Regulation and bank lending in South Africa: A narrative index approach*

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Abstract

An increase in affordable credit extension is key to financial inclusion but could lower finance sector stability. Macroprudential policy is well placed to respond to increases in finance sector risk. This suggests that inclusion and macroprudential regulations may oppose one another. This study estimates and contrasts the impact of these potentially contradictory regulations on the bank lending rates and volumes of South Africa's largest banks. Our results suggest that macroprudential policy is working as intended as it is associated with increases in interest rates on unsecured lending rates, decreases in short-term secured and mortgage lending rates. We observe that lending growth rates in unsecured and secured credit increase and decrease in mortage lending. Inclusion focused regulation is associated with increased bank lending rates in unsecured credit. We observe a decrease in the growth of unsecured lending for households and an increase in secured lending for corporates. As opposed to offsetting regulations, we find that the estimated impacts of financial inclusion initiatives largely overlap with those estimated for macroprudential policy.

Keywords: Bank lending, narrative methods, finance regulation
JEL Codes: G01, G18, G28, G32, G38

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1 Introduction

The greater extension of affordable credit is one key component to financial inclusion.[1]. Owing to South Africa's Apartheid history, levels of financial inclusion were significant low at the dawn of democracy (Hawkins, 2004). Increasing financial inclusion levels has thus been a government imperative post-1994, and has been pursued through finance sector regulatory reforms. However, research indicates that greater financial inclusion, achieved through credit extension, may lower financial stability (García and José, 2016). Conversely, macroprudential policies are necessarily pursued in order to achieve stability in the finance sector and consists of policies that could increase bank capital requirements that ultimately lower lending in order to meet said requirements. Therefore inclusion and macroprudential policies have different objectives that could offset one another.

In this paper we first estimate the realised impacts of separate regulatory developments related to macroprudential policy and financial inclusion to determine if these initiatives meet their intended goals. Secondly, we consider whether the two regulatory approaches are potentially contradictory. We achieve this through a panel data approach to estimate the impact of the different regulatory developments on bank rates and three month changes in bank lending volumes.

To measure regulatory developments, we develop narrative indices that comprehensively measure all developments relevant to our study. This approach is consistent with various studies that consider the effect of macroprudential reforms on the stock of lending. However, this paper extends this type of analysis by also considering the impact of finance regulations geared towards financial inclusion. We also compile a dataset comprising public and confidential bank data related to the four largest banks in South Africa. This allows us to analyse how the largest banks in South Africa respond to the two potentially opposing regulations. To the best of our knowledge, this paper is the first in South Africa to consider the impact of bank regulation on bank pricing.

[1]Financial inclusion is a multi-faceted concept that relates to access by individuals and businesses to affordable transaction, payments, savings, credit and insurance products (World Bank, 2024). This paper focuses on the aspect of inclusion related to the greater usage of affordable credit

Our results indicate that macroprudential policy is working as intended to achieve financial sector stability. We find that macroprudential regulation results in increases in interest rates in unsecured lending and decreases in secured lending and mortgage rates. Macroprudential regulations are also associated with positive growth in lending volumes in unsecured and secured credit while mortgage lending growth rates decrease. We estimate that inclusion focused initiatives result in increased bank lending rates for unsecured credit to households and decreased growth in the unsecured lending volumes to households. We also observe increases in the growth of secured lending to corporates and a decrease in secured lending rates paid by those corporates. As opposed to these two regulatory approaches offsetting one another, we find that the estimated impacts of financial inclusion initiatives largely overlap with those estimated for macroprudential policy. This is likely because inclusion focused regulation may be at odds with its own stated objectives.

The paper is structured as follows. First, we provide a comprehensive review of literature that indicate how banks have responded to macroprudential and finance regulation intended for inclusion. Second, we describe the construction of our narrative indices. Third, we describe our data and methodology. Fourth, we discuss our results and thereafter conclude.

2 Literature Review

Our paper encompasses and contributes to various strands of literature. It firstly encompasses literature on the response of banks to macroprudential reforms and secondly, the response of banks to efforts aimed at enabling financial inclusion. The construction of narrative indices on macroprudential and financial inclusion reforms relate to literature on narrative methods of identification.

2.1 Macroprudential regulatory developments

The objective(s) of macroprudential reforms are well documented and continue to expand with further reforms being introduced to create resilient banking systems[2]. The ongoing debate

[2]See Kashyap et al. (2004), BCBS (2006), Cohen and Scatigna (2016) and Cerutti et al. (2018) among others.

regarding the implications of the reforms, particularly on lending behaviour of banks provide further insight on the costs and benefits of making banking systems resilient through the reforms.

Evidently, work on the cost or unintended consequences of macroprudential reforms have dominated the debate. Noss and Toffano (2016) highlight that tightened macroprudential capital requirements can cause banks' cost of funding to rise and in turn, prompt banks to pass the increase in their cost of funding to borrowers in the form of high interest on loans and/or reduction in credit extended. Deli and Hasan (2017) show that higher capital requirements would lead banks to reduce their risk-weighted assets, implying a downward shift in lending in order to meet the capital requirements. As evidence, the former authors use a Vector Autoregressive (VAR) model to estimate the effect of changes in banks' capital requirements on lending in the United Kingdom (UK) and find that tighter capital requirements are associated with a reduction in lending, with the effect on corporate lending more pronounced relative to household lending.

Earlier work by Aiyar et al. (2016) study the interaction of capital requirements and monetary policy and response of UK banks to the two policies. Their findings show that banks reduce lending in response to tighter capital reforms and monetary policy. They also exploit the heterogeneity of banks and find that large banks react to tighter capital requirements only, while small banks react to both policies. Deli and Hasan (2017) and Mirzaei and Samet (2022) provide cross-country evidence on the effect of macroprudential reforms. The former authors conduct the analysis for banks in 125 countries and find weak negative effects of capital stringency on loan growth, especially for well-capitalized banks. Mirzaei and Samet (2022) find similar results for banks in 91 countries, where small, less-capitalized and less-liquid banks reduce lending more in response to stringent capital requirements relative to banks that are well-capitalized and highly-liquid.

With the use of various Dynamic Stochastic General Equilibrium (DSGE) models, Angelini et al. (2015) find that a one percentage point increase in the capital ratio translates into a 0.09 percent loss in output relative to the level that would have prevailed in the absence of capital tightening. Berka et al. (2018) study the interaction between credit activity, Basel

Accords banking regulations, household saving decisions and project returns with the use of a DSGE model, calibrated for the Canadian economy. They find that Basel Accords in the form of capital requirements have an impact on loans, when project returns decline throughout the cycle as the requirements prompt banks to ration credit during downturns where project returns are low, implying increased default risk by borrowers (entrepreneurs).

Interestingly, work on the potential effect of macroprudential reforms in emerging markets is limited. The exception is recent work by Fang et al. (2022) who study the impact of rising capital requirements on lending in Peru. They exploit bank-level lending data and bank-specific capital buffers. Their findings show that higher capital requirements are associated with lower credit extension. The effects however vary according to economic conditions and bank characteristics, where less capitalized, less liquid and less profitable banks react more to tighter capital requirements. The effects are also more pronounced during economic downturns. In the case of South Africa, earlier work by Maredza (2016) investigates the impact of increased bank requirements and in particular those introduced under Basel II on the cost of intermediation. Results from a panel of ten banks show that tighter capital requirements increase the cost of intermediation, with the net interest margin serving as a proxy for the cost of intermediation. Gumata and Ndou (2017) assess the impact of Basel III in the form of liquidity coverage ratio and net stable funding ratios on credit growth. Their decomposition exercise shows that Basel III contributed to the contraction in credit post the GFC. Most recently and similar to our work, Sibande and Milne (2024) study the impact of BASEL III capital requirement on the supply of bank credit in South Africa using data on the big four banks. Their findings indicate weaker evidence of the impact of capital requirements on the supply of bank lending. Makrelov and Pillay (2024) study how decisions around the size of excess capital as well as monetary and financial stability actions impact sectoral lending in South Africa. Using data on big and small banks, their findings indicate that banks' decisions around holding additional capital affect their lending, especially for small banks.

2.2 Financial inclusion regulatory developments

Financial inclusion has been identified as key to development. Greater access to credit, savings account and transactional services have enabled individuals to store money safely, make and receive payments and invest for the future (Demirgüç-Kunt et al., 2021). Empirical studies have also shown that greater levels of financial inclusion are associated with lower levels of poverty. Mahalika et al. (2023) estimate such a relationship for South Africa through the regression of poverty levels on a meaure of derived measure of financial exclusion. On a macro-level, there are studies, albeit limited, linking financial inclusion with greater economic growth, employment and lower inequality (Demirgüç-Kunt and Singer, 2017). The importance of financial inclusion is also highlighted by its recognition as a strategy that could be used to achieve the United Nation's sustaiable development goals (Ozili, 2021).[3]

The creation of, or the changes in, financial regulation has been used as a tool to further financial inclusion in various jurisdictions to different levels of success. In a World Bank policy working paper, Chen and Divanbeigi (2019) indicates that around 2 of 3 national regulatory and supervisory entities in the world further financial inclusion by, inter alia, easing entry by increasing consumer protection and financial literacy, as well as supporting the creation of non-traditional financial service providers. Chen and Divanbeigi (2019) express further that a supportive regulatory environment enables the growth of service providers and the provision of products that meet the needs of various customers thus furthering financial inclusion. There is a wide range of regulatory changes that governments have pursued to further inclusion. Our study is focused on greater access and usage to affordable credit products. Therefore, relevant finance sector regulatory efforts pursued in this vein by authorities worldwide include the creation of inclusive financial institutes, credit databases, newly designed financial products, promotion of technology as a method to deliver financial products, lending regulations, and the provision of subsidised funding (Yoshino and Morgan, 2016). Consumer protection measures are also touted necessary to support financial inclusion (Yoshino and Morgan, 2016). A number

[3]More specifically, Yap et al. (2023) conduct a cross-country analysis examining the relationship between 7 sustainable development goals (SDGs) and financial inclusion. They find statistical evidence indicating that greater financial inclusion is associated with SDGs 2 (ending hunger), 5 (reducing gender inequality) and 8 (promoting economic growth).

of these developments overlap with the inclusion related developments, initiated by South African authorities, that we consider in our study. A review of empirical analyses of these types of regulatory developments and their impact on credit extension, are discussed further below.

Regulations that result in the creation of credit databases that include relevant credit related information on individuals and firms reduce the level of asymmetry that exist between lenders and borrowers. Banking markets are characterised by informational asymmetries where a lender may not know the credit worthiness of an potential borrower. In such instances, banks may choose to credit ration where some customers may receive loans and others not due to demand for loans exceeding supply (Stiglitz and Weiss, 1981). This imbalance in information may also have an impact on market entry in credit markets, as well. Dell'Ariccia et al. (1999) provide a theoretical model that predicts that when a potential entrant bank is unable to differentiate good from bad borrowers, entry is likely to be deterred. Dell'Ariccia (2001) show in a two period model that this barrier to entry can be lessened when banks are able to gain proprietary information about borrowers over time. However, gaining this information provides banks with market power over clients where old creditworthy clients are charged higher rates.[4] A study by Martinez Peria and Singh (2014) estimates the impact of credit information sharing systems on bank lending to firms. The credit information schemes they consider include credit bureaus and public credit registries that capture information on borrowers, thus decreasing the informational asymmetry that characterise credit markets. Martinez Peria and Singh (2014) find that following the introduction of a credit bureau, firms had increased access to finance, lower interest rate, longer maturity terms and increased working capital.

Consumer protection mechanisms are also pursued by various national authorities to further financial inclusion. These are usefully summarised by Yoshino and Morgan (2016) as the creation of rgulatory agencies that regulate credit extension. They explain further that consumer protection initiatives implemented by these agencies include the provision of guidelines to be followed when conducting affordability assessments and providing consumers with information

[4]Dell'Ariccia (2001) indicates that this result is a function of their two period model. They indicate that over extended periods creditworthy customers may seek to switch credit providers thus attracting lower interest rates. However, we note that a lower proclivity to switching may affect this prediction.

on legal recourse following fraud. Yoshino and Morgan (2016) indicates that consumer protection could further financial inclusion has they increase consumer trust in financial services, thus increasing supporting usage. A study by Chen and Divanbeigi (2019) estimated that inclusion focused regulatory measures had a causal impact on financial inclusion. Their index of regulatory measures comprised a number of regulations, as well as consumer protection initiatives that provided for interest rate disclosures to customers.

