

Sweden: Selected Issues

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SWEDEN

Selected Issues

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Approved by European Department

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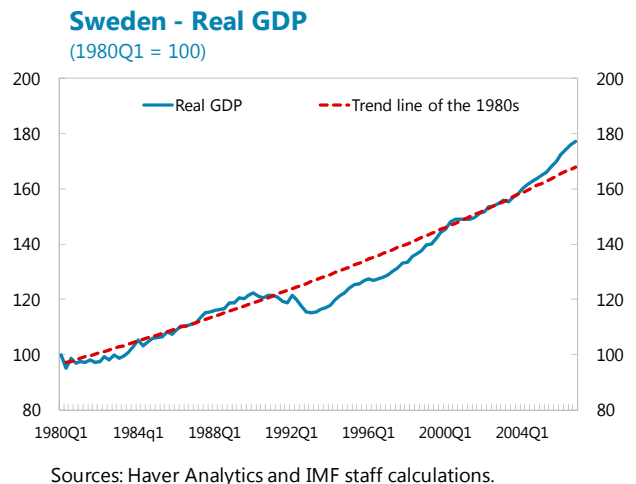
I. CAPITAL AND LIQUIDITY REGULATIONS: THE CASE OF SWEDEN¹

1. Banks need capital and stable source of funding (liquidity) to absorb shocks and facilitate bank resolution, in the event of a bank failure. In light of global instability in recent years, there is broad international agreement that both need to be strengthened. However, there is a wide range of views about how much buffers would be adequate, including in the context of EU Capital Requirements Directive (CRD) IV.
2. There are a number of approaches to assess the adequacy of capital and liquidity. One is a public finance perspective. The global financial crisis once again proved that a banking crisis could put severe pressures on public finances.
3. This note first recaps the recent debates on capital and liquidity buffers (Section A); then discusses a way to consider appropriate levels of capital and liquidity buffers in the case of Sweden (Section B), estimates the government's contingent liabilities from banks by different capital and liquidity levels (Section C); and finally discusses options for Sweden in case the authorities face constraints to set buffer at their desirable levels (Section D).

A. How Much Capital and Liquidity Should Banks Have?

There is no disagreement that more buffers will benefit financial stability and resolution

4. History suggests that banking crises were costly. For example, Sweden experienced a systemic banking crisis in the early 1990s, resulting in sizable output losses. GDP fell below the trend line by nearly 10 percent at trough. Moreover, the crisis had a long-lasting impact: GDP returned to the pre-crisis trend only after a decade. In fact, evidence from banking crises in other countries suggests that banking crises have lasting effects, with output losses ranging from 2 to 10 percent of GDP (BCBS, 2010).



¹ Prepared by Kotaro Ishi (kishi@imf.org).

However, there is no consensus on how much exactly

5. The optimal level of capital and liquidity is when the social benefits, net of the social costs, are maximized in the long run. There is increasing literature analyzing this. However, there is no agreed approach in terms of methodologies, model selection, and assumptions, while calibration is difficult due to lack of enough historical banking crisis episodes and consistent data (e.g., capital and liquidity indicators taking account of changes in accounting standards and regulations).

6. The Basel Committee on Banking Supervision (BCBS, 2010) presents various studies on this. Drawing from the existing literature, it estimates the long-term economic impact of the Basel III requirements. The results suggest tangible common equity to risk weight assets (TCE/RWA) ratios of 10–15 percent, with higher capital ratios needed if large output losses are anticipated (Table 1). The Riksbank (2011) also studies appropriate capital ratios for Swedish major banks taking account of Sweden's specific characteristics based on three different models: the BIS (2010)

Table 1. Estimates of the Appropriate Levels of Capital Ratios (TCE/RWA ratios in percent) 1/			
BIS (2010)	Severity in permanent output losses		
	Nothing	Moderate	Large
	Models without reforms in liquidity requirements	10	13	15
Models with reforms in liquidity requirements	9-10	12-14	15
Riksbank (2011)	Small		Large
	Models based on BIS (2010) methodology 2/	12-14 (10-12)	12-15 (11-15)
	Models based on Miles et al. methodology	14-16 (12-14)	16-18 (14-15)
	The Riksbank's model	12-16 (10-14)	16-20 (14-17)
	Sources: BIS (2011) and the Riksbank (2011).		
1/ Figures in parentheses are based on CET1/RWA ratios.			
2/ "Small" is the same as "moderate" in BIS (2010).			

model, the Miles et al (2011) model, and the Riksbank's own model. The Riksbank's study suggested a higher range of capital levels, 12–20 percent (TCE/RWA), which is equivalent to common equity Tier 1 to risk weight assets (CET1/RWA) ratios of 10–17 percent.

7. Given technical difficulties in point-estimates of the appropriate buffer, these studies provided a wide range of estimates. Nevertheless, a number of objections are made to these assessments: typically, critics suggest that equity is more expensive for banks than debt, and thus, average costs of bank funding will rise, raising credit spreads, and thereby impairing economic activity. For example, the Institute of International Finance (2011) estimates that credit spreads for European banks will increase by nearly 300 basis points in 2011–15, and that GDP growth will shrink 3 percentage points in five years (Table 2).

8. However, in the long run, the cost of higher capital will likely be below these estimates. As the Modigliani-Miller theorem (1958) implies, costs for banks will not be fundamentally affected by the amount of their equity financing because the higher costs of equity will be offset by comparatively lower debt costs. This offset should only be reduced in the presence of distortion, such as the tax advantages of debt over equity, government guarantees, and bankruptcy costs. Furthermore, an increase in banks' funding costs from higher capital requirements should not necessarily be borne fully by borrowers—a portion of these additional costs would be likely absorbed through banks' cost cutting efforts (Santos and Elliott, forthcoming).

Table 2. Europe: Costs of Higher Capital and Liquidity Requirements		
	Impact on credit spreads (In basis points)	Cumulative GDP loss (In percent)
Short-term and transitional effect analysis		
Institute of International Finance (2011) 1/	291	-3.0
Longer-term analysis		
Slovik et al (2011, OECD) 2/	54	-1.1
BIS (2010) 3/		
Capital 4/	52	-0.53
Liquidity (NSFR)	24	...
Both	76	-0.73
Santos and Elliott (2012, IMF)		
Capital	10	...
Liquidity	14	...
Net costs including expense cuts	17	...
Riksbank (2011) 3/ 4/	52	From -0.24 to -0.64
Sources: IIF (2011), Slovik et al (2011), BIS (2010), and Santos and Elliott (2012).		
1/ Cumulative impacts over 5 years.		
2/ Cumulative impacts by 2019.		
3/ Changes in steady state levels of credit spreads and GDP.		
4/ To be consistent with other studies, a four percentage points increase in the capital ratio without a change in risk weight assets is assumed.		

B. A Way to Consider Appropriate Levels of Buffers—the Case of Sweden

9. All the above arguments suggest that a considerable judgment is required in making the choice of capital and liquidity levels. How should one look at it in the case of Sweden?

The state of play

10. Risk weighted capital ratios for Swedish major banks are generally high by international standards. Core Tier 1 (CT1) capital ratios (under Basel II definition) are 14–16 percent for SEB, Handelsbanken, and Swedbank, and 11 percent for Nordea, compared to the median of 10 percent for peer European and US banks (Table 3). Even under the Basel III definition, all banks are estimated to have common equity Tier 1 (CET1) capital ratios of more than 10 percent, a regulatory minimum to be applied from January 1, 2013.

