

UP Paper

February 19, 2024

Keywords:

JEL Codes:

1 Introduction

2 Literature Review

Alexakis et al. (2023)

3 Data and Methodology

Table 1: Descriptive Statistics

Series	Median	SD	Min	Max	IQR	Obs
Lending growth						
Change_in_log_Commercial mortgages to corporates and households	0.32	0.55	-1.16	2.11	0.75	155
Change_in_log_Household unsecured lending	0.41	1.17	-10.31	5.61	0.84	155
Change_in_log_Leasing and installments to corporates	0.37	0.74	-1.88	4.08	0.88	155
Change_in_log_Leasing and installments to households	0.47	0.57	-2.75	1.69	0.78	155
Change_in_log_Non-financial corporate unsecured lending	0.29	1.58	-6.17	6.29	1.82	155
Change_in_log_Residential mortgages to households	0.28	0.27	-0.60	1.00	0.37	155
Change_in_log_Total leasing and installments	0.51	0.49	-1.88	1.45	0.71	155
Change_in_log_Total mortgage lending	0.32	0.26	-0.26	1.01	0.41	155
Change_in_log_Total unsecured lending	0.48	1.14	-3.88	4.39	1.23	155
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	0	0.25	0	1	0	156
Implementation	0	0.27	0	1	0	156
Competition regulation narrative indices						
Entry_Corporate_dummy	0	0.31	0	1	0	156
Entry_Household_dummy	0	0.30	0	1	0	156
Entry_all_dummy	0	0.40	0	1	0	156
Entry_commercial_mortgages_dummy	0	0.11	0	1	0	156
Entry_credit_households_dummy	0	0.22	0	1	0	156
Entry_credit_non_fin_corporate_dummy	0	0.19	0	1	0	156
Entry_credit_non_fin_dummy	0	0.29	0	1	0	156
Entry_leasing_households_dummy	0	0.08	0	1	0	156
Entry_leasing_non_fin_corporate_dummy	0	0.08	0	1	0	156
Entry_mortgages_households_dummy	0	0.08	0	1	0	156
Exit_Corporate_dummy	0	0.22	0	1	0	156
Exit_Household_dummy	0	0.22	0	1	0	156
Exit_all_dummy	0	0.32	0	1	0	156
Exit_commercial_mortgages_dummy	0	0.11	0	1	0	156
Exit_credit_households_dummy	0	0.08	0	1	0	156
Exit_credit_non_fin_corporate_dummy	0	0.11	0	1	0	156
Exit_credit_non_fin_dummy	0	0.14	0	1	0	156
Exit_leasing_households_dummy	0	0.14	0	1	0	156
Exit_mortgages_households_dummy	0	0.11	0	1	0	156
competition_dummy	0	0.18	0	1	0	156
finance_regulation_dummy	0	0.29	0	1	0	156
financial_inclusion_dummy	0	0.08	0	1	0	156
Controls						
Consumer confidence index	-8	10	-33	26	10	154
SAVIT40	18	4	13	38	5	154
repo	6	1	4	7	2	154

4 Results

4.1 Macroprudential regulation

Table 2: Macroprudential regulations and lending volumes (3-months) results

	Total			Corporations			Households		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Draft regulations estimates									
draft	0.62	2.23**	-0.19***	0.41	0.89**	-0.41**	1.00**	3.11**	-0.16
Implementation estimates									
implementation	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									

Table 3: Macroprudential regulation and lending rates

	Total			Corporations			Households		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Draft regulations estimates									
draft	0.38***	-0.39***	-0.50***	0.31***	-0.45***	-0.20	0.39***	-0.36***	-0.60***
Implementation estimates									
implementation	2.59***	-0.51***	-0.61**	2.30**	-0.73***	-0.77**	3.04***	-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									

4.2 Competition regulation

Table 4: Entry and exit effect on unsecured lending

	(1)	(2)
Corporation estimates		
entry_credit_non_fin_dummy	0.65**	0.21
exit_credit_non_fin_dummy	0.88**	-1.18***
covid_dummy	-0.43*	-0.11
Households estimates		
entry_credit_households_dummy	1.14***	-0.30***
exit_credit_households_dummy	1.47***	-0.62***
covid_dummy	-1.32***	-0.54***
Num.Obs.	768	768
Bank Fixed Effects	Yes	Yes
Monthly Fixed Effects	Yes	Yes
* p < 0.1, ** p < 0.05, *** p < 0.01		