In South Africa, the National Credit Act ("NCA" hereafter) of 2006 resulted in a host of changes in credit market regulation that included provisions increasing disclosures on the costs of credit, to protect credit customers from reckless lending, the regulation of interest rates and the creation of national credit institutions, such as the National Credit Regulator (Goodwin-Groen and Kelly-Louw, 2003). Chipeta and Mbululu (2012) study the impact that the announcement and actual implementation of the NCA on the growth of credit extension in South Africa. Using regression analysis, these authors find that the NCA was associated with greater loan growth in the credit card, overdrafts and other conventional loans, as well as total credit to the private sector. They make these finding for the both the announcement and the implementation of the Act. De Wet et al. (2015) assess the impact of the NCA on levels of over-indebtedness using regression analysis. They do not find evidence of the NCA having any impact on the levels of over-indebtedness in South Africa. Makhaya and Nhundu (2016) provide a qualitative analysis of Capitec's entry into the banking industry. According to their analysis, the NCA provided certainty in unsecured lending that enabled Capitec to provide larger loan amounts over extended periods of time. This development is significant as Capitec growth in the banking industry is underpinned by its growth in the low-income market (Makhaya and Nhundu, 2016).

Other initiatives such as interest rate caps applied to bank lending volumes have also been by implemented by regulatory authorities to support financial inclusion. Yoshino and Morgan (2016) indicates that these interest rate caps are applied in Bangladesh, India, Indonesia, and Thailand. Presumably interest rate caps support inclusion by artificially lowering the cost of lending for customers who would have been charged interest rates above the specified caps. However, this type of regulation can have an adverse effect on inclusion through the restriction

of credit supply (Yoshino and Morgan, 2016). This is likely to reverse proposed gains in inclusion as a restriction in supply is likely to affect lending rates for all customers. Barua et al. (2016) indicates that enabling banks to price risk freely is likely to support financial inclusion in the long term.

Following the development of the NCA, there have been a number of changes in the regulations accompanying the NCA. Whilst there is, limited, research on the impact of the NCA on bank lending, none of the subsequent changes in NCA changes have been subject to empirical study. South Africa's national inclusion framework also includes fundamental changes in financial sector regulations with a clear intent of increasing inclusion. Furthermore, the country's financial ministry has developed draft national policy framework specific to increasing financial inclusion for individuals and firms. No empirical research has assessed the impact of this suite of financial inclusion focused regulatory developments on inclusion outcomes in South Africa.

2.3 Methods of identification

Lastly, the construction of our narrative macroprudential reforms is based on the literature documenting narrative methods of identification. As outlined earlier, evidence on the response of bank lending to macroprudential reforms is based on the assumption that an increase in aggregate regulatory capital represents a negative credit supply shock and in turn have a negative effect on credit extension (Noss and Toffano, 2016). As such, our narrative accounts of macroprudential reforms implicitly proxy for credit supply shocks. Ramey (2016) describes the narrative method of identification as constructing a series from historical documents to identify the reason and/or the quantities associated with a particular change in a variable. Furthermore, the construction of narrative accounts is particularly aimed at exclusively isolating shocks or effects of policy intervention(Angelopoulou et al., 2007). Therefore, by constructing a narrative series of macroprudential reforms, we aim to address challenges relating to the identification of macroprudential reforms and their impact thereof.

The application of the identification strategy has largely focused on identifying monetary and fiscal shocks[5]. However, the approach is increasingly being applied to analyse and identify

[5]See Romer and Romer (1989), Romer and Romer (1997) Romer and Romer (2004) Romer and Romer (2010)

capital reforms. For instance, Budnik and Rünstler (2020) analyse the dynamic effects of U.S macroprudential policies by constructing a set of policy measures related to capital requirements following the Basel III Accords. The narrative instruments take a value of -1 and 1 in the case of tightening and easing of capital requirements, respectively and 0 otherwise. Importantly, results from their analysis show that tightening of capital requirements induces a persistent decline in corporate credit. Further, the impact of a change in capital requirements is concentrated more on corporate credit relative to household credit. Eickmeier et al. (2018) also assess the dynamic effects of bank capital regulation in the U.S, where they use the narrative approach to construct an exogenous capital regulation index that captures exogenous changes in bank capital regulation. Their results also show persistent declines in corporate and investment loans and real estate loans, following changes in the capital regulation index.

We therefore add to the growing empirical literature examining the response of banks to regulatory reforms applying narrative methods of identification.

3 Narrative Indicators

3.1 Macroprudential reforms

This section presents actions and events we use to construct a set of macroprudential measures or indicators introduced following Basel II Agreements and Accords. The indicators represent credit supply shocks, following Noss and Toffano (2016) and Deli and Hasan (2017) among others. The construction is based on historical documents containing actions and events that lead to the implementation of macroprudential regulations, from 2008 to 2019. We consult circulars issued by the SARB to commercial banks in South Africa, annual reports of commercial banks and SARB and risk and capital management reports of commercial banks. We consider reports of only the big 4 commercial banks in South Africa as they account for over 90 percent of banking industry assets.[6] We also consider documents published and issued by the Basel Committee on Bank Supervision (BCBS), containing communication between BCBS and SARB

Ramey (2011)]Ramey (2016) Ramey and Zubairy (2018).

[6]The big 4 banks include Standard Bank, ABSA, Nedbank and First Rand.

relating to the implementation of Basel regulations.[7]

Due to the wide variety of information contained in the documents, we impose a criteria with which we use to identify actions and events that are most important in the construction of our narrative indicators. Since the set of macorprudential indicators proxy for credit shocks, the criteria imposed is such that: (1) actions and events are specific in their intentions and (2), actions and events might imply a change in bank behaviour with respect to the adjustment of capital buffers and/or the attachment of greater risk weights to certain lending products or lending markets. From this, we are able to build a series of two narrative indicators z_t defined such that $z_t = 1$ for dates of events containing announcements and communication of regulation intended to be passed and the drafting of such regulation which we call $Draft$. The second indicator is such that $z_t = 1$ for dates of events recording the eventual implementation of the regulation, which we call $Implementation$. For dates where $Draft$ and $Implementation$ of regulation is not recorded $z_t = 0$. Therefore where possible, we also track the actions and events from the date they are communicated and or announced, issued or published ($Draft$), until the date they are introduced or implemented ($Implementation$).

The decomposition of the actions and events is done with the aim of possibly identifying anticipation effects following the drafting of regulation not yet implemented. For instance, Eickmeier et al. (2018) analyse the macroeconomic effects of bank capital requirement tightenings using a narrative index of bank regulatory capital in the U.S. They find that bank assets (loans) and industrial production fall 6 months before new rules become effective. The anticipation effects are captured by the banks' actions between dates when regulation is first mentioned in proposed rules and dates when the final rule is communicated. In effect, anticipation effects are therefore based on the notion that banks have information on the proposed regulation and dates which they will be implemented and as such, they can act (expand credit for instance) before implementation date and thereby take advantage of less stringent requirements on credit extension due to regulation before tighter requirements are introduced.

[7] It is important to note that the policy indicators capturing macroprudential reforms are not-bank specific. For instance, banks in our panel may at their discretion, increase their capital buffers in addition to minimum requirements. However, the minimum macroprudential (predominantly capital requirements) reforms are applied uniformly across banks.

Information contained in the documents we use to construct our narrative indicators also contain details enabling us to exploit such anticipation effects.

Importantly, we do not identify the impact of individual regulations and requirements under Basel Accords and Agreements but rather, we consider Basel regulations in their entirety. Although different Basel regulations such as the capital and liquidity requirements target different instruments, the entirety of Basel regulations, which both capital and liquidity requirements fall under, is aimed at creating resilient and robust banking systems, through higher bank capital requirements and subsequently, increased bank capital holdings (Cohen and Scatigna, 2016) (Cerutti et al., 2018).

As an example to some of the actions we use to construct the two sets of indicators, the implementation of Basel II on January 1, 2008 is categorized as an implementation indicator. Further example occurs on February 4, 2009, which we categorize as a $Draft$ indicator, where the SARB issues directive 1/2009 (1 of 2009) announcing the approach banks should follow in the application of capital floors. "Modelled capital should not be below 80% of the capital requirements under Basel I to ensure capital levels do not fall below prudent level".

Following Basel II, banks are allowed to use internal models to determine risk weights and in turn, determine capital levels. However, capital floors ensure capital requirements did not fall below a certain percentage of banks' capital requirements under the previous Basel I framework(BCBS, 2006). This in essence, imply greater risk weight attached to riskier credit products. For instance, Imbierowicz et al. (2018) show that Danish banks reducing their lending on loans with higher risk weights, in response to higher capital requirements, including approaches to capital floors. A further example which is categorized as a $Draft$ indicator and tracked until implementation, occurs on July 31, 2009, where the BCBS announces "measures to strengthen the 1996 rules governing trading book capital and to enhance the three pillars of the Basel II framework (Basel 2.5)". This in essence, aims to introduce higher capital requirements to capture the credit risk of complex trading activities, promote the build-up of capital buffers that can be drawn down in periods of stress and strengthen the quality of bank capital(BCBS, 2009). The SARB endorsed and gave notices to banks to prepare for the implementation therefore, on October 8, 2010, following the communication by the

BCBS on July 31, 2009. Following both communications and announcements, Basel 2.5 is eventually implemented January 1, 2012. A detailed account and timeline of the indicators are in Appendix A.6.

3.2 Finance regulation reforms

The finance regulations that we consider in this paper are regulations that relate to the implementation of the NCA of 2005, the wholesale restructuring of financial sector regulation in South Africa, as well as the drafting of a national framework for financial inclusion. These developments have been selected as they relate to a series of regulatory reforms that have the intention of increasing financial inclusion in South Africa. We refer to a concept of financial inclusion that is consistent with World Bank (2024). According to this definition, financial inclusion occurs when there is access to useful and affordable financial products, although we specifically focused on credit products. Therefore we review and capture regulatory developments that have the intention of facilitating greater access to credit products and/or reducing the cost of said products. These regulatory developments are summarised in the variable: $FinReg$. This variable is recorded as 1 following the presentation of draft or final finance regulations made publicly available; it is $FinReg = 0$ otherwise.

Below we provide an overview of the type of regulatory developments we capture within $FinReg$. A detailed review of each of these regulations is provided in Appendix A.8.

The first type of development we consider are those related to the national credit regulations. These are regulations issued by the Minister of Trade and Industry (2006) and relate to the application of the NCA of 2005. Over time the Department of Trade and Industry has provided government notices inviting public comments on potential amendments to these regulations and following consultation, final regulations were published in the Government Gazette. The Ministry has put forth notices and final regulations related to (i) Debt Counselling Regulations in 2012, (ii) removal of adverse consumer credit information and information relating to paid up judgements in 2013 and 2014, (iii) various changes in credit regulation in 2014 and 2015, and (iv) limitations on fees and interest rates in 2015. Underlying these notices and regulations

is the intention to further financial inclusion. For instance Roestoff et al. (2009) indicates that the 2012 regulations were introduced to assist over-indebted consumers that could result in the restructuring of their debt. This directly relates to the affordability of credit products. 2013 and 2014 regulations relate to government efforts made towards removing adverse credit information from credit bureaus to better increase consumer access of credit products.

The second type of development relates to the restructuring finance regulation in South Africa. The Presidency (2017) announced that the President had assented to the Financial Sector Regulation Act of 2017. This regulation set up two authorities. One being the Prudential Authority, which sits within the South African Reserve Bank. The other is the Financial Sector Conduct Authority (FSCA). Both of these institutions have varying mandates. But consistent across both was a task to promote financial inclusion (Presidency, 2017). Another development is the drafting of a Conduct of Financial Institutions Bill. This bill proposes consolidating a number of the financial sector laws of the country in order to better regulate the conduct of institutions that provide financial services and products. According to the bill, the FSCA will be provided with the ability to provide standards for the conduct of firms in the provision of financial products and services. The referred to conduct relates to, inter alia, firms' charging structures, pricing methodologies, financial product features and the identification of appropriate and inappropriate target markets. According to the National Treasury (2018), this enhanced regulation will further financial inclusion as the better regulation of firm conduct would provide consumers with greater security required for greater usage of financial sector products.