Table 3. Summary of the Performance and Operation of Swedish Four Major Banks*(In percent unless otherwise indicated, end of period)*

	Nordea			SEB			Handelsbanken			Swedbank			Median of 44 European and US banks
	2009	2010	2011	2009	2010	2011	2009	2010	2011	2009	2010	2011	2011
Capital													
Tier 1 core capital ratio to risk weighted assets 1/	10.3	10.3	11.2	11.7	12.2	13.7	11.7	13.8	15.6	12.0	13.9	15.7	10.2
Tier 1 ratio to risk weighted assets 1/	11.4	11.4	12.2	13.9	14.2	15.9	14.2	16.5	18.4	13.5	15.2	17.2	12.3
Total capital to risk weighted assets 1/	13.4	13.4	13.4	14.7	13.9	15.2	20.2	20.9	20.9	17.5	18.4	18.9	15.1
Leverage (Tier 1 as a percent of total assets)	4.1	4.0	3.8	4.0	4.3	4.2	3.5	3.6	3.4	4.3	4.6	4.4	...
Assets													
Gross impaired loans to total loans at amortized costs 2/	1.9	1.9	2.0	1.5	1.3	0.8	0.6	0.6	0.4	5.9	5.2	3.4	3.7
Net impaired loans to total loans at amortized costs	0.9	0.9	1.1	0.5	0.5	0.3	0.2	0.2	0.2	2.9	2.5	1.7	...
Earnings and profitability													
Return on assets	0.5	0.5	0.4	0.0	0.3	0.5	0.5	0.5	0.5	-0.6	0.4	0.7	0.7
Return on equity	11.4	11.5	10.6	1.2	6.9	10.8	13.1	13.0	13.8	-12.7	8.2	12.2	8.4
Liquidity													
Loans to customers deposits	197.6	198.7	199.5	148.3	151.1	137.7	320.6	322.5	325.1	269.9	234.7	236.9	89.5
Deposits maturing less than 3 months to total deposits	17.0	19.4	22.1	28.7	69.4	36.5	3.2	...	...	9.8	11.8	16.7	...
On demand deposits to total deposits	74.7	71.9	68.9	55.4	14.7	49.0	93.7	...	...	82.1	82.6	76.3	...
Memorandum item:													
Total assets in percent of GDP	173.5	166.3	185.1	74.3	65.4	67.6	68.4	64.7	70.3	57.8	51.5	53.2	...

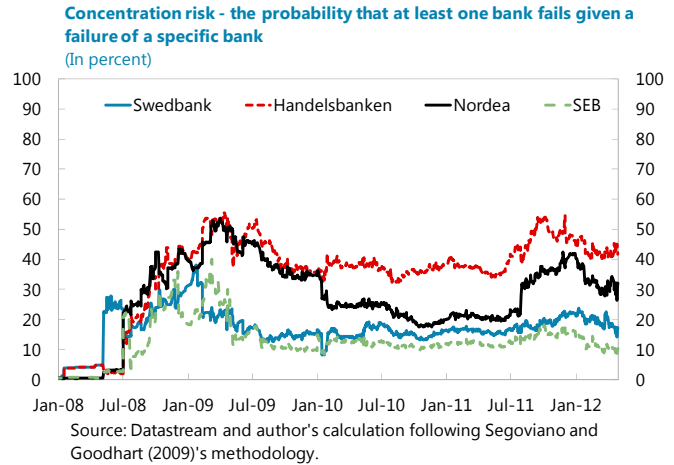
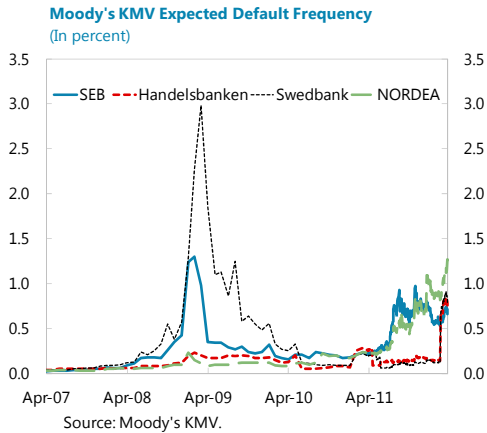
Sources: Banks' annual reports, SNL Financial, and Fund staff calculations.

1/ With the transition rules. Under the Basel II capital adequacy rules, Swedish banks are allowed to substantially reduce capital adequacy requirements due to their large mortgage portfolios. However, currently, the FSA applies transitional regulations, allowing banks to reduce capital requirements only in stages.

2/ Data for SEB are gross impaired loans to total loans.

11. However, tail risks remain. Moody's KMV indicators suggest an increase in the expected default probability for Swedish banks in recent months.² A concentration risk indicator—measured by the probability that at least one bank fails when another specific bank fails, based on Segoviano and Goodhart (2009)'s Consistent Information Multivariate Density Optimization (CIMDO) methodology—also suggests an elevated level of a probability of a systemic failure in Sweden.

² Expected default frequency rose sharply for Handelsbanken and Swedbank in March 2012. This mainly reflected increases in their equity price volatility and short-term debt.



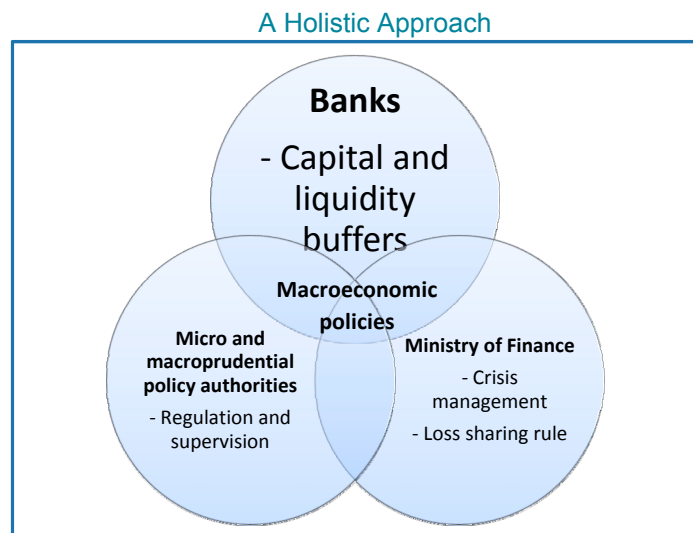
Sweden's specific risk profiles are different from others

12. Moreover, each economy and banking system faces various types and sizes of risks. And this should be taken into account in the consideration of buffer levels, equally as important as other factors, such as regulatory competition and the compliance burden. Sweden is a small open economy, and by international comparison, Sweden's banking system is relatively large, significantly concentrated, and largely dependent on wholesale funding (Box 1). All these factors may suggest that Sweden needs tougher regulatory standards than those without these risks.

Content also matters

13. The regulatory capital and liquidity requirements are only one of the instruments available to the authorities to secure stability objectives. Other important instruments are: (i) micro and macro prudential policies; (ii) crisis management and resolution rules, including safety nets (e.g., deposit insurance and bank guarantee schemes) and a loss sharing rule; and (iii) stable macroeconomic policy frameworks.

