ZIPAR
Zambia Institute for Policy Analysis & Research

Switching costs, Relationship Banking & MSMEs formal Bank Credit in Zambia

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Working Paper No.20
January, 2014

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Acknowledgment and Disclaimer

Abstract

This paper uses data collected from a sample of Micro, Small and Medium Enterprises (MSMEs) located in urban areas of five major districts in Zambia to investigate the role of switching costs and relationship banking among MSMEs when borrowing formal bank credit. We find that MSMEs choice of the main-bank does not persist signaling the absence of switching costs and the vague role of relationship banking. Moreover, switching a main-bank has no effect on lending interest rates. Our results imply that MSMEs are not 'locked-in' and long-term relationships between banks and MSMEs barely exist. Banks also don't use discounts on lending interest rates to attract enterprises from competitor banks. These results point to the existence of asymmetric information as the main explanation for the occurrence of high interest rates and low volume of credit banks allocate to MSMEs. Therefore, we recommend strengthening relationship banking as a single opportunity to promote repeated interaction between banks and MSMEs and greater absorption of MSMEs 'soft' information by commercial banks.

1.0. Introduction

The problem of high lending interest rates and low access to formal bank credit faced by MSMEs in Zambia is a cause of great concern to the Government and other stakeholders. While potential causes of this problem are many, with some specific to enterprises and others to banks and regulators, the role of switching costs and relationship banking has never been investigated.[1] Accordingly, we investigate their role in this paper. This investigation is necessary to inform government and stakeholders in the financial sector on the type of actions they must consider implementing to influence competitive interest rates and improved flow of bank credit to MSMEs.

Switching costs are defined as costs that are associated with leaving a current lender or main- bank in this case, to join another that offers favorable customer services and product terms. They usually occur in lending markets when borrowers need to duplicate the investment specific to their current lenders for the new ones. This tends to prevent free exit and entry of borrowers across banks thereby creating inelastic demand for incumbent bank lenders. If switching costs are present when MSMEs borrow formal bank credit, commercial banks can exert market power by charging them noncompetitive high interest rates. This is called the 'locked-in' or consumer 'harvesting' problem in this literature (see Farrell and Klemperer, 2007).

Relationship lending can be defined as the provision of credit by banks on the basis of long-term investment in obtaining enterprise-specific information that is proprietary in nature through multiple interactions over a period of time (see Boot, 2000). In general, relationship lending is considered as one of the most powerful technologies available to reduce information problems in small firm finance. Under relationship lending, banks acquire information over time through contact with the firm, its owner, and its local community on a variety of dimensions and use this information in their decisions about the availability and terms of credit to the firm (Berger and Udell, 2002).

Most banks in the country argue that MSMEs lack proper information and collateral that is required to make a sound credit decision. These banks also indicate that they disproportionately depend on relationship lending when serving MSMEs (Mphuka, Simumba, and Banda, 2013). Therefore, the credit interaction between many MSMEs and commercial banks is likely to be shaped by some other non-quantifiable but critical aspects such as trust and character of the MSMEs as perceived by commercial banks. These attributes shape over a period of time so that MSMEs hardly develop more than a single-bank credit relationship.

At the same time, the focal attributes of these credit relationships are usually unknown to competitor banks or at least cannot be easily verified by them. If banks credit provision to MSMEs is truly shaped by relationship lending as a mechanism to bridge their information opaqueness, then switching costs might be a crucial determinant in explaining restricted competition and hence the high cost and low access problem to formal bank credit by MSMEs in the country.

The issue of switching costs and their effects on interest rates in banking markets has received considered attention in developed and transition countries but less so in countries similar to Zambia. Therefore, there is generally lack of evidence on the existence and role of switching costs on interest rates and volume of credit banks allocate especially to MSMEs. In the case of Zambia, it is puzzling why a great deal of policy reform efforts in the last two decades have failed to sufficiently foster substantial reduction in lending interest rates and stimulate improved formal bank enterprise credit.[2] This is despite the reform

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1   For example, low capitalization among commercial banks and stifled competition. While there is ample evidence that commercial banks in Zambia earn profits under monopolistic conditions (see Mwenda and Mutoti, 2011; Musonda, 2008), antitrust efforts have never uncovered any commercial bank cartel.

2   Currently, the country has been implementing the financial sector development plan (FSDP) phase II after a series of prior market-based reforms that started with the broader Structural Adjustment Programme in 1992. To reduce the cost of credit, government has unilaterally capped effective commercial bank lending interest rates at nine percentage points above the central bank policy since January 2013. This has resulted in bank lending interest rates to vary between 18.25% and 18.75% in line with the policy rate adjustments.

agenda being premised on the overarching objectives of stimulating competition, improving efficiency and the infrastructure in the financial sector (Bank of Zambia, 2011).

Our investigation based on data collected from MSMEs located in five major urban districts, show that MSMEs choice of the main-bank does not persist, an indication that switching costs do not exist. Moreover, we find that MSMEs switching of the main-bank does not confer any lending interest rate advantage implying that commercial banks don't use interest rate discounts to lure MSMEs customers to switch their incumbent main-banks. These results indicate that long-term relationships between banks and MSMEs barely exist and there is identical pricing of MSMEs credit across commercial banks.

These results support alternative but also richer explanations for the occurrence of high interest rates and low volume of credit allocated to MSMEs outside the 'regular' switching costs argument in the literature. First, the lack of long-term relationship building between commercial banks and MSMEs points to the likelihood that banks lack practical knowledge of MSME business risks. This ignorance is likely to impede commercial banks ability to correctly price the MSMEs risk premium and therefore arbitrarily charges interest rates on the higher side. This is likely to explain the occurrence of high interest rates among commercial banks.

Second, weak relationships between MSMEs and banks also mean that commercial banks deal with MSMEs using 'arms-length' transaction type of lending method that is heavily dependent on information and collateral that most MSMEs do not possess. Therefore, asymmetry of information is still widespread and does not only affect high interest rates but also credit rationing that leads to many MSMEs being denied credit or remaining discouraged to borrow due to their information opaqueness. This manifests in MSMEs low access to formal bank credit (the low access problem). Therefore, the problem in Zambia is not a switching cost problem but a coordination failure problem that needs to be urgently rectified.

It is possible that both banks and MSMEs incur substantial communication costs that can be resolved if an institutional agency is setup to remove the communication barriers between banks and MSMEs. Therefore, existing institutions such as the Zambia Development Agency and its peers mandated to support MSMEs development and access to finance need to strengthen their interventions so that barriers that constrain relationship initiation and sustainability between MSMEs and banks are curbed.