The final development we consider is the drafting of a national policy framework for financial inclusion. According to the National Treasury (2020) The existing state of financial inclusion is reported to be high in South Africa but it is noted that usage of financial products by low income earners is low. Small, medium and micro enterprises are also reported to only be marginally serviced by finance institutions. The National Treasury (2020) proposes a number of initiatives that relate to increased usage of credit products by individuals and businesses with less access.

4 Data and Methodology

For our analysis we compile a dataset comprised of data collected from various sources. The primary data of interest are bank lending and rates. This is supplemented bank and market related variables that serve as controls in our analysis. Below we describe in further detail how we measure bank lending volumes and rates in those segments. We also describe the bank and market specific controls we use in our analysis.

Across all the bank specific data collected, we restrict our focus to four banks: Absa, FNB, Standard Bank and Nedbank. We focus on these banks as they account for the bulk of the banking assets in the industry. In addition, these banks contain continuous bank lending and rates data, enabling us to have as large a time period as possible for our panel data analysis.

We also capture bank responses in the following customer segments: (i) non-financial corporate unsecured lending, (ii) household unsecured lending, (iii) total unsecured lending, (iv) commercial mortgages to corporates and households, (v) residential mortgates to households, (vi) total mortgage lending, (vii) leasing and instalment sales to corporates, (viii) leasing and instalment sales to households, and (ix) total leasing and instalment sales. The disaggregation allows us to measure important differences in bank responses in their different customer segments. This approach is consistent with Sibande and Milne (2024).

4.1 Bank lending data

Bank lending data are obtained from various banks' monthly disclosures to the Registrar of the SARB of bank assets and liabilities ("BA900 data" hereafter). This data is available publicly and is reported in the form prescribed by a "BA900" form available from the Banks Act.[8]

We aggregate all bank assets that are relevant to the customer segments referred to above. For instance, a bank's unsecured household lending volumes are estimated as the sum of that bank's household credit card and overdraft debt, as well as other household loans and advances. Further detail on the individual bank assets that comprise our various customer segments are available in Appendix A.2.

[8]See: https://www.gov.za/sites/default/files/gcis_document/201605/40002gen297.pdf

4.2 Bank lending rates data

We pair our bank lending volumes data with corresponding bank lending rates data. This data is sourced from what is referred to as BA930 data. Similar to bank reporting of asset and liability data, banks are required to report their lending rates data to the SARB. This data is provided in a form prescribed by a "BA930 form" available from the Banks Act and is not publicly available. The BA930 data contains average rates that are weighted by the outstanding amounts due to the bank at the time of reporting for various customer segments. We describe further the customer segments for which rates data is reported in Appendix A.3.

We use the BA930 data to estimate weighted average rates that are consistent with the customer segments we use in our analysis. The formula below shows how we estimate weighted average rates for our 9 customer segments. CS_j refers to the total number of banking assets pulled from the BA900 data to form customer segment j , where ($j \in [1, 9]$). $w^j_{b,i}$ is the weight for each bank's asset i in customer segment j. It calculated as the value of that bank's asset value divided by the total value of the bank's assets in that customer segment j.

$$Rate_{b,k} = \sum_{i=1}^{CS_j} w^j_{b,i} P_{b,i}$$

Table 1: Descriptive Statistics

Series	Median	SD	Min	Max	IQR	Obs
Lending growth						
Three month change in log commercial mortgages to corporates and households	1.06	1.50	-1.43	6.91	1.67	209
Three month change in log household unsecured lending	1.53	2.64	-10.40	10.08	2.07	209
Three month change in log leasing and installments to corporates	1.04	2.05	-4.94	6.82	2.32	209
Three month change in log leasing and installments to households	1.30	1.31	-2.56	4.75	1.57	209
Three month change in log non-financial corporate unsecured lending	1.54	3.03	-9.17	13.68	3.47	209
Three month change in log residential mortgages to households	0.80	0.65	-0.78	2.86	0.82	209
Three month change in log total leasing and installments	1.25	1.25	-2.10	3.58	1.48	209
Three month change in log total mortgage lending	0.98	0.74	-0.11	3.97	0.79	209
Three month change in log total unsecured lending	1.60	2.35	-5.57	10.85	2.74	209
Lending rates						
Commercial mortgages to corporates and households rate	8.06	1.05	6.16	9.99	1.55	156
Household unsecured lending rate	14.17	2.63	4.78	15.67	2.19	156
Leasing and installements to corporate rate	9.40	0.84	7.05	10.46	1.38	156
Leasing and installments to households rate	10.63	0.96	8.85	11.91	2.06	156
Non financial corporate unsecured lending rate	7.26	0.75	6.02	8.48	1.28	156
Residential mortgages to household rate	8.64	1.24	6.78	10.28	2.27	156
Total leasing and installments rate	10.26	0.91	8.29	11.44	1.75	156
Total mortgages lending rate	8.40	1.17	6.59	10.19	1.99	156
Total unsecured lending rate	9.58	1.04	6.30	10.74	1.46	156
Macroprudential regulation narrative indices						
Draft Index	0.00	0.23	0.00	1.00	0.00	212
Implementation Index	0.00	0.24	0.00	1.00	0.00	212
Financial regulation narrative index						
Finance regulation index	0.00	0.25	0.00	1.00	0.00	212
Controls						
Consumer confidence index	-5.00	9.88	-33.00	26.00	14.25	204
Repo rate	6.00	1.94	3.50	12.00	1.75	204
SAVIT40 index	18.44	3.62	12.70	37.93	4.92	156

4.3 Methodology

We use a panel data approach to estimate the impact of the different regulatory developments on bank rates and three month changes in bank lending volumes. The three month change in lending is calculated as the log difference of lending at t and $t-3$.[9] This approach is consistent with Aiyar et al. (2016), Deli and Hasan (2017), Fang et al. (2022) and Mirzaei and Samet (2022) who also consider the effect of macroprudential reforms on the stock of lending.

Our approach differs from existing literature in the following respects. First, our analysis considers the impact of regulatory developments on both lending volumes and bank pricing.

[9]We perform a visual test of the correlations between the response variables and our narrative indices. These are provided in Figure A4 and Figure A6 in Appendices A.7 and A.9. We find a stronger co-movement between the narrative indicators and three month change in lending. This is because the three month growth rates are less volatile than than the one month changes.

Second, we measure bank responses in disaggregated customer segments, as opposed to assess changes in aggregate lending. This approach allows us to measure whether bank responses differ in different customers segments. Third, our analysis considers separate estimations for each of the narrative indices. This allows us to estimate how differently banks respond in the face of different regulation. Our approach provides us with the ability to infer whether these two regulatory approaches are consistent with their own objectives, but also with each other.

$$Rate^{c}_{b,t} = \alpha_1 Index^{i}_{t} + \tau^{c}_{b} + \lambda^{c}_{t} + \alpha' \Omega^{c} + \epsilon^{c}_{b,t}$$

$$Lending^{c}_{b,t} = \beta_1 Index^{i}_{t} + \tau^{c}_{b} + \lambda^{c}_{t} + \beta' \Omega^{c} + \epsilon^{c}_{b,t}$$

Where $b \in [FNB, Absa, Nedbank, StandardBank]$; t is the time period; c is the credit category; and $i \in [Draft_t, Implementation_t, FinReg_t]$. Therefore $Lending^{c}_{b,t}$ are the bank level three month growth of lending, and $Rate^{c}_{b,t}$ are the bank level lending rates. Ω^{c} is a matrix of controls which includes a covid dummy, bank level variables, and other macroeconomic variables. τ^{c}_{b} captures the bank fixed effect, λ^{c}_{t} are the time fixed effects, and $\epsilon^{c}_{b,t}$ are the error terms.

5 Results

5.1 Responses to regulation

Tables 2 and 4 report the results from the estimation of equation (1), with standard errors clustered at bank level. Tables 3 and 5 relate to equation (2), where the dependent variable is the log difference in lending volumes between t and $t-3$, also clustered at bank level.[10].

With regard the impact of macroprudential regulation and bank lending rates, we find that interest rates on unsecured lending rise while those on secured lending and mortgage fall, by under 1%. The results are consistent and significant when we consider the effect on households and corporates. Household unsecured and mortgage rates, have a stronger reaction relative to

[10]Results of one month loan volume changes are available upon request

corporate rates. Total unsecured lending rate increases by approximately 2.5% while lending rates on secured loans and mortgages fall half a percentage point. Lending rates on household unsecured loans rise more relative to corporate unsecured lending rates (over 3% relative to 2% increase in corporate unsecured lending rates). On the other hand, secured and mortgage lending rates for corporates decline more relative to secured and mortgage lending rates on households.

With regard the impact of macroprudential regulation and bank lending growth, we find that the draft indicator is associated with a 2% increase in secured lending and an under 1% decline in mortgage lending. The signs of the coefficients are consistent and significant for both unsecured lending to corporates and households as well as mortgage lending to corporates and households. However, lending to households has a stronger reaction relative to lending to corporates. On the contrary, we find that following regulatory implementation, total unsecured lending falls by approximately 2%, while the effect on total secured lending is insignificant. The results are consistent for unsecured lending to corporates and households (although the coefficient on unsecured household lending is insignificant).

For both lending rates and volumes, we find that banks respond stronger and significantly following macruprudential regulatory implementation, relative to responses to the draft indicator. The results hold when we include controls, as shown in Tables A4 and A5.

Table 4 provides the results of how lending rates have responded to the finance regulations that have sought to enhance inclusion. For both corporates and households we estimate that inclusion related regulations were associated with respective decreases in secured lending rates of 0.3% and 0.2%. With the inclusion of controls, we record decreases in corporate lending rates of 0.1% and lose the statistical significance in the decreases in household lending rates in the secured segment (Table A6). Statistically significant increases in corporate and household lending rates respectively increase by 1% and 1.5% in the face inclusion focused regulation. With controls, the 0.9% increase in the unsecured lending rates to households is the only statistically significant result across customer types.

Table 2: Macroprudential regulation and lending rates

	Total			Corporates			Households		
	Unsecured	Secured	Mortgage	Unsecured	Secured	Mortgage	Unsecured	Secured	Mortgage
				Draft model					
Draft index	0.383***	-0.387***	-0.495***	0.326***	-0.449***	-0.199	0.398***	-0.359***	-0.597***
				Implementation model					
Implementation index	2.59***	-0.51***	-0.61**	2.29**	-0.73***	-0.77**	3.05***	-0.41***	-0.58**
Num.Obs.	580	580	580	580	580	580	580	580	580
Bank Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Monthly Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* p < 0.1, ** p < 0.05, *** p < 0.01

Table 3: Macroprudential regulations and lending volumes (3-months) results

	Total			Corporates			Households		
	Unsecured	Secured	Mortgages	Unsecured	Secured	Mortgages	Unsecured	Secured	Mortgages
				Draft model					
Draft index	0.624	2.232**	-0.194***	0.414	0.890***	-0.405**	0.999**	3.109**	-0.156*
				Implementation model					
Implementation index	1.82***	0.51	-0.62**	2.33***	1.24*	-1.44**	0.62	-0.09	-0.27**
Num.Obs.	580	580	580	580	580	580	580	580	580
Bank Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Monthly Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* p < 0.1, ** p < 0.05, *** p < 0.01

In Table 5 we provide the results of how lending volumes have responded to inclusion focused finance regulations. Results indicate that finance regulations are associated with 1.2% increase in lending volume growth to corporates in the secured segment. With the inclusion of controls (Table A7), this result lowers to a 0.8% and there is a statistically significant decrease in lending volume growth to households in the unsecured segment of 0.5%.

5.2 Discussion

5.2.1 Macroprudential regulatory changes

The analysis in the paper adds to the existing work on consequences of macroprudential regulation in emerging markets, similar to Sibande and Milne (2024) and Makrelov and Pillay (2024). Our results however, are directly not comparable to other studies since firstly, we consider entirely, the effects of anticipated regulatory changes captured by the pre-announcement of the regulation and the eventual implementation of the regulation. Secondly, we consider the effect of these pre-announced regulation on loan growth and interest rates on lending, for secured, unsecured and mortgage loans.

