

Regulation and the Cost of Loans in Switzerland

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1. Introduction
2. The current proposals
3. Our analysis
4. Capital results
5. Spread results
6. Conclusions

Background

- The Basel Committee has recently announced plans to revise the Standardised Approach (SA) to bank capital for credit risk and to employ the revised SA as a floor for bank capital based on internal models.
- The new approaches will have a major impact on the overall level of capital and its distribution across banks and asset classes.
- This paper examines the effects of the proposed changes in capital rules on the Swiss loan market.
- Using primarily public information, we estimate the effects on the capital of individual Swiss banks broken down by asset class and infer what this is likely to imply for lending rates in the Swiss market.

Findings

- We find that the proposed Basel rule changes would significantly boost capital for corporate and commercial mortgage exposures while capital for residential mortgages could actually fall for SA banks.
- This pattern of effects across asset classes is at variance with the lessons of the recent financial crisis which was triggered by the collapse of the US mortgage market.
- It is also inconsistent with current policy concerns in Switzerland where regulators have publicly expressed concern about possible overheating in the residential mortgage market.

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Regulatory background

- Following the crisis, the initial focus was on Basel III changes
 1. Improving the quality of capital (by focussing requirements more on common equity)
 2. Tightening regulation of liquidity
 3. Introducing counter-cyclical buffers and higher capital for systemic institutions
 4. Reviewing securitisation rules
- Now there is a second wave of changes...

Second wave of regulatory changes

- Revisions proposed for market risk and operational risk weights
- In December 2014, the Basel Committee issued two consultative documents BCBS 306 and BCBS 307 proposing changes in how banks calculate credit risk capital.
- The proposals include:
 - New rules for the capital of less sophisticated banks that use Standardised Approach (SA) regulations and
 - A set of capital floors for advanced banks that employ the Internal-Ratings Based Approach (IRBA).

Key features of BCBS 307

- The current credit risk SA yields capital for exposures in each asset class based on $8\% \times \text{EAD} \times \text{Asset-class-specific-risk-weight}$
- If an exposure is rated (corporate/bank/sovereign), a rating-specific risk weight is employed.
- In the revised SA, rating-based risk weights are retained for sovereigns but for other exposures, ratings are dropped and risk weights depend on financial ratios

For example, corporate risk weights depend on (i) Revenue and (ii) Leverage (assets/equity)

	€5m <		€50m <	
	Revenue	Revenue	Revenue	Revenue
	≤ €5m	≤ €50m	≤ €1bn	> 1bn
Leverage: 1x-3x	100%	90%	80%	60%
Leverage: 3x-5x	110%	100%	90%	70%
Leverage: >5x	130%	120%	110%	90%
Negative Equity (*)	300%	300%	300%	300%

BCBS 307 – Risk indicators (2/2)

Bank risk weights depend on (i) CET1 ratios (ii) Net non-performing assets

	12% >	9.5% >	7% >	5.5% >		
	CET1 ratio	CET1 ratio	CET1 ratio	CET1 ratio	CET1 ratio	CET1 ratio
	≥ 12%	≥ 9.5%	≥ 7%	≥ 5.5%	≥ 4.5%	< 4.5%
NNPA ratio ≤ 1%	30%	40%	60%	80%	100%	300%
1% < NNPA ratio ≤ 3%	45%	60%	80%	100%	120%	300%
NNPA ratio > 3%	60%	60%	100%	120%	140%	300%

Residential mortgage risk weights depend on Loan-to-Value and Interest Coverage Ratios

