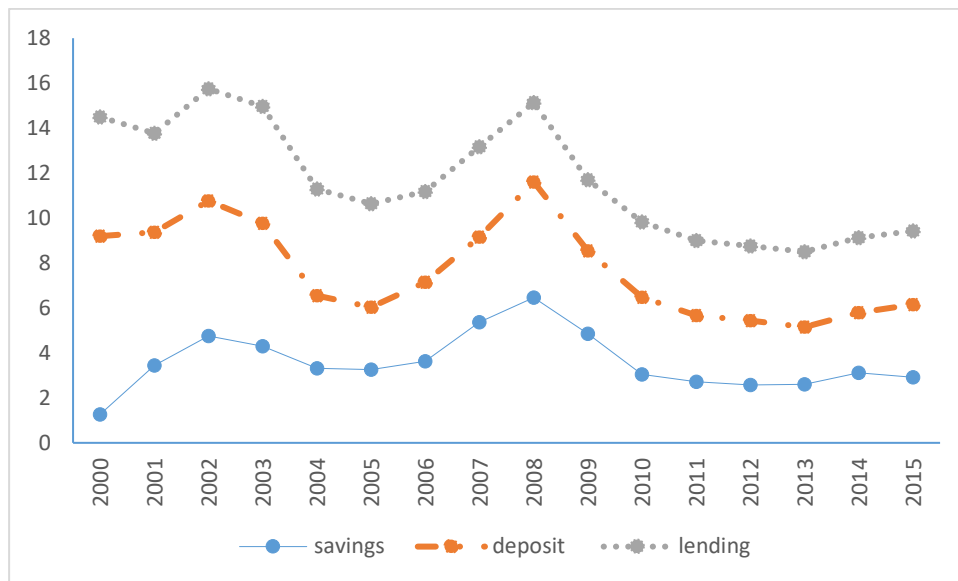


**Source:** Author's compilation from the World Bank Global Financial Database (2014) and World Development Indicators

A low interest rate regime is conducive for enterprises that seek finance for start-up or business expansion as this makes the cost of capital low. Indeed, the Reserve Bank of South Africa has for the past decade kept interest rates relatively low, averaging 11.74% between 2000 and 2015 as shown in Figure 2. Perhaps this explains the relatively increasing private sector credit-to-GDP ratio and declining NPLs as shown in Figure 3. A possible explanation is that credit is concentrated in a few large firms thus, the trend in Figure 3 might not be representative of the entire enterprise sector. For instance, between 2000 and 2015, large enterprise in the mining and quarrying sectors reported a lower interest burden than real estate and services sector enterprises which are the majority. One possible argument is that they were perhaps borrowing less, and so the increase in the trend is accounted for by smaller enterprises or personal credit. But there is evidence that many small businesses registered a decline in productivity in the period after the financial crisis of 2008/09, and many households were too indebted to attract more credit.<sup>6</sup> This provides the second possible argument that the observed increase in credit to the private sector was indeed to large enterprises due to an increase in demand that was not met by the ailing small businesses. Moreover, for the period leading up to the 2010 FIFA World Cup, there was an increase in construction in preparation for the World football tournament, which most likely benefitted large enterprises. This argument is corroborated by the decline in NPLs shown in Figure 3, suggesting that credit was being extended to low risk firms, and these are most likely the large firms.

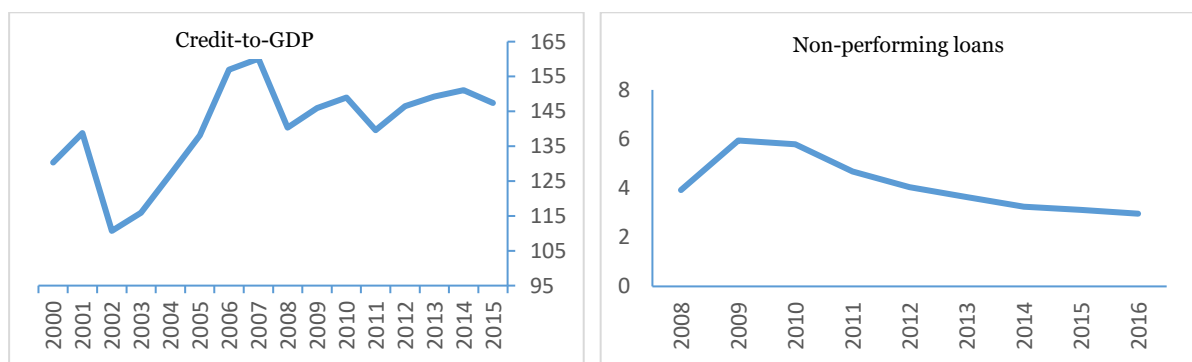
<sup>6</sup> See *South Africa Economy: An overview of key trends since 1994*, Industrial Development Corporation, December 2013

**Figure 2: The Trend of Interest Rates in South Africa (2000 – 2015)**



**Source:** International Financial Statistics (2016), World Bank

**Figure 3: Trend of private sector credit to GDP ratio and non-performing loans to total loans**



**Source:** World Development Indicators, World Bank

Challenges to SMMEs still remain and these are summarised in BER (2016) and Wilkinson (2000). However, we discuss those that are pertinent to this study. First, access to finance has remained a problem for many small businesses (see FinScope SME Survey, 2010). SMMEs do not receive start-up finance. The country has a highly concentrated banking sector (International Monetary Fund, 2015). Except for the Industrial Development Corporation (IDC)<sup>7</sup>, which finances mainly large enterprises, and two relatively large local banks focusing on retail banking, other banks (29 banks), both locally controlled and foreign controlled, have limited operations, and not systemically important. This poses a challenge to financial inclusion, whereby financial access is likely to continue being concentrated

<sup>7</sup> The IDC is one of government's development finance institutions, operating in a semi-autonomous manner to extend development finance mainly to large firms according to government's development priorities. For more information see [www.idc.co.za](http://www.idc.co.za). See also [www.sefa.org.za](http://www.sefa.org.za)

among large firms (see World Bank, 2013b) or SMMEs in their later stages of development. Moreover, the distribution of access to finance for SMMEs is highly correlated with the location, i.e. rural are less likely to access finance as are those located in poorer provinces. Thus, entrepreneurs would require large amounts of savings or bequest funds to start own businesses otherwise they are driven into employment seekers. This is not likely for the bulk of South African population, which is 80% Blacks according to the population census of 2011, resident in rural or poorer provinces following the apartheid settlement policy, and who form the bulk of the informal SMMEs. These individuals are also less wealthy and poorly educated (see Bhorat Leibbrandt & Woolard, 2000) to afford start-up capital or the skills to prepare business plans required by potential financiers. Indeed, the National Development Plan (NDP) of South Africa reports that there is a skills shortage especially for business services. For entrepreneurs, this compromises their chances of securing financial support, and for securing gainful employment as a fallback position.

Second, there are obstacles to accessing finance mainly due to inadequate collateral or lack of credit history. There is no collateral registry that can be used to share information on the assets of the firms in the country to determine their credit worthiness (see World Bank's *Doing Business* Report, 2016). There are currently 14 registered credit bureaus in South Africa under the watch of the National Credit Regulator, with credit information on approximately 24 million borrowers as at December 2016 (Credit Bureau Market, 2016). Up until 2015, lenders used the credit bureau information to extend new or more credit to borrowers based on the willingness-to-pay criteria, which was derived from the repayment history of the borrower. But this approach came under review by the Regulator citing reckless lending that was driving especially small borrowers into indebtedness.<sup>8</sup> These collateral requirements are likely to compromise business expansion.