Table 5: Entry and exit effect on mortgages

	(1)	(2)
Corporation estimates		
entry_commercial_mortgages_dummy	-0.34**	-0.23**
exit_commercial_mortgages_dummy	-0.19	-0.11
covid_dummy	-1.47**	-0.13
Households estimates		
entry_mortgages_households_dummy	-0.43***	-0.18***
exit_mortgages_households_dummy	0.06	-0.02
covid_dummy	-1.93***	0.22**
Num.Obs.	768	768
Bank Fixed Effects	Yes	Yes
Monthly Fixed Effects	Yes	Yes
* p < 0.1, ** p < 0.05, *** p < 0.01		

Table 6: Entry and exit effect on leasing and installments

	(1)	(2)
Corporation estimates		
entry_leasing_non_fin_corporate_dummy	0.27	0.00
covid_dummy	-1.75***	0.18**
Households estimates		
entry_leasing_households_dummy	-0.09	-0.26***
exit_leasing_households_dummy	-0.47***	0.62**
covid_dummy	-1.55***	-0.18
Num.Obs.	768	768
Bank Fixed Effects	Yes	Yes
Monthly Fixed Effects	Yes	Yes
* p < 0.1, ** p < 0.05, *** p < 0.01		

Table 7: Miscellaneous competition results

	(1)	(2)	(3)	(4)	(5)	(6)
Financial inclusion estimates						
financial_inclusion_dummy	-0.30***	0.21	-0.63***	2.16***	-1.94	-0.19
covid_dummy	-0.66**	-1.57***	-1.84***	-0.28**	-0.01	0.09
Other competition developments estimates						
competition_dummy	1.28***	-0.58***	-0.76***	1.05***	0.11	0.09*
covid_dummy	-0.64**	-1.58***	-1.87***	-0.20	-0.06	0.09
Micro-regulations estimates						
finance_regulation_dummy	0.99***	-0.18*	-0.31*	-0.36**	-0.10	-0.02
covid_dummy	-0.62**	-1.58***	-1.87***	-0.24*	-0.06	0.09
Num.Obs.	768	768	768	768	768	768
Bank Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Monthly Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
* p < 0.1, ** p < 0.05, *** p < 0.01						

5 Conclusion

6 References

Alexakis, C., Chantziaras, A., Economou, F., Eleftheriou, K., and Grose, C. (2023). Animal behavior in capital markets: Herding formation dynamics, trading volume, and the role of covid-19 pandemic. *The North American Journal of Economics and Finance*, 67:101946.

A Appendix

A.1 Data sources

Table A1: Data Sources

	Description	Availability	Source
Macroprudential narrative index		Public data	Own analysis
Competition narrative index		Public data	Own analysis
BA900	Banking sector balance sheet data at a bank level	Public data	South African Reserve Bank
BA930	Banking sector lending rates at a bank level	Aggregated data is public. Bank specific data is private	South African Reserve Bank
Controls	Banking sector performance data at a bank level	public. Bank specific data is private	Prudential Authority

A.2 Aggregation scheme

Table A2: Aggregation schema

BA 900 Categories	Item	Sector	Aggregation
	Number		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	-
	166	Other	-
Credit cards	167	Financial corporate sector	a
	168	Non financial corporate sector	b
	169	Household sector	-
	170	Other	-
Overdrafts	171	Public sector (includes public corporations and local government)	-
	172	Public non-financial corporates	-
	173	Private financial corporate	-
	174	Private non-financial corporates	a
	175	Household sector	-
	176	Other Household sector	-
	177	Non-profit organisations serving households	b
Factoring debtors	187	Non-profit organisations serving households	-
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