Two possibilities exist for growth in credit supply following stringent regulatory reforms (positive coefficients on lending volumes). One is the notion of anticipation effects where banks have information on the proposed regulation and dates which they will be implemented. As such, they can adjust credit supply upwards following pre-announcement and thereby take advantage of less stringent requirements, before tighter requirements are introduced.

Another possibility is the occurrence of portfolio re-balancing. The notion is that banks will reduce their relatively riskier loans, through a reduction in unsecured lending and rebalance their portfolios towards more prudent ones such as secured lending (Deli and Hasan, 2017). This is due to fact that macropruential reforms enforce banks to attach greater risk weights to certain loan portfolios such as unsecured credit. For instance, banks in Denmark retrenched more on their lending portfolio with higher risk weights, in response to higher capital requirements (Imbierowicz et al., 2018). Similarly, Cappelletti et al. (2019) find that banks classified as Other Systematically-Important (O-SII), who face added capital requirements, reduce their credit

Table 4: Financial regulation and lending rates results

	Total			Corporates			Households		
	Unsecured	Secured	Mortgage	Unsecured	Secured	Mortgage	Unsecured	Secured	Mortgage
	Finance regulation model								
Finance regulation index	1.196***	-0.240***	-0.286	1.010**	-0.324***	-0.332	1.463***	-0.190**	-0.285
Num.Obs.	580	580	580	580	580	580	580	580	580
Bank Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Monthly Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* p < 0.1, ** p < 0.05, *** p < 0.01

Table 5: Finance regulation and lending volumes (3-months) results

	Total			Corporates			Households		
	Unsecured	Secured	Mortgage	Unsecured	Secured	Mortgage	Unsecured	Secured	Mortgage
	Finance regulation model								
Finance regulation index	-0.496	-0.063	-0.084	-0.535	1.187***	-0.197	-0.348	-0.811	-0.065
Num.Obs.	580	580	580	580	580	580	580	580	580
Bank Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Monthly Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* p < 0.1, ** p < 0.05, *** p < 0.01

supply to households and financial sectors and shifted their lending to less risky counterparts within the non-financial corporations sector. The four banks in our sample are also classified as Systematically-Important (SI) banks, facing added capital requirements.

The portfolio re-balancing argument is stronger when we consider implementation effects, particularly on lending rates. We observe a decline in secured lending and an increase in unsecured lending rates as greater risk weights are attached to unsecured credit. This is also highlighted by the fact that while corporate unsecured lending volume increase following implementation, there is no effect on household lending. As such, household (unsecured) lending appear to have greater risk weights as the effect on the respective lending rate is more than the effect on corporate unsecured lending rate[11].

Results around regulatory implementation, especially for unsecured lending, show that, despite tighter macroprudential reforms, we still observe an increase in unsecured lending, driven by corporate unsecured lending. This suggest that despite the implementation of stringent regulatory measures, banks still lend to higher quality clients within the unsecured lending space (seemingly corporates) and still charge relatively higher rates on these loans. Interestingly and consistent with the portfolio re-balancing argument, this is not the case for any lending towards households, even though the implementation effect on lending rates is more pronounced on household unsecured lending relative corporate unsecured lending rate.

Results from Table 2 point to similar evidence when we consider the draft indicator, where we find an increase in secured lending relative to unsecured lending (rightward shift in the secured loan supply curve). Consequently, the rates associated with unsecured lending fall. These effects are stronger for household unsecured lending relative to corporate secured lending. Furthermore, we also find evidence of an increase in household unsecured lending during the pre-announcement stages, while this is not the case for coroprates. This possibly points to banks taking advantage of less stringent requirements on household unsecured lending, with both an increase in the supply loans and interest rates on these loans before implementation of stringent requirements. Bridges et al. (2014) on the other hand, finds that an increase in

[11]This makes sense as the average and maximum lending rate on household unsecured lending far exceed that on corporate unsecured lending, as shown in Table 1

capital requirements reduces on average, loan growth for commercial real estate (mortgages), other corporate and household secured lending, while the response of unsecured lending is relatively weak.

Our results show that mortgage lending declines, in all specifications. At the same time, interest rates on mortgages also decline in all specifications. A few possibilities exist. Firstly, banks tightened deposit requirements on mortgages following regulatory reforms. This in essence reduces the risk associated with mortgage lending, hence the decline in mortgages rates in all specifications as borrowers who can meet the new deposit requirements are likely to meet their mortgage obligations. The downside however to tighter deposit requirements on mortgages is that access to mortgage credit is tightened, hence the decline in mortgage lending volumes for all specifications in Table 2. Essentially, mortgage borrowers who can afford to pay higher deposits on mortgages following increased deposit requirements are the only ones likely to access mortgage lending, while those who are unable to meet higher deposit requirements are relatively unlikely to access mortgage borrowing.

Second is that mortgage lending declines following stringent macroprudential reforms. However, with banks facing credit constraints due to the reforms, high-quality mortgage borrowers benefit from stringent reforms in the form of reduced interest rates on mortgages. Furthermore, the reduction in mortgage lending rates, in addition to reduction in lending volumes, could possibly be result of also in a decline in the demand for mortgage finance. For instance, data from National Accounts shows that mortgages accounted for 61% of household liabilities, but has since declined to only 47% in 2020[12]. However, they also find that mortgage lending margin increase post 2008, which is consistent with m supply shortfalls than demand deficit in the mortgage lending market.

A report by the Actuarial Society of South Africa highlights that banks have reduced their relative exposures to mortgages and have in turn, increased their exposures to loan classes that are for consumption purposes. It also highlights that the introduction of the Net Stable Funding Ratio (NSFR) which form part of Basel III, potentially implies higher funding costs

[12]This evidence is also contained in a report by the Actuarial Society of South Africa, available at: https://www.actuarialsociety.org.za/convention/wp-content/uploads/2022/10/2022-ASSA-AnthonyrajahMalwandla.pdf

on retail mortgages relative to unsecured retail loans. In turn, these costs can be shifted to consumers through higher mortgages lending rates (which does not show up in our results) and/or rationing of mortgage lending for a given level of lending rate.

Results from Table 2 and 3 show that implementation effects are stronger relative to announcement effects as captured by the $Draft$ indicator. This is specific to unsecured lending rates and volumes. The stronger implementation effects potentially reflect the endogenous reaction of banks to pre-announced regulatory actions, thereby influencing (overestimating) the effects of regulatory implementation. For instance, Fernández-Gallardo Romero and Lloyd (2023) and Fang et al. (2022) control for possible anticipation effects by distinguishing between macroprudential policies with and without implementation lags as they can have different effects on macroeconomic variables. As such Fernández-Gallardo Romero and Lloyd (2023) use only announcement dates to identify the effects of macroprudential policies. Secondly, they identify macroprudential policies that have no implementation lags, which are captured by the announcement date and in the spirit of Mertens and Ravn (2012), they also identify macroprudential policies with implementation lags, which are defined as policies with significant delay between the announcement and enforcement or implementation date of at least 90 days. Those with implementation lags could potentially influence the response of banks as it allows them significant time to endogenously react to the prudential regulations ahead of implementation.

Therefore, a further challenge to explore in our paper and with the construction of our macroprudential narrative indices, is an attempt at disentangling and distinguishing polices with and without implementation lags. Secondly, a challenge is posed to also construct leads and lags for our macroprudential narrative series to identify any lag effects and identify if banks adjust their lending before actual implementation dates, as with Fang et al. (2022).

Despite the challenges, the construction of our narrative macroprudential indices and the use of data on bank lending rates, contributes significantly to the growing empirical work analysing the effects of macroprudential policy in South Africa and emerging markets at large.

5.2.2 Finance regulatory changes

After accounting for possible confounders, the results pertaining to inclusion focused finance sector reforms indicate that these regulatory developments are associated with increases in unsecured lending rates for households, as well as decreased secured lending rates for corporates. With respect to lending volume growth, inclusion focused finance sector developments are associated with decreased growth in unsecured lending to households and increased growth in secured lending to corporates.

A number of the regulatory developments were motivated by government intentions to improve access and lower the costs of financing for individuals and entities with poorer access. These developments included removal of adverse information kept at credit bureaus, reducing the periods that adverse information is kept by those credit bureaus and providing guidance facilitating debt restructing in cases of risky and/or reckless lending. According to the National Credit Regulator (2014) some of these developments were to enable greater consumer access to affordable credit, as well as employment opportunities. The South African Government (2013) express further that negative credit information hinders access of individuals who have paid their debts from accessing affordable credit. The South African Government (2013) thereafter took a decision to remove adverse credit information relating to individuals who have paid their debts to achieve this. However, our results suggest that opposite of the intended effects. Our results indicate that, on average, South African households paid higher interest rates on their unsecured credit following these regulatory developments. This was also followed by a decrease in the growth of unsecured lending volumes to households. This negatively impacts on financial inclusion as greater access to and usage of affordable credit is impeded.

This results is likely driven by the increase in the informational asymmetry that the regulations introduce. Banks are financial intermediaries that collect deposits and issue out loans. To extend loans, banks face credit risk which follows from the possibility that a loan customer may not pay back the loan (Kleimeier and Sander, 2017, Freixas and Rochet (1997)). To lessen this credit risk, banks rely on information about individuals and firms that can be sourced from credit bureaus or other institutions (Freixas and Rochet, 1997). The regulatory developments

we consider in this paper have the effect of limiting the amount of information available to banks or the periods that information could be kept. This could have given rise to the increased lending rates and decreased lending volume growth we observe in unsecured credit provided to households.

Another potential explanation for the decreases in the reduced lending volume growth and higher interest rates in unsecured lending to households is the adjustment in the maximum interest rates that are specified in the NCA regulations. In 2015, the Minister of Trade and Industry proposed changes to the maximum interest rates and initiation fees that credit providers could charge consumers (Minister of Trade and Industry, 2015a). Final changes came into effect that same year (Minister of Trade and Industry, 2015c). For 5 of the 7 credit types, the net effect of these adjustments were that maximum interest rates on credit facilities would be lower by 2.9 percentage points and 7.9 percentage points for unsecured credit (based on the prevailing repo rate). The maximum rates set for other credit types increased marginally by 0.1 percentage points or had no change at all. Initiation and service fees were increased above the limits set in the 2006 regulations. Yoshino and Morgan (2016) indicates that this type of rate regulation can restrict credit supply. Indications are that flexible interest rate setting could further financial inclusion as opposed to consumer protection regulation that seeks to constrain rate determination (Barua et al., 2016).

Our secured lending category refers to all loans provided by banks with an underlying asset offered by the customer as collateral. With collateral referring to an asset that a bank would be able to seize should a borrower face bankruptcy. This guarantees the repayment of the debt (Freixas and Rochet, 1997). Following the regulatory developments, we note that unsecured lending volume growth to households decrease, while secured lending volume growth to corporates increase. This development likely reflects bank shift towards safer credit categories. Since the regulations we consider primarily affect secured and unsecured lending to households, it appears that banks do not shift from unsecured to secured lending within household lending. Instead, they appear to be directing credit supply towards another credit customer type - corporates.

6 Conclusion

This study examines the impact of regulation on the bank lending rates and volumes of the South Africa's largest banks. The regulations we consider are macroprudential regulation that intend to achieve stability in the finance sector, as well as finance regulations that are intended to achieve greater financial inclusion. These two regulations are potentially in conflict as one may be premised on limiting credit supply to achieve stability while the other may increase risk through greater credit extension. We capture these regulatory developments through narrative indices that comprehensively measure all regulatory developments relevant to our study.

The effects of these regulations on bank pricing and lending are estimated through panel data regressions estimated separately for the different types of regulations we consider. We find that macroprudential regulation results in increases in interest rates on unsecured lending while those on secured lending and mortgages decrease. Further to this, our results indicate that macroprudential regulations are associated with positive growth in lending volumes in unsecured and secured credit while mortgage lending growth rates decrease. Our estimates of inclusion focused initiatives indicate that these developments are associated with increased bank lending rates for unsecured credit to households and decreased growth in the unsecured lending volumes to households. We also observe increases in the growth of secured lending to corporates and a decrease in secured lending rates paid by those corporates.