Third, the regulatory framework is prohibitive to SMMEs operations. For instance, rigidity of labour laws deters SMMEs from hiring workers because they do not provide for firing them when businesses are unprofitable or when workers are unproductive due to low skills level. This is likely to further curtail business expansion especially for businesses that are labour intensive like clothing or other services sectors, which comprise a large proportion of the enterprise sector as noted earlier. Given that SMMEs are arguably job creators (BER, 2016; Berry et al, 2002), rigid labour laws in this setting threaten the reduction of income inequality and overall productivity in the country.

This study therefore, attempts to investigate the impact of relaxing the finance related constraints for SMEs on growth and inequality in South Africa. We are particularly concerned with increasing the number of firms (and potential entrepreneurs) with credit accounts, reducing collateral requirements and reducing the interest rate spread to improve intermediation efficiency. Such an exercise would contribute to the policy debate of the role of SMEs in the country, and subsequently guide financial support strategies for the small businesses in economies like South Africa.

---

<sup>8</sup> Regulation 23 of the National Credit Act was amended to standardize credit affordability assessment to ensure that whoever receives credit has sufficient proof to repay it without compromising their welfare.



### **3. Review of related literature**

There is vast theoretical and empirical literature on the finance - growth nexus, a dearth of studies on financial inclusion and inequality, notwithstanding controversy in the findings. For example, there is consensus that improvements in financial inclusion increase output growth rate (Levine, 2005; King and Levine, 1993, Mckinnon, 1973; Shaw, 1973). Although causality is sometimes difficult to pin down, there is evidence from cross-sectional studies that financial access is associated with increase in wages under general equilibrium (Honohan, 2008, Lloyd-Ellis and Bernhardt, 2000) and poverty reduction and income inequality (Beck et al., 2007; Clarke et al., 2006; Burgess and Pande, 2005).

On SMEs, financial inclusion and income inequality however, some studies find a positive relationship between access to external finance, firm growth and efficient allocation of productive assets (Beck and Cull, 2014; Ayyagari et al., 2011). Dabla-Norris et al. (2015) also find that relaxing financial constraints SMEs for seeking credit, reduces inequality. Liquidity constraints can impede business opportunities for the poor (Demirgüç-Kunt & Levine, 2009). Financial inclusion can reduce moral hazard and adverse selection problems, both of which have a tendency of aligning returns to assets with the initial stock of assets available for individuals in a generation. Thus, financial inclusion opens up investment opportunities irrespective of parental wealth. Moreover, on one hand, financial inclusion enables households to invest in human capital. On the other hand, firms accessing finance improve productivity by not only investing in physical capital, but also employing high skilled individuals. Since, high skills attract higher wages, highly skilled individuals can only be engaged in firms that are skill intensive and highly efficient (Banerjee and Newman, 1993). Therefore, financial inclusion reduces inequality, by enabling families to invest in skill improvement beyond their generational bequest, thereby enabling less endowed households acquire skills akin to those of wealthy households. However, Greenwood and Jovanovic (1990) find an inverted U-shaped relationship between financial inclusion and income inequality among agents. This paper contributes to this literature by looking at the impact of access to finance by firms on inequality and economic growth in a country that still faces financial access constraints and inequality.

This paper is related to studies on finance for SMEs which build on the seminal work by Fazzari et al. (1988). According to Levine (2005), one of the mechanisms of tracing the impact of financial deepening on growth and poverty is through SME financing. Indeed, empirical work such as Beck and Cull (2014), Dabla-Norris et al. (2015, Jang et al. (2014) and Karpowicz (2014) find that there are financing obstacles especially for firms in Africa and developing economies. These studies find that while firm characteristics are significant determinants of access to finance, there are also supply-side constraints such lending techniques. Our paper contributes to this literature by relaxing supply-side finance constraints to enhance entrepreneurial talent as a mechanism of improving total factor productivity while reducing overall income inequality.

This study also contributes to empirical work on the evaluation of access to finance for firms on overall economic growth and inequality. Recent work by Dabla-Norris et al. (2015), Jang et al. (2014) and Karpowicz (2014) provides an approach that can be used to evaluate the impact of micro-level strategies on macro-economic variables. This approach allows for the disentanglement of institutional

level factors that can have an impact on the outcomes of financial access, which are often masked by conventional analytical methods such as regression analysis. For instance, several studies find a positive relationship between financial sector and growth and poverty reduction (see Beck et al. 2007; Clark et al., 2006). Yet there are inequalities in access to this credit at firm level (Beck and Cull, 2014). Dabla-Norris et al. (2015) argue that causal relationships and policy evaluation can also be challenging when using these static frameworks for analysis. Hence using a general equilibrium and dynamic framework can overcome these challenges. This approach ties in well with arguments by Greenwood and Jovanovic (1990) that benefits of finance are not necessarily linear. Different economic agents benefit differently depending on their initial position. South Africa provides a good case study for thus evaluation given its duality in firm composition (more informal, fewer formal firms) and its recent reforms to facilitate inclusion for those previously excluded from the economic sector.

#### **4. The Model**

Financial inclusion influences growth and inequality in so far as it enables firms and households to undertake indivisible investment to augment productivity and skills as well as talents, respectively. Households make consumption and bequest decision which determine wealth and talent of an individual, while firms utilise talent, labour and capital in the production process. In particular, individuals differ in wealth ( $w$ ) and talent ( $z$ ) endowments, depending on initial wealth, innate characteristic and the level financial constraints that affect talent/skills improvement (Banerjee and Newman, 1993). These individuals are faced with decisions related to financial sector participation, occupation choice (supply labour or become entrepreneurs) or investment. We posit a financial sector with two regimes: a savings regime and a credit regime, as in Dabla-Norris et al. (2015). Only individuals with a certain level of wealth and talent become entrepreneurs. These individuals can participate in both the savings and the credit regimes. On the other hand, wealth-constrained individuals or those without entrepreneurial talent only supply labour and they do not participate in the credit regime.

Participation in the savings regime entails transactions costs, documentation requirements, periodical fees and other financial inclusion constraints, which determine financial inclusion. In the credit regime, the size of collateral and information asymmetry determine the extent of financial inclusion of the agent. The latter is captured as differentials in the lending rate. The interest rate differentials are the result of monitoring costs for highly leveraged entrepreneurial firms of individuals with talent but with less wealth. According to Dabla-Norris et al. (2015) this can be a source of financial exclusion even in the presence of availability of credit. Thus, the size of collateral and interest rate differentials can distort capital allocation and entrepreneurial talent in a manner that affects aggregate total factor productivity and therefore GDP.

As in Dabla-Norris et al. (2015) the model also assumes two periods. In the first period, financial sector participation, occupation choice and investment decisions are made. While in the second period agents earn wages or profit and they maximise utility by either consuming or bequeathing to their off-

springs. The utility function is assumed to be Cobb-Douglas as shown in expression (1), which agents maximize in the second period subject to a budget constraint.

$$u(c, b') = c^{1-\omega} b'^{\omega} \quad (1)$$

where  $c$  is consumption and  $b'$  is bequest. The bequest is the basis of the economy's wealth distribution which is determined endogenously across periods, and  $\omega$  is the optimal bequest rate. The budget constraint  $c + b' = W$  shows that wealth  $W$  in the second period is a composite of initial wealth as well as the first-period income.