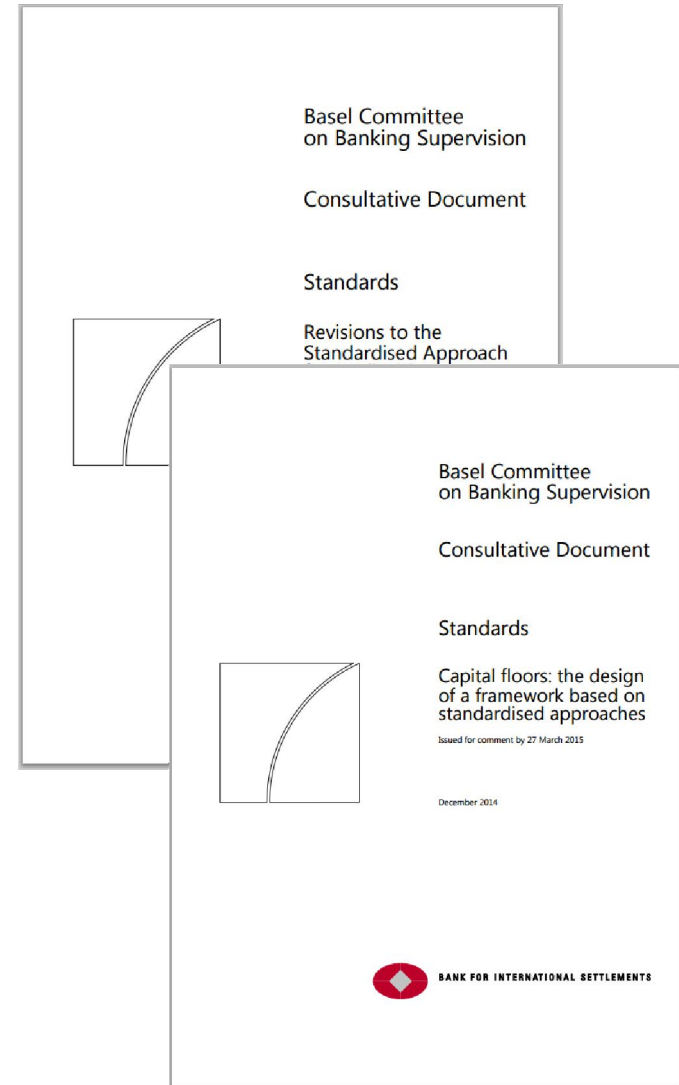
	40% ≤ LTV	60% ≤ LTV	80% ≤ LTV	90% ≤ LTV		
	LTV < 40%	< 60%	< 80%	< 90%	< 100%	100% ≤ LTV
DSC ≤ 35%	25%	30%	40%	50%	60%	80%
DSC > 35%	30%	40%	50%	70%	80%	100%

Objectives of BCBS 306 and 307

- The proposals have multiple objectives, including:
 1. Improving comparability of capital across banks
 2. Reducing discrepancies between the use of capital floors by different countries, and
 3. Reducing the reliance of capital on agency ratings
 - Particularly important to US, as Dodd-Frank prohibits such reliance

Effects of the proposals

- Profound effects on relative distribution of capital across:
 - Jurisdictions
 - Banks
 - Types of loan
- Likely also to boost overall capital levels
- Aspects of distributional impact result from piecemeal calibration of rules rather than fully thought-through set of changes to relative capital



Impact of the rule changes?

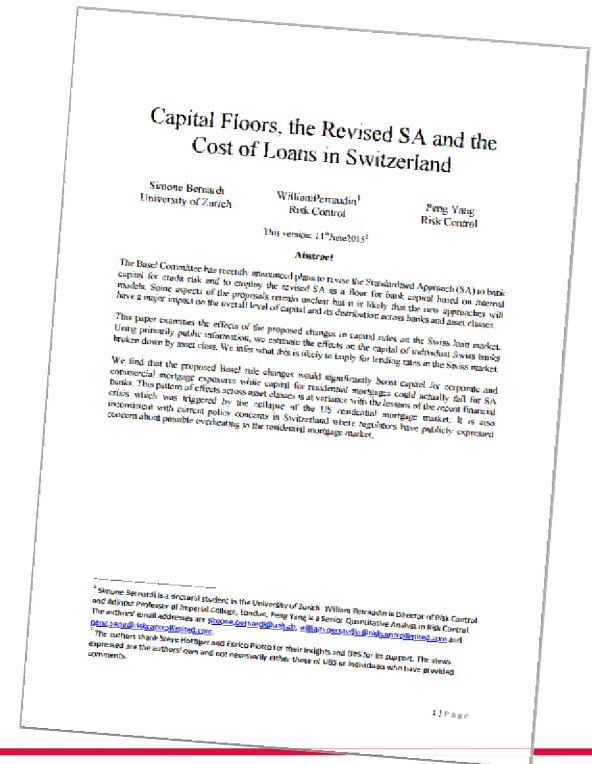
- The effects of the rule changes remain opaque to the industry and probably also to regulators
- The Basel authorities have performed a **Quantitative Impact Study (QIS)** in which they ask banks to evaluate how the new rules would affect their capital calculations

Problems with the BCBS QIS

- We understand that many banks are found it difficult to assess the impact accurately because of a lack of relevant data.
- The results of the QIS remain confidential