14. Note that these instruments are complementary to each other. If all of these instruments are stronger—higher capital and liquidity buffers, strong micro and macroprudential policy frameworks, and effective crisis management and loss sharing framework—the resilience of the system as a whole should be stronger. If any of these instruments fall short, the other

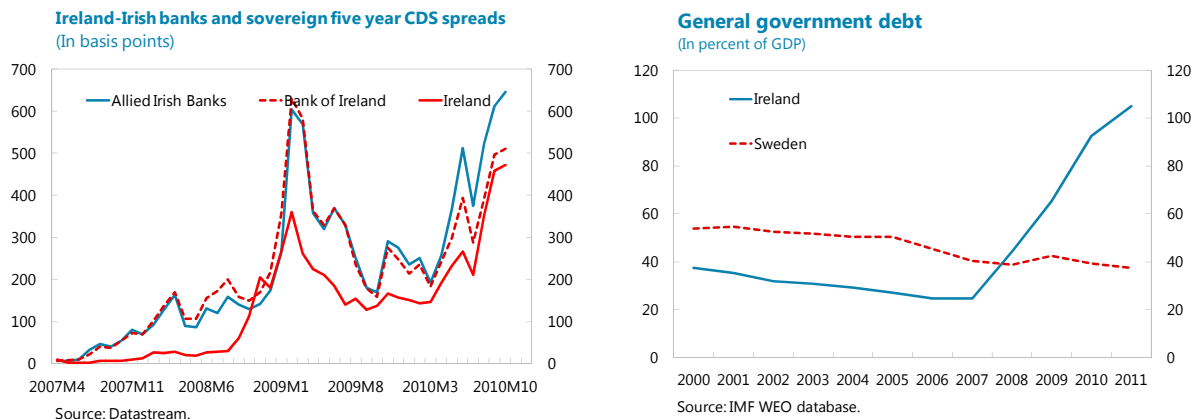


measures should be even stronger to compensate.

15. In this context, the EU-wide financial regulations under CRD IV could have a major impact on Sweden. In the single market context, a common floor is essential to prevent regulatory competition and to ease compliance burdens. But the absence of a common European banking backstop and lack of common crisis management and resolution framework argue for broad flexibility for a national regulator in implementing country-specific policies, including in the case of Sweden.

C. Government Contingent Liabilities From Banks—Application of Contingent Claims Analysis

16. A systemic banking crisis could take a heavy toll on public finances. During the global financial crisis, in several countries with large banking systems, public finance confidence was deteriorated, resulting in vicious feedback effects between bank and sovereign risks. For example, in Ireland, the government introduced a Credit Institutions Financial Support Scheme in September 2008, covering all deposits, senior debt, covered bonds, and dated subordinated debt. Initially, this measure proved effective to reduce bank risk spreads as indicated by a decrease in credit default swap (CDS) spreads. However, confidence in public finance sustainability soon weakened, sovereign CDS spreads started rising sharply, and so did bank CDS spreads. While public debt continued to fall to below 25 percent of GDP until 2007, it has since started rising sharply, now exceeding 100 percent of GDP.



17. Accordingly, from the public finance perspectives, banks should hold higher capital and liquidity buffers to reduce the likelihood of a failure, while minimizing costs for taxpayers, if it happens. This suggests a simple intuition. The adequate levels of capital and liquidity buffers can be assessed by estimating government contingent liabilities from banks and then by associating estimated contingent liabilities with different levels of capital and liquidity buffers.

Estimating government contingent liabilities

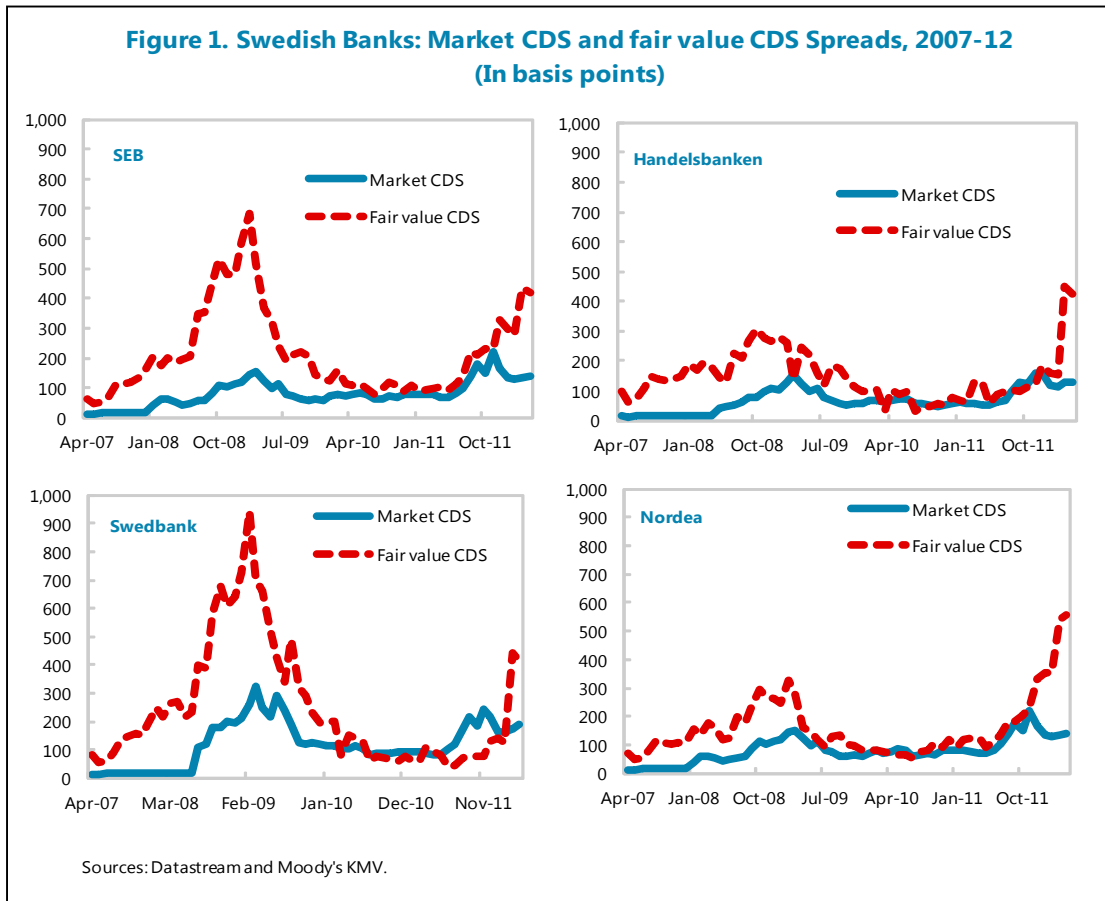
Key concepts: fair value CDS versus market CDS spreads

18. Gray, Merton, and Bodie (2008)'s contingent claim analysis (CCA) model can be used to estimate government contingent liabilities in Sweden. Their model is predicated on the following observations.

- The government support measures during the crisis have primarily benefited credit investors rather than equity investors. For example, when the Swedish government introduced its guarantee program for banks in October 2008, the authorities repeatedly emphasized that bank shareholders would not be bailed out.
- Thus, observed credit spreads (such as market CDS spreads) reflect the assessment of credit risks of a bank by its credit investors, factoring in government support to bank's debt.
- On the contrary, fair value CDS spreads (FVCDS)—calculated by Moody's KMV using equity market information based on the Black-Sholes option pricing theorem—reflect credit risk assessments by equity market participants and are not distorted by government intervention.
- Accordingly, the difference between FVCDS spreads and market CDS spreads can be interpreted as premiums that markets expect the government will explicitly or implicitly bear, i.e., the government's guarantee premiums.