Firm productivity depends on the entrepreneur's talent in combination with capital and labour employed. This relationship is shown as in expression (2).

$$f(k, l) = z(k^{\alpha} l^{1-\alpha})^{1-\nu} \quad (2)$$

where the Lucas span-of-control parameter  $1 - \nu$  represents the share of output that comes from the variable factors. Of this,  $\alpha$  comes from capital while  $1 - \alpha$  comes from labour,  $\nu > 0$  and capital depreciates at a rate of  $\delta$ . We assume that the distribution of talent among agents, conditional on loan amount, is given by  $F(z, \Phi) = 1 - \Sigma \left(\frac{z}{a}\right)^{-e} + \Sigma \left(\frac{\Phi}{c}\right)^{-d}$ , a bivariate pareto distribution function (see Sankaran, Nair & John, 2014), consisting of talent and the amount of credit received.  $e$  &  $d$  are shape parameters, while  $a$  &  $c$  are shift parameters of talent and loan amount respectively. Access to financial services then augments the talent of agents such that, the enhanced talent, as argued by (Demirgüç-Kunt & Levine, 2009), increases productivity of the individual, which in turn increases earnings in form of salaries and at firm level, it increases profits. This link between access to credit and enhanced quality of talent marks the difference between this paper and Dabla-Norris et al. (2015). There is a probability  $p$  of project failure and hence zero output. In this case, the entrepreneur can only recover a portion of his capital investment equal to  $\eta < 1$ , net of depreciation. Thus, the probability of earning a wage income is  $1 - p$ .

Agents' choice to participate in the savings or credit regimes depends on their expected income, which is equivalent to them maximising expected end-of-first-period wealth. This relationship is given by expression (3). Entrepreneurs who participate in the savings regime rely on their savings to finance their business undertakings.

$$W^s = \begin{cases} (1 + r^d)b + (1 - p)\omega & \text{for workers} \\ \pi^s(b, z) & \text{for entrepreneurs} \end{cases} \quad (3)$$

where,  $W^s$  is wealth in the savings regime,  $r^d$  is the deposit interest rate,  $\pi^s$  is the profits for entrepreneurs operating in the savings regime. Thus, agents chose to work if their earnings are greater than the profit they would make if they invested their wealth and talent into business projects.

In the credit regime, the emphasis is on the implied lending rate  $r^l = \frac{\Omega}{\Phi} - 1$  (where  $\Omega$  is the face value of the loan contract and  $\Phi$  is the total amount), and the leverage ratio  $\tilde{\lambda} = \frac{\Phi}{\Delta}$  (where denominator represents the collateral). The end-of-period wealth in this regime is thus given by  $W^c = \pi^c(b, z)$  such that the agent will pay the participation costs in the credit regime if his wealth from participation in the credit regime is greater than that from his participation in the savings regime, that is,  $W^c > W^s$ . Entrepreneurs then chose capital and labour to maximise (4) subject to  $k \leq \lambda(b - \Psi)$

$$\pi^c(b, z) = \max_{k, l} \{ (1-p)[z(k^\alpha l^{1-\alpha})^{1-\nu} w l + (1-\delta)k - \Omega + (1+r^d)(b-\Psi)] + p \max(0, \eta(1-\delta)k + (1+r^d)(b-\Psi) - \Omega) \} \quad (4)$$

Assuming initial wealth and talent  $H_0(b, z)$ , a competitive equilibrium has allocations  $\{c_t(b, z), k_t(b, z), l_t(b, z)\}_{t=0}^\infty$ , sequences of wealth and talent  $\{H_t(b, z)\}_{t=0}^\infty$  and prices  $\{r^d(t), w(t)\}_t$ , such that;

- i. Agents maximize utility at time  $t \geq 0$  by choosing either the savings or the credit regime, occupation (entrepreneur or worker),  $c_t(b, z), k_t(b, z), l_t(b, z)$
- ii. Capital market clears at all  $t \geq 0$

$$\iint_{(b,z) \in E(t)} k_t(b, z) H_t(b, z) db dz = \iint_{(b,z)} b H_t(b, z) db dz - \Psi \iint_{(b,z) \in Fin(t)} H_t(b, z) db dz$$

where  $E(t)$  is a set of all type  $(b, z)$ , who choose to be entrepreneurs at time  $t$ ;  $Fin(t)$  is the set of all  $(b, z)$  agents who are in the credit regime.

- iii. Labour market clears at all  $t \geq 0$

$$\iint_{(b,z) \in E(t)} l_t(b, z) H_t(b, z) db dz = \iint_{(b,z) \notin Fin(t)} H_t(b, z) db dz$$

- iv.  $\{H_t(b, z)\}_{t=0}^\infty$  evolves according to the equilibrium mapping below:

$$H_{t+1}(\bar{b}, \bar{z}) db = \gamma \mu(\bar{z}) \int_z \mathbb{1}_{\{b'=\bar{b}\}} H_t(b, z) db dz + (1-\gamma) \int_b \mathbb{1}_{\{b'=\bar{b}\}} H_t(b, \bar{z}) db$$

where  $b'$  is the bequest for an agent of type  $(b, z)$ , and  $\mathbb{1}_{\{b'=\bar{b}\}}$  an indicator function which equals 1 if  $b' = \bar{b}$ , and equals zero otherwise. As in Dabla-Norris et al. (2015), the steady state of the economy is defined as the invariant joint distribution of wealth and talent  $H(b, z)$ , such that  $H(b, z) = \lim_{t \rightarrow \infty} H_t(b, z)$

## 5. Data and calibration

For the calibration exercise, we use data from the World Bank Enterprise Surveys, the World Development Indicators and International Financial Statistics database. The Enterprise surveys provide firm-level cross-section data with a range of variables including: access to finance, business environment, firm and owner characteristics. For South Africa, data is available only for one period – 2007. The World Development Indicators from the World Bank database provide macro-level gross-savings, the interest rate spread and the non-performing loans. To calibrate the model, standard values are used from the literature as used in the original exercise by Dabla-Norris et al. (2015) for countries that are like South Africa. For instance, the one-year depreciation rate of 0.06 is used and the share of output earned by capital is 0.33. Other parameters are estimated by matching the simulated moments to actual data. For example, the savings rate is matched to estimate the bequest rate,  $\omega$ , and the average value of collateral is used to calibrate the degree of financial friction stemming from limited commitment,  $\lambda$ , which coincides directly with the maximum leverage ratio in the model. The financial participation cost,  $\psi$ , intermediation cost,  $\chi$ , recovery rate,  $\eta$  and probability of failure,  $p$ , are jointly calibrated to match the moments of the percent of firms with credit, NPLs as a percentage of total loans, interest rate spread, and the employment share distribution as in Jang et al. (2014). Each of these moments is affected by some parameters of the model.

The model assumes that the share of firms with credit is endogenous and is affected by  $\psi$ ,  $\lambda$ , and  $\chi$ . Therefore, three policy experiments are conducted to identify key constraints to financial sector inclusion in South Africa and to study the macro effects of their removal. The first experiment consists of reducing financial participation costs ( $\psi$ ). The second experiment consists of relaxing borrowing constraints in the form of collateral requirements ( $\lambda$ ). The third experiment assumes an increase in intermediation efficiency ( $\chi$ ). Table 3 presents an overview of the data.