The impact of these two notionally contradictory policies are consistent with respect to secured lending volume growth and rates to corporates, as well as the unsecured lending rates paid by households. The opposite effect is observed with respect to unsecured lending volumes to households - inclusion efforts lowers usage whereas macroprudential efforts increase usage.

Overall, our results indicate that macroprudential policy is working as intended to achieve financial sector stability. However, inclusion focused regulation may be at odds with its own stated objectives of increasing the extension of affordable credit.

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A Appendix

A.1 Data sources

Table A1: Data Sources

	Description	Availability	Source
Macroprudential narrative index	Narrative index of macroprudential regulations in South Africa.	Public data	Own analysis
Competition narrative index	Narrative index of financial regulations in South Africa	Public data	Own analysis
BA900	Banking sector balance sheet data at a bank level	Public data Aggregated data is public.	South African Reserve Bank
BA930	Banking sector lending rates at a bank level	Bank specific data is private	South African Reserve Bank
Controls	Banking sector performance data at a bank level and general macroeconomic data.	Aggregated data is public. Bank specific data is private	Prudential Authority, South African Reserve Bank, Statistics South Africa, Johanesburg Stock Exchange

A.2 Aggregation scheme

Table A2: Aggregation schema

BA 900 Categories	Item Number	Sector	Aggregation Key
Installment sales	141	Financial corporate sector	-
	142	Non financial corporate sector	g
	143	Household sector	h
	144	Other	-
Leasing transactions	146	Financial corporate sector	-
	147	Non financial corporate sector	g
	148	Household sector	h
	149	Other	-
Farm mortgages	152	Non financial corporate sector	d
	153	Household sector	d
	154	Other	-
Residential mortgages	156	Non financial corporate sector	e
	157	Household sector	-
	158	Other	-
Commercial and other mortgages	160	Public financial corporates	-
	161	Public non-financial corporates	-
	162	Private financial corporate	d
	163	Private non-financial corporates	d
	164	Household sector	-
	165	Other	-
Credit cards	167	Financial corporate sector	a
	168	Non financial corporate sector	b
	169	Household sector	-
	170	Other	-
Overdrafts	178	Public sector (includes public corporations and local government)	-
	181	Financial corporate sector	-
	182	Non financial corporate sector	-
	183	Unincorporated business enterprises	a
	184	Other Household sector	-
	185	Non-profit organisations serving households	b
Factoring debtors	187		-
Other loans and advances	189	Financial corporate sector	-
	190	Non financial corporate sector	a
	191	Unincorporated business enterprises	-
	192	Other Household sector	b
	193	Non-profit organisations serving households	-

The following aggregation scheme which results in nine categories was followed based on Table A2:

a. Non-financial corporate unsecured lending: Items 168 + 183 + 190

b. Household unsecured lending: Items 169 + 185 + 192

c. Total unsecured lending: Non-financial corporate unsecured lending + Household unsecured lending

d. Commercial mortgages to corporates and households: Items 152 + 153 + 156 + 163 + 164

e. Residential mortgages to household: Item 157

f. Total mortgage lending: Commercial mortgages to corporates and households + Residential mortgages to household

g. Leasing and instalments to corporates: Items 142 + 147

h. Leasing and instalments to households: Items 143 + 148

i. Total leasing and instalments: Leasing and instalments to corporates + Leasing and instalments to households

A.3 Bank lending rates weighting scheme

The loans quantities from the BA900s are then linked to the lending rate data from the BA930s using table to create nine lending rate categories the schema on Table A3. The weights for each category are then calculated by dividing the total value of the loans in each category by the total value of all loans in the BA900s. The weights are then used to calculate the weighted average lending rate for each month. The weighted average lending rate is calculated by multiplying the lending rate for each category by the weight for that category and then summing the results.

Table A3: Weighting schema

Sector	BA 930 Categories	Item Number	Weighting Key
Corporate sector	Overdraft rate	48	a and c
	Instalment sale agreements flexible rate	49	g and i
	Instalment sale fixed rate	50	-
	Leasing transactions flexible rate	51	g and i
	Leasing transactions fixed rate	52	-
	Mortgage advances flexible rate	53	d and f
	Mortgage advances fixed rate	54	-
	Credit card rate	55	a and c
	Other	56	a and c
Household sector	Overdraft rate	58	b and c
	Instalment sale agreements flexible rate	59	h and i
	Instalment sale fixed rate	60	-
	Leasing transactions flexible rate	61	h and i
	Leasing transactions fixed rate	62	-
	Mortgage advances flexible rate	63	e and f
	Mortgage advances fixed rate	64	-
	Credit card rate	65	b and c
	Other	66	b and c

The nine categories, therefore, are as follows:

a. Non-financial corporate unsecured lending: Weighted average of items 55 + 48 + 56
b. Household unsecured lending: Weighted average of items 65 + 58 + 66
c. Total unsecured lending: Weighted average of items 55 + 48 + 56 + 65 + 58 + 66
d. Commercial mortgages to corporates and households: Weighted average of items 53
e. Residential mortgages to household: Item 63
f. Total mortgage lending: Weighted average of items 53 + 63

g. Leasing and instalments to corporates: Weighted average of items 49 + 51

h. Leasing and instalments to households: Weighted average of items 59 + 61

i. Total leasing and instalments: Weighted average of items 49 + 51 + 59 + 61

A.4 Aggregated bank lending

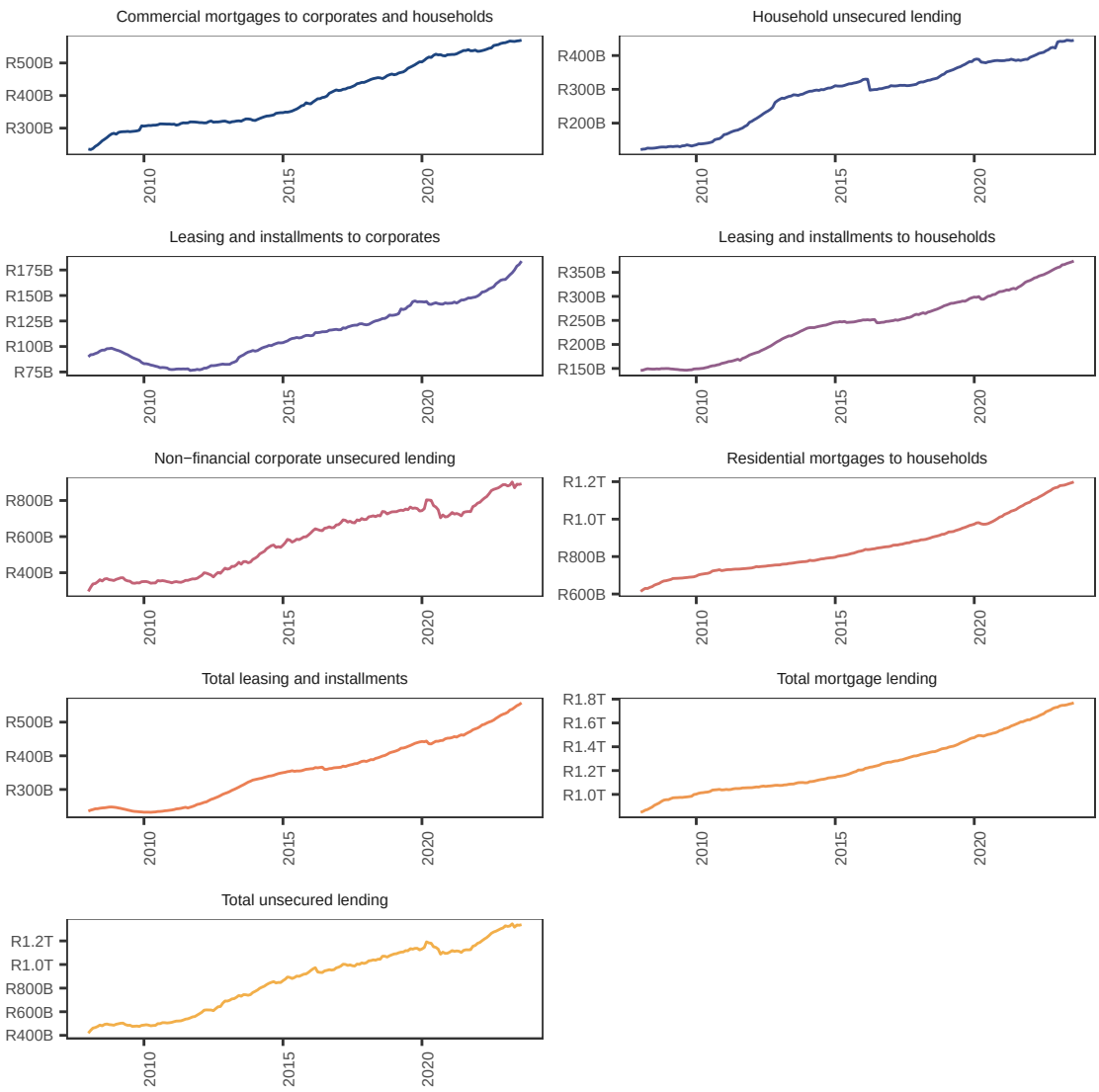

Figure A1: Total aggregated bank lending

A.5 Weighted lending rates (aggregated)

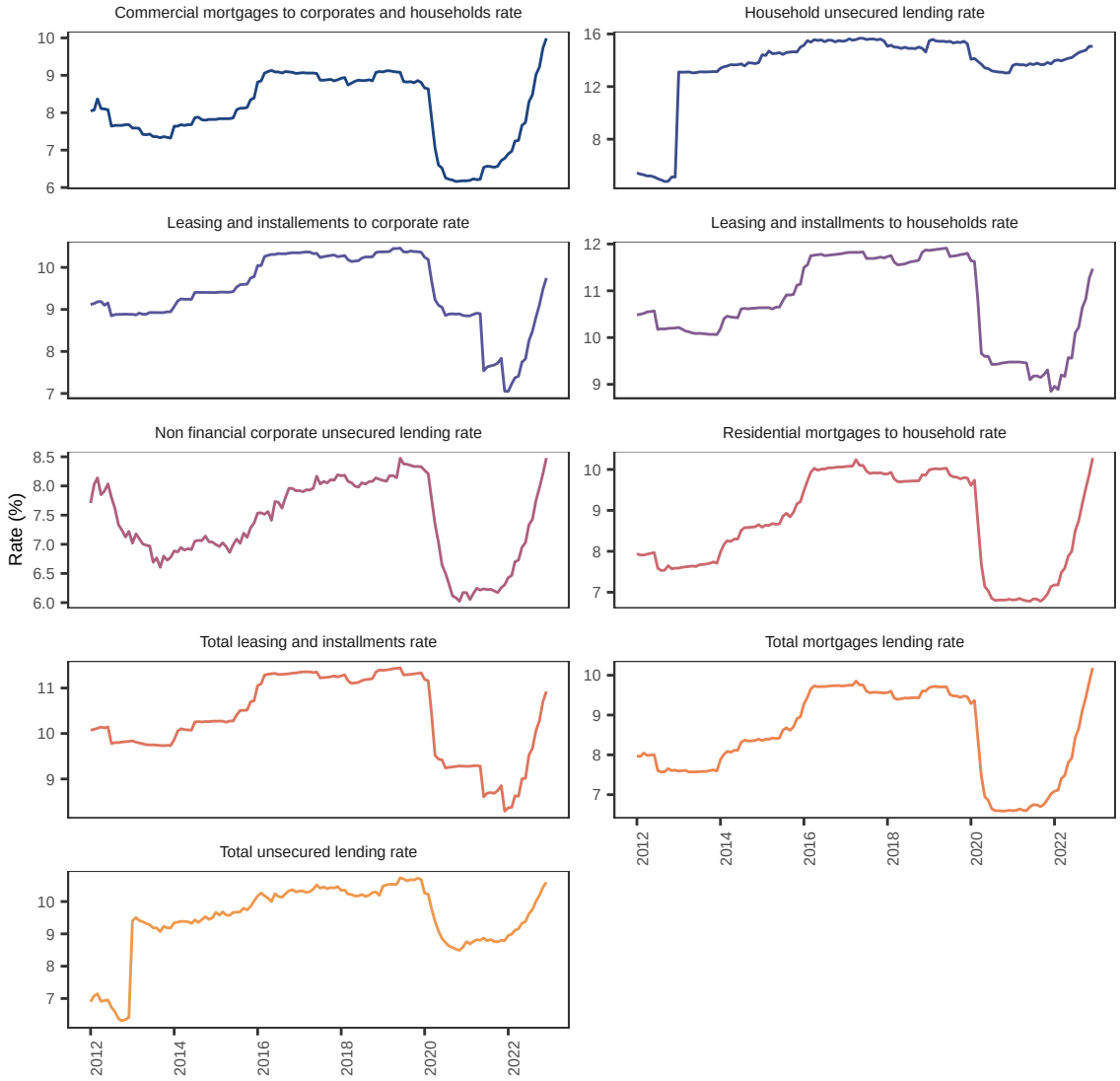

Figure A2: Weighted lending rates

A.6 Description of narrative events

A.6.1 Macroprudential Indicators

This section provides a detailed account of the narrative macroprudential indicators. The asterisk (*) indicates that the specific regulation is tracked from the date of announcement to the date of implementation.