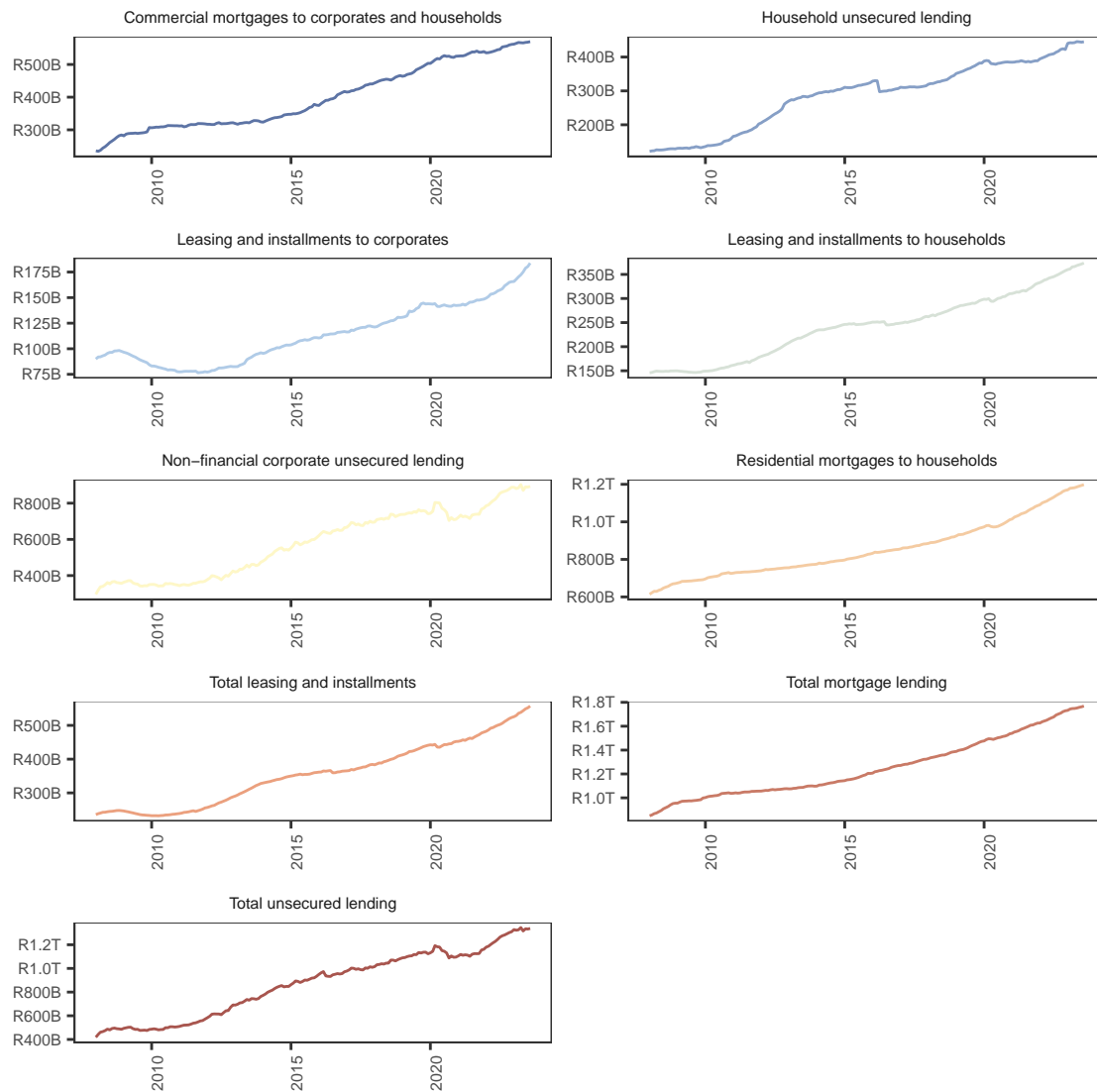


Figure A1: Total aggregated bank lending

A.5 Weighted lending rates (aggregated)