Table 3 shows evidence of financial stress given by the high percentage of collateral requirements. 50% of the firms indicated that they need a loan and up to 30% of firms' working capital is financed through credit. Even though 98% of firms have a bank account, still up to 16% identify access to finance as an obstacle. This is plausible given the high collateral requirements, subsequently not surprising that the rate of internal financing is as high as 68.5%. The interest rate spread is comparable to that of emerging economies for the same period (3.3 for Malaysia, 4.3 for the Philippines and 6.1 for Egypt).<sup>9</sup> Given that the average number of employees in the data is almost 50, it is safe to say that this study is

---

<sup>9</sup> Figures for Malaysia, Philippines and Egypt were obtained from Dabla-Norris et al. (2015)

conducted on small to medium enterprises as per South Africa’s definition provided in appendix Table A1.

**Table 3:** Overview of the data

Gross savings (% of GDP)	19.7
Collateral (% of loan)	103.6
Firms with a bank loan or line of credit (%)	30.1
Non-performing loans (% of total loans)	3.2
Proportion of credit requiring collateral (%)	71.2
Percentage of firms using banks to finance investments	34.8
Percentage of firms that need a loan	50
Percentage of firms using banks to finance working capital	21.1
Proportion of investment financed internally (%)	68.5
Percentage of firms with a checking or savings account	97.9
Interest rate spread	4.01
Average age of the establishment (years)	15
Average number of permanent skilled production workers	25.7
Average number of permanent unskilled production workers	17.2
Percentage of firms identifying access to finance as a major obstacle	15.5
Percentage of firms formally registered	91

**Source:** *World Bank Enterprise Surveys (2007), World Development Indicators. All data for 2007*

As mentioned earlier, financial inclusion is captured by three dimensions: access or reach (which is measured by the size of participation costs), depth (determined by the size of collateral constraints), and efficiency (determined by the size of interest rate spreads). Finally, welfare analysis is conducted by estimating the change in income of the different agents (with varying initial wealth and talent) when one of the parameters  $\psi$ ,  $\lambda$ , and  $\chi$  changes. Wealth is captured by the share of income accruing to various quintiles. The direction of this change is not known *a priori* as discussed in Section 3.

Table 4 presents the parameter calibrations and compares the computed moments with the summary statistics from the data. The moments from actual data suggests that South Africa has a lower savings rate compared to emerging countries, despite favourable interest rates for savers. The low levels of savings can stifle financial intermediation since lenders would not have sufficient deposits to extend to SMEs as credit. This might account for the small number of firms that have access to credit (just 30%). The moments computed from the model are close to the actual moments with respect to savings rate, interest rate spread and non-performing loans. This indicates that the model fits the actual data fairly. The parameters, as noted before, are calibrated based on the data and some are based on Dabla-Norris et al. (2015).

**Table 4:** Data, model and calibrated parameters

Target moments	Data	Model estimated parameters	Parameters calibrated	Parameters from literature
Savings (% of GDP)	19.7	20.1	$\omega = 0.2$	$\rho = 0.15$
Collateral (% of loan)	103.6	109.6	$\lambda = 2.52$	$\eta = 0.3$
Firms with credit (%)	30.1	---	$\psi = 0.03$	$v = 0.7$
				$\rho = 0.03$
Non-performing loans (%)	4.9	8.1	$\chi = 0.85$	$\alpha = 0.33$
				$\delta = 0.1$
Interest rate spread	3.9	3.1		$d = 0.9$
Top 40% employment share	91.6	62.1		$e = 0.4$
Average household loans per capita for those between 15 & 65 years of age		$c=7.8$		
Average years of schooling		$a= 5.6$		

**Note:**  $\lambda$  = degree of financial friction resulting from limited collateral ( $\lambda \geq 1, \lambda=1$  implies that entrepreneur cannot borrow). The calibrated parameters  $\omega, \lambda, \psi, \chi$  are used to estimate the corresponding model parameters in column (2). Shape-parameters  $e$  &  $d$  are calibrated as in Mardia (1962).

## 6. Policy evaluations

Figures 4 - 6 provide an overview of the comparative statics resulting from relaxing the financial inclusion constraints in this study. Three scenarios are investigated. In the first scenario, we consider reducing the participation costs,  $\psi$ . The second scenario involves reducing the borrowing constraints equivalent to reducing collateral requirements thus changing the ratio of collateral as a proportion of total loans,  $\lambda$ . Finally, we consider an increase in the intermediation efficiency,  $\chi$ .