Our response:

Capital Floors, the Revised SA
And the Cost of Loans in
Switzerland



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Overview

- To shed light on what the proposals will mean, we have performed a detailed analysis of their implications for the Swiss loan market.
- We study the effects on 37 individual banks, breaking down results by different loan categories.
- We then re-aggregate the findings which we report for Large banks, Cantonal banks and Other banks

A two-step process

1. First, we calculate the impact on the capital that banks will have to hold against loans in different categories.
2. Second, we estimate the effect on the spreads that banks would charge for making loans in these categories.
 - This involves estimating banks' cost of funding given their regulatory capital requirements

Results

- Our analysis reveals dramatic results.
- We believe some effects of the proposed regulations are unintentional. For instance:
 - Capital for corporate loans within Switzerland would be substantially boosted
 - Whereas capital for residential mortgages would fall for SA banks (but increase for IRBA banks)
- IRBA banks would be required to hold substantially greater capital
- Capital for SA banks would in many cases fall

Immediate implications

- Changes to capital levels matter for the rest of the economy to the extent that they affect the lending rates that banks charge.
- To reveal the implications for lending rates, we have looked at how bank loan spreads (over and above Treasury yields) would be affected.

What one needs to know

- To calculate the revised SA capital for a given bank and given asset class (e.g., corporate exposures), one needs the total exposure and the breakdown of that exposure by the risk indicator ranges specified in BCBS 307
- Such breakdowns are hard to assess from outside a bank but we have
 1. Data on the credit quality of their exposures (from Pillar 3 disclosures)
 2. Loan breakdowns by risk indicators and credit quality for the Swiss market (from UBS)

Steps in the capital forecasting

- a) For IRB banks, we infer default probabilities (PDs) from risk weights using the standard Basel formula assuming values of loss given default (LGD) and maturity (MT).
- b) For SA banks, we infer ratings from RW according to the look-up tables in the current SA approach.
- c) From the inferred ratings, we map the corresponding PD based on a default probability master scale table provided by UBS (see Table 8).
- d) We devise two rating buckets: AAA to A- and BBB+ to default.
- e) For each asset class that depends on two capital indicators, we estimate three joint distributions: one unconditional distribution and two conditional distributions for the above two rating buckets.
- f) For each asset class, we associate to each of the exposure categories (broken down by credit quality) a distribution of the two capital indicators conditional on their credit quality.
- g) Given the look-up table in the revised SA paper, the indicator distribution and the loan exposure at default, we calculate the risk weighted assets and capital requirement for the loan book.

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Banks finance a given loan using a combination of deposit and equity funding.

- The latter is considerably more expensive to a bank, dollar for dollar.
- The volume amount of equity funding that a bank requires for a loan is determined by the regulatory capital a bank is required to hold.

$$\begin{aligned} \Delta spread & \\ &= capital_{new} \times return\ on\ equity_{new} \\ &\quad -\ capital_{old} \times return\ on\ equity_{old} \end{aligned}$$

Here the “capital level” is measured per Swiss franc of exposure. To estimate the return on equity, we use the Capital Asset Pricing Model (CAPM).