2008/01/01: Implementation

BASEL II is Implemented until Dec 2011

2009/02/04: Announcement, draft and passing of regulation

SARB issues **directive 1/2009 (1 of 2009)** announcing the approach banks should follow in the application of capital floors. "Modelled capital should not be below 80% of the capital requirements under Basel I to ensure capital levels do not fall below prudent level". Following Basel II, banks are allowed to use internal models to determine risk weights and in turn, determine capital levels. However, capital floors ensure capital requirements did not fall below a certain percentage of banks' capital requirements under the previous Basel I framework(BCBS, 2006). This in essence, imply greater risk weight attached to riskier credit products. For instance, Imbierowicz et al. (2018) show that Danish banks reducing their lending on loans with higher risk weights, in response to higher capital requirements, including approaches to capital floors.

2009/07/31*: Announcement, draft and passing of regulation

BCBS announces "measures to strengthen the 1996 rules governing trading book capital and to enhance the three pillars of the Basel II framework (Basel 2.5)". This in essence, aims to introduce higher capital requirements to capture the credit risk of complex trading activities, promote the build-up of capital buffers that can be drawn down in periods of stress and strengthen the quality of bank capital(BCBS, 2009)

2010/10/08*: Announcement, draft and passing of regulation

SARB issues **circular 3/2010** endorsing and giving notices to banks to prepare for the implementation of Basel 2.5, following the communication by the BCBS on July 31, 2009

2011/06/30*: Announcement, draft and passing of regulation

BCBS issues and publishes Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems.

2011/07/31: Announcement, draft and passing of regulation

Cabinet adopts proposal to shift to Twin Peaks Model of Financial Regulation in South Africa, following he GFC, with the aim of improving institutional structure to support financial regulation. This is a signal to stricter oversight on the overall financial system

2011/10/31: Announcement, draft and passing of regulation

Basel 2.5 is transposed into domestic law (next step is implementation)

2012/01/01: Implementation

Basel 2.5 takes effect: SARB minimum capital requirements

- Total CET1, 5.25%, Total Tier1, 7%, Minimum regulatory capital, 8%, Total regulatory capital for D-SIB, 9.5%

2012/02/16*: Announcement, draft and passing of regulation

SARB issues **guidance note 2/2012** announcing on new definition of total regulatory capital for Basel III such as:

- Phasing out arrangements for non-common equity Tier 1 capital instruments that no longer qualify as regulatory capital under Basel III

- Transitional arrangements for Basel III implementation
- Treatment of disclosed reserves under Basel III

2012/05/31*: Announcement, draft and passing of regulation

SARB issues **guidance Note G5/2012** announcing that it will provide liquidity facility to assist banks in meeting the liquidity Coverage Ratio (LCR) and cash reserves can be included as banks' high quality liquid assets for calculating LCR. This follows results from Quantitative Impact Studies (QIS) exercises by banks, which revealed some banks would have shortfalls of around R140 billion in meeting the 100% LCR by 1 Jan 2019 due do to reliance eon short-term funding limited availability of HQLA

- LCR requirements will be introduced on **1 Jan 2015** at 60%, increasing by 10% to reach 100% on 1 Jan 2019
- Level 1 assets (stocks, funds or bonds) shall comprise 60% of total HQLA while level 2 assets (less liquid) shall constitute no more than the remaining 40%
- SARB proposes that Leverage ratio be set at 4% (LR of 4% implies that banks' leverage does not exceed its capital by 40%)

2012/08/15*: Announcement, draft and passing of regulation

SARB transposes Basel III into law and publishes Counter-cyclical Capital Buffer (CCyB) rules, set to be implemented on 1 January 2016

2013/01/31/*: Implementation

Basel III takes effect

2013/08/20: Announcement, draft and passing of regulation

SARB issues **Guidance Note 6/2013** announcing that banks' cash reserves may be included as part of their level 1 HQLA. Only equities listed on JSE's main exchange and included on Top 40 Index shall be considered as level2 HQLA (*Potentially limit banks' ability to raise capital*).

2014/01/31: Implementation

SARB mimimum Capital Requirements increase to:
Total CET1, 5,5%, Total Tier1, 7%, Total regulatory capital, 8%, Total regulatory capital for D-SIB, 10%

2014/12/31: Announcement, draft and passing of regulation

SARB issues **guidance note 8/2014** announcing the provision of a committed liquidity facility (CLF). This is to assist banks to meet the LCR. Banks, however need to have collateral to access the CLF, consisting of:

- High-quality residential mortgage loans
- Other loans and advances such as VAF, excluding unsecured loans
- Domestically listed securities

2015/01/31*: Implementation

LCR ratio is introduced/implemented at 60% compliance

2015/12/31*: Announcement, draft and passing of regulation

SARB issues **circular 8/2015** announcing timelines and targets in respect of the implementation of the countercyclical capital buffer (CCyB). SARB requirements shall apply to bank-wide total RWA:

- 0.625% on 1 Jan 2016
- 1.25% 1 Jan 2017

- 1.875% on 1 Jan 2018
- 2.5% on 1 Jan 2019

2016/01/31*: Implementation

CCyB is implemented and set at 0.625%

2016/04/13*: Announcement, draft and passing of regulation

SARB issues **directive 1/2016** to inform all banks of matters related to the exposure limits imposed in the classification of deposits and credit exposures to small and medium enterprises (SMEs), to be implemented on 1 July 2016. For instance, total exposure of a bank to an SME borrower, which shall be determined or calculated on a consolidated basis, at no time exceeds R12,5 million (*Greater limits on value of a loan that can be extended to an SME*)

2016/07/01*: Implementation

Exposure limits imposed in the classification of deposits and credit exposures to small and medium enterprises (SMEs), announced on 2016/04/13, is implemented

2017/01/31*: Implementation

LCR ratio is introduced/implemented at 80% compliance, while CCyB increases to 1.25%

2017/12/13*: Announcement, draft and passing of regulation SARB issues **directive 8/2017** informing banks to comply with the Net Stable Funding Ratio (NSFR) framework and on matters related to calibration of NSFR, including template to monitor NSFR compliance. Agrees to start implementation on 1 January 2018. Objective is to reduce funding risk over a longer time horizon by requiring banks to fund their activities with sufficiently stable sources of funding in order to mitigate the risk of future funding stress. *Banks will be required to match their funding with*

their outflows, which may lead to a greater demand for longer term funding. Longer term funding will result in an increased cost of funding for banks (possibly passed on to borrowers and lower profitability and returns for banks

2018/01/31*: Implementation

NSFR Implemented following Directive 8/2017, CCyB increases to 1,875% and LCR is implemented at 90% compliance.

2019/01/31*: Implementation

CCyB increases to 2,5% (maximum) and LCR is implemented at 100% compliance.

A.6.2 Finance regulation index

Changes in the National Credit Act of 2005 Regulations

The National Credit Act of 2005 is legislation that was enacted in order to better regulate the markets for customer credit. According to this Act its purpose is to develop, inter alia, credit markets that are accessible by all South Africans, correct the imbalance in negotiating power between consumers and credit providers, regulate the collection and sharing of consumer credit information and prevent over-indebtedness. These, and other, efforts are to achieve a "*fair, transparent, competitive, sustainable, responsible, efficient, effective and accessible credit market and industry, and to protect consumers*[13]. The Act specifically provided the Minister of, the erstwhile, Trade and Industry with powers to provide regulations pertaining to the implementation of the Act.[14] These regulations were made available in May 2006.

The initial regulations pre-date the period assessed by this paper, but the proposed and later realised changes to these Regulations occurred between 2012 and 2015. It is these developments that are captured within *FinReg*.

2012 Debt Counselling Regulations

On the 10th of May 2012 the Minister of Trade and Industry published debt counselling regulations. These codified the process to be followed by debt counselors and consumers when seeking various order from the Magistrate's Court. These orders relate to the re-structuring of debt following a debt counselor's findings of consumer over-indebtedness, consumer difficulty to meet debt obligations and direct applications by consumers to the court following an adverse finding by debt counsellors. The regulations also provided that credit providers were expected to implement orders from the Court within 10 working days following their receipt of the court orders from the debt counselors and/or consumers (Minister of Trade and Industry, 2012).[15].

Roestoff et al. (2009) indicates that provisions of the National Credit Act in regard to debt relief are to assist over-indebted consumers, prioritising their interests more than those of credit providers. To achieve these outcomes, debt review negotiations require that credit providers

[13]Section 3 of the NCA.
[14]Section 171 of the NCA.
[15]The initial draft regulations were published on the 15th of May 2009 and did not prescribe the period within which court orders, made following debt counselling processes, were to be implemented by credit providers

have greater responsibility toward the possible negative outcomes of credit provision.

2013 and 2014 draft and final credit regulations on the removal of adverse consumer credit information and information relating to paid up judgements

In 2013 the Minister of Trade and Industry issued a notice about a proposal to remove adverse credit information from credit bureaus. This followed Cabinet endorsement of a *Removal of Adverse Credit Information Project*. The Minister proposed that all adverse findings were to be removed regardless of non-payment. Thereafter on an ongoing basis adverse information held by credit bureaus were on settled debt or paid up judgements were to be removed. Communication from the SA government indicated that this move was to ensure that those who could access credit, and were prevented from doing so, due to adverse credit information could do so (South African Government, 2013).

On the 26th of February 2014, the Minister published final regulations instructing credit bureaus that adverse credit information was to be removed on all paid up judgements (Minister of Trade and Industry, 2014b). The final regulations were less ambitious than the proposal. Nevertheless, the National Credit Regulator (2014) indicates that the regulations were to enable consumer access to affordable credit, as well as employment opportunities.

2014 and 2015 changes to the National Credit Regulations

On the 1st of August 2014, the Minister of Trade and Industry published draft national credit regulations that proposed a host of changes to the existing 2006 regulations, as amended (Minister of Trade and Industry, 2014a). Many of these were proposed insertions into the regulations that did not exist before. The proposals included a criteria to be adopted by credit providers to conduct affordability assessments to further limit instances of reckless lending. Credit providers were provided with additional limits on when adverse consumer credit information was to be shared with credit bureaus; for instance, information that consumers did not meet their financial obligations would not be shared unless a consumer would have missed their minimum obligations for three consecutive months. Related to credit bureau information were changes to the maximum periods that credit information were to be kept by credit bureaus. For many of the types of information kept, the proposed regulations proposed reduced retention periods. For instance, information relating to enquiries on a consumers

record was to be reduced from 2 years to 2 months; information on liquidations had been kept for an unlimited period and the proposal was to reduce this to 5 years; information on complaints initiated by customers was kept from 18 months and proposed to be reduced to 6 months. Other changes included explicit references to the registration and operation of payment distribution agents, as well as the provision of clarity on when credit information could be obtained for employment purposes.

By the 13th of March 2015, the Minister provided a final set of proposed changes and insertions into the regulations that would come into effect (Minister of Trade and Industry, 2015b). Many of the 2014 proposals were accepted, some with changes. Some of these included the explicit criteria for affordability assessments, changes to the retention periods for credit bureau information, and the additional limits on when adverse consumer credit information was to be shared with credit bureaus.