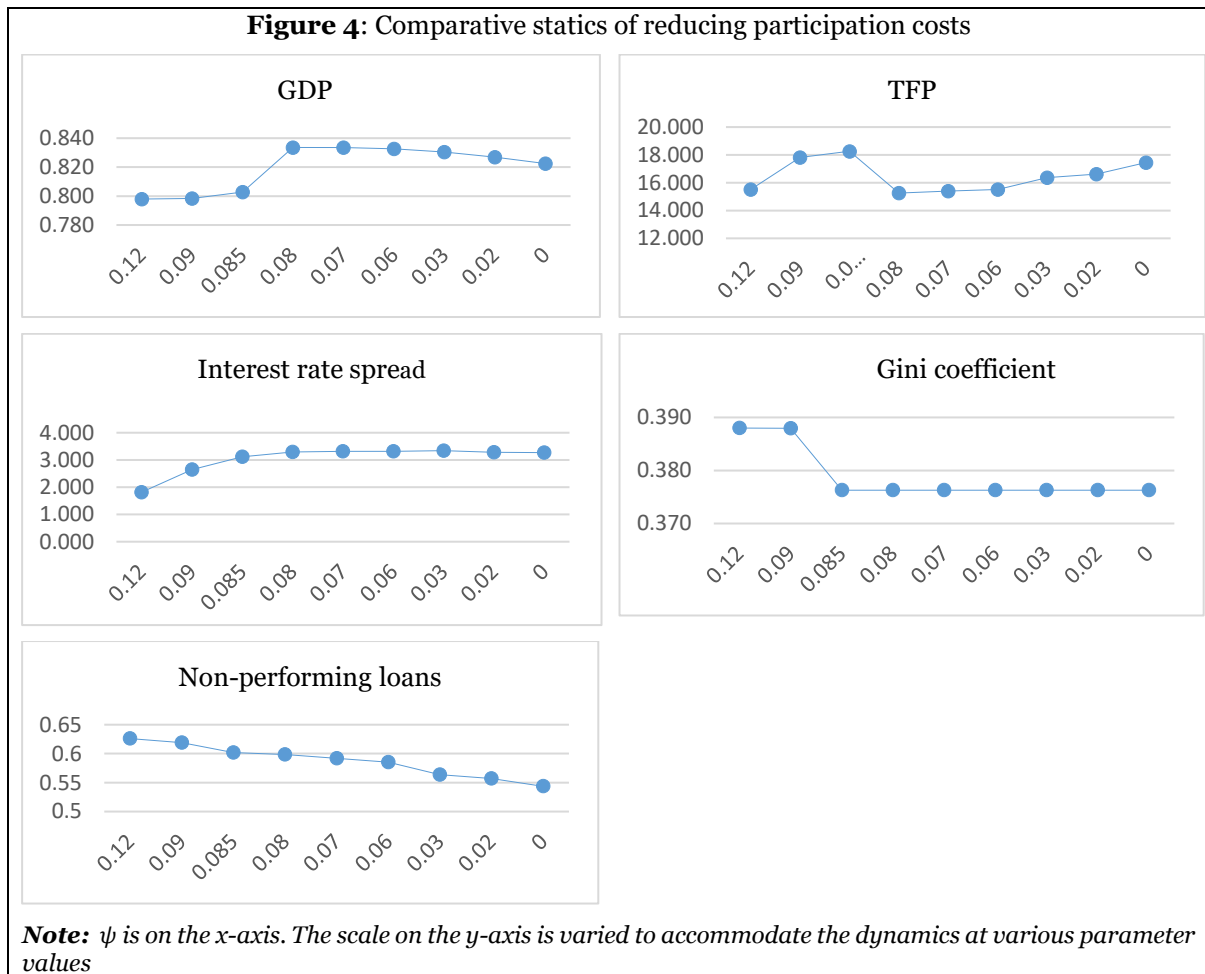
### 6.1. Relaxing participation costs

Figure 4 shows the effect of reducing participation costs from 0.12 to 0. This decline causes a slight increase in GDP through two channels. First, a reduction in participation costs allows more firms to access credit from the extensive margin perspective. This increases investment and subsequently GDP. Second, this scenario leads to less wastage as firms invest more capital in production – the intensive margin. Subsequently, TFP increases due to the efficient allocation of capital among entrepreneurs.

Interest rate spread rises monotonically driven by two forces. First, the low participation costs imply that the cost of capital is low, which encourages entrepreneurs to acquire more and hence become wealthier. These entrepreneurs then deleverage, which pushes the average interest rate spread down. Secondly, talented but constrained workers can join the credit market and borrow to become entrepreneurs. Since these workers are wealth constrained, they chose a high leverage ratio driving up the average interest rate spread. The second effect becomes more dominant as  $\psi$  tends towards zero.

The effect on inequality, captured by the Gini coefficient, is to decrease. This is because a reduction in participation costs disproportionately benefits both constrained workers and talented but constrained entrepreneurs. Constrained entrepreneurs access more credit and inject capital into

production which boosts their profits as NPLS drop. Constrained workers on the other hand receive higher wage incomes which improves their welfare. The combined effect is a sharp decline in inequality until such a point when all firms that need credit have received it, at which point the Gini coefficient flattens as  $\psi$  approaches zero. Further decline in inequality is curtailed because of other constraints that could be prevalent or that arise as a result of these dynamics. This result is similar to that obtained for Colombia by Karpowicz (2014).



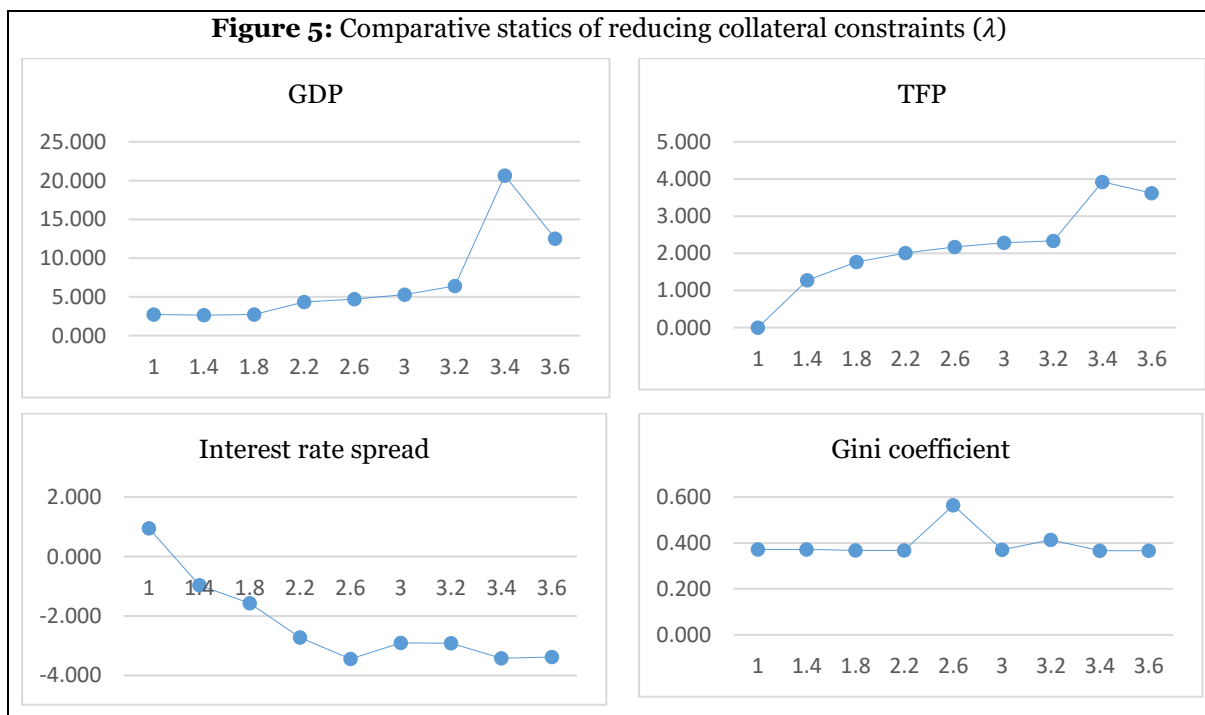
## 6.2. Relaxing borrowing or collateral constraints

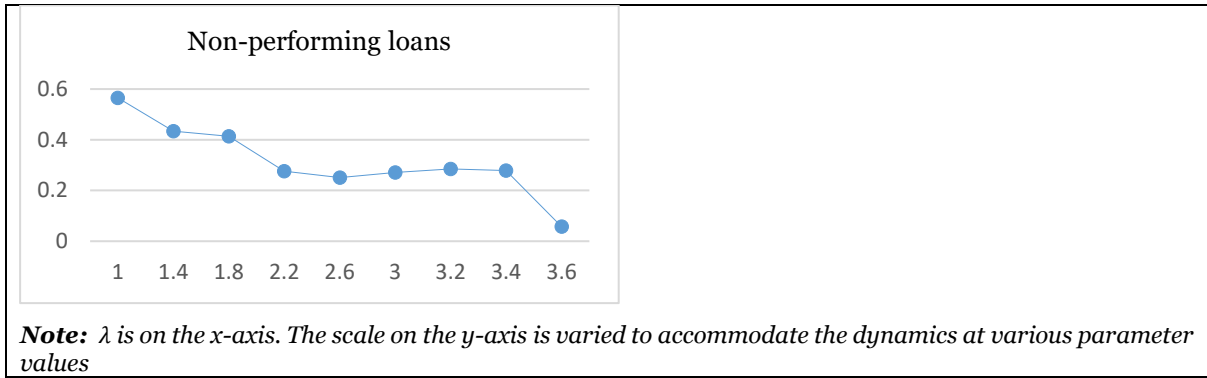
Figure 5 shows the effect of varying the collateral requirements,  $\lambda$ , from 1.0 to 3.4. Aggregate GDP rises sharply, greater than levels observed in the low participation costs regime. This is due to high deposit rates and very low average interest rate spread, which free up financial resources for investment, leading to an increase in GDP. This result is similar to results obtained for other emerging economies like Philippines by Dabla-Norris et al. (2015) and Colombia by Karpowicz (2014). This large increase in GDP would suggest that relaxing collateral constraints has great promise for increasing growth in South



Africa. TFP also improves considerably. A possible reason is that relaxing borrowing constraints enables firm to acquire more efficient technology and factor inputs.