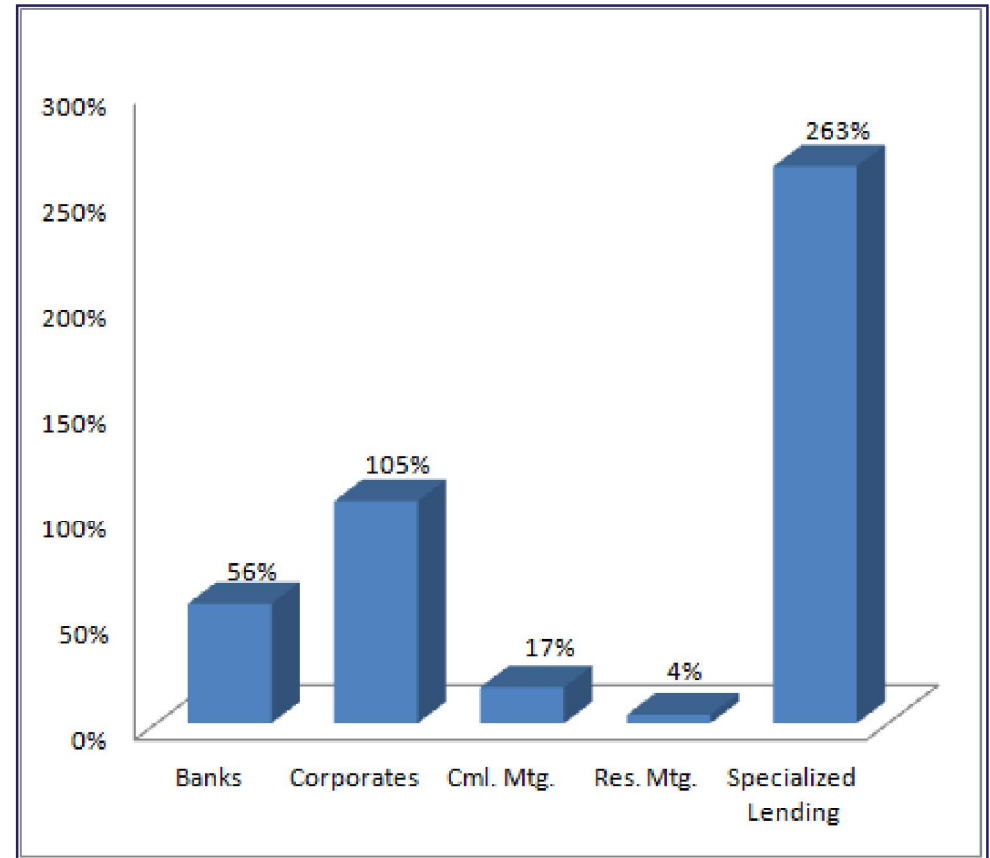
$$\begin{aligned} \Delta spread_{i,j} & \\ &= \begin{cases} (K_{i,j}^{RSA} \times \beta_j^{SA} - K_{i,j}^{SA} \times \beta_j^{SA}) \times \gamma, & con. \\ (K_{i,j}^{RSA} \times \beta_j^{RSA} - K_{i,j}^{SA} \times \beta_j^{SA}) \times \gamma, & var \end{cases} \end{aligned}$$

We estimate the beta using a regression: $\beta_{Equity} = \alpha_0 + \alpha_1 \times \frac{Assets}{Equity}$

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What are the effects?

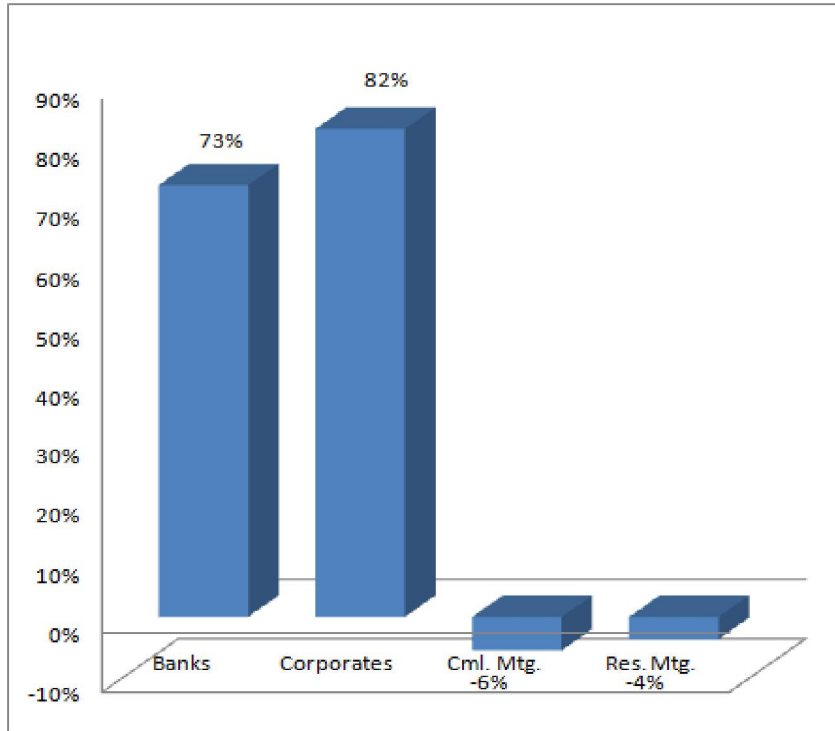
- We focus on four key loan categories:
 1. exposures to banks,
 2. corporate loans,
 3. commercial mortgages , and
 4. residential mortgages.
- Corporate and commercial mortgage capital increase substantially
- Capital for residential mortgages hardly changes
 - this partly reflects offsetting rises and falls in increases in IRBA and SA bank capital for residential mortgages.