19. The government's implicit guarantee rose sharply between late 2008 and early 2009 for SEB and Swedbank, while remaining relatively low for Nordea and Handelsbanken (Figure 1). This is consistent with the fact that both SEB and Swedbank were viewed at that time as the most vulnerable banks in Sweden due to their extensive exposures to the Baltics. In recent months, as strains in European financial markets rose, FVCDS spreads have risen sharply, whereas market CDS spreads have gone up more gradually, albeit with increased volatility—the spreads fell sharply following the European Central Bank's long-term refinancing operations in December 2011 but subsequently edged up. As a result, the gap between FVCDS spreads and market CDS spreads widened again for all Swedish banks. This time, FVCDS spreads for Nordea—the largest Swedish bank with least capitalization—rose more sharply than others, likely indicating its extensive exposures to core European markets as well as its relatively weaker capitalization than the other Swedish banks'.³

³ Given government guarantees (both explicit and implicit), FVCDS spreads are expected to be higher than market CDS spreads. However, when volatility in both credit and equity markets is excessive (e.g., late 2011), credit and equity market indicators could show unsynchronized movements, temporary, and so do FVCDS and market CDS spreads (e.g., Swedbank in late 2011).



Applying the contingent claim methodology

20. Using the spreads between FVCDS and CDS, the values of the government's contingent liabilities can be calculated as following. From Merton (1971)'s option pricing theorem, the following equation holds:

$$\text{Credit spreads} = -\frac{1}{T} \ln \left(1 - \frac{\text{Expected losses}}{\text{Default barrier} \times e^{-rT}} \right)$$

where T is the time horizon of interest (5 years), r is a risk free interest rate (2 percent), and default barrier is assumed to equal to total short-term debt and a half of long-term debt following Moody's KMV methodology.

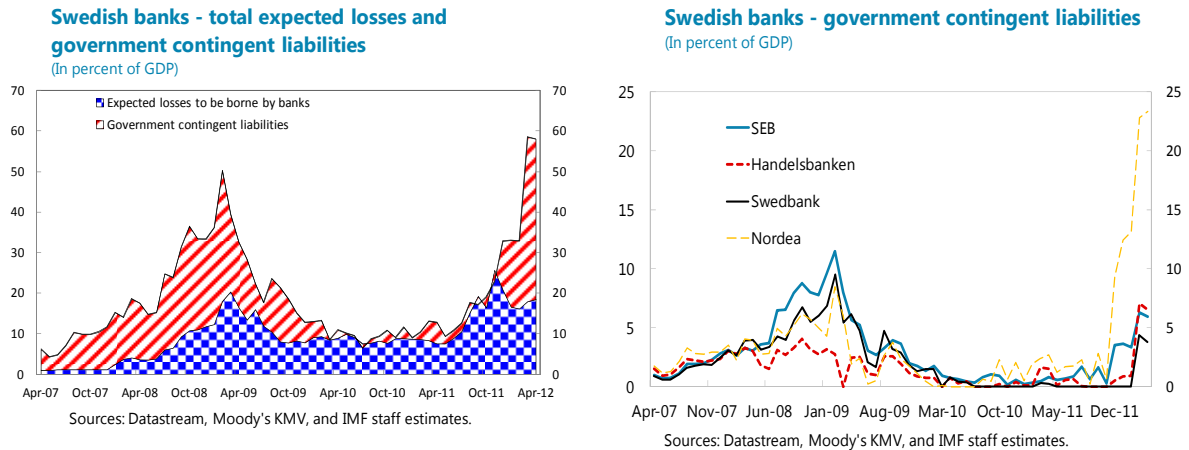
Then, expected losses can be calculated as:

$$\text{Expected losses} = (1 - e^{-\text{credit spreads} \times T}) \times \text{Default barrier} \times e^{-rT}$$

Accordingly, expected losses without government guarantees ($EL^{w/o\ guarantees}$) and with government guarantees ($EL^{guarantees}$) can be estimated by plugging FVCDS spreads and market CDS spreads, respectively, into this equation. Therefore,

$$\text{Government contingent liabilities} = EL^{w/o\ guarantees} - EL^{guarantees}$$

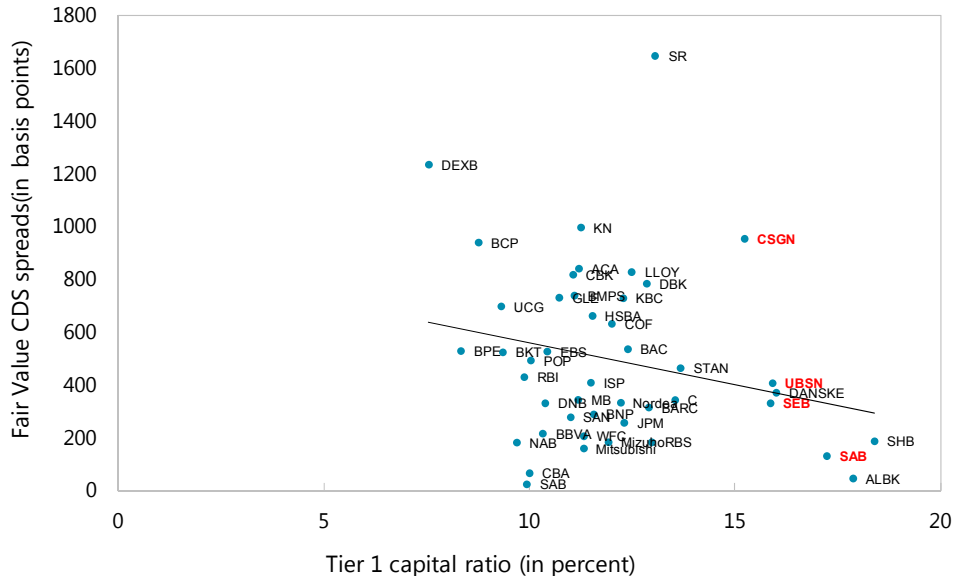
21. The results are presented by simply summing the expected losses of four major banks: so it could be viewed as an extreme event that all banks fail simultaneously. The implied total expected losses of major banks rose from about 10 percent of GDP a year ago to 60 percent of GDP now. Both expected losses attributed to banks and the government rose, but markets view that the latter now share a larger portion of the total losses. By bank, Nordea could expose the government to the largest contingent liabilities (over 20 percent of GDP), given its size and higher risks perceived by markets currently.