The interest rate spread is very low, going below zero when  $\lambda$  increases slightly from one, as the ratio of non-performing loans also declines sharply. In the first instance, a relaxation of the borrowing costs pushes the default rate down and firms leverage more. However, as  $\lambda$  increases, the interest rate spread continues to decline due to a declining trend in the lending rate amidst a rising trend in deposit rate. This result is slightly different from what is observed in other emerging economies where the spread rises after an initial fall in response to a relaxation of borrowing constraints (Dabla-Norris et al., 2015; Karpowicz, 2014). A possible explanation is perhaps that relaxing borrowing constraints might only affect the incumbent and larger firms which have almost achieved optimal production. Moreover, South Africa has an initially low rate of non-performing loans. Further reduction in the borrowing constraints drives the interest rate spread down, but does not attract many newer firms to borrow thus keeping TFP relatively low. Earlier work by Berry et al (2002) identified information asymmetry as a setback for South Africa’s SMEs in that there is limited awareness of loan facilities. This means that even when collateral constrains are relaxed and interest rates drop to their lowest, fewer firms will demand loans but they would quickly take advantage of a rising deposit rate to build up own capital, which impacts productivity. Information asymmetry has been reported as a contributor to the imperfections in credit markets which makes the cost of capital unattractive to firms (see Mullineux & Murinde, 2014). It should also be noted that from a practitioner’s perspective, interest rates cannot go below zero without causing some financial instability.



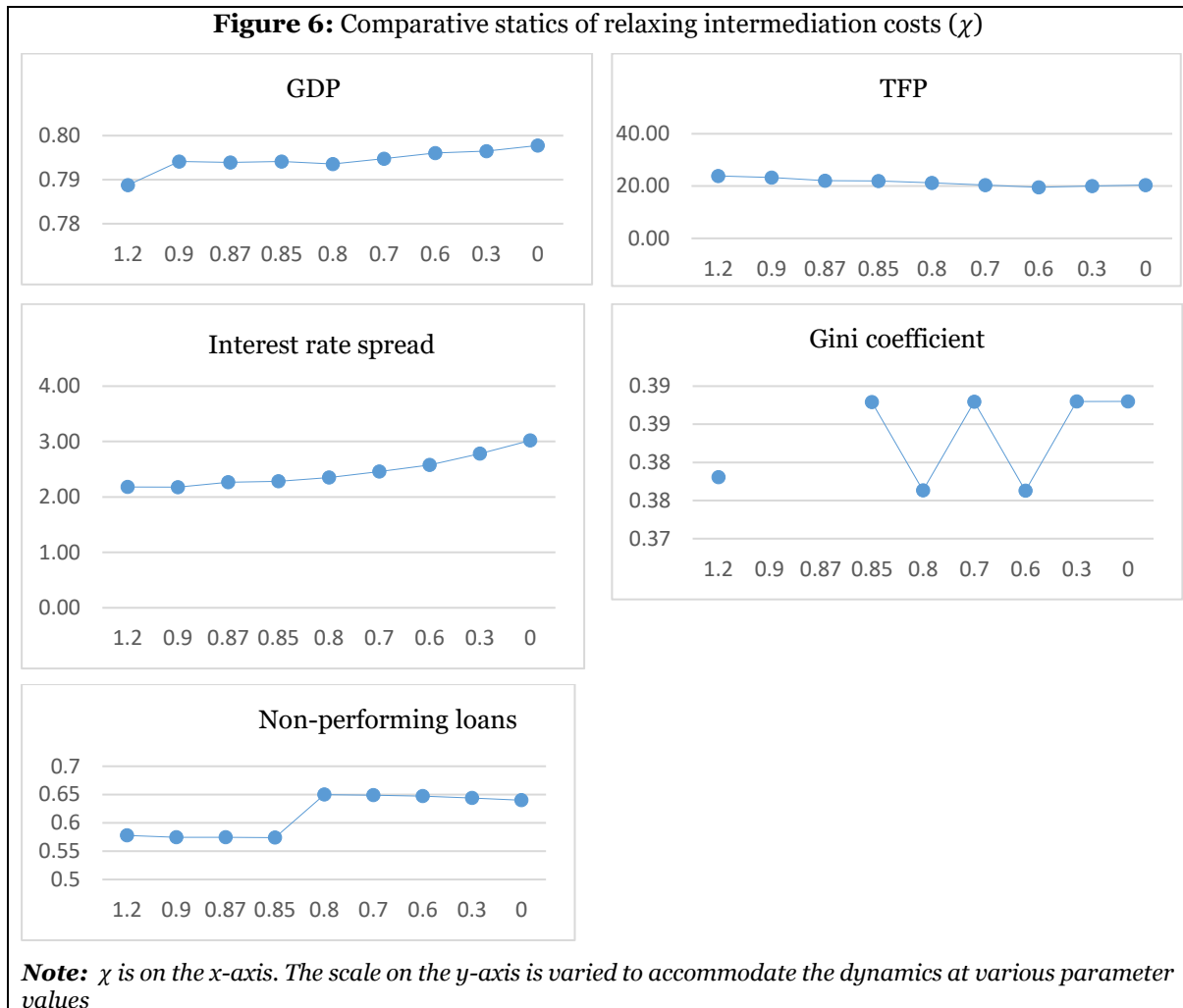


In terms of inequality, there is on average, no effect. Initially, we would expect constrained entrepreneurs to take advantage of the availability of credit, which in turn would improve their incomes. But this does not seem to happen. As interest rates decline further and collateral constraints relaxed further, incumbent entrepreneurs take advantage and borrow more, invest in their production which increases their profits even further, and subsequently inequality shoots up before returning to the original levels. This drop could be attributed to two effects: 1) the incumbent entrepreneurs cannot make more profits as they have to pay higher wages. This takes up some of their profits while raising the welfare of the constrained workers, leading to a decline in inequality. 2) Further relaxation of the collateral constraints could attract a few constrained entrepreneurs, who make profits by investing in production. But they too now face the high wages that have to be paid to workers. The failure of constrained entrepreneurs to take advantage of low collateral constraints might reflect lack of awareness of credit opportunities, i.e. information asymmetry.

### 6.3. Reducing intermediation costs

We now reduce parameter  $\chi$  from 1.2 to 0, which is part of the total intermediation cost  $p\chi$  reflecting intermediation efficiency. Figure 6 shows that with a reduction in  $\chi$ , GDP increases minimally. This is because the initial beneficiaries of this reduction are incumbent and large firms which are already few and they are highly leveraged. TFP also declines as  $\chi$  declines further, while the interest rate spread initially declines before increasing monotonically. The initial decline in the interest rate spread is the direct effect of intermediation costs. But as the intermediation costs decline further, this attracts risky firms given the low cost of capital, which increase the share of non-performing loans. This latter effect dominates the more. Note that a reduction in interest rate spread shows efficiency and depth of intermediation. A negative spread would not be desirable as it means that lending cost is far below the deposit rate. Therefore, a narrow (and non-negative) spread is desirable from the point of efficiency in pricing and depth in intermediation. This may not necessarily be a desired position in an oligopolistic banking system (like South Africa) where the spread becomes a source of rent (net interest margin) for banks.