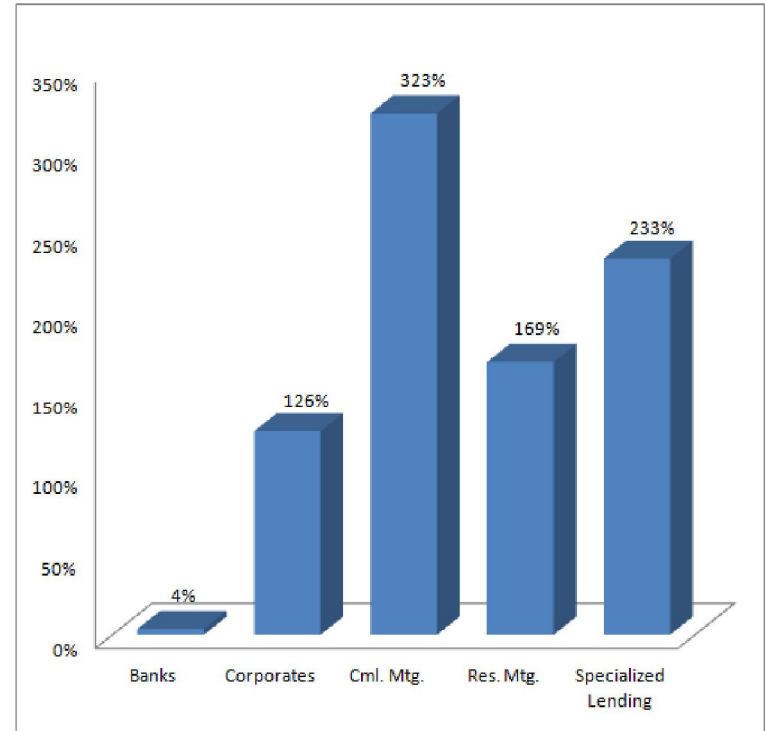
Note: The figure shows the percentage change in capital that Swiss banks will have to hold under the new regulations against their loans to Swiss borrowers.

RW breakdown by IRBA/SA banks

Weighted average SA bank RW changes



IRB bank RW changes (80% asset class floor)



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Changes in bank lending spreads

- The table shows weighted average estimates of changes in bank lending spreads that would result from the adoption of the new bank capital rules.
- Estimates are presented for two assumptions about the relevant definition of equity capital: Common Equity Tier 1 (CET1) or Total Capital
- The increase in the cost of lending due to the spread change is CHF 1.3 billion or CHF 2.1 billion per annum (depending on which of the capital definitions is employed).

	Banks	Corp.	CML. Mtg.	Res. Mtg.	Specialised Lending	Wtd. Avg.
CET1 Capital Target						
Wtd. Avg. of IRB Banks	3	60	57	9	70	30
Wtd. Avg. of IRB and SA Banks	7	45	14	2	70	11
Total Capital Target						
Wtd. Avg. of IRB Banks	6	103	90	15	121	51
Wtd. Avg. of IRB and SA Banks	11	73	22	3	121	19

Note: The table shows weighted average estimates of changes in bank lending spreads.

Spread impact in basis points (asset class level floor for IRB banks)

		Spread Impact 1 (Constant Equity Return)					Spread Impact 2 (Reduced Equity Return)						
				Speciali					Speciali				
		Cml.	Res.	zed	Wtd.		CML.	Res.	zed	Wtd.			
		Banks	Corp.	Mtg.	Mtg.	Lending	Avg.	Banks	Corp.	Mtg.	Mtg.	Lending	Avg.
		60% floor											
Wtd. Avg. of IRB Banks		3	39	38	4	49	19	3	37	36	3	46	18
Wtd. Avg. of IRB and SA Banks		8	38	8	0	49	8	7	36	7	0	46	8
CET 1		70% floor											
Wtd. Avg. of IRB Banks		4	52	49	6	62	25	3	49	47	5	59	23
Wtd. Avg. of IRB and SA Banks		8	43	12	1	62	10	7	41	11	0	59	9
capital target		80% floor											
Wtd. Avg. of IRB Banks		5	65	60	11	75	33	3	60	57	9	70	30
Wtd. Avg. of IRB and SA Banks		8	47	15	2	75	13	7	45	14	2	70	11
		60% floor											
Wtd. Avg. of IRB Banks		6	67	60	6	84	32	4	63	57	5	80	29
Wtd. Avg. of IRB and SA Banks		12	60	14	0	84	13	11	57	12	0	80	12
Total		70% floor											
Wtd. Avg. of IRB Banks		6	90	79	10	107	43	4	84	74	8	101	39
Wtd. Avg. of IRB and SA Banks		12	68	19	2	107	17	11	65	18	1	101	15
capital target		80% floor											
Wtd. Avg. of IRB Banks		8	111	96	18	128	55	6	103	90	15	121	51
Wtd. Avg. of IRB and SA Banks		12	76	24	4	128	21	11	73	22	3	121	19

Monetary impact per year

	Monetary cost (Constant Equity Return)						Monetary cost(Reduced Equity Return)					
	Banks	Corp.	Speciali			Total	Banks	Corp.	Speciali			Total
			Cml. Mtg.	Res. Mtg.	zed Lending				CML. Mtg.	Res. Mtg.	zed Lending	
CET 1 capital target												
RSA exposure level 60% floor	72	507	98	33	254	963	67	487	87	5	241	887
RSA asset class level 60% floor	68	488	96	14	250	916	64	469	86	-12	238	845
RSA bank level 60% floor	62	483	94	7	246	892	58	464	84	-19	235	822
RSA exposure level 70% floor	74	567	137	94	320	1,192	70	542	123	59	302	1,096
RSA asset class level 70% floor	69	554	136	62	319	1,140	64	530	123	30	302	1,049
RSA bank level 70% floor	63	554	136	62	318	1,133	59	530	123	29	301	1,042
RSA exposure level 80% floor	77	623	174	181	385	1,440	72	594	157	139	362	1,323
RSA asset class level 80% floor	70	616	174	156	384	1,399	65	587	157	115	361	1,286
RSA bank level 80% floor	66	616	174	156	384	1,396	62	587	157	115	361	1,283
Total capital target												
RSA exposure level 60% floor	110	808	162	63	437	1,580	104	775	145	20	415	1,458
RSA asset class level 60% floor	105	775	160	33	430	1,503	98	744	144	-7	410	1,389
RSA bank level 60% floor	94	766	155	22	423	1,461	88	736	140	-17	403	1,350
RSA exposure level 70% floor	115	910	224	162	550	1,960	108	869	203	108	519	1,805
RSA asset class level 70% floor	105	888	223	111	547	1,875	99	849	203	60	518	1,728
RSA bank level 70% floor	96	888	223	110	547	1,863	89	848	202	60	517	1,717
RSA exposure level 80% floor	119	1,007	283	302	661	2,372	111	958	257	235	621	2,183
RSA asset class level 80% floor	107	994	283	261	659	2,304	100	946	258	197	620	2,121
RSA bank level 80% floor	102	994	283	261	659	2,299	95	946	258	197	620	2,116

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The major findings are

- Bank capital charges for Bank, Corporate, Commercial Mortgage, Residential Mortgage borrowers and Specialised Lending will increase by 18%, 160%, 215%, 35% and 259% respectively.
- Total IRB bank capital will rise by 108%.
- Total SA bank capital against Residential Mortgages will fall from CHF 22 billion to CHF 21 billion.
- This reallocation of bank capital is hard to square with the fact that
- the recent crisis began with the collapse of the US mortgage market (albeit one located in the United States rather than Switzerland),
- many commentators have expressed concern about possible house price bubbles in Switzerland driven by readily available mortgage financing, and loans to corporates were remarkably resilient to the crisis in many countries.

The major findings are

- Substantially higher capital is likely to lead to increases in lending spreads in Swiss loan markets.
- We estimate that Corporate Loan spreads would rise by between 45 and 76 basis points assuming a full pass-through to borrowers and an 80% asset class level floor.
- If one assumes that IRB banks set prices in corporate lending, then the impact will be between 60 and 111 basis points.
- Multiplying loan volumes by spread changes, one obtains a transparent monetary measure of the impact of the policy changes.
- This suggests that the annual flow cost of the new rules would be CHF 1.3 billion and CHF 2.1 billion.
- A conservative measure of the present discounted cost (assuming a 3% discount rate) is between CHF 42.8 billion and CHF 70.5 billion.

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