2.0. Commercial bank sector and bank lending to MSMEs

The commercial banking sector in Zambia consist of nineteen registered commercial banks. The central bank, Bank of Zambia, classifies 16 banks as foreign owned while 2 banks are classified as locally owned. The remainder is categorized as a joint venture bank. When a threshold of 50% and above of voting rights held by foreign nationals is used to classify foreign bank ownership, 15 banks can be classified as foreign owned.

The commercial bank sector is an important source of capital for enterprise development in Zambia. The options to access funds outside the commercial banks are much more limited and present a number of challenges. For instance, the only equity market, the Lusaka Stock Exchange (LuSE), is still embryonic and does not cater to MSMEs despite being in existence for about 20 years. Venture capital initiatives are also extremely rare. The public operated citizen economic empowerment Fund that was established in 2007 to provide afordable finance to local enterprises has limited capability and it is not completely void of politics. In some way, micro-finance credit ofers some alternative but its disadvantage is that it is hardly available in sufciently larger amounts and longer tenure when compared to commercial bank credit.

The banking sector in Zambia underwent heavy deregulation between 1992 and 1994. This led to a substantial creation of new banks but many of them collapsed at the end of the twentieth century due

to various reasons. In the absence of a depositor insurance, many depositors shifted their holdings to large and considerably financially sound commercial banks. Consequently the assets and capital structure of the banking industry mimicked the shifts in the deposits and led to a heavily concentrated banking sector in which a few big banks dominated. During the period 2005 to 2010, the number of commercial banks rose from 14 to 18. The recent addition to the number of commercial banks was in 2012. Mwenda and Mutoti (2011) and Musonda (2008) show that concentration measured both on the four-firm concentration ratio and Herfindal Index is high. For example, the largest four private banks account for over 74% of total banking assets and in excess of 67% in terms of total banking sector deposits.

Currently, at least thirteen commercial banks directly serve the MSMEs sector.[3] Commercial banks typically use annual turnover to classify MSMEs. The threshold varies quite widely across banks with big banks adopting higher thresholds but K10 million is the upper limit. Mostly, banks offer products that are more linked to cash flow solutions rather than capital needs of MSMEs, a situation that probably reflects the low capitalization among banks or pervasive risk aversion. In 2012, the central bank passed new regulations that significantly raised the capital requirements for commercial banks to operate in the country. This is expected to improve their ability to lend.

The data on commercial bank lending to MSMEs is scant. Indicative data compiled by the Bankers Association of Zambia beginning December 2010, shows that commercial bank lending to MSMEs has been rising.[4] Table 1 summarizes the distribution of bank lending to MSMEs based on this data. It shows that lending to MSMEs more than doubled within a six-month period in 2012 after marginally dropping in 2011. In the last half of 2012, total bank lending increased by 28% while lending to MSMEs is purported to have risen by 121%. While this increase may be extremely biased upwards, the important observation is that it is banks that dominate the market share that have been leading the growth of credit to the MSME sector. For instance, while the growth at the median of the MSME loan portfolio is 22.5%, the growth at percentiles higher than the median is extremely large compared to percentiles lower than the median that show significant reduction. Although suggestive, this result is likely to reflect huge infrastructure, large capital and the broad branch network that big banks possess because bank MSMEs lending portfolio is strong correlated to bank size.

Table 1: Indicative bank lending to MSMEs in K'000

Period	Total Bank Loans	Total MSME Loans	Mean	p1	p10	p50	p90	p99
						Percentiles		
Dec 2010	9,164,159	388,111	29,855	1,013	3,290	20,870	61,694	69,658
Dec 2011	11,840,511	301,382	27,398	1,400	2,571	10,070	88,789	91,315
Jun 2012	12,912,855	845,363	84,536	9,486	9,552	53,491	253,844	339,972
Dec 2012	16,616,545	1,867,491	124,499	3,815	6,449	65,533	423,334	655,493

Overview of the MSMEs sector

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3   The commercial banks that do not serve MSMEs indicate that they do it purely on corporate strategy determined by their parent banks mainly domiciled abroad

4   This data lacks quality assurance and it is certainly biased upwards as it is produced by lobby group of commercial   banks. Equally, the response rate varies between 11 and 15 banks

3.0. Overview of the MSMEs sector

MSMEs in Zambia are spread across all the economic sectors and represent one of the most prolific sources of productivity growth and job creation. They represent an avenue to diversify the economy away from the vulnerable dependence on mining into a more resilient domestic high-value addition industrial nation. MSMEs are defined based on a combination of variables that include total fixed investment excluding land and buildings, annual turnover, number of employees and legal status. Although the MSME policy requires that a business has to be legally registered before it can qualify to be classified as an MSME, there are many MSME equivalent firms that are not formally registered. These are called informal MSMEs and they are estimated to be between 943 thousand and 1.2 million compared to 30 thousand that are formally registered as reported by the national tax authority (Kedia-Shah, 2012).

Figure 1 shows the cumulative percentages of employment, annual turnover, formal registration with the Patents and Companies Registration Authority (PACRA) and the number of business units computed from data collected in the 2008 World Bank Business Survey in Zambia.[5] Using the number of full-time employees and ignoring their legal status, it is observed that most MSMEs in Zambia are micro enterprises. These typically employ less than 10 full-time employees and account for approximately 96% of the total number of roughly 1.5 million businesses in Zambia. This pattern conforms to the regularity of the 'missing' middle in the size distribution of firms as stylized in much of the economic literature. In this case, the missing middle also extends to smaller enterprises. Microenterprises strongly dominates especially those employing fewer than three fulltime employees. The total contribution of microenterprises to full-time employment is 26.4% and 57.8% to formal enterprise registration at PACRA. However, there contribution to annual turnover in the economy is extremely low at 3.3% despite their massive population.