Mapping FVCDS spreads with capital and liquidity ratios

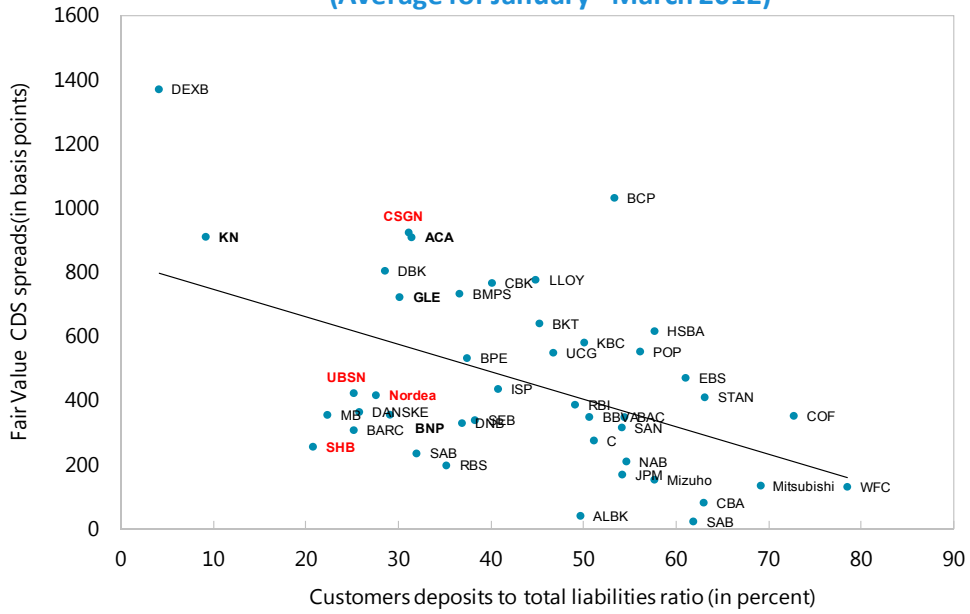
22. The last step is analyzing whether there is any association between FVCDS spreads and capital/liquidity ratios. It appears that, during the recent market strain periods, FVCDS spreads (average for January–March 2012) tended to be lower for banks with higher capital ratios (Figure 2). Furthermore, banks that had more stable funding structure (proxied by deposits to total liabilities ratio) tended to have lower FVCDS spreads (Figure 3).

Figure 2. Selected banks - fair value CDS spreads and capital ratios



Sources: Datastream, Moody's KMV, SNL Database, and IMF staff estimates.

Figure 3. Selected banks - fair value CDS spreads and deposit ratios (Average for January - March 2012)



Sources: Datastream, Moody's KMV, SNL Database, and IMF staff estimates.

Note: See Annex for the name of selected banks.

23. Simple cross section regressions are employed to examine whether any statistical evidence can be found between FVCDS spreads and capital and liquidity buffers in recent stress periods. In a sample of 44 international banks (35 European banks, 5 US banks, 4 others, see Annex), models regress FVCDS spreads (average of January–March 2012) on various measures of capital ratios (Tier 1 and CT1 to RWA ratios, and tangible equity to total assets ratios) and deposit ratios (defined as deposits to total liabilities ratios). The regression method is ordinary least squares (OLS), and several other variables (such as output gap and non-performing loan ratios) are also tested based on the general-to-specific approach.

24. The estimation results confirm the expected inverse relationship between FVCDS spreads and capital and liquidity buffers. As reported in Table 4, all capital ratio measures are highly significant and with negative coefficients. The deposit ratios are also highly significant (except for Model 3) with negative coefficients. Interestingly, similar results are not found for market CDS spreads. This confirms that market CDS spreads significantly reflect government intervention.

Dependent variables	Fair value CDS spreads			Market CDS spreads	
	(1)	(2)	(3)	(4)	(5)
Constant	1,420.05 (6.74) ***	1,413.12 (7.44) ***	917.60 (8.33) ***	412.44 (1.46)	289.73 (2.05)
Tier1 to RWA ratio	-51.04 (-3.49) ***	...	...	...	...
CET1 to RWA ratio	...	-63.32 (-4.05) **	...	0.15 (0.01)	...
TE to total assets ratio	...	...	-66.86 (-2.90) **	...	59.11 (2.00)
Deposit ratio	-8.01 (-3.91) ***	-6.39 (-3.10) ***	-2.43 (-0.93)	-1.07 (-0.36)	-5.65 * (-1.72)
No. of observations	43	40	43	41	44
Adjusted R-squared	0.34	0.37	0.29	0.00	0.05

Source: Fund staff estimates.
1/ T-statistics in parenthesis (***, **, and * indicate significant at 1, 5 and 10 percent, respectively).

Note:
Sample countries: 35 EU banks, 5 US banks, 2 Australian banks, and 2 Japanese banks. The number of sample countries differs across models depending on the availability of capital and liquidity ratios.
Sample periods: fair value and market CDS spreads, average for January-March 2012; and capital and liquidity ratios, as of end 2011.

Higher buffers helped the government reduce contingent liabilities

25. This point can be highlighted by comparing Sweden with other countries, such as France—which has an equally concentrated banking system. In recent months, FVCDS spreads of French banks (BNP Paribas, NATIXIS, Societe Generale, and Credit Agricole) also rose sharply, averaging over 700 basis points (January–March 2012), while market CDS spreads remained relatively low at 240 basis points (Figure 4). As a result, the government’s implicit guarantee premiums (the difference between FVCDS and market CDS spreads) increased sharply, standing at around 490 basis points (Table 5). This implies market-implied government contingent liabilities of 50 percent of GDP.

26. This contrasts with the Swedish case. The Swedish banking system is much larger, and so is its default point (the size of bank debt) as a percent of GDP than the French banking system. However, because FVCDS spreads for Swedish banks were lower, the government’s implicit guarantee premiums were lower, resulting lower government contingent liabilities. This in turn reflects Swedish banks’ higher capital ratios, given that lower FVCDS spreads are associated with higher capital ratios.