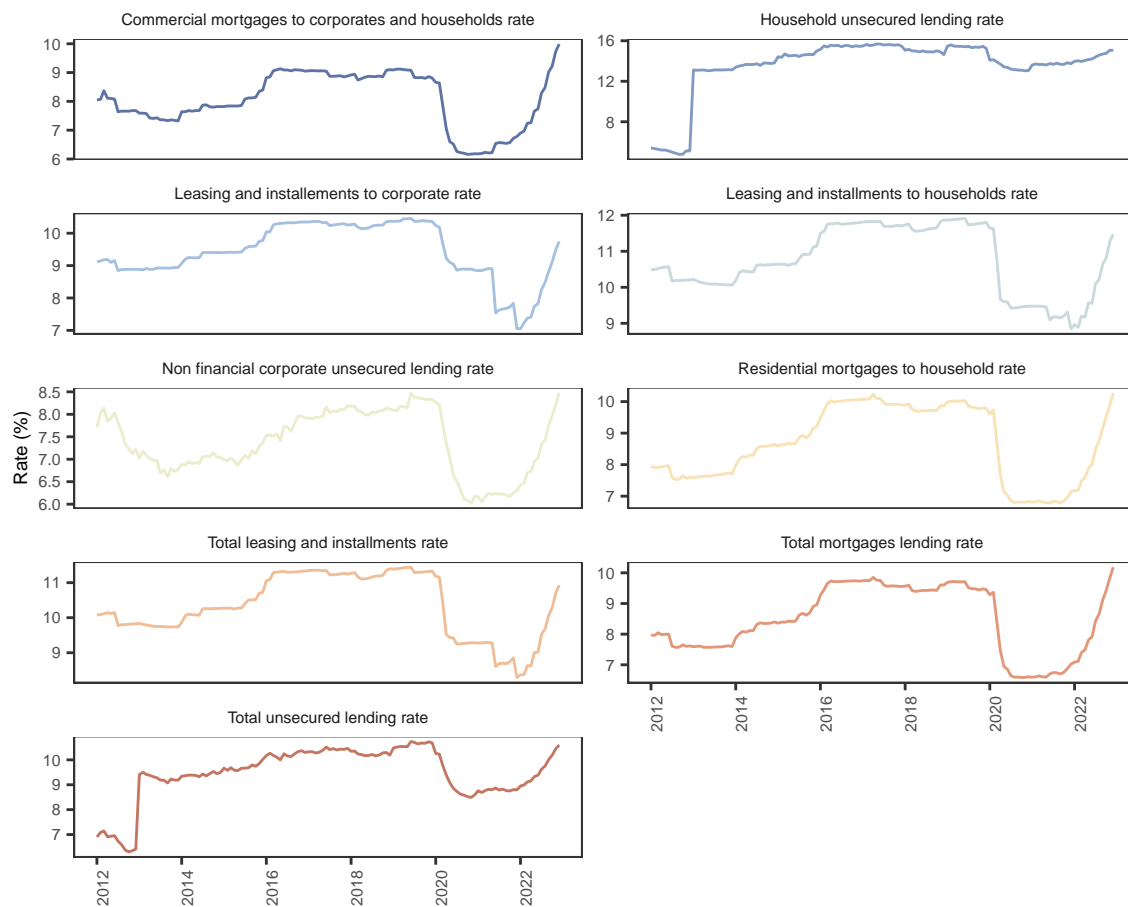


Figure A2: Weighted lending rates

A.6 Description of narrative events

Table A4: Description of the narrative indexes

Index	Description
Macroprudential	The macroprudential narrative index
Competition	The competition narrative index