2015 draft and final credit regulations on limitations on fees and interest rates

Section 42(1) of the 2006 credit regulations provided the maximum interest rates to be set on different types of credit (Minister of Trade and Industry, 2006). These included mortgages, credit facilities, unsecured credit, developmental credit, short term credit, other and incidental credit agreements. Incidental and short term credit rates were respectively capped at 2% and 5% per month. The limits for other rates were calculated at the repo rate scaled up by 2.2 and increased by fixed interest rates ranging between 5 to 20 percentage points depending on the credit type. In addition, the regulations also provided the maximum Rand values that would be set as initiation and service fees. The initiation fees varied by credit type.

In 2015, the Minister of Trade and Industry proposed changes to these interest rates and initiation fees (Minister of Trade and Industry, 2015a). Final changes came into effects that same year (Minister of Trade and Industry, 2015c). For 5 of the 7 credit types, the Minister provided a lower scalar by higher interest rate premium. The net effect of this adjustment was that maximum interest rates on credit facilities would be lower by 2.9 percentage points and 7.9 percentage points for unsecured credit (based on the prevailing repo rate). The maximum rates set for other credit types increased marginally by 0.1 percentage points of had no change at all. Initiation and service fees were increased above the limits set in the 2006 regulations.

Restructuring of the financial sector regulation

Financial Sector Regulation Act

The Financial Sector Regulation Act of 2017 represented a structural shift in the regulation of financial institutions in South Africa, as it set up a framework for financial regulation and supervision.

The Act importantly sets up two authorities with important regulatory powers. One is the Prudential Authority, which sits within the South African Reserve Bank. This object of this authority is to ensure the soundness of financial institutions and infrastructure and financial stability, as well as protecting consumers against risks from financial institutions. The other authority created by the act is the Financial Sector Conduct Authority (FSCA).[16] The object of the FSCA was to protect financial consumers by promoting fair treatment and financial education, as well as to maintaining financial stability and market efficiency.

Both the PA and the FSCA were tasked with promoting financial inclusion. Which the Act defined as a state where all persons have access to *"timely and fair access to appropriate, fair and affordable financial products and services"* (Presidency, 2017).

Draft and Update of the Conduct of Financial Institutions Bill

In 2018 the National Treasury presented a draft Conduct of Financial Institutions (COFI) Bill. This bill proposes consolidating a number of the financial sector laws of the country. At present, the nature of financial sector regulation is focused on particular sectors. For instance, insurance companies are regulated by the Insurance Act, investment schemes by the Collective Investment Schemes Control Act and financial service providers by the Financial Advisory and Intermediary Services Act. The proposed bill seeks to provide the provide the Financial Services Conduct Authority with the ability to regulate the conduct of institution that provide the similar services and products (Minister of Finance, 2018a).

With regard to credit provision, the COFI bill proposes providing the FSCA with the ability to provide standards for the conduct of firms in the provision of financial products and services. The referred to conduct relates to, inter alia, firms' charging structures, pricing methodologies, financial product features and the identification of appropriate and inappropriate target markets

[16]The FSCA replaced the Financial Services Board. See: https://www.fsca.co.za/TPNL/4/fsb4/proactive.html

(Minister of Finance, 2018a, Minister of Finance (2018b)). The National Treasury (2018) explains that this proposed legislation is premised on supporting greater financial inclusion as the better regulation of firm conduct would provide consumers with greater security required for their usage of financial sector products. A draft COFI bill was presented in 2018 and an updated draft in 2020 (Minister of Finance, 2018b).

National financial inclusion policy

Draft Financial Inclusion Policy Report is published

In 2020 the National Treasury provided a draft national policy framework for financial inclusion in South Africa. The existing state of financial inclusion is reported to be high in South Africa but the National Treasury notes that the usage of financial products by low income earners remains low and that small, medium and micro enterprises are only marginally serviced (National Treasury, 2020). On the back of these challenges, the draft national policy framework provides the initiatives to be support the three key pillars they identify as being important to financial inclusion: (i) deepening financial inclusion, (ii) improving access for SMMEs and (iii) supporting more diverse providers of financial services.

A number of initiatives identified by the National Treasury (2020) in the above mentioned three pillars relate directly to credit currently extended by incumbent banks. To increase developmental loans provided to low income families, the policy proposes governments sharing losses on defaults and a students future income to assess affordability of loans, as well as the use of different forms of collateral (such as a permission to occupy) to secure mortgage financing. SMME access to financing is planned to be supported by improvements in credit infrastructure for small businesses; an example of this will include consideration of SMME payments data as information relevant to determining ability to access credit. To support more providers of financial services National Treasury (2020) proposes promoting the development of cooperative banks to compete against incumbent banks, developing a licensing framework that supports the entry of new financial institutions and assessing the role of a state owned bank.

The financial inclusion policy sets out a number of initiatives that are likely to have an impact when and how incumbent banks extend credit. In addition, the proposed framework as suggests various programmes that would create additional financial institutions that are likely

to compete with incumbents in markets relating to credit provision.

A.7 Macroprudential narrative indexes

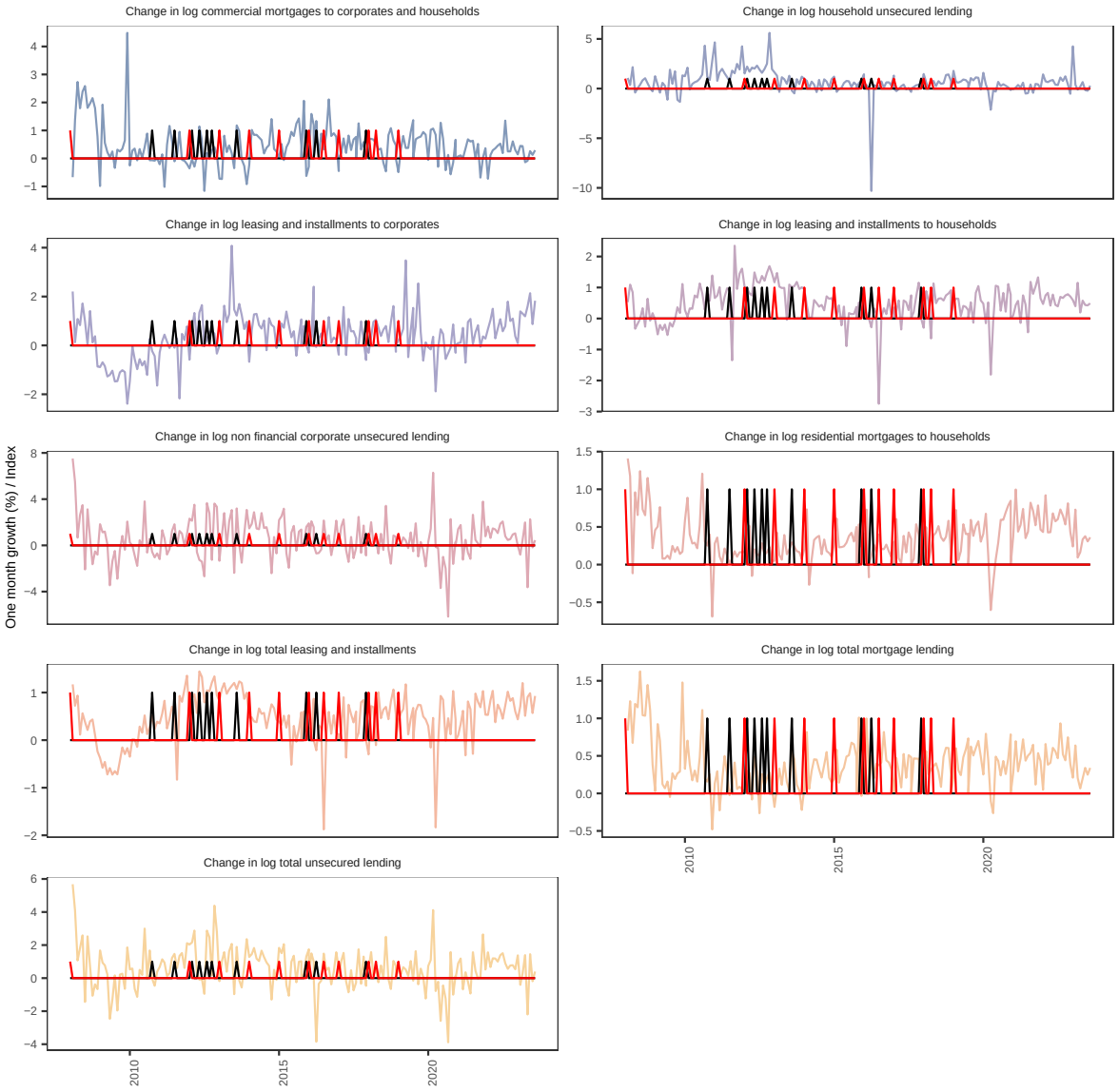

Figure A3: One month lending growth and macroprudential narrative index comparison. Note: The black line represents the Draft index, and the red line represents the Implementation index.

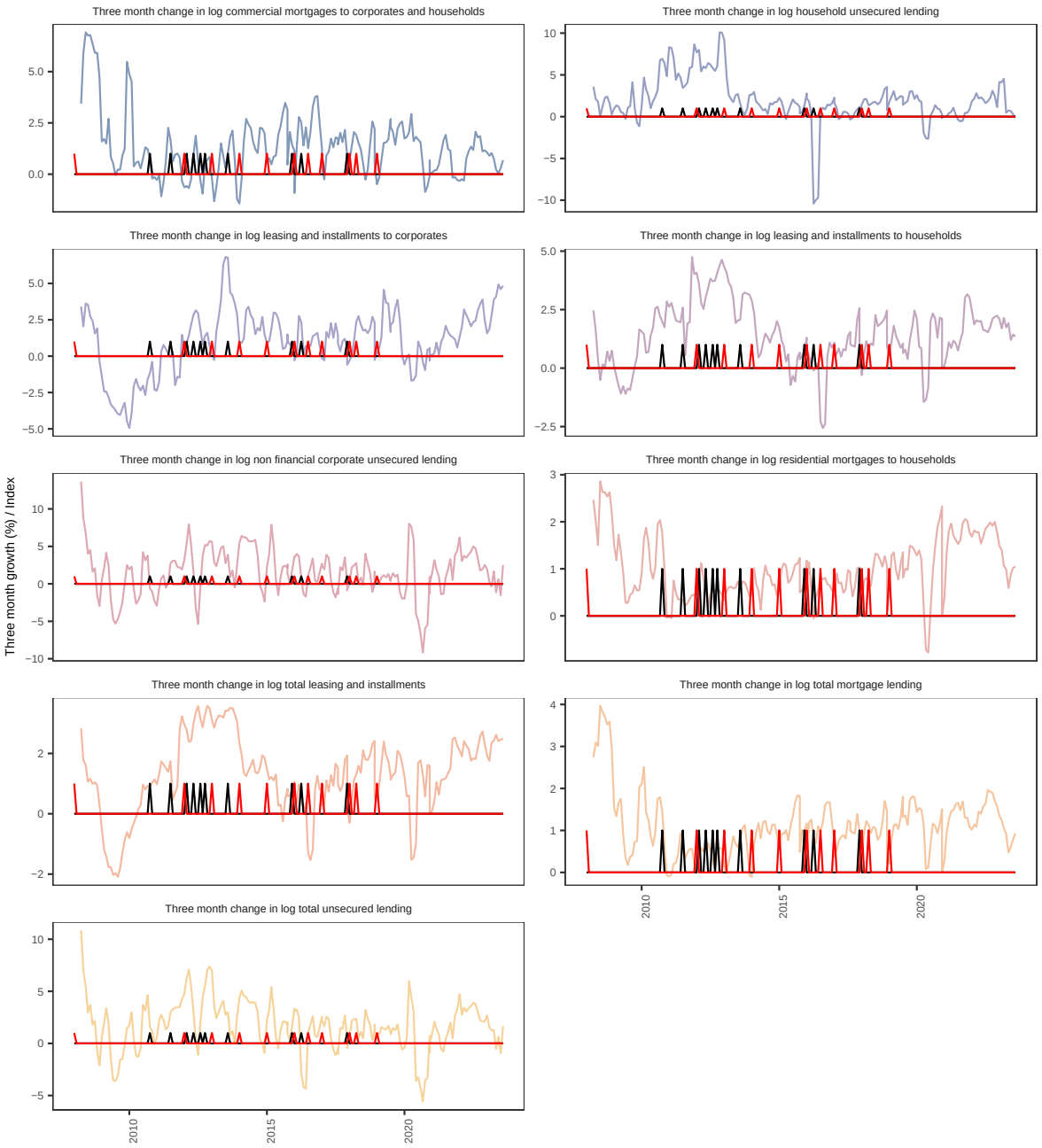

Figure A4: Three month lending growth and macroprudential narrative indexes comparison. Note: The black line represents the Draft index, and the red line represents the Implementation index.