The effect on inequality is non-monotonic. We expect that large firms benefit from the decline in intermediation costs such that they make profits and consolidate their wealth even further, thus driving up the Gini coefficient. But the increase in equilibrium wages reduces their profit levels, while at the same time increasing incomes for workers. The combined effect is to reduce inequality. As intermediation efficiency improves further, the cycle is repeated until the intermediation costs are zero, at which point inequality levels off but at almost the initial level, with rising NPLs as well.



#### 6.4. Interaction between the parameters $\psi, \lambda, \chi$

Thus far, we have analysed the effect of changes in these parameters separately on macroeconomic variables. Yet in practice they are interrelated and as such, a policy mix might yield better results. Say for instance the financial sector is mandated to reduce the collateral requirements which is equivalent to increasing  $\lambda$ . This would have the effect of increasing the number of firms with a line of credit, which is synonymous to reducing participation costs  $\psi$ . This would increase GDP because the cost of capital becomes cheaper for both talented-wealthy and talented but constrained entrepreneurs, enabling them

to invest in production. But if monitoring costs are already high, i.e. intermediation costs, then entrepreneurs might avoid acquiring cost even at low interest rates, keeping a low leverage ratio to avoid being monitored. The effect of this behaviour is to dampen the GDP gains that would have been realised by reducing participation costs. From the financial authorities' perspective, it might not be plausible to reduce the borrowing costs below a certain threshold without raising monitoring (contract enforcement) as the former would attract high risk entrepreneurs. Thus, greatly relaxing participation and borrowing constraints is likely to be counterproductive if it leads to an increase in the intermediation costs to closely monitor NPLs (Karpowicz, 2014).

Table 5 shows a comparison of the outcomes and it provides guidance of where financial inclusion should be targeted for optimal results. The largest effect on GDP results from relaxing collateral constraints ( $\lambda$ ) which leads to an increase in GDP by almost 18% (but GDP doubles if the increase in  $\lambda$  is capped at 3 as in Dabla-Norris et al., 2015; Karpowicz, 2014; Jang et al., 2014). On the other hand, the highest gains of 1.94% in TFP are realised by reducing participation costs. The effect on inequality is the same whether we are in a region of a Gini coefficient of above or below 0.60, with a decrease in inequality by 1 - 3 percentage points. An increase in the intermediation efficiency reduces inequality marginally (if the Gini coefficient was below 0.60 initially), but its effect on TFP is negative amidst a marginal increase in GDP of 1 percentage point. These results suggest that a reduction in the participation costs coupled with a decrease in the collateral constraints would offer relatively better results for the South African macro economy.

**Table 5:** Comparative statics of relaxing financial constraints on growth and inequality

	Reduction in $\psi$ ( $\psi = 0.12$ to $\psi = 0$ )	Increase in $\lambda$ ( $\lambda = 1.4$ to $\lambda = 3.4$ )	Reduction in $\chi$ ( $\chi = 1.2$ to $\chi = 0$ )
GDP	0.034	18.01	0.009
TFP	1.940	1.280	-3.530
Gini (< 0.60)	-0.010	-0.021	-0.002
Gini (> 0.60)	-0.012	-0.026	0.010

*Note:* Two scenarios of inequality are considered – Gini coefficients of above and below 0.60, given that South Africa's Gini has often been above 0.50.

## 7. Conclusion

This paper used a micro-founded general equilibrium model to examine the implications of financial inclusion policies on macroeconomic variables such as GDP, TFP and inequality in a dual economy like South Africa. Three financial inclusion dimensions were considered: access- measured by the degree of financial participation, depth – measured by the extent of collateral constraints, and intermediation efficiency – measured by the interest rate spread. We used the World Bank Enterprise Surveys, standard as well as estimated parameters from the literature to calibrate the model for South

Africa. We then undertook three simulation experiments by relaxing the constraints related to each of the financial inclusion dimensions.

Our results show that relaxing financial sector constraints has positive and negative effects on macroeconomic variables, and hence trade-offs have to be made. For instance, relaxing participation or collateral constraints can boost GDP by over 3 percentage points and TFP by up to 2 percent, while reducing inequality by up to 3 percentage points. On the other hand, increasing intermediation efficiency increases GDP marginally, has a negative effect on TFP and it increases inequality. Since the dimensions of financial inclusion are interrelated, however, these results suggest that reducing participation and collateral costs offers relatively better gains on several fronts, with inequality reducing by 1 – 3 percentage points. But the attraction of more agents into the credit regime need not translate into higher intermediation costs if the financiers can work-out an optimal interest rate that would prevent intermediation costs from rising while maintaining a positive TFP position.

The increase in TFP in these results is indicative of the broad benefits of extending credit for human capital development which increases productivity of firms and of the overall economy. However, results also suggest a possible restraint by talented wealth-constrained entrepreneurs from taking up credit when collateral constraints are greatly relaxed. Two explanations are advanced such as lack of awareness of credit opportunities or, if intermediation costs remain high, constrained entrepreneurs might choose to remain low leverage to avoid expansion and being monitored. At the same time, constrained workers might choose to save if the deposit rates are favourable, instead of joining the credit regime.

Overall, there is evident that relaxing financial constraints for SMEs can lead to positive spill-overs to South Africa's economic growth and inequality reduction prospects. However, policies that advocate for financial inclusion for firms should also create more awareness about the availability of credit. The lack of awareness or asymmetrical information was identified as a challenge for South African SMEs by Berry et al. (2002). Emphasis should also be placed on developing entrepreneurial skills to grow the entrepreneurial base in South Africa. The results of this study present further evidence that these challenges could impede the achievement of benefits of financial inclusion policies for SMEs in the country.

## References

- African National Congress (1994) *The Reconstruction and Development Programme: A Policy (Framework)*, Johannesburg, Umanyano Publications
- Asiedu, E., Kalonda-Kanyama, I., Ndikumana, L. & Nti-Addae, A. (2013) 'Access to Credit by Firms in Sub-Saharan Africa: How Relevant Is Gender?' *American Economic Review*, 103(3), 293-97
- Aterido, R., Hallward-Driemeier, M., Pages, C. (2009) 'Big Constraints on Small Firms' Growth', World Bank Policy Research Working Paper 5032.
- Ayyagari, M., Demirgüç-Kunt, A., Maksimovic, V. (2011) 'Firm Innovation in Emerging Markets: The Role of Finance, Governance, and Competition', *Journal of Financial and Quantitative Analysis*, 46, pp. 1545–80.
- Beck, T., Cull, R. (2014) 'SME Financing in Africa', *Journal of African Economies*, Vol.23:5, pp. 583-613.
- Beck, T., Demirgüç-Kunt, A., Levine, R. (2007) 'Finance, Inequality and Poverty: Cross Country Evidence', *Journal of Economic Growth*, 12 (1), pp. 211-252.
- BER. (2016) Policy Note (1), Bureau for Economic Research, Stellenbosch University
- Berry, A., Von Blottnitz, M., Cassim, R., Kesper, A., Rajaratnam, B., Van Seventer, D. E. (2002) 'The Economics of SMMEs in South Africa', Trade and Industrial Policy Strategies (TIPS), South Africa.
- Bhorat, H., Leibbrandt, M. and Woolard, I. (2000) 'Understanding Contemporary Household Inequality in South Africa', *Studies in Economics and Econometrics*, 24(3): 31-52
- Burgess, R., Pande, R. (2005) 'Do Rural Banks Matter? Evidence from the Indian Social Banking Experiment', *The American Economic Review*, 95(3), pp. 780-795.
- Chakravarty, S. R., Pal, R. (2013) 'Financial inclusion in India: An Axiomatic Approach', *Journal of Policy Modeling* 35, pp. 813–837.
- Clarke, G., Cull, R., Martinez Peria, M. S. (2006) 'Foreign Bank Participation and Access to Credit Across Firms in Developing Countries', *Journal of Comparative Economics*, 34, pp. 774–95.
- Coad, A., G. Pellegrino, M. Savona (2016). 'Barriers to Innovation and Firm Productivity', *Economics of Innovation and New Technology*, 25(3), pp 321-334, Routledge