A.7 Macprudential narrative indexes

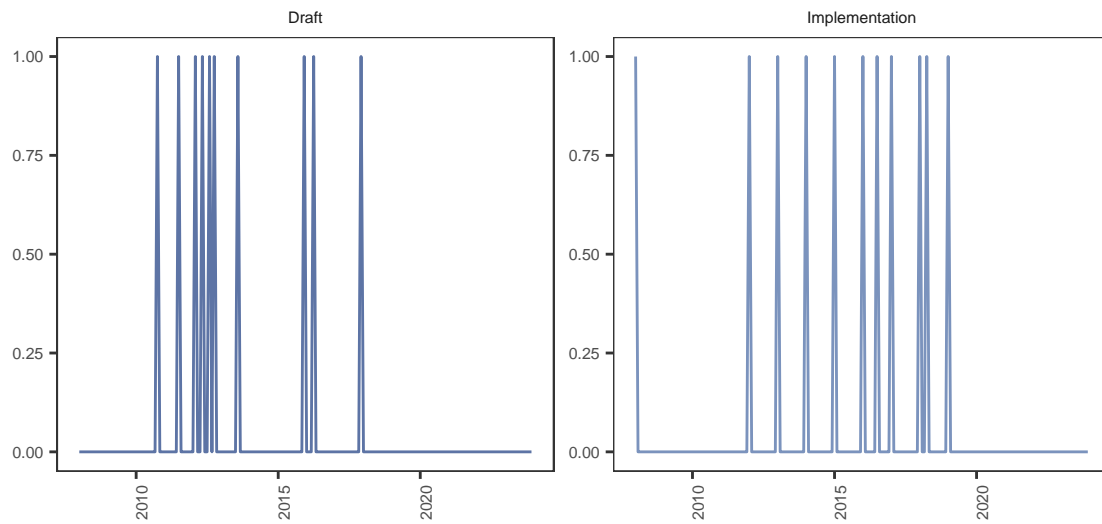


Figure A3: Macprudential narrative indexes

A.8 Competition narrative indexes

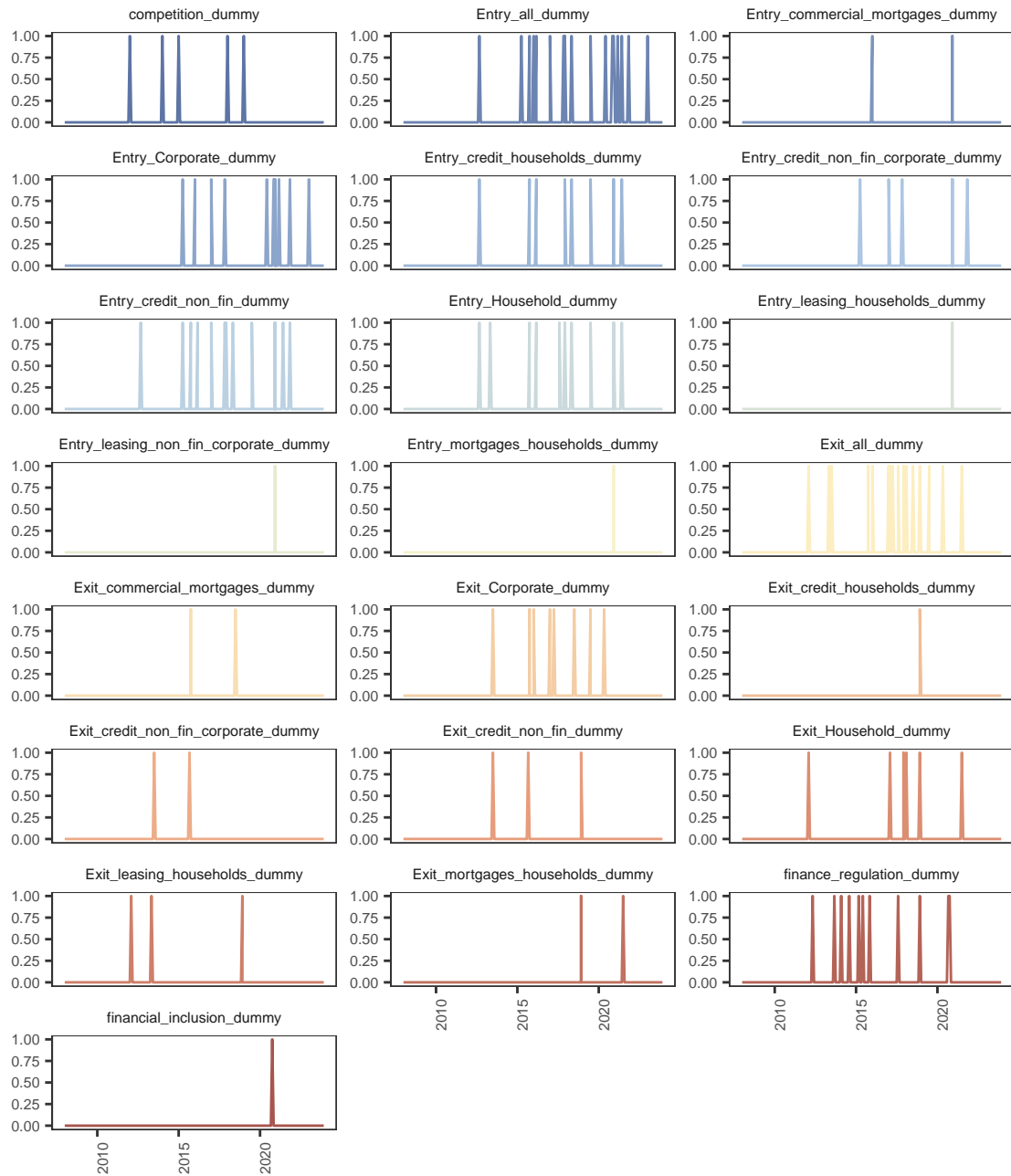


Figure A4: Competition narrative indexes

A.9 Macropudential results with controls

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

	Total			Corporations			Households		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Draft regulations estimates									
draft	0.64	2.28**	-0.19**	0.42	0.89**	-0.38	1.03**	3.18**	-0.15
return_on_assets	104.98	-413.87	-86.66	149.74	250.40**	-210.20	-61.27	-786.53	-33.17
total_capital_adequacy_ratio	23.32	27.84	3.52	18.53	14.14	20.13	35.24	36.15	0.10
factor(month)12									
Implementation estimates									
implementation	1.52***	1.19	-0.49**	1.98***	0.69	-1.18**	0.55	1.29	-0.21*
return_on_assets	87.24	-425.50	-80.94	126.16	243.17**	-196.31	-66.63	-798.14	-30.83
total_capital_adequacy_ratio	21.36	25.32	4.14	16.20	12.92	21.59	34.09	33.05	0.40
factor(month)12	-0.24***	3.13***	-0.08***	-0.22***	1.48***	0.02***	-0.41***	3.92***	-0.15***
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: Macroprudential regulation and lending rates with controls

	Total			Corporations			Households		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Draft regulations estimates									
draft	0.41**	-0.38***	-0.47***	0.36	-0.44***	-0.18	0.39**	-0.35***	-0.57***
return_on_assets	584.54***	-79.07**	-121.05	515.32***	-107.26	-112.38	601.51***	-64.31**	-128.11
total_capital_adequacy_ratio	71.38**	5.00	17.84	83.98**	2.97	11.83	39.13**	5.72	20.87*
factor(month)12									
Implementation estimates									
implementation	1.05***	-0.40***	-0.49***	0.80	-0.56***	-0.64***	1.67***	-0.33**	-0.47***
return_on_assets	572.34***	-74.68**	-115.69	506.04***	-101.03	-104.79	581.66***	-60.70***	-123.16
total_capital_adequacy_ratio	70.05**	5.63	18.61	82.93***	3.81	12.61	37.14*	6.27	21.67*
factor(month)12	0.49***	-0.42***	-0.63***	0.33***	-0.58***	-0.81***	0.90***	-0.35***	-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									

A.10 Competition results with controls

Table A7: Entry and exit effect on unsecured lending with controls

	(1)	(2)
Corporation estimates		
entry_credit_non_fin_dummy	-0.03	0.27
exit_credit_non_fin_dummy	-0.13**	-1.68***
covid_dummy	0.31	0.09
repo	0.58**	-0.33*
consumer_confidence_index	0.01***	0.03***
return_on_assets	62.83	214.51***
savit40	0.00	0.09***
factor(month)12		
Households estimates		
entry_credit_households_dummy	0.05	-0.29***
exit_credit_households_dummy	-0.16**	-0.34*
covid_dummy	-1.69*	-1.37***
repo	0.57***	-0.27**
consumer_confidence_index	0.00	0.01***
return_on_assets	-52.93	-59.41
savit40	-0.01	0.03***
factor(month)12	0.18***	-1.04***
Num.Obs.	604	604
Bank Fixed Effects	Yes	Yes
Monthly Fixed Effects	Yes	Yes
* p < 0.1, ** p < 0.05, *** p < 0.01		

Table A8: Entry and exit effect on mortgages with controls

	(1)	(2)
Corporation estimates		
entry_commercial_mortgages_dummy	0.02	-0.23***
exit_commercial_mortgages_dummy	-0.10	-0.13
repo	0.61*	0.32**
consumer_confidence_index	0.01	0.00
return_on_assets	159.03	-49.45
savit40	0.00	0.00
covid_dummy	0.85*	0.35
factor(month)12		
Households estimates		
entry_mortgages_households_dummy	-0.04**	-0.17***
exit_mortgages_households_dummy	0.07	-0.04
repo	1.25***	0.08
consumer_confidence_index	0.01***	0.00**
return_on_assets	-25.23**	2.09
savit40	-0.02***	-0.01***
covid_dummy	0.91***	0.48**
factor(month)12	0.04***	-0.26***
Num.Obs.	604	604
Bank Fixed Effects	Yes	Yes
Monthly Fixed Effects	Yes	Yes
* p < 0.1, ** p < 0.05, *** p < 0.01		

Table A9: Entry and exit effect on leasing and installments with controls

	(1)	(2)
Corporation estimates		
entry_leasing_non_fin_corporate_dummy	0.16	0.04
covid_dummy	-0.75	-0.48***
repo	0.79***	-0.22**
consumer_confidence_index	0.00	0.00
return_on_assets	-184.38	27.03
savit40	0.01	0.00
factor(month)12		
Households estimates		
entry_leasing_households_dummy	0.04	-0.31***
exit_leasing_households_dummy	0.03	0.53***
covid_dummy	-0.12	-0.40
repo	0.78***	-0.25**
consumer_confidence_index	0.00**	0.01**
return_on_assets	-85.21	6.74
savit40	-0.01	0.00
factor(month)12	0.09***	-0.25***
Num.Obs.	604	604
Bank Fixed Effects	Yes	Yes
Monthly Fixed Effects	Yes	Yes
* p < 0.1, ** p < 0.05, *** p < 0.01		

Table A10: Miscellaneous competition results with controls

	(1)	(2)	(3)	(4)	(5)	(6)
Financial inclusion estimates						
financial_inclusion_dummy	0.21*	0.33***	0.11***	2.61***	-0.34	-0.08
covid_dummy	-0.41	-0.29	0.87***	-0.15	-0.44*	0.34*
repo	0.45*	0.78***	1.08***	-0.28*	-0.23***	0.11**
consumer_confidence_index	0.01*	0.00	0.01***	0.02***	0.01**	0.00
return_on_assets	58.02	-118.63	29.13	147.08***	10.34	-7.19
savit40	-0.01	0.00	-0.02***	0.04***	0.00	0.00
factor(month)12						
Other competition developments estimates						
competition_dummy	0.05	-0.04	-0.01	0.57	-0.12	0.19***
covid_dummy	-0.42	-0.30	0.87***	-0.20	-0.44*	0.35*
repo	0.45*	0.78***	1.08***	-0.28*	-0.23***	0.12**
consumer_confidence_index	0.00*	0.00	0.01***	0.02***	0.01**	0.00
return_on_assets	57.07	-120.25	28.61	135.16***	11.86	-6.60
savit40						
factor(month)12	0.18***	0.10***	0.03***	-0.38***	-0.12***	-0.05***
Micro-regulations estimates						
finance_regulation_dummy	0.00	0.03	0.00	-0.58***	-0.14	0.01
covid_dummy	-0.42	-0.29	0.87***	-0.38	-0.47*	0.34*
repo	0.45*	0.78***	1.08***	-0.31**	-0.23***	0.12**
consumer_confidence_index	0.01*	0.00	0.01***	0.02***	0.01**	0.00
return_on_assets	57.00	-120.10	28.60	132.57***	11.50	-6.77
savit40	-0.01	0.00	-0.02***	0.06***	0.00	-0.01
factor(month)12	0.16***	0.11***	0.04***	-0.46***	-0.05***	-0.11***
Num.Obs.	604	604	604	604	604	604
Bank Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

	(1)	(2)	(3)	(4)	(5)	(6)
Monthly Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
* p < 0.1, ** p < 0.05, *** p < 0.01						