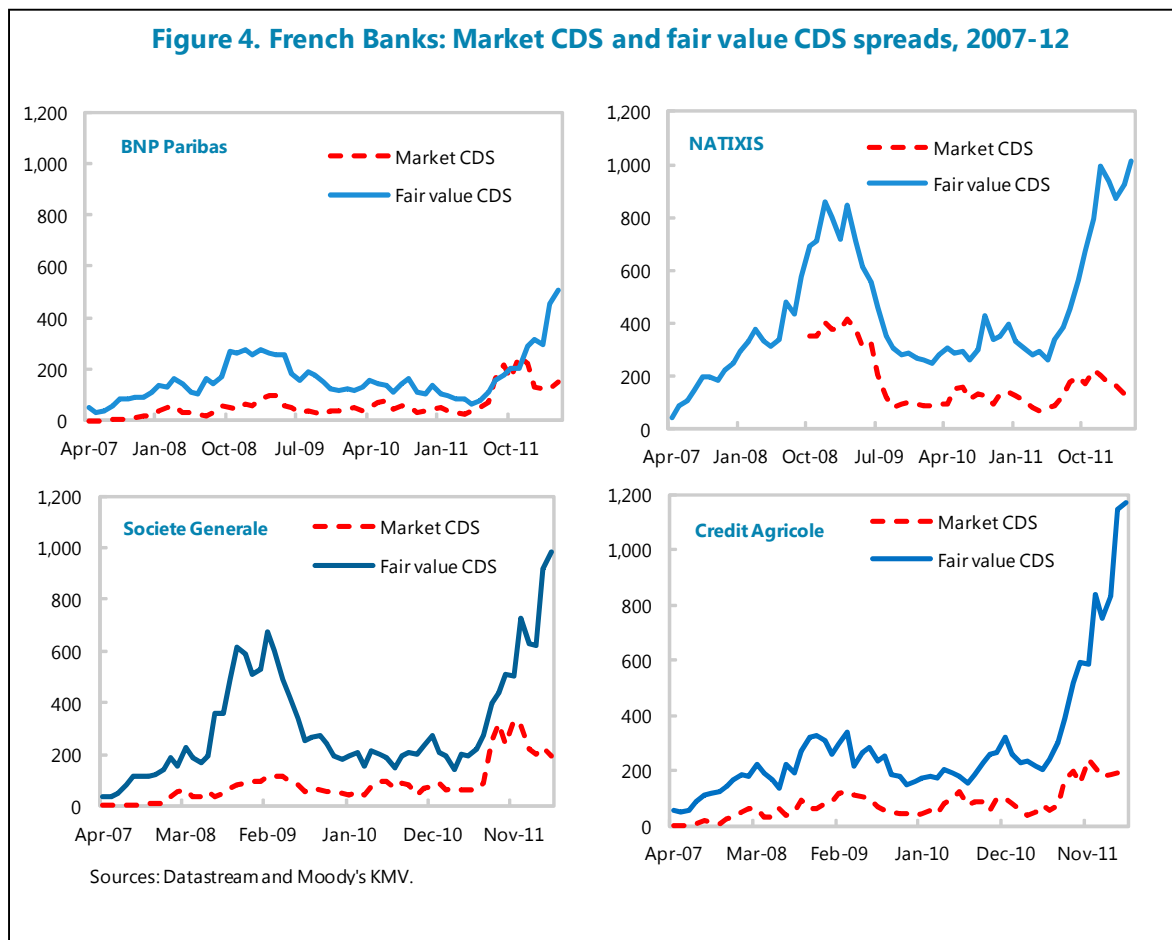


Table 5. Comparisons between Swedish and French banks					
	FV CDS spreads (A)	Market CDS spreads (B)	A-B	Default point	Contingent liabilities
	Basis points			Percent GDP	
Swedish banks (average)	310.6	176.0	134.6	279	39.5
French banks (average)	723.3	235.9	487.3	192	50.4

Source: Fund staff estimates.

D. Policy Implications for Sweden

27. The main conclusions of this note are as follows.
- The Swedish strategy to strengthen capital requirements can be empirically supported; Higher capital ratios contribute to reducing banking system risks and thus the government's contingent liabilities.
 - These efforts cannot be fully achieved via adherence to broader European bank capital norms. In particular, the behavior and degree of banking system risks vary significantly across Europe. In order to harmonize risks, it appears essential to apply country specific prudential regulations.
 - While Swedish banks are relatively well capitalized by international standards, their liquidity is weak. And empirical evidence indicates that strengthening liquidity positions could contribute to further reduce banking system risk and government contingent liabilities.
 - Notwithstanding efforts to raise capital and liquidity performance, financial system stability risk will remain. So, Sweden needs to support its capital and liquidity initiatives with action in other areas, including FI's supervision power; crisis management; and the macroprudential policy institutional framework (see SIP Chapter II).

Box 1. Sweden’s Specific Risk Factors

A small and open economy

Sweden’s output bundle is dominated by investment-related and durable consumption goods—computers, industrial machine tools, electrical equipment, and chemicals. All these products are prone to a global economic cycle, and so is Swedish economy as a whole. To the extent that domestic monetary and fiscal policies cannot offset external shocks, banks are sensitive to global shocks, implying additional needs for buffers.

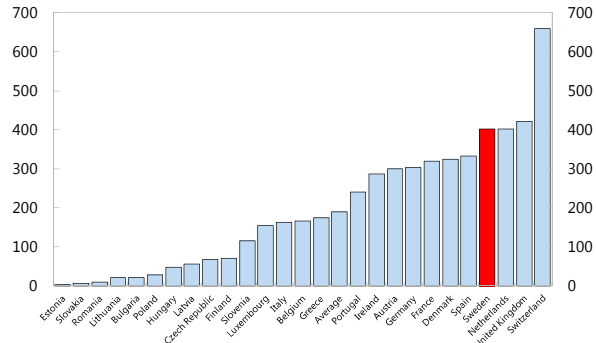
A sizable banking system

The Swedish banking system far exceeds the national economy with the total assets are equivalent to 4 times GDP (top text figure). As the recent banking crisis in Iceland suggests, the oversized banking system could put severe strains on public finance (see further discussions below). Thus, with the large size of the banking system, the more buffers would be needed.

Extensive cross border operations

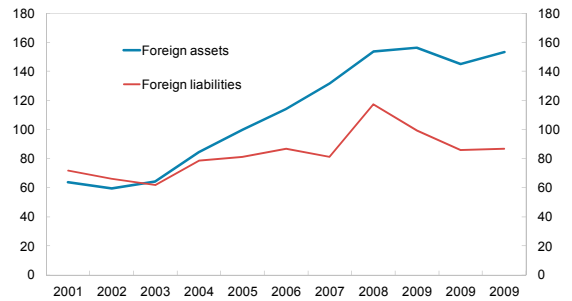
A steep upward trend of Swedish banks’ foreign assets has halted since 2008, and foreign liabilities have fallen as a percent of GDP (middle text figure). However, the total foreign assets, currently standing at over 200 percent of GDP based on BIS statistics, far exceeds European peer norms (bottom text figure). In normal times, cross border banking brings a number of benefits. But in times of market strains, risks could arise from contagion. Swedish banks are exposed largely to other Nordic countries and Germany, and thus Sweden is sensitive to shocks originating from them—while exposures to weak peripheral European countries are small.

Selected European banks: assets
(In percent of GDP, end 2010)



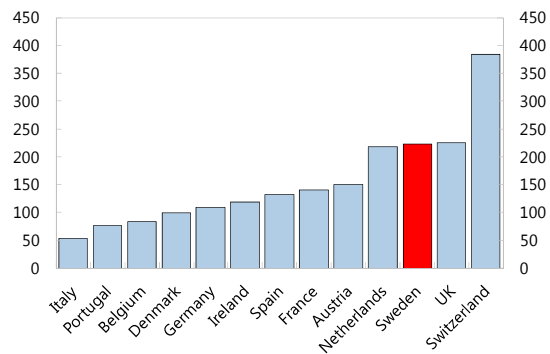
Sources: The ECB, the EC, the Swiss National Bank, and the Riksbank.

Swedish banking system: foreign assets and liabilities
(In percent of GDP, banking survey basis) 1/



Source: IMF, International Financial Statistics, Haver, and author's calculation. 1/ Not directly comparable with BIS Consolidated Banking Statistics.

Selected European banks: foreign assets
(In percent of GDP)



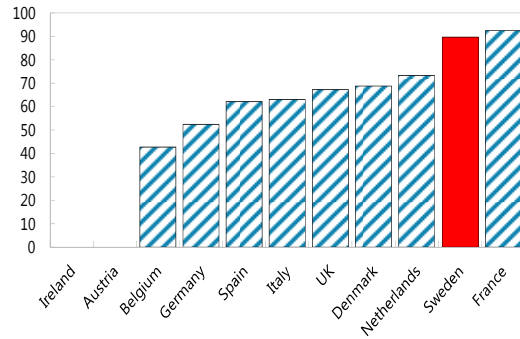
Source: BIS Consolidated Banking Statistics (Table 9B).

Box 1. Sweden’s Specific Risk Factors (continued)

High concentration

The four largest banks—Swedbank, Nordea, SEB, and Handelsbanken—account for about 85 percent of banking sector assets. The concentration degree is among the highest, together with France, in Europe (top text figure).

Banking system concentration
(Share of large banks) 1/



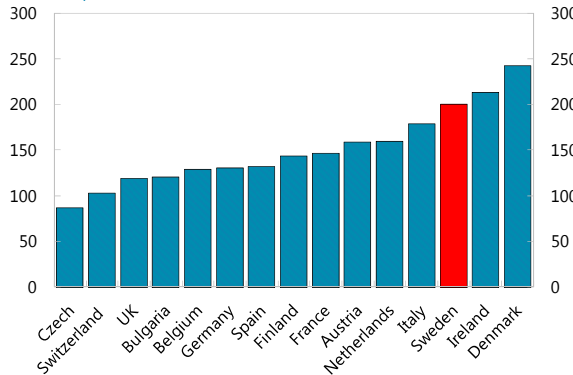
Source: ECB Consolidated Banking Data.
1/ Defined as banks with total assets greater than 0.5% of the total consolidated assets of EU banks

High reliance on short-term wholesale funding

Swedish banks’ funding gap remains substantial. The loan to deposits ratio of the Swedish banking system reaches 200 percent, among the highest in Europe (bottom left text figure). The funding gaps are closed mainly with covered bonds and unsecured bonds.