- Credit Bureau Market Report (2016), [www.ncr.gov.za](http://www.ncr.gov.za)
- Dabla-Norris, E., Ji, Y., Townsend, R., Unsal, U. (2015) 'Identifying Constraints to Financial Inclusion and Their Impact on GDP and Inequality: A Structural Framework for Policy', IMF Working Paper WP/15/22.
- Demirgüç-Kunt, A., Klapper, L., Singer, D., Van Oudheusden, P. (2015) 'The Global Findex Database 2014. Measuring Financial Inclusion Around the World', World Bank Policy Research Working Paper, 7255. The World Bank, Washington DC, USA.
- Demirgüç-Kunt, A., Levine, R. (2009) 'Finance and Inequality: Theory and Evidence', *Annual Review of Financial Economics*, 1, pp. 287-318.
- Diamond, D. (1991) 'Monitoring and Reputation: The Choice Between Bank Loans and Directly Placed Debt', *Journal of Political Economy*, 99, pp. 689-721.
- Doing Business (2016) <http://www.doingbusiness.org/data/exploreeconomies/south-africa/getting-credit>, World Bank.
- Fazzari, S., Hubbard, G., Petersen, B. (1988) 'Financing Constraints and Corporate Investment', *Brookings Papers on Economic Activity*, 1, pp. 141-95.
- FinScope SME Survey (2010), South Africa, [www.finmark.co.za](http://www.finmark.co.za)
- Greenwood, J., Jovanovic, B. (1990) 'Financial Development, Growth and the Distribution of Income', *Journal of Political Economy*, 98, pp. 1076-1107.
- Guiso, L., Schivardi, F. (2004) 'Learning to be an Entrepreneur', University of Chicago
- Honohan, P. (2008) 'Cross-Country Variation in Household Access to Financial Services', *Journal of Banking and Finance* 32(11), pp. 2493-2500.
- <https://www.ibef.org/download/SMEs-Role-in-Indian-Manufacturing.pdf>
- International Monetary Fund (2015). South Africa: Financial Sector Assessment Program Update.
- Jang, B. K., Benicio, D., Chiyaba, G. (2014) 'Enhancing Financial Inclusion in Zambia', International Monetary Fund.
- Karpowicz, I. (2014) 'Financial Inclusion, Growth and Inequality: A Model Application to Colombia', IMF Working Paper No. 14/166, International Monetary Fund.
- King, R. G., R. Levine (1993) 'Finance and Growth: Schumpeter Might Be Right', *The Quarterly Journal of Economics*, 108 (3), pp. 717-37.

- Levine, R. (2005) 'Finance and Growth: Theory and Evidence', in P. Aghion and S. Durlauf (Eds.),  
Handbook of Economic Growth. The Netherlands: Elsevier Science.
- Lloyd-Ellis, H., Bernhardt, D. (2000) 'Enterprise, Inequality and Economic Development', *Review of Economic Studies*, 67 (1), pp. 147-68.
- Mardia, K. V. (1962) 'Multivariate Pareto distributions', *The Annals of Mathematical Statistics*, 33, pp. 1008-1015
- McKinnon, R. I. (1973) 'Money and Capital in Economic Development' Brookings Institution, Washington, DC).
- Mullineux, A. W., Murinde, V. (2014) 'Financial Sector Policies for Enterprise Development in Africa', *Review of Development Finance*, 4, pp. 66-72.
- Murphy, K. M., Shleifer, A., Vishny, R. W. (1991) 'The Allocation of Talent: Implications for Growth', *The Quarterly Journal of Economics*, 106 (2) 503. doi:10.2307/2937945
- Sankaran, P. G., Nair, N. U. & John, P. (2014) 'A Family of Bivariate Pareto Distributions', *Statistica*, LXXIV (2)
- Sarma, M. (2015) 'Measuring Financial Inclusion', *Economics Bulletin*, 35(1), pp. 604-611
- Shaw, E. S. (1973) *Financial Deepening in Economic Development*, Oxford University Press, New York
- South Africa Economy: An overview of key trends since 1994. Industrial Development Corporation, December 2013
- The DTI (2008) *Annual Review of small business in South Africa 2005 - 2007*. Pretoria, Department of Trade and Industry
- Townsend, R. M., Ueda, K. (2010) 'Welfare Gains From Financial Liberalization', *International Economic Review*, 51(3), pp. 553-597.
- WBES - World Bank Enterprise Surveys (2007)
- Wilkinson, B. (2000) 'Small Business Policy: Options for Finance, Taxation, Labour, and Government Procurement; Expanding Local Options Using Emerging Principles and International Experience: A Review of Recent Literature', SEGA South Africa Project, p.11.
- World Bank (2013a) 'Global Financial Development Report: Financial Inclusion', Washington, DC
- World Bank (2013b) *South Africa Economic Update: Focus on Financial Inclusion*. South Africa Economic Update, Issue No. 4, Washington, DC.



World Bank (2014), Global Financial Inclusion Database

World Bank (2015), World Development Indicators

## Appendix

**Table A1: Definitions of enterprises in South Africa**

**Panel A: Enterprise definition by employment, turnover & assets**

Enterprise Size	Number of employees	Annual turnover	Gross assets, excluding fixed property
Medium	Fewer than 100 to 200, depending on industry	Less than R4 million to R50 million, depending upon industry	Less than R2 million to R18 million, depending on industry
Small	Fewer than 50	Less than R2 million to R25 million, depending on industry	Less than R2 million to R4,5 million depending on industry
Very small	Fewer than 10 to 20, depending on industry	Less than R200 000 to R500 000, depending on Industry	Less than R150 000 to R500 000, depending on industry
Micro	Fewer than 5	Less than R150 000	Less than R100 000

**Source:** National Treasury of South Africa (2010) - unpublished

**Note:** Definition by National Small Business Bill (2003)

**Panel A2: Enterprise definition by industry turnover (> R million)**

	Large	Medium	Small	Very small
Mining	370.5	95	38	2
Manufacturing	456.3	123.5	47.5	2
Electricity, gas & water	456.3	123.5	48.5	2
Construction	247	57	28.5	2
Wholesale trade	608	304	57	2
Retail trade	370.5	180.5	42.5	2
Motor trade	370.5	180.5	42.5	2
Accommodation & catering	123.5	57	48.5	2
Transport	247	123.5	28.5	2
Real estate & business services	247	123.5	28.5	2
Community, social & personal	123.5	57	8.5	2

**Source:** Bureau for Economic Research (2016)

**Note:** Definition by the Department of Trade & Industry. Figures adjusted by Statistics South Africa