When combined together, MSMEs account for 99% of the total number of businesses operating in the country. They employ 56% of total full-time employees and account for 80% of registered business at PACRA. They generate 35% of annual national business turnover. This picture justifies the claim that MSMEs are significant productivity growth and job creation in the country. It also shows that many MSMEs are microenterprises that are capital deficient and record very low productivity as indicated by the low proportion of annual turnover per level of employment. This shows that capital finance is required if many microenterprises have to contribute significantly to economic growth and development.
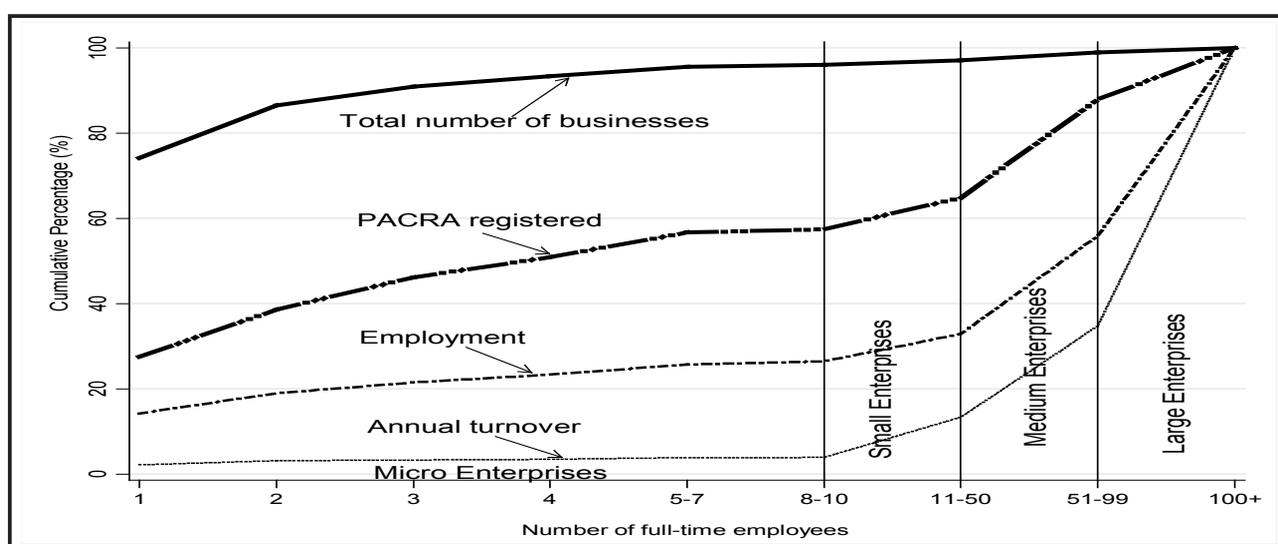
Figure 1: Enterprise characteristics by number of full time employees

While improved finance through competitive interest rates is imperative for productivity improvement among MSMEs, the country lacks a cadre of nascent entrepreneurs. Table 2 shows that very few

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5   This is the only recent comprehensive data on businesses that is publicly available in the country at present. The data on the economic census that was conducted in 2011 has not yet been published. The details of the data are provided at http://siteresources.worldbank.org/INTAFRICA/Resources/zambia_biz-survey.pdf

microenterprises are created because its owners would like to implement a business idea. Instead the majority of these enterprises are created to supplement the income of its owners mainly from wage earnings. This evidence casts doubt on the viability of the outspoken MSMEs in terms of their willingness and ability to innovate and grow into third generation vibrant private sector that is expected to anchor Zambia's economic transformation.

Table 2: Motives for establishing a microenterprise

	1 fulltime Employee	more than 1-employee	Difference
I was retired/retrenched from a previous job	5%	6%	-1%
I couldn't find a job elsewhere	18%	16%	2%
To support me/my family	14%	20%	-6%
To supplement other income	82%	75%	8%
To try out a business idea	10%	13%	-3%
I hoped to make more money working for myself	6%	10%	-3%
I had nothing else to do	1%	3%	-2%
Other reasons	13%	11%	2%

In Figure 2, the distribution of MSMEs by sector of economic activity and the duration in business measured by the number of years an enterprise has been in existence is shown. Since the size distribution of MSMEs is heavily skewed towards microenterprises, economic activity is unsurprisingly concentrated in the agriculture sector. Nonetheless, the wholesale and retail trade sector is dominant in the year of commencement but quickly drops below agriculture due to high infant firm mortality.[6] MSMEs that conduct business in manufacturing, construction and the hotels and food catering sectors show better survival rates. However, there are fewer MSMEs that operate within these sectors, an indication that probably reflects the relatively higher capital that is required to conduct businesses in these sectors.
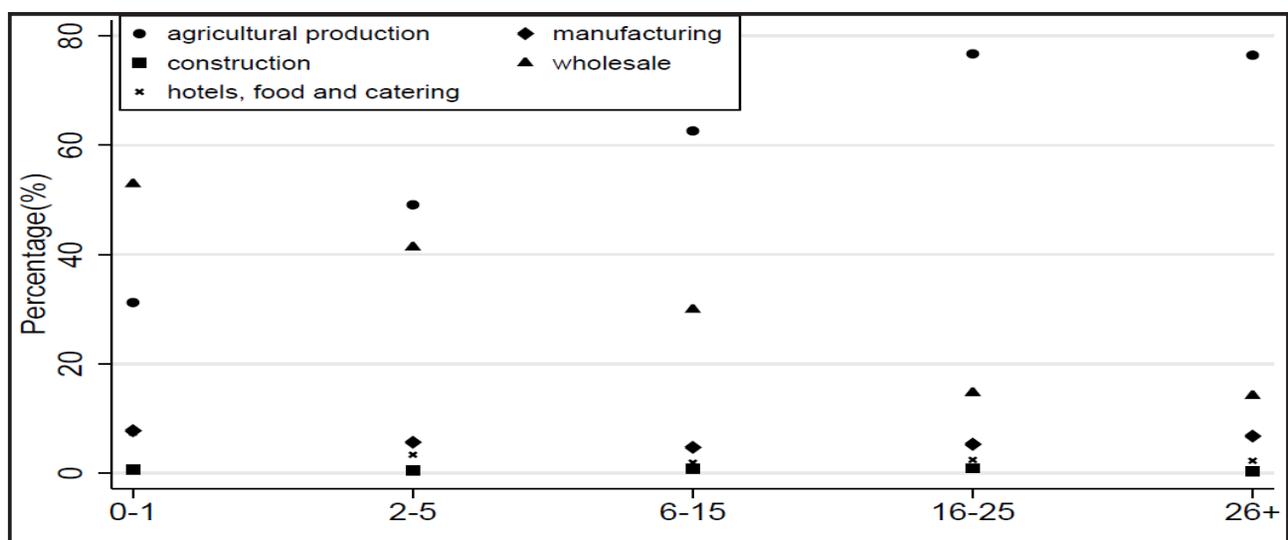

Figure 2: Sector patterns MSMEs by years spent in business

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6   We do not delve into the discussion of factors that cause short duration of MSMEs survival as they lie outside the focus of this paper

4.0. Literature on switching costs and relationship banking

Customer relationship lending by commercial banks is theoretically known to be the source of switching costs as long as the process of lending leads the incumbent lending bank to learn more than the competitor or potential bank lenders about its borrowers (Sharpe, 1990). Therefore, switching costs arise when buyers separate purchases are repeatedly made from the same seller which invariably creates a buyer-seller relationship (see Farrell and Klemperer, 2007).