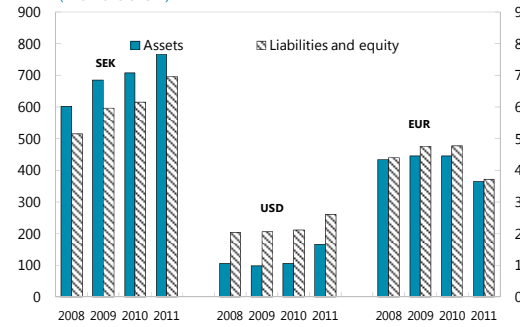
Some banks seize arbitrage opportunities by contracting cheaper short-term foreign currency funding (particularly in US dollar wholesale markets), which then convert to the kroner to finance long-term assets (including mortgages). In anticipation of regulatory tightening, the gaps have been reduced, but are estimated at remaining substantial (about SKr 100 billion, bottom right text figure). This funding structure poses vulnerabilities to the banking sector if such markets dry up or their cost increases sharply, potentially due to a shift in investors’ risk appetite.

Selected European banks: loans to deposits ratios
(In percent)



Source: BIS Consolidated Banking Statistics (Table 9B).

Major Swedish banks; assets and liabilities by currency
(In billions of SKr)



Sources: Banks’ annual reports; IMF, International Financial Statistics; and Haver.

ANNEX. SAMPLE BANKS USED FOR THE EMPIRICAL ANALYSIS

Bank name	Abbreviation	Country
Erste Group Bank AG	EBS	Austria
Raiffeisen Bank International AG	RBI	Austria
Dexia SA	DEXB	Belgium
KBC Group NV	KBC	Belgium
Danske Bank A/S	DANSKE	Denmark
Société Générale SA	GLE	France
BNP Paribas SA	BNP	France
Natixis	KN	France
Crédit Agricole SA	ACA	France
Deutsche Bank AG	DBK	Germany
Commerzbank AG	CBK	Germany
Allied Irish Banks, Plc	ALBK	Ireland
UniCredit SpA	UCG	Italy
Mediobanca -- Banca di Credito Finanziario SpA	MB	Italy
Intesa Sanpaolo SpA	ISP	Italy
Banca Monte dei Paschi di Siena SpA	BMPS	Italy
Banco Popolare Società Cooperativa	BPE	Italy
SNS REAAL NV	DNB	Norway
DNB ASA	BCP	Portugal
Banco Comercial Português SA	BCP	Spain
Banco Bilbao Vizcaya Argentaria, SA	BBVA	Spain
Banco Santander SA	SAN	Spain
Banco Popular Español SA	POP	Spain
Bankinter SA	BKT	Spain
Nordea Bank AB	Nordea	Sweden
Svenska Handelsbanken AB	SHB	Sweden
Skandinaviska Enskilda Banken AB	SEB	Sweden
Sw edbank AB	SAB	Sweden
Credit Suisse Group AG	CSGN	Sw itzerland
UBS AG	UBSN	Sw itzerland
HSBC Holdings Plc	HSBA	United Kingdom
Barclays Plc	BARC	United Kingdom
Royal Bank of Scotland Group Plc	RBS	United Kingdom
Lloyds Banking Group Plc	LLOY	United Kingdom
Standard Chartered Plc	STAN	United Kingdom
Wells Fargo & Company	WFC	USA
JPMorgan Chase & Co.	JPM	USA
Citigroup Inc.	C	USA
Bank of America Corporation	BAC	USA
Capital One Financial Corporation	COF	USA
Commonwealth Bank of Australia	CBA	Australia
National Australia Bank, Limited	NAB	Australia
Mizuho Financial Group, Inc.	Mizuho	Japan
Mitsubishi UFJ Financial Group, Inc.	Mitsubishi	Japan

REFERENCES

Basel Committee on Banking and Supervision, 2010, *An Assessment of the Long Term Economic Impact of the New Regulatory Framework*, August.

Gray, D., Merton R.C., and Bodix Z, 2008, “New Framework for Measuring and Managing Macrofinancial Risk and Financial Stability,” Working Paper No. 09-015, Harvard Business School, August.

Institute of International Finance, 2011, *The Cumulative Impact on the Global Economy on Changes in the Financial Regulatory Framework*, September.

Merton, R.C., 1971, “Theory of Rational Option Pricing,” Working Paper, Alfred P. Sloan School of Management, Cambridge M.I.T., October.

Modigliani, F., and Miller, M.H., 1958, “The Cost of Capital, Corporation Finance, and the Theory of Investment,” *American Economic Review*, 48 (3).

Santos, A. O., Elliott, D., “Estimating the Costs of Financial Regulation,” IMF Staff Discussion Note, forthcoming.

Segoviano, M. A. and C. C. Goodhart, 2009, “Banking Stability Measures,” IMF Working Paper, January, WP/09/4.

Sveriges Riksbank, 2011, *Appropriate Capital Ratio in Major Swedish Banks—An Economic Analysis*, December.

II. DEVELOPING AN EFFECTIVE MACROPRUDENTIAL POLICY INSTITUTION IN SWEDEN¹

1. Through the mid-2000s, Swedish banks actively expanded outward cross-border activity, including in the Baltics, with increasing reliance on short-term foreign currency funding. This raised vulnerabilities in Swedish banks just ahead of the 2008–09 global crisis period. Much of subsequent strains could have been attenuated if an appropriate institutional framework for macroprudential policy had been in place.²

A. Lessons Learnt from the 2008-09 Crisis

2. The Baltics was “subprime” for the Swedish banking system. In 2008–09, two of the largest banks, both increasingly funded on wholesale markets and exposed to the Baltics, faced sharp increases in loan losses and nonperforming loans, with their ratings marked down accordingly. Market concern toward these two banks spilled over to the Swedish banking system as a whole, as indicated by an increase in a joint default probability indicator, thus the problem became a major systemic issue (for more details, see Ishi, 2010).

3. In response, the authorities implemented a range of bold crisis intervention measures. The Riksbank lowered the policy rate to a zero bound and introduced various new liquidity measures, including a US dollar lending facility. To boost international reserves, the National Debt Office (NDO) borrowed externally (\$15 billion equivalent), and the Riksbank tapped US Fed’s and ECB’s currency swap arrangements. Meanwhile, the government doubled the deposit guarantee and introduced new bank recapitalization and debt guarantee schemes. These concerted efforts proved successful, and a full-brown crisis was prevented successfully. However, important questions remain.

Did the authorities appropriately anticipate a systemic risk and take preemptive measures?

4. The initial signs of the imbalances in Baltic economies, such as high credit growth and rapid housing price increases, were identified as early as 2005, but at that time, this was not recognized as a source of a systemic risk. The Riksbank noted that “borrowing in the Baltic states is still rising, as are defaults, but the ability to service debt is still judged to be good,” (Financial Stability Report 2005:1). Similarly, Finansinspektionen (FI) noted, “the large banking groups were financially strong, and risks to systemic stability were low for the foreseeable future.” It also expressed caution about a potential risk but only in a longer

¹ Prepared by Kotaro Ishi (kishi@imf.org).