A.8 Financial regulation narrative indexes

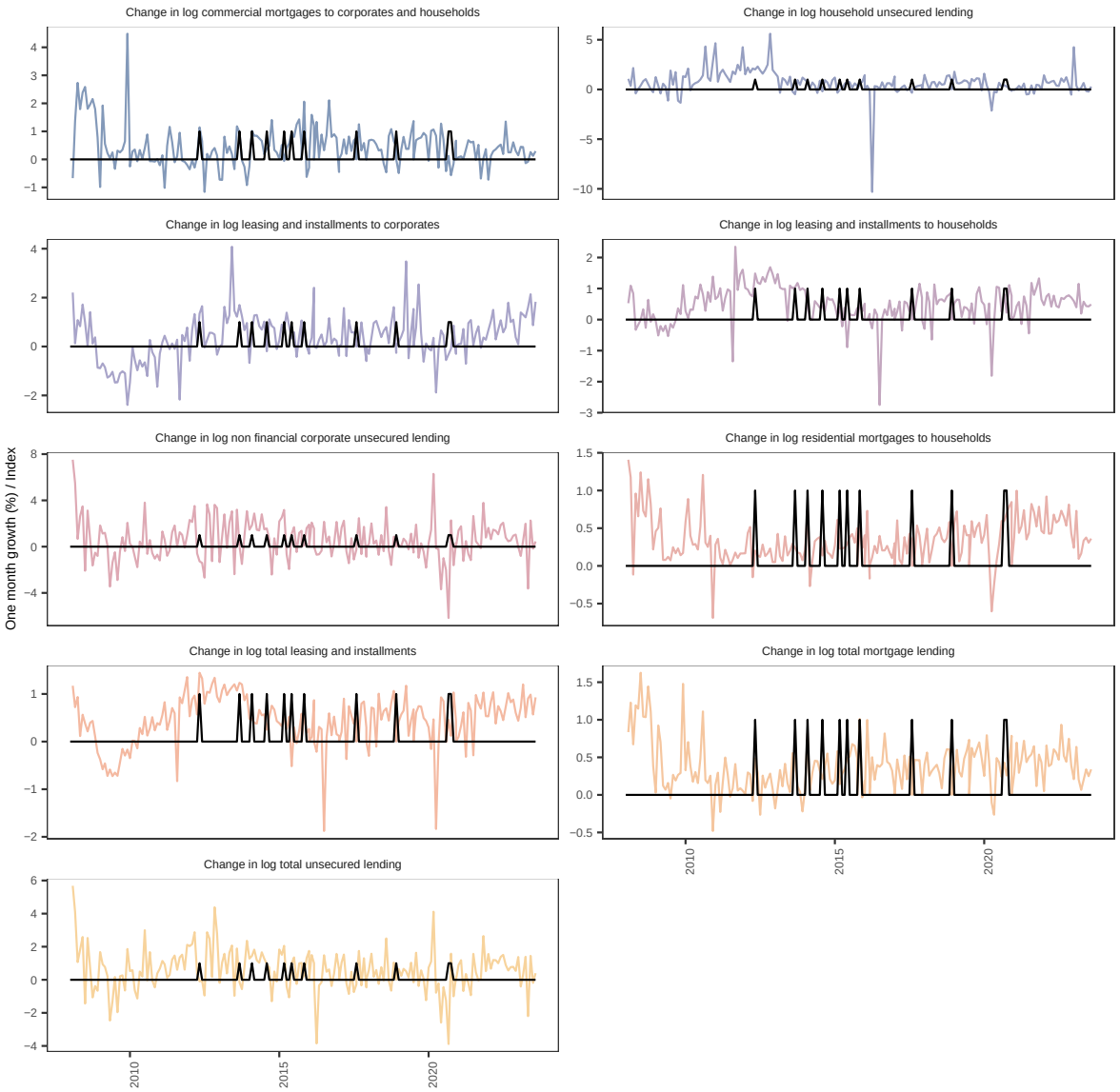

Figure A5: One month lending growth and financial narrative index comparison. Note: The black line represents the Financial regulation index.

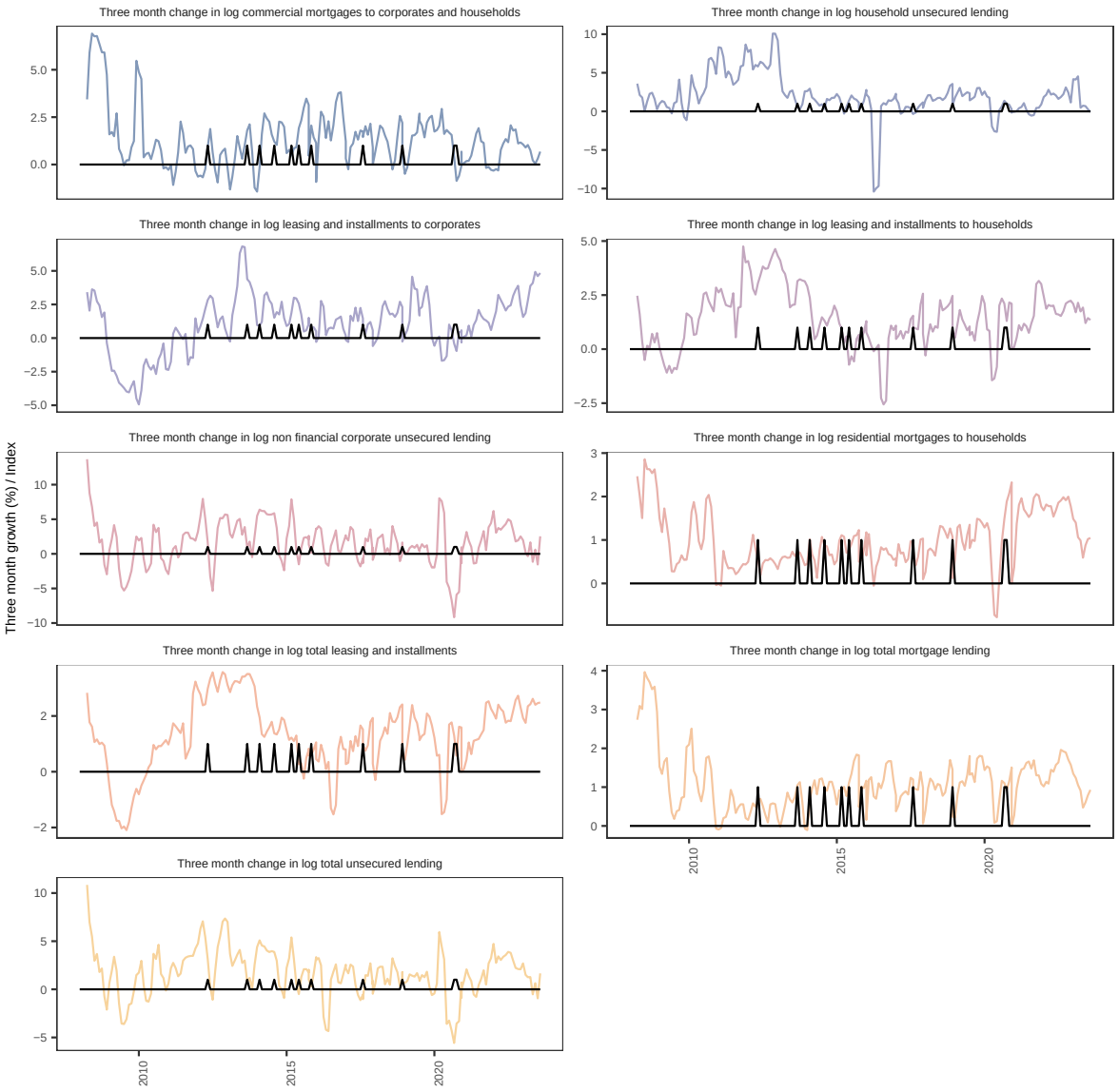

Figure A6: Three month lending growth and financial narrative indexes comparison. Note: The black line represents the Financial regulation index.

A.9 Results with controls

Table A4: Macroprudential regulation and lending rates with controls results

	Total			Corporations			Households		
	Unsecured	Secured	Mortgage	Unsecured	Secured	Mortgage	Unsecured	Secured	Mortgage
				Draft model					
Draft index	0.420*	-0.378***	-0.472***	0.378	-0.441***	-0.182	0.404**	-0.350***	-0.571***
Return on assets	5.847***	-0.791**	-1.211	5.155***	-1.073	-1.124	6.013***	-0.643***	-1.285
Total capital adequacy ratio	0.715**	0.050	0.178	0.842**	0.030	0.118	0.392**	0.057	0.208
				Implementation model					
Implementation index	1.05***	-0.40***	-0.49***	0.80	-0.56***	-0.64***	1.68***	-0.33**	-0.47***
Return on assets	5.72***	-0.75**	-1.16	5.06***	-1.01	-1.05	5.81**	-0.61**	-1.24
Total capital adequacy ratio	0.70***	0.06	0.19	0.83**	0.04	0.13	0.37**	0.06	0.22
Num.Obs.	580	580	580	580	580	580	580	580	580
Bank Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Monthly Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* p < 0.1, ** p < 0.05, *** p < 0.01

Table A5: Macroprudential regulations and lending volumes (3-months) with controls results

	Total			Corporates			Households		
	Unsecured	Secured	Mortgages	Unsecured	Secured	Mortgages	Unsecured	Secured	Mortgages
				Draft model					
Draft index	0.641	2.279**	-0.186**	0.423	0.891***	-0.375	1.035**	3.183**	-0.154
Return on assets	1.050	-4.139	-0.867	1.497	2.504**	-2.102	-0.613	-7.865	-0.332
Total capital adequacy ratio	0.233	0.278	0.035	0.185	0.141	0.201	0.352	0.362	0.001
				Implementation model					
Implementation index	1.52***	1.19	-0.49**	1.98***	0.69	-1.18**	0.55	1.29	-0.21*
Return on assets	0.87	-4.26	-0.81	1.26	2.43**	-1.96	-0.67	-7.98	-0.31
Total capital adequacy ratio	0.21	0.25	0.04	0.16	0.13	0.22*	0.34	0.33	0.00
Num.Obs.	580	580	580	580	580	580	580	580	580
Bank Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Monthly Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* p < 0.1, ** p < 0.05, *** p < 0.01

Table A6: Finance regulation and lending rates with controls results

	Total			Corporates			Households		
	Unsecured	Secured	Mortgage	Unsecured	Secured	Mortgage	Unsecured	Secured	Mortgage
				Finance regulation model					
Finance regulation index	0.595**	-0.068	-0.059	0.458	-0.106**	-0.138	0.927***	-0.038	-0.042
Repo rate	-0.084	0.718***	0.912***	-0.091	0.848***	0.708***	0.235	0.673***	0.985***
Return on assets	6.424***	-0.316	-0.498	5.871***	-0.537	-0.578	6.416***	-0.191	-0.504
Num.Obs.	580	580	580	580	580	580	580	580	580
Bank Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Monthly Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* p < 0.1, ** p < 0.05, *** p < 0.01

Table A7: Finance regulation and lending volumes (3-months) with controls results

	Total			Corporates			Households		
	Unsecured	Secured	Mortgage	Unsecured	Secured	Mortgage	Unsecured	Secured	Mortgage
				Finance regulation model					
Finance regulation index	-0.730	0.085	0.022	-0.781	0.817***	0.043	-0.496**	-0.385	-0.010
Repo rate	-0.739***	-1.390***	0.200*	-0.569***	-0.946***	0.454*	-1.135***	-1.706***	0.167
Return on assets	0.948**	-4.672	-0.719	1.453**	1.989	-1.648	-0.857	-8.432	-0.233
Num.Obs.	580	580	580	580	580	580	580	580	580
Bank Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Monthly Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* p < 0.1, ** p < 0.05, *** p < 0.01