A vast theoretical literature predicts that switching costs are harmful to long-run competitive conditions in markets (see survey by Farrell and Klemperer, 2007). The key argument in this literature is that if switching costs or buyer lock-in is possible, establishing market share becomes a value asset to sellers. Firms are motivated to vie for market share by competing hard for early market adoptions based on penetration pricing that may perhaps be even less efficient. This arises because early sales generate lucrative follow-on sales as locked-in buyers pay more and create ex-post rents.

Empirical evidence on existence of switching costs and their combined role with relationship banking in explaining access and pricing of MSMEs formal bank credit is generally missing. However, studies that investigate switching costs in other customer segments especially consumers in the banking sector are modest and growing for high income and transition countries. Nonetheless, we review the studies that investigate switching costs and are relevant to our investigation.

Kim, Kliger, and Vale (2003) estimate switching costs amounting to 4.1% of a customer's total loan among borrowers in Norway based on aggregate market shares data and a specification of interest rate dynamics. Evidence from micro data on prices and market shares in Finland by Shy (2002) indicates that switching costs among individual bank customers range between 0 and 11% of the average bank account balances. Barone, Felici, and Pagnini (2011) find robust borrower inertia consistent with the existence of switching costs in four provincial corporate loan markets of Italy with additional evidence that banks price discriminate in favour of new borrowers and ofers them a discount totaling 7% of the average interest rate. Ho (2009) finds evidence that switching costs produce significant impacts on consumers choice of deposit institutions in China. The deposit consumers also adjust bank choices gradually following a change in some bank attributes. This finding is based on a dynamic model of consumer demand for deposits in which products are differentiated and have characteristics that evolve with time.

Although the conventional view is that switching costs are detrimental to competitive pricing in markets, Dube, Gunter, and Rossi (2009) and Cabral (2012) provide theoretical basis that challenge this conventional wisdom. They show that under dynamic price competition that allows for differentiated products and imperfect lock-in of heterogeneous customers, firms tend to compete for market shares (investment incentive), where competition is for the market and protect their base of imperfectly locked-in customers. In these models, steady-state equilibrium prices are lower even when significant switching costs are present.

However, lower equilibrium prices only persist when switching costs are sufficiently smaller. When relatively large switching costs are introduced in these models, the harvesting motive overshadows the investment motive and prices rapidly rise and market competition is harmed.[7] There is no regularity on the amount of switching costs that are able to support and not harm competition. This is likely to depend on many factors such as the nature of the product and the geographical context of the market. Therefore, investigating switching costs and determining their effect on competitive conditions is an empirical matter and results can potentially differ across countries.

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7 Dube et al. (2009) further provide empirical evidence based on Bayesian numerical analysis which shows that switching costs up to twice the purchase price are linked with lower equilibrium prices but this is in the case of orange juice and margarine.

5.0. Data description

Investigating the role of switching costs and relationship lending on the occurrence of high interest rates and low volume of banking lending to MSMEs requires loan contract information data for every enterprise that borrowed from the commercial banks. However, the refusal by commercial banks and later on the credit reference bureau to provide loan contract data for MSMEs borrowers led us to utilize the 'second best' option of data collection. At first, we conducted an exploratory survey of MSMEs that conduct business within the central business district, the light industrial zone and the heavy industrial area of Lusaka, the capital city. Thereafter, we scaled up the survey to Ndola, Kitwe, Choma, Livingstone and other urban areas in Lusaka. These cities were chosen based on the agglomeration of MSMEs and the cost effectiveness in data collection.

A team of research assistants canvassed a delineated geographical area usually a street or an avenue or a section and visited all the MSMEs there. All MSMEs that had borrowed at least one loan product including overdrafts or a bond guarantees between 2008 and 2013 where interviewed upon granting consent. The questionnaire captured information pertaining to enterprise background information, multiple banking relationships, terms and conditions of the loan, the main or primary bank in each year, less sensitive financial information and the business environment of the enterprise. While locating eligible MSMEs was very difcult, the level of cooperation was overwhelming, an indication that MSMEs have considerable interest on the topic of afordable bank finance and improved access.

In total, we successfully interviewed 449 MSMEs from all the study districts. We define MSMEs as any enterprise whose annual sales are less or equal to K10,000,000 like typically done among banks.[8] We capture switching using an indicator for every episode that an MSME reports a diferent main-bank between any two successive years.[9]

We construct a balanced panel over the period 2009-2013. We lose 2008 because measuring switching requires knowledge on the past years main bank of the enterprise. At the same time, we use 2009 for the initial condition of switching only because it does not have a lagged value of switching as well. All MSMEs that had missing values on any of the constructed variables irrespective of the time period were dropped leading to data usable data for 350 MSMEs.

In Table 3, we show both the unconditional and conditional probabilities of switching based on switching status in period t – 1 in each year. The raw unconditional probability for MSMEs to switch their main-bank over the whole period is 10.5%. The likelihood to switch generally increases with time except for 2010 and 2012. MSMEs that switch in the past year are more (almost two times more) likely to switch the main bank again than those that never switched as shown in column 3 and 4 respectively. The considerable low likelihood of switching among MSMEs that never switched in the previous period is a naive indication of state dependence or persistence in the failure of MSMEs to switch their main commercial bank.

Nonetheless, the rise in the likelihood to switch the main bank overtime fits the correspondent rise in the number of new banks from 14 to 19 between 2008 and 2012 after a long spell of stagnation since 2010.[10] The extremely large proportion of MSMEs that stick to their past choice of the main bank (the status quo bias) forms the basis on which we investigate the existence of switching costs in this paper.

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8 Our sample includes about 30% of unregistered MSMEs where the principal owner borrowed for the enterprise using their job earnings or pledged non-business assets as collateral such as personal estate.

9 We reiterate that main-bank relationship is based on enterprise self reports based on recalling

10 Traditionally, many new banks tend to attract MSMEs customers and individual clients before large corporations

Table 3: Unconditional and conditional probability of MSMEs to switch their main-bank

Year	Unconditional	Switched at t-1	Never Switched at t-1	Total Number of observations
2009	0.129			350
2010	0.043	0.089	0.036	350
2011	0.089	0.267	0.081	350
2012	0.140	0.194	0.135	350
2013	0.126	0.225	0.110	350
Total	0.105	0.179	0.091	1750

Before presenting the descriptive statistics, we analyze the distribution of lending rates which are faced by the two groups of the MSMEs, the switchers and non-switchers. First, each MSME was asked to indicate whether at the time it borrowed, the credit was either contracted from a commercial bank that was it's primary (main) bank or not. While this does not capture switching per se, it shows whether banks that are able to attract customers of the competitor banks do provide them offers through low interest charges.

The upper left panel in 3 shows that around the mode of the lending interest rate, there is a tendency of MSMEs that borrow from non-main banks to receive lower rates but the difference is extremely minute. Actually, the two sample nonparametric Kolmogorov-Smirnov test for equality of distribution functions shows that the difference is statistically insignificant indicating that the lending rates are equal in the limit. The difference in the distribution of lending rates is also statistically insignificant among firms that switch their main bank and those that do not.

However, it is possible that the date at which a loan was contracted could be preceded by the date of switching and this might be inducing bias in the results.[11] To control for this possibility, we also test for the difference in lending rates by allowing switching to be predetermined. We use the switching outcome at date t-1 and we still find that the difference is statistically insignificant from zero. Therefore, we conclude there is no difference on interest rates that are charged between MSMEs that switch their main bank and those that do not.
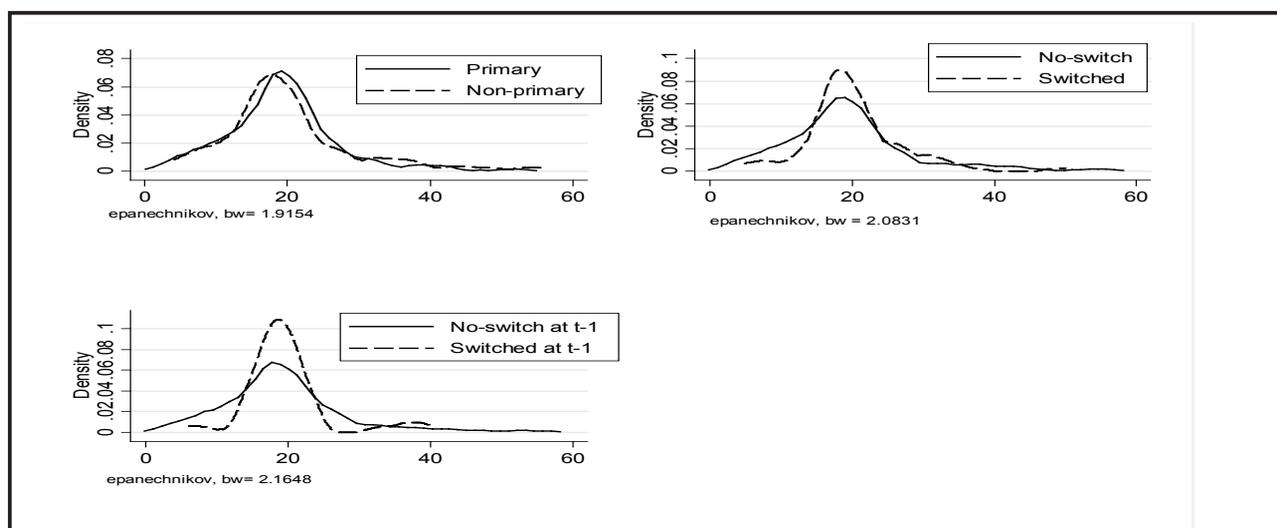

Figure 3: Difference in lending rates by switching status among MSMEs

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11 Our data refers to the year not the month or date which may be adversely prone to recall bias than the year

The summary statistics of the balanced panel are presented in Table 4 and Table 5. Table 4 shows the average values of the covariates that vary over time. These values provide useful variation of characteristics that enriches the capturing of individual heterogeneity. Table 5 describes the characteristics included in the estimation of the model that are fairly constant overtime.

Table 4: Averages of time varying covariates

	Mean			
Variable	**2010**	**2011**	**2012**	**2013**
Age of principal owner	41	42	43	44
Fulltime employees	5	5	5	6
Value of Assets*	208,845	186,433	187,458	188,582
Business sales*	141,758	134,716	137,184	125,736

Notes: * denotes 1% upper-tail trimmed average

Table 5: Time invariant summary statistics

Variable	Mean	Std. Dev.	Min.	Max.
No switch	0.90	0.30	0	1
No switch lagged	0.90	0.30	0	1
Keep financial records	0.69	0.46	0	1
Formally registered	0.74	0.44	0	1
Number of shareholders[mean]	1.74	1.48	1	10
Male owner	0.79	0.41	0	1
Attained tertiary education	0.50	0.50	0	1
Able to negotiate with bank	0.33	0.47	0	1
Education/private school sector	0.04	0.20	0	1
Retail and wholesale trading sector	0.57	0.50	0	1
Hospitality, food and leisure sector	0.05	0.22	0	1
Transport sector	0.05	0.22	0	1

6.0.   Methodology

6.1.   Inertia in MSME main-bank choice

In order to investigate the existence of switching costs, we first examine whether there is significant persistence in MSMEs repeated choices of the main bank. A genuine causal effect between lagged and current choices of the main bank by MSMEs is a signal of the existence of switching costs because it shows whether MSMEs do stick to their earlier main-bank choice. However, Heckman (1981) shows that in the presence of unobserved heterogeneity across sample units, a positive correlation in repeated choices can arise not because of the existence of true state dependence but also due to persistence in unobserved factors that influence current and lagged choices. This leads to spurious correlation in repeated choices. Therefore, we utilize an empirical framework that is capable of isolating true state dependence from spurious correlation overtime.

We specify a dynamic model of main bank switching behaviour among MSMEs as follows:

$$y_{it} = 1(x_{it}'\beta + \gamma y_{it-1} + \alpha_i + \nu_{it} > 0) \quad \text{(1.6.1)}$$

where y_{it} is an indicator variable that equals to one if an enterprise does not switch its main bank otherwise it is zero, x_{it} is a vector of explanatory variables and ν_{it} is the idiosyncratic error term assumed $N(0, \sigma_\nu^2)$. The parameter γ captures the causal effect of observed lagged choices on current choices called true state dependence. The subscript i indexes MSMEs and t time periods. Here, N is large but T is fixed and is equal to five. The vector x_{it} contain typical control variables such as the background characteristics that include age and gender of the principal owner, whether the principal owner attained tertiary education and the economic sector in which the enterprise conducts its business. All the measures of enterprise size that are included vary with time and include value of business assets, number of full time employees and sales per annum. The indicator of whether an enterprise is able to negotiate favorable credit terms is included to capture MSME-bank relationship.

Although the idiosyncratic error term ν_{it} is taken as iid, the enterprise specific time-invariant α_i term that capture unobserved heterogeneity in MSMEs preferences of banks causes the composite unobserved error term $\varepsilon_{it} = \alpha_i + \nu_{it}$ to be correlated across time periods. At the same time, the fact that α_i is unobserved requires an assumption on how it is distributed across MSMEs. Because y_{it} is a nonlinear function that is extremely difficult to transform in order to permit the elimination of α_i when it is assumed to be fixed (the incidental parameter problem), much of the literature treats it as a random effect. Various distributions are used to characterize this term but in this study we follow the commonly assumed normal density function (i.e. $\alpha_i \sim N(0, \sigma_\alpha^2)$). Therefore the composite error term for every sample unit has equi-correlation in any two periods given by:

$$\rho = Corr(\varepsilon_{it}, \varepsilon_{is}) = \frac{\sigma_\alpha^2}{\sigma_\alpha^2 + \sigma_\nu^2} \qquad t, s = 2, ..., T; t \neq s \quad \text{(1.6.2)}$$

When the variance of the idiosyncratic error is normalized to unit, the transition probability for each sample unit at time, given α_i can be identified as:

$$\Pr(y_{it}|x_{it}, y_{it-1}, \alpha_i) = \Phi\left\{(\gamma y_{it-1} + x_{it}'\beta + \alpha_i)(2y_{it-1})\right\} \quad \text{(1.6.3)}$$

where $\Phi(\cdot)$ is the cumulative normal distribution function.

In order to obtain consistent parameter estimates for γ on the transition probabilities in Equation 1.6.3, the initial condition problem needs to be corrected. This problem arises because the first observation y_{i1} has no lagged value. That is to say, the observation y_{i0} is missing. This is because switching is observed from 2009 while MSMEs switching choices made earlier than 2009 are never known. Therefore y_{i1} is plausibly a function of the unobserved heterogeneity term α_i. A naive approach assumes that the initial observation of switching is randomly allocated to MSMEs so that it can be taken as exogenous or

predetermined. This assumption reduces the complexity of the model but it is very unrealistic. Heckman (1981), Orme (1997) and Wooldridge (2005) provide some solutions on how to reasonably deal with the initial condition problem in order to consistently estimate γ under less restrictive assumptions.

The solution method proposed by Wooldridge (2005) is widely used in empirical studies. Although its theoretical derivation is quite involving, it's empirical implementation is extremely easy. It merely involves including the dependent variable in the initial period as an element in the vector of control variables and estimation is performed on observations from the second period onward. Heckman (1981) approach has been found to be more robust in simulations conducted by Miranda (2007) than Wooldridge (2005) or Orme (1997). This approach requires the explicit specification of a linear reduced-form equation for the initial value of the latent variable. The x_{i1} values are often included in the vector of explanatory variables but in addition a set of predetermined variables is required to serve as instruments due to the exogeneity condition that is required to credibly identify the model.

Besides the difficulty in finding appropriate variables that can serve as good instruments, the likelihood function for the resultant system of two equations (one relating to the initial condition and the other relating to the likelihood of $t > 1$ observations) has predominantly been computer intensive due to the need to take integrals over each α_i and i. This certainly led to its infrequent use in applied work in the past. The improvement in computing power has facilitated the computation of this model in a fairly manageable manner. In this study, we estimate this model using a user written stata program redprob developed by Stewart (2006).[12]

There is another problem that relates to the presence of autocorrelation in the idiosyncratic term. All the three models that correct for the initial condition problem are based on the condition that the error term ν_{it} is not autocorrelated. Serial correlation in the idiosyncratic error is likely to occur when transitory shocks are correlated. This situation complicates the estimation of all the three models that resolve the initial condition problem.

Stewart (2006) shows that Heckman1981 model can be extended to allow serial correlation in the idiosyncratic error. However, the likelihood function becomes extremely complicated. It is possible to approximate it using Maximum Simulated Likelihood approach but this is more feasible only in the restrictive case of a first-order autoregressive AR(1) or moving average MA(1) process in the innovations. In our empirical estimation, the regression results from Heckman (1981) and Stewart (2006) extension are similar to the results from the Wooldridge (2005) model. For brevity, we do not report them in the paper.

6.2. Main bank switching and interest pricing of loans

Although inertia in MSMEs choices of the main bank provides an indication of the existence of switching costs, it does not show the efect of switching on interest rates. We use reported interest rates that are charged on loans borrowed by MSMEs to estimate the size of switching costs, if any, that MSMEs face when borrowing from commercial banks. It is useful to mention that this is one aspect in which the size of switching costs can be determined.

To contextualize this aspect, consider the following thought experiment: suppose we can observe lending interest rates of an MSME if it switches its main-bank and if it doesn't at the same time. If this was possible, the difference between the interest charges in these two states (switched or not) will be the size of the switching costs faced by an MSME. This is because the difference in lending rates is solely due to the change in the switching status of the enterprise as everything else remained the same.

Unfortunately, this situation can never occur in reality. At any given time, an MSME can only be observed in one and only one state. This introduces the problem of confounding factors that may include the change in time and unobserved variables that simultaneously influence the ability of the enterprise to switch a main bank and the amount of interest rates the bank charges on its loan. The status of switching of the

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12 see http://www2.warwick.ac.uk/fac/soc/economics/staff/faculty/stewart

main bank or not in our data is observational and not randomly assigned.

Therefore, it is possible that MSMEs that switch their main bank are systematically different from their counterparts that don't switch. If the influence of unobserved factors that are linked to the decision to switch can reasonably diminish on influencing lending rates after controlling for the effect of observed variables (ignorability condition), the size of any switching costs can be estimated as the average treatment effect on the treated.

If the lending interest rate that an MSME is charged if it doesn't switch its main bank is r_i^0 and r_i^1 after it switches, then the observed lending rate r_i can be expressed as:

$$r_i = r_i^0 + S_i(r_i^1 + r_i^0) \quad \text{(1.6.4)}$$

where S_i is an indicator that is equal to one if an MSME switches its main bank otherwise its zero. The average treatment effect on the treated denoted τ or the amount of the switching costs can be expressed as:

$$\tau_{ATT} = E\big[r(1) - r(0)|S = 1, X\big] = \frac{1}{N_T} \sum_{i \in [D=1]} \Big[r_{1,i} - \sum_j w(i,j)r_{0,j}\Big] \quad \text{(1.6.5)}$$

where $0 < w(i,j) \leq 1$ and $D = 1$ is the set of MSMEs that switched their main bank referred to as treated units, and j is an element of the set of matched comparison units. The variety of matching estimators just differ on the specification of $w(i,j)$.

7.0. Results

As mentioned earlier, the first critical step in estimating switching costs is to separate true state dependence from spurious correlation caused by persistence in unobserved heterogeneity. In Table 6 we report the results of the nature of state dependence that characterize main bank switching among MSMEs. First consider, the estimates from a probit model that is estimated by pooling all the observations. These are shown in the column (1) under the heading pooled probit.

There are a number of features from this model that are worth noting. There is some evidence that the background variables have statistical effects that are different from zero. For instance, the rise in the number of MSME owners is associated with the rise in the likelihood of the enterprise to switch its main bank. However, the key feature of this column is the coefficient on the first lag of not switching. This model predicts that there is inertia in MSMEs choice of the main bank between any two periods although the level of statistical significance is weak. Nonetheless, this result is naive and invalid because persistence in unobserved lagged and current choices of the main bank may be causing spurious correlation in this benchmark model.

We now focus on the estimates that are adjusted for unobserved heterogeneity and isolate true state dependence from spurious correlation. In column (2) of Table 6, we show results from a panel probit model. The only problem with this model is that it does not correct for the possible endogeneity of the initial condition. In column (3) the same model in column (2) is re-estimated but with the means of the time varying explanatory variables for each MSME included as additional variables. This is usually done in empirical implementation to enrich heterogeneity across sampled units.

While the benchmark result showed inertia in main bank repeated choices, we now see that there is no true state dependence once the influence of spurious correlation is expunged. The positive sign observed earlier is reversed in the model under column (3) although the coefficient is statistically equal to zero. The negative qualitative efect and the statistical insignificant of lagged switching to current switching

outcome persists in the panel probit model that is also adjusted for the initial condition problem.[13] This is shown in column (4). In this model, the switching status in the initial year is a significant predictor of the MSMEs main bank switching status in proceeding years.

In short, the findings from our study indicate that switching costs do not exist among MSMEs when borrowing credit from commercial banks. Therefore, it is unlikely that the high interest lending rates emanate from banks 'harvesting' of MSMEs due to lock-in problems. To further interpret our results, we still examine whether there is a difference in interest rates between MSMEs that switch the main bank and those that do not using the propensity score matching and reweighting procedure that rigorous goes beyond the kernel density estimation shown in Figure 3. Retaining the same background variables, we examine the effect of switching at period $t-1$ on lending interest rates to avoid the possibility that borrowing could have occurred in an earlier month than switching in a given year when switching in the current year is used.[14]

Neglecting verification of covariate balancing and sensitivity to selection on unobserved factors, we find that switching a main bank does not lead to an advantage in terms of receiving a lower interest rate when an MSME borrows from a commercial bank. For the 250 MSMEs that lie within the region of common support shown in Figure 4 the lending interest rate before matching is 19.7% among MSMEs that switched and 19.8% among non switchers leading to an insignificant -0.1% diference. After matching on the propensity score, the interest rate among switchers remained unchanged but it declined among non-switchers to 18.7% leading to one percentage point diference with a bootstrapped standard error of 2.68 after 1000 replications.

The weighted OLS regression of interest rates on the switching variable with all background variables included and using propensity score weights produces statistically insignificant coefcients equal to -0.76 and -0.47 when the common support is imposed or not respectively.
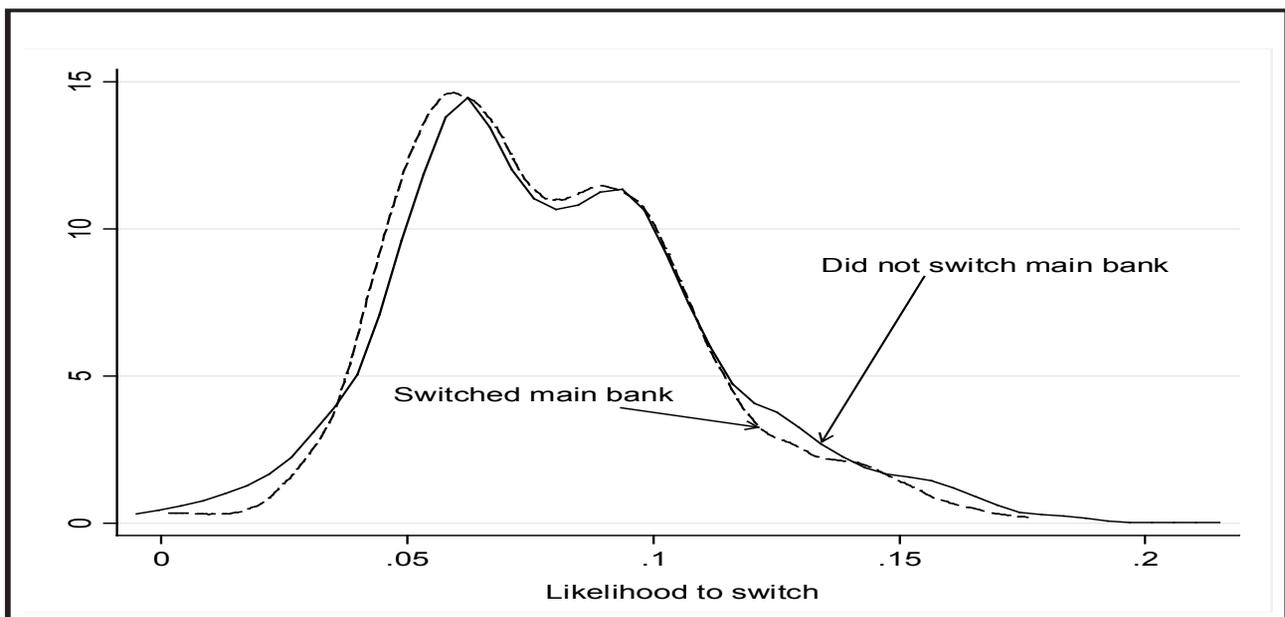

Figure 4: Distribution of the propensity scores

13 The model that corrects for the initial condition problem using the Heckman (1981) approach also showed negative persistence that was statistically insignificant. This was also the case for Stewart(2006) extension of the Heckman (1981)

14 We neglect the discussion of the pretest issues that is conducted to generate a plausible counterfactual which forms the core challenge to identifying a genuine casual effect

Table 6: Failure to switch Results

	Dynamic Probit Models Predicting failure to Switch			
	Pooled Probit	Panel Probit	Panel Probit with xi	Wooldridge Panel probit
	(1)	(2)	(3)	(4)
NOSWITCH t-1	0.37*	0.08	-0.17	-0.30
	(0.17)	(0.21)	(0.24)	(0.23)
AGE OF OWNER	0.00	0.00	-0.21**	-0.22**
	(0.01)	(0.01)	(0.06)	(0.06)
PACRA REGISTERED	0.14	0.18	0.28	0.29
	(0.13)	(0.16)	(0.19)	(0.19)
KEEP FIN. RECORDS	0.11	0.11	0.05	0.04
	(0.11)	(0.15)	(0.17)	(0.17)
No. OF OWNERS	-0.06*	-0.07	-0.08*	-0.09*
	(0.03)	(0.04)	(0.05)	(0.05)
MALE OWNER	-0.04	-0.06	-0.11	-0.10
	(0.13)	(0.15)	(0.17)	(0.17)
ATTAINED TERTIARY	0.27*	0.31*	0.36*	0.35*
	(0.12)	(0.13)	(0.15)	(0.15)
ABLE TO NEGOTIATE	0.08	0.13	0.13	0.15
	(0.12)	(0.13)	(0.15)	(0.16)
Logarithimn of ASSETS	0.02	0.02	-0.09	-0.09
	(0.04)	(0.05)	(0.15)	(0.14)
EMPLOYEES	0.00	0.01	0.04	0.04
	(0.01)	(0.01)	(0.04)	(0.04)
Logarithimn of SALES	-0.07	-0.07	-0.23	-0.23
	(0.04)	(0.05)	(0.16)	(0.16)
HOSPITALITY/LEISURE INDUSTRY	0.56*	0.64*	0.69	0.61
	(0.29)	(0.38)	(0.42)	(0.43)
YEAR_2009				0.60**
				(0.20)
cons	1.21**	1.59**	1.60*	1.27*
	(0.41)	(0.59)	(0.67)	(0.66)
loglikelihood	-436.51	-434.32	-421.55	-416.62
σ_α		0.47	0.63	0.65
ρ		0.18	0.29	0.29
N	1400	1400	1400	1050

Notes: *=p<0.1, **=p<0.05 , ***<0.01

7.1.   Policy context

The major ramification of our results is that there are no long-term commitments from MSMEs for their early choices of the main bank. It is, therefore, likely that relationship building between commercial banks and MSMEs is very weak. This has consequences on banks abilities to understand from a practical perspective MSMEs business risk and how to correctly price it. It also means that the likelihood of MSMEs to borrow based on soft 'proprietary' is low. Consequently, lending to MSMEs may be more exercised at

the 'arms length' interaction that require 'hard' credit information. But many MSMEs are informational opaque and lack good collateral at the same time.

These factors are likely to be reinforcing each other and leading to the occurrence of high lending rates and low access to bank credit among MSMEs. Therefore there is need to bridge the gap and ensure sustainable relationships are built between banks and MSMEs. One option is to create an institution that can provide business development services to MSMEs by intermediating between banks and MSMEs. The results also provide valuable insights to commercial banks that would like to penetrate and dominate the MSME lending market. They need to pay particular attention to retaining MSME customers to ensure their choice of the main bank truly persists overtime. Finally, our results entails that antitrust efForts do not need to waste resources attempting to deal with switching costs.

7.2.   Caveats
These results are the first estimates to document switching costs among MSMEs and their impact of lending interest rates when borrowing from commercial banks in a setting that is representative of LICs. While they are informative, they are not persuasive and need to be interpreted with caution. Importantly, the lack of data on commercial banks specific attributes precludes us from analyzing the role of bank specific characteristics in explaining state dependence. It is possible that a policy that changes how banks earn their revenues may result in MSMEs being dear to banks so that many banks would like to invest in long-term relationships with MSMEs. Our results do not show the mechanism through which MSMEs fail to stick with their earlier chosen main bank and how switching fails to influence the reduction in lending rates. Therefore our results are void of structural mechanisms on switching costs and lending interest rates. They might also not be generally applicable to other countries transitioning from low income to lower middle income status or those that remain in the group of LICs. Further, we do not rule out the effects of sampling and finite or small sample bias. Therefore, theere is need for many other studies to be conducted in LICs to aid comparisons.

8.0. Conclusion

This paper investigated the existence of switching costs among MSMEs when borrowing from commercial banks in Zambia. Evidence from an econometric model that isolated true state dependence from spurious correlation showed that MSMEs repeated choices of commercial banks are not per- sistent. The results also showed that the diference between lending rates charged on MSMEs that switch and those that do not is nil. The implication of these results is that public funds allocated towards interventions that seek to lower switching costs on MSMEs when borrowing from commercial banks might be wasteful. The lack of state dependence also suggests that any relationship between MSMEs and banks is hardly long-term. This means that banks might be lacking practical knowledge of how MSME business is conducted such that their ability to correctly price MSME business risks is inadequate. This is one possible avenue that might be leading to the occurrence of high interest rates. Equally, the failure for MSMEs to build long term relationships with banks perpetuates the informa- tion asymmetry in the market. This is likely to explain the low alloaction of commercial bank credit to MSMEs in the country. Relationship banking is a critical mode through which much qualitative but very useful information about MSMEs can be transmitted to banks. Therefore, there is need to strengthen the institutional framework that supports relationship building between commercial banks and MSMEs. This framework should embed safeguards that must restrain commercial banks from abusing their incumbency over MSMEs borrowers,

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