² In this note, macroprudential policy is defined as the policy that uses primarily prudential tools to limit systemic or system-wide financial risks, in line with IMF (2011) and FSB, IMF, and BIS (2011).

perspective, “the expansion of their business abroad and in countries like the Baltic states and Russia may imply increasing risks,” (The Stability of the Swedish Financial Sector, 2005).

5. By contrast, Baltic authorities expressed their concern about growing imbalances at that time. The Estonian authorities attempted to persuade banks (mostly Finish, German, and Swedish bank affiliates) to slow lending growth and tighten lending standards, but without success. And they sent a letter to home supervisors, including the Riksbank and FI, to tighten regulations in December 2005. However, the home supervisor opposed to a change, noting that this would not be consistent with EU-wide harmonized rules (The Swedish National Audit Office, 2011).

6. In 2007, the authorities hinted with greater emphasis the potential risks arising from the Baltics, but decisive actions were not taken. The Riksbank assessed “risk lies in developments in the Baltic states, in particular Latvia but also Estonia and Lithuania. Signs of economic overheating there are becoming increasingly clear,” (Financial Stability Report 2007:1). FI reported, “the Baltic economies, albeit to varying degrees, are judged to be overheated... banks have enough capital to handle a situation that could entail extremely large credit losses in any of these countries,” (The Stability of the Swedish Financial Sector, 2007). Both the Riksbank and FI indicated at that time that Swedish banks had ample buffers to manage deteriorations in credit quality in the Baltics.

7. In the middle of 2008, the Riksbank expressed concern that “the risks in the Baltic countries have not diminished...During the next result period, the banks may experience additional negative impacts.” And it added, “there is also a risk that this will affect capital strength....In the event of continued unfavorable developments, liquidity risks will probably increase,” implying that banks needed more capital and liquidity buffers. But the Riksbank was apparently hesitant to make a formal recommendation to FI on this regard. In June 2008, FI’s Board discussed whether banks’ capital be raised. But it assessed the level of banks’ capital as adequate, and no action was taken (The Swedish National Audit Office, 2011).

8. Meanwhile, banks started raising capital in markets. However, as September 2008 approached, strains in financial markets increased sharply. At that point, it was too late to apply preemptive measures to reduce systemic risks.

Why did the authorities fail?

9. Sweden’s experience reveals challenges in effectively identifying and diagnosing systemic risk, and making intervention in a timely and effective manner.

- When signs of building-up risks or growing imbalances are detected, there is substantial uncertainty as to how large they are and what problem they pose on a system. Thus, it is difficult to decide whether a countermeasure is warranted, let alone for policymakers to explain to stakeholders the need for such a measure (the situation in 2005-06).

- When risks continue to grow, a consensus can be easily reached that some action is needed. However, it is still hard to reach a consensus on how serious the problem is and what measures should be applied. Moreover, given that imbalances typically grow in tandem with an economic boom, taking a counter measure is politically unpopular and could even face social backlash. Thus, policymakers tend to wait and see until clear risk emerges (the situation in 2007).
- The risks could further grow to a point that most feel such risks. However, policymakers could face dilemma of weighing benefits and costs of bursting a bubble. And often, it is still hard to reach a consensus on which measures should be applied and by how much, especially if there still remains a view of an optimistic denial (the situation in the first half of 2008).

10. This said, in the case of Sweden, the delayed policy response partly reflected a drawback in its own institutional setting. Sweden's financial stability framework is highly decentralized and composed of several independent agencies. FI has a statutory mandate for financial stability and to promote consumer protection. The Riksbank, on the other hand, does not have in its charter an explicit financial stability mandate but is responsible for promoting a safe and efficient payments system and actively provides analyses on financial stability by periodic publication of its Financial Stability Reports. The MOF bears the ultimate political responsibility as the fiscal authority but is also responsible for legislation in the financial sector and plays a leading role in crisis management (currently, the MOF chairs an inter-agency standing crisis management group). The NDO manages the stability fund, deposit insurance, and investor protection systems. It also serves as the support authority when public funds are conferred to credit institutions.

11. The main problem is that although each of these agencies is highly professional in addressing issues in their responsible areas, there is neither a formal coordination and accountability framework nor a incentive mechanism to coordinate.³

- While the Riksbank has comparative advantage and resources in diagnosing and identifying risks from macro-financial perspectives, it does not have sufficient tools to address macro-financial risks;
- Meanwhile, the FI focused on financial stability at an institutional level and consumer protection and did not devote large resources to overall macro-financial stability issues.

³ Informal cooperation arrangements existed prior to the crisis. In June 2005, the Memorandum of Understanding was signed among the MOF, the Riksbank, and FI. Later, in May 2009, this Memorandum of Understanding was expanded to include the NDO.

- Thus, the Riksbank and the FI have partly overlapping tasks but have different ways and means of performing these tasks from different perspectives.
- Moreover, pre-crisis, while regulatory reform initiatives in the EU moved towards more centralization in supervision frameworks, there was no EU-wide macroprudential policy framework. Now the European Systemic Risk Board (ESRB) has been established, an important issue would be how best to integrate Sweden's macroprudential oversight into the European framework.

B. Alternative Institutional Models for Macroprudential Policy

12. Reflecting lessons from the crisis, a consensus is building that a new institutional framework that solely focuses on macro-financial stability and associated macroprudential policies will be needed in Sweden. As an interim first step, in January 2012, the Riksbank and FI signed a Memorandum of Understanding and newly established a council for cooperation on macroprudential policy. The council is a forum for information exchange and consultation, including for financial sector risk assessment and for macroprudential policy making.

13. Nonetheless, this initiative should go further.⁴ A formal macroprudential authority will need to be established by law. Such authority must be autonomous (particularly from the financial industry and political influence) and should have clear and strong mandate, responsibilities, and accountability. This is particularly important because macroprudential policy could suffer from an inaction bias (ESRB, 2012): the success of macroprudential policy measures is hard to observe; while macroprudential policymakers would have to take unpopular decisions by taking away the punch bowl just as the party gets going.

14. There is no one-size-fit-all model for all jurisdictions. While there is a general consensus that central banks should play a leading role given their expertise in macro-financial analysis and their role in preventing a crisis as emergency liquidity providers (IMF, 2011 and ESRB, 2012), the choice of a specific institutional set-up may depend on country's context, reflecting differential financial structure, regulatory architecture, as well as historical and political factors. This said, in general, a strong macroprudential authority should be able to (i) effectively identify, analyze, and monitor systemic risks; (ii) timely and effectively use macroprudential tools; and (iii) (if macroprudential policy powers are shared) make coordination among responsible agencies effective in risk assessment, while preserving their individual autonomy (Nier et al, 2011).

⁴ 2011 FSAP Update recommended that the authorities establish a high level systemic financial stability council to focus solely on financial stability and related macroprudential policies.

15. Berntsson and Molin (2012) have proposed five alternative models that could be considered for the case of Sweden (Table 1). The first two models involve the establishment of a new macroprudential policy council, and the remaining three models assume the existing institutions to be unchanged.

16. The main strengths and weaknesses of each model are evaluated in Table 2, based on the following six criteria: (i) whether a model ensures macroprudential policy autonomy; (ii) whether a model provides for efficient identification, diagnosis, and resource use; (iii) timely and effective use of tools; