

How does the interaction of macroprudential and monetary policies affect cross-border bank lending?

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January 3, 2020 – CSWEP @ AEA, San Diego

Motivation

- Growing use of macroprudential tools since the financial crisis, which seem to affect cross-border bank lending
 - as they are being implemented (Avdjiev et al, IJCB, 2017) and
 - stabilise lending in stress (Takats and Temesvary, IJCB, 2019)
- Little evidence on how they interact with monetary policy changes; particularly in an international context
 - Policy-relevant to understand this for coordination
- Unique chance to look into this question by combining
 - the BIS IBS cross-border bank lending and
 - the IBRN and the IMF macroprudential databases

Roadmap

1. Identification
2. Overview of results
3. Data
 1. BIS IBS
 2. IBRN and IMF
4. Panel regression
5. Regression results

Identification

- Difficulty: monetary & macroprudential policies intertwined in same country
- Idea: use the currency dimension of the international bank lending channel
 - Monetary policy affects loans denominated in that currency even when the country of the currency is neither the lender nor the borrower, e.g. UK bank lends in USD to Malaysia, (Takats and Temesvary, 2016)
- Interact
 - changes in monetary policy by the currency issuer with
 - macroprudential policy enacted in the source lending banking system,
 - while applying extensive demand-side fixed effects to control for non-monetary/regulatory changes in credit demand in borrowers' countries and changes in credit supply in source lending banking systems

Identification (2)

- We need the currency dimension to be exogenous to source macroprudential policy
 - Exclude “same country” lending
 - E.g. US banks lend “back” to borrowers in the US
 - Exclude “own currency” lending
 - E.g. German banks lend in EUR
 - E.g. US banks lend in USD

Overview of results

- Conjecture: Tighter macroprudential policies ensure more stable funding access for banks & enable banks to better buffer monetary tightening-induced effects on cross-border lending flows
- Robust finding: Macroprudential tools in source lending banking systems interact with monetary policy in cross-border bank lending
 - Tighter macroprudential policy mitigates the lending impact of monetary policy (irrespective whether monetary policy tightens or eases); easier macroprudential policy amplifies monetary effect
 - E.g: macroprudential tightening in the UK mitigates the negative impact of US monetary tightening on USD cross-border bank lending outflows from the UK banking system (say, to Malaysia)

Overview of results

Figure 2: Policy interactions

How do monetary and macroprudential policy interactions impact cross-border bank lending?	Monetary easing (in lending currency)	Monetary tightening (in lending currency)	<i>Macroprudential policy impact on monetary policy</i>
Macroprudential easing (in source bank lending system)	Amplify (positive) Macroprudential easing strengthens the positive impact of monetary easing	Amplify (negative) Macroprudential easing strengthens the negative impact of monetary tightening	Amplify Macroprudential easing strengthens the impact of monetary policy
Macroprudential tightening (in source bank lending system)	Mitigate (negative) Macroprudential tightening weakens the positive impact of monetary tightening	Mitigate (positive) Macroprudential tightening weakens the negative impact of monetary tightening	Mitigate Macroprudential tightening weakens the impact of monetary policy

Data

- BIS IBS Stage 1
 - Around US\$ 30 trillion
 - Available by major currencies: USD, EUR, and JPY (stock and flow)
 - 27 source bank lending system and 50 borrowers' countries
 - Covers quarterly observations starting from 2012 Q2
- Macroprudential regulation: no agreed standard on stance
 - IBRN database
 - Covers quarterly observations over 2000 Q1 - 2014 Q4
 - Cerrutti et al (2015); Correa et al (2016)
 - IMF database
 - Available up until 2016 Q4

Data: Bilateral cross-border bank flows: BIS IBS Stage 1

- Linking lending banking systems with borrowing countries while retaining information on currency composition

	Currency composition (A)	Residence of borrower (B)	Nationality of lending bank (C)
Consolidated Data	No	Yes	No
Locational Data			
by Residence	Yes	Yes	No
by Nationality	Yes	No	Yes
Stage 1 data	Yes	Yes	Yes

- Why nationality and not residence of the lender?
 - Example: German bank's UK subsidiary lending to the US
 - "Same country" lending

Data: IBRN and IMF iMap

Table A1: Construction of Macroprudential Indices

Panel A: IBRN Macroprudential Subcategories

sscb_res	Change in sector specific capital buffer: Real estate credit. Requires banks to finance a larger fraction of these exposures with capital.
sscb_cons	Change in sector specific capital buffer: Consumer credit Requires banks to finance a larger fraction of these exposures with capital.
sscb_oth	Change in sector specific capital buffer: Other sectors. Requires banks to finance a larger fraction of these exposures with capital.
Concrat	Change in concentration limit. Limits banks' exposures to specific borrowers or sectors.
lbex	Change in interbank exposure limit. Limits banks exposures to other banks.
ltv_cap	Change in the loan-to-value ratio cap. Limits on loans to residential borrowers.
rr_foreign	Change in reserve requirements on foreign currency-denominated accounts.
rr_local	Change in reserve requirements on local currency-denominated accounts.

Panel B: IMF iMapp Macroprudential Subcategories

CCB	Changes in countercyclical capital buffers based on various private sector credit exposures.
LCG	Changes in limits and penalties on banks' household-sector and corporate-sector credit growth.
LTV	Changes in limits to the loan-to-value ratios, including those targeted at housing, automobile and commercial real estate loans.
RR	Changes in reserve requirements (domestic or foreign currency) for macroprudential purposes.

Capital requirements: prudential policy, particularly Basel III implementation vs macroprudential policy

Macroprudential data transformation

- No simple macroprudential policy rate
- Each category shows tightening (+1), unchanged (0) or easing (-1) of macroprudential policies
- Sum these changes across all categories,
 - but maximize this sum at 1 and minimize it at -1

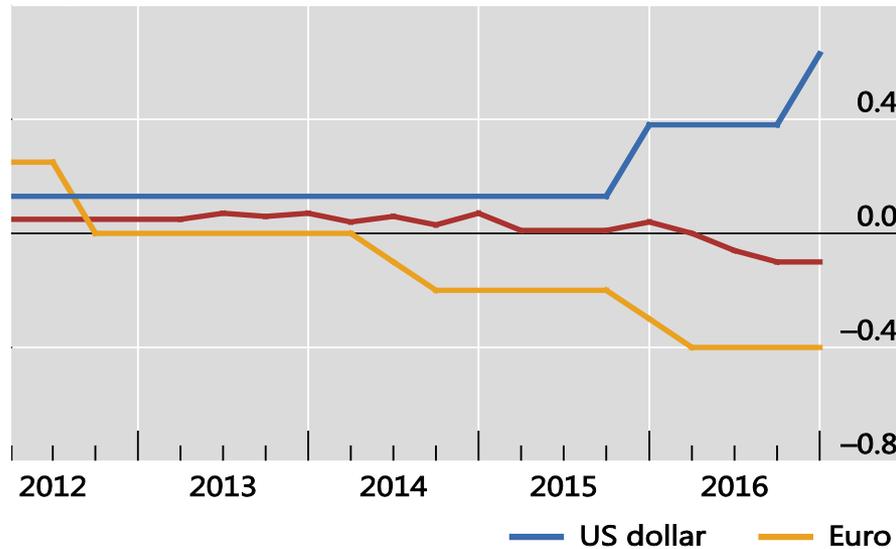
Effective monetary policy rates

Short-term policy and shadow interest rates

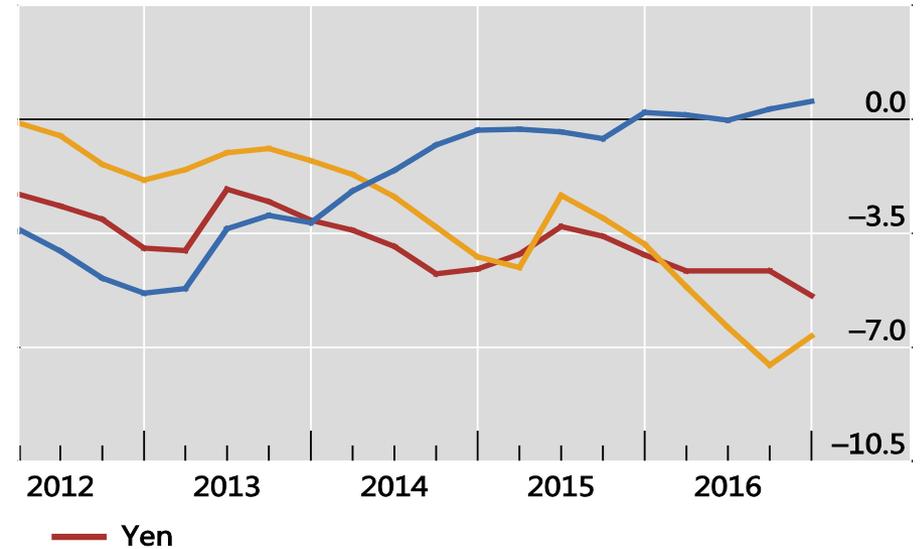
In per cent

Figure 1

Target rates



Shadow rates



Sources: Krippner (2016); national data.

Panel regression setup

- Difference-in-difference regression:

$$\Delta \text{claims}_{ijct}$$
$$= \sum_{k=1}^4 \lambda_{1k} \Delta \text{macroprudential}_{it-k} * \Delta \text{monetary}_{ct-k} + \text{controls} + \varepsilon_{ijct}$$

- Δflows : change in bilateral flows (i.e. claims growth adjusted for exchange rate movements) from lending banking system i to country j in currency c
- $\Delta \text{macroprudential}$: change over the previous year (four quarters) in the aggregate macroprudential measure of lending banking system j
- $\Delta \text{monetary}$: change over the previous year (four quarters) in the monetary policy measure of currency c issuer central bank (Krippner shadow rate)
- Two-way clustering of standard errors

Table 2: Main specifications: Source Macroprudential Stringency - IBRN Database; 2012 Q2 - 2014 Q4

<i>Model</i>	[1]	[2]	[3]	[4]	[5]	[6]
$\Sigma\Delta$ Source Macropru Stringency {t-1 to t-4}	9.939 [4.796]**	10.08 [5.069]**	5.609 [2.782]**	5.787 [6.401]		6 [5.628]
$\Sigma\Delta$ Shadow Interest Rate {t-1 to t-4}		-3.319 [2.25]	-4.342 [2.304*]			
$\Sigma\Delta$ Source Macropru Stringency * $\Sigma\Delta$ Shadow Interest Rate {t-1 to t-4}			9.791 [4.672]**	10.733 [5.453]**	6.755 [2.310]***	10.09 [6.134]*
$\Sigma\Delta$ Borrower Macropru Stringency {t-1 to t-4}						-1.181 [5.296]
$\Sigma\Delta$ Shadow Interest Rate* $\Sigma\Delta$ Source Macropru Stringency {t-1 to t-4}* $\Sigma\Delta$ Borrower Macropru Stringency {t-1 to t-4}						0.634 [17.43]
Constant	2.854 [2.276]	1.792 [1.962]	1.579 [2.162]	2.64 [2.752]	1.765 [0.393]***	-0.735 [1.981]
Source Macro Controls	Yes	Yes	Yes	Yes	n/p	Yes
Borrower Macro Controls	Yes	Yes	Yes	n/p	n/p	Yes
Source Fixed Effects	Yes	Yes	Yes	Yes	--	--
Time Fixed Effects	Yes	Yes	Yes	--	--	--
Borrower Fixed Effects	Yes	Yes	Yes	--	--	--
Currency Fixed Effects	Yes	Yes	Yes	--	--	--
Source * Borrower Fixed Effects	No	No	No	No	No	Yes
Borrower * Time Fixed Effects	No	No	No	Yes	Yes	No
Source * Time Fixed Effects	No	No	No	No	Yes	No
Currency * Time Fixed Effects	No	No	No	Yes	Yes	Yes
R - squared	0.07	0.07	0.06	0.10	0.15	0.07
Number of Observations	8,155	8,155	9,173	9,173	9,173	9,173

Economic significance: Difference (in percentage points) in the impact of a 100 basis point change in the short-term shadow interest rate associated with the currency of lending, originating from a source lending system with easing macroprudential rules (at the 1st percentile of the Source Macropru Stringency index) vs a source banking system with tightening macroprudential rules (at the 99th percentile).

19.58 [9.344]**	21.47 [10.91]**	13.51 [4.620]***	20.18 [12.27]*
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Table 3: Main specifications: Source Macroprudential Stringency - IMF iMapp Database; 2012 Q2 - 2014 Q4

<i>Model</i>	[1]	[2]	[3]	[4]	[5]	[6]
$\Sigma\Delta$ Source Macropru Stringency {t-1 to t-4}	-3.396 [11.43]	-2.586 [12]	-13.781 [14.752]	-15.378 [12.194]		-33.45 [12.36]***
$\Sigma\Delta$ Shadow Interest Rate {t-1 to t-4}		-15.51 [9.757]	-3.104 [5.509]			
$\Sigma\Delta$ Source Macropru Stringency * $\Sigma\Delta$ Shadow Interest Rate {t-1 to t-4}			25.2 [10.13]**	20.51 [8.481]**	-107.485 [69.491]	16.17 [7.896]**
$\Sigma\Delta$ Borrower Macropru Stringency {t-1 to t-4}						-14.96 [21.2]
$\Sigma\Delta$ Shadow Interest Rate* $\Sigma\Delta$ Source Macropru Stringency {t-1 to t-4}* $\Sigma\Delta$ Borrower Macropru Stringency {t-1 to t-4}						-82.13 [59.71]
Constant	4.589 [13.84]	-7.883 [17.2]	-6.838 [5.693]	-7.536 [3.529]	1.037 [2.496]	-2.51 [5.854]
Source Macro Controls	Yes	Yes	Yes	Yes	n/p	Yes
Borrower Macro Controls	Yes	Yes	Yes	n/p	n/p	Yes
Source Fixed Effects	Yes	Yes	Yes	Yes	--	--
Time Fixed Effects	Yes	Yes	Yes	--	--	--
Borrower Fixed Effects	Yes	Yes	Yes	--	--	--
Currency Fixed Effects	Yes	Yes	Yes	--	--	--
Source * Borrower Fixed Effects	No	No	No	No	No	Yes
Borrower * Time Fixed Effects	No	No	No	Yes	Yes	No
Source * Time Fixed Effects	No	No	No	No	Yes	No
Currency * Time Fixed Effects	No	No	No	Yes	Yes	Yes
R - squared	0.08	0.08	0.08	0.13	0.18	0.08
Number of Observations	6,304	5,393	5,440	5,440	5,440	5,393
Economic significance: Difference (in percentage points) in the impact of a 100 basis point change in the short-term shadow interest rate associated with the currency of lending, originating from a source lending system with easing macroprudential rules (at the 1st percentile of the Source Macropru Stringency index) vs a source banking system with tightening macroprudential rules (at the 99th percentile).			50.4 [22.26]**	41.02 [16.96]**	-214.97 [138.98]	32.35 [15.79]**

Table 4: Main specifications: Source Macroprudential Stringency - IMF iMapp Database; 2012 Q2 - 2016 Q4

Model	[1]	[2]	[3]	[4]	[5]	[6]
Σ Δ Source Macropru Stringency {t-1 to t-4}	-9.988 [8.763]	-10.33 [9.463]	-6.176 [6.692]	-4.954 [5.879]		-6.467 [11.12]
Σ Δ Shadow Interest Rate {t-1 to t-4}		1.916 [5.736]	2.789 [7.066]			
Σ Δ Source Macropru Stringency * Σ Δ Shadow Interest Rate {t-1 to t-4}			15.253 [6]***	14.02 [6.10]**	-11.601 [19.485]	14.72 [6.694]**
Σ Δ Borrower Macropru Stringency {t-1 to t-4}						-9.533 [11.94]
Σ Δ Shadow Interest Rate* Σ Δ Source Macropru Stringency {t-1 to t-4}* Σ Δ Borrower Macropru Stringency {t-1 to t-4}						-28.84 [29.1]
Constant	11.31 [8.583]	9.94 [10.26]	12.682 [5.805]**	-2.65 [1.540]*	-3.085 [1.903]	6.386 [3.092]**
Source Macro Controls	Yes	Yes	Yes	Yes	n/p	Yes
Borrower Macro Controls	Yes	Yes	Yes	n/p	n/p	Yes
Source Fixed Effects	Yes	Yes	Yes	Yes	--	--
Time Fixed Effects	Yes	Yes	Yes	--	--	--
Borrower Fixed Effects	Yes	Yes	Yes	--	--	--
Currency Fixed Effects	Yes	Yes	Yes	--	--	--
Source * Borrower Fixed Effects	No	No	No	No	No	Yes
Borrower * Time Fixed Effects	No	No	No	Yes	Yes	No
Source * Time Fixed Effects	No	No	No	No	Yes	No
Currency * Time Fixed Effects	No	No	No	Yes	Yes	Yes
R - squared	0.08	0.08	0.08	0.13	0.18	0.08
Number of Observations	10,794	9,875	10,076	10,076	9,875	9,887

Economic significance: Difference (in percentage points) in the impact of a 100 basis point change in the short-term shadow interest rate associated with the currency of lending, originating from a source lending system with easing macroprudential rules (at the 1st percentile of the Source Macropru Stringency index) vs a source banking system with tightening macroprudential rules (at the 99th percentile).

30.51 [12]***	28.04 [12.20]**	-23.201 [38.97]	29.44 [13.39]**
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Economic significance

- Interaction: non-trivial to interpret magnitude of interaction impact
- We look at impact of
 - 100 basis point monetary tightening over four quarters
 - Moving from 99th to 1st percentile in macroprudential tightness
- Such monetary tightening would reduce cross-border lending outflows from a source banking system that has *eased regulations* by 14-22 percentage points *more* than outflows from a source that has *tightened* regulations (Table 2, Models 3-6)

Conclusion

- Macroprudential tools in source lending banking systems interact with monetary policy when affecting cross-border bank lending
 - Tighter source macroprudential rules substantially mitigate the lending impact of monetary policy
 - E.g. Higher LTV in the UK mitigates the impact of tighter US monetary policy on USD lending outflows from the UK
 - Consistent with macroprudential tools stabilizing funding sources
- This interaction is
 - Relevant for domestic macroprudential & monetary policy authorities
 - Also for potential international policy coordination
- (Interaction with borrowers' country macroprudential rules insignificant)

Thank you for your comments!

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Table 1: Summary Statistics

	[1] Mean	[2] S.D.	[3] Min	[4] p1	[5] p5	[6] p25	[7] p50	[8] p75	[9] p95	[10] p99	[11] Max	[12] N
<i>Panel A: IBRN Database 2012 Q2 -2014 Q4</i>												
<i>Dependent variable:</i>												
Total Currency-specific Cross-border Lending Flows	1.24	32.98	-86.88	-86.88	-57.61	-10.80	-0.03	12.49	66.54	93.51	93.51	8,155
<i>Regulatory measures:</i>												
Source PruC6 Macropru Stringency	0.06	0.29	-1	-1	0	0	0	0	1	1	1	8,155
Source Loan-to-Value Cap	0.05	0.21	0	0	0	0	0	0	0	1	1	3,518
Source FX Reserve	0.01	0.13	-1	0	0	0	0	0	0	1	1	8,155
Borrower PruC6 Macropru Stringency	0.05	0.26	-1	0	0	0	0	0	1	1	1	8,155
<i>Macro controls:</i>												
Δ Source Policy Interest Rate	-0.02	0.37	-1.25	-0.50	-0.25	-0.10	0	0	0.15	1	5.5	8,155
Source Real GDP Growth	1.57	1.90	-5.96	-2.69	-1.30	0.39	1.61	2.45	5.01	7.06	7.99	8,155
Borrower Real GDP Growth	1.76	2.28	-14.78	-3.75	-1.45	0.31	1.71	2.86	6.03	7.50	7.90	8,155
Δ Source - Borrower Exchange Rate	-0.67	9.37	-33.30	-25.58	-17.28	-4.70	0	3.16	13.72	26.24	67.95	8,155
<i>Panel B: IMF iMapp Database 2012 Q2 - 2014 Q4</i>												
<i>Dependent variable:</i>												
Total Currency-specific Cross-border Lending Flows	1.19	49.84	-103.60	-103.60	-103.60	-18.36	-0.03	18.91	105.00	105.00	105.00	6,304
<i>Regulatory measures:</i>												
Source PruC6 Macropru Stringency	0.00	0.19	-1	-1	0	0	0	0	0	1	1	6,304
Source Loan-to-Value Cap	0.00	0.14	-1	0	0	0	0	0	0	1	1	6,304
Source FX Reserve	0.00	0.06	-1	0	0	0	0	0	0	0	0	6,304
Borrower PruC6 Macropru Stringency	0.02	0.20	-1	0	0	0	0	0	0	1	1	6,304
<i>Macro controls:</i>												
Δ Source Policy Interest Rate	-0.02	0.45	-1.25	-1.00	-0.25	-0.10	0	0	0.15	1	5.5	6,304
Source Real GDP Growth	1.97	1.73	-3.59	-2.02	-0.91	1.11	2.05	2.71	5.08	7.06	7.99	6,304
Borrower Real GDP Growth	1.75	2.23	-14.78	-5.31	-1.45	0.42	1.73	2.82	6.02	7.40	7.90	6,304
Δ Source - Borrower Exchange Rate	-0.23	10.12	-33.30	-25.58	-17.38	-4.98	0	4.22	16.35	27.57	67.95	6,304

Panel C: IMF iMapp Database 2012 Q2 - 2016 Q4

<u>Dependent variable:</u>												
Total Currency-specific Cross-border Lending Flows	0.34	49.31	-103.60	-103.60	-103.60	-18.97	-0.19	18.63	105.00	105.00	105.00	10,794
<u>Regulatory measures:</u>												
Source PruC6 Macropru Stringency	0.01	0.22	-1	-1	0	0	0	0	0	1	1	9,967
Source Loan-to-Value Cap	0.00	0.14	-1	0	0	0	0	0	0	0	1	9,967
Source FX Reserve	0.00	0.05	-1	0	0	0	0	0	0	0	0	9,967
Borrower PruC6 Macropru Stringency	0.03	0.22	-1	-1	0	0	0	0	0	1	1	9,967
<u>Macro controls:</u>												
Δ Source Policy Interest Rate	-0.03	0.37	-1.25	-0.70	-0.38	-0.05	0	0	0.15	1	5.5	10,794
Source Real GDP Growth	1.93	1.83	-5.40	-2.89	-0.91	1.06	1.94	2.68	5.32	7.60	8.30	9,954
Borrower Real GDP Growth	1.78	2.32	-17.16	-5.40	-1.45	0.57	1.73	2.85	6.15	7.40	7.90	9,891
Δ Source - Borrower Exchange Rate	0.65	11.54	-48.30	-26.31	-17.66	-4.98	0	6.09	20.18	38.92	76.08	9,878

Table 6: Selected specifications: Source Loan-to-Value Cap Stringency

<i>Model</i>	[1]	[2]	[3]	[4]	[5]	[6]
<i>Database</i>	<i>IBRN</i>		<i>IMF iMapp</i>		<i>IMF iMapp</i>	
<i>Time period</i>	2012 Q2 - 2014 Q4	2012 Q2 - 2016 Q4	2012 Q2 - 2016 Q4			
$\Sigma\Delta$ Source Loan-to-Value Cap Stringency {t-1 to t-4}	17.16 [6.405]***	18.43 [8.363]**	-7.698 [11.69]	-14 [9.242]	0.787 [18.81]	-1.2 [19.43]
$\Sigma\Delta$ Shadow Interest Rate {t-1 to t-4}	-1.079 [5.808]		-22.14 [4.571]***		-1.389 [2.15]	
$\Sigma\Delta$ Source Loan-to-Value Cap Stringency * $\Sigma\Delta$ Shadow Interest Rate {t-1 to t-4}	15.27 [8.548]*	16.23 [7.533]**	49.56 [12.46]***	44.12 [15.56]***	33.48 [18.88]*	21.77 [26.57]
Constant	6.506 [5.567]	-11.51 [2.629]***	-7.055 [2.13]***	-7.923 [2.748]***	12.33 [1.227]***	-3.509 [1.368]**
Source Macro Controls	Yes	Yes	Yes	Yes	Yes	Yes
Borrower Macro Controls	Yes	n/p	Yes	n/p	Yes	n/p
Source Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	--	Yes	--	Yes	--
Borrower Fixed Effects	Yes	--	Yes	--	Yes	--
Currency Fixed Effects	Yes	--	Yes	--	Yes	--
Source * Borrower Fixed Effects	No	No	No	No	No	No
Borrower * Time Fixed Effects	No	Yes	No	Yes	No	Yes
Source * Time Fixed Effects	No	No	No	No	No	No
Currency * Time Fixed Effects	No	Yes	No	Yes	No	Yes
R - squared	0.07	0.15	0.08	0.14	0.07	0.13
Number of Observations	3,796	3,785	5,440	5,440	10,076	10,076
Economic significance: Difference (in percentage points) in the impact of a 100 basis point change in the short-term shadow interest rate associated with the currency of lending, originating from a source lending system with easing Loan-to-Value cap rules (at the 1st percentile of the Source Loan-to-Value cap index) vs a source banking system with tightening Loan-to-Value cap rules (at the 99th percentile).						
	15.27 [8.548]*	16.23 [7.533]**	99.12 [24.93]***	88.25 [31.12]***	66.97 [37.76]*	43.53 [53.14]

Table A5: Selected specifications: Source Macroprudential Stringency - IBRN and IMF iMapp Common Sample; 2012 Q2 - 2014 Q4

<i>Model</i>	[1]	[2]	[3]	[4]	[5]	[6]
<i>Database</i>	<i>IBRN</i>			<i>IMF iMapp</i>		
$\Sigma\Delta$ Source Macropru Stringency {t-1 to t-4}	24.25 [7.916]***	23.62 [12.86]*	23.52 [15.08]	-13.71 [13.03]	-12.19 [15.91]	-36.92 [29.86]
$\Sigma\Delta$ Shadow Interest Rate {t-1 to t-4}	5.686 [5.854]			-25.92 [10.61]**		
$\Sigma\Delta$ Source Macropru Stringency * $\Sigma\Delta$ Shadow Interest Rate {t-1 to t-4}	24.78 [7.782]***	26.29 [10.73]**	26.28 [10.21]***	31.66 [12.76]**	34.74 [7.471]***	7.64 [9.817]
$\Sigma\Delta$ Borrower Macropru Stringency {t-1 to t-4}			-9.557 [9.157]			-25.15 [20.7]
$\Sigma\Delta$ Shadow Interest Rate* $\Sigma\Delta$ Source Macropru Stringency {t-1 to t-4}* $\Sigma\Delta$ Borrower Macropru Stringency {t-1 to t-4}			17.53 [45.67]			88.11 [54.88]
Constant	3.23 [4.571]	0.859 [9.275]	-0.504 [5.175]	-7.004 [9.666]	-2.291 [4.015]	-5.423 [9.676]
Source Macro Controls	Yes	Yes	Yes	Yes	Yes	Yes
Borrower Macro Controls	Yes	n/p	Yes	n/p	Yes	Yes
Source Fixed Effects	Yes	Yes	--	Yes	Yes	--
Time Fixed Effects	Yes	--	--	--	Yes	--
Borrower Fixed Effects	Yes	--	--	--	Yes	--
Currency Fixed Effects	Yes	--	--	--	Yes	--
Source * Borrower Fixed Effects	No	No	Yes	No	No	Yes
Borrower * Time Fixed Effects	No	Yes	No	Yes	No	No
Source * Time Fixed Effects	No	No	No	No	No	No
Currency * Time Fixed Effects	No	Yes	Yes	Yes	No	Yes
R - squared	0.11	0.18	0.11	0.10	0.19	0.12
Number of Observations	2,787	2,784	2,787	2,787	2,784	2,787
Economic significance: Difference (in percentage points) in the impact of a 100 basis point change in the short-term shadow interest rate associated with the currency of lending, originating from a source lending system with easing source macroprudential stringency (at the 1st percentile of the Source Macropru Stringency) vs a source banking system with tightening macroprudential rules (at the 99th percentile).						
	49.56 [15.56]***	52.58 [21.46]**	52.56 [20.42]***	63.33 [25.52]**	69.48 [14.94]***	15.28 [19.63]

Table 5: Selected specifications: Borrower Macroprudential Stringency

<i>Model</i>	[1]	[2]	[3]	[4]	[5]	[6]
<i>Database</i>	<i>IBRN</i>		<i>IMF iMap</i>		<i>IMF iMap</i>	
<i>Time period</i>	<i>2012 Q2 - 2012 Q2 - 2014 Q4 2014 Q4</i>	<i>2012 Q2 - 2012 Q2 - 2014 Q4 2014 Q4</i>	<i>2012 Q2 - 2012 Q2 - 2014 Q4 2014 Q4</i>	<i>2012 Q2 - 2012 Q2 - 2014 Q4 2014 Q4</i>	<i>2012 Q2 - 2012 Q2 - 2016 Q4 2016 Q4</i>	<i>2012 Q2 - 2012 Q2 - 2016 Q4 2016 Q4</i>
$\Sigma\Delta$ Borrower Macropru Stringency {t-1 to t-4}	-0.019 [2.914]	-0.578 [5.000]	-15.05 [14.05]	-15.17 [13.36]	-11.07 [11.43]	-10.42 [11.93]
$\Sigma\Delta$ Shadow Interest Rate {t-1 to t-4}	-3.692 [2.610]		-6.466 [4.315]		2.145 [3.567]	
$\Sigma\Delta$ Borrower Macropru Stringency * $\Sigma\Delta$ Shadow Interest Rate {t-1 to t-4}	8.326 [4.513]*	9.788 [6.042]*	-8.77 [14.51]	-9.929 [14.80]	4.36 [12.30]	5.303 [10.67]
Constant	0.21 [2.386]	0.788 [0.964]	-7.372 [4.526]	-2.893 [2.782]	11.26 [3.660]***	5.33 [1.804]***
Source Macro Controls	Yes	n/p	Yes	n/p	Yes	n/p
Borrower Macro Controls	Yes	Yes	Yes	Yes	Yes	Yes
Source Fixed Effects	Yes	--	Yes	--	Yes	--
Time Fixed Effects	Yes	--	Yes	--	Yes	--
Borrower Fixed Effects	Yes	Yes	No	Yes	No	Yes
Currency Fixed Effects	Yes	--	Yes	--	Yes	--
Source * Borrower Fixed Effects	No	No	No	No	No	Yes
Borrower * Time Fixed Effects	No	No	No	No	No	No
Source * Time Fixed Effects	No	Yes	No	Yes	No	Yes
Currency * Time Fixed Effects	No	Yes	No	Yes	No	Yes
R - squared	0.06	0.12	0.08	0.12	0.08	0.12
Number of Observations	9,173	9,173	5,440	5,440	10,076	10,089
Economic significance: Difference (in percentage points) in the impact of a 100 basis point change in the short-term shadow interest rate associated with the currency of lending, to borrowers in a Borrower country with easing macroprudential rules (at the 1st percentile of the Borrower Macropru Stringency index) vs a Borrower country with tightening macroprudential rules (at the 99th percentile).	24.98 [13.54]*	29.36 [18.13]*	-17.54 [29.02]	-19.86 [29.60]	8.719 [24.59]	10.61 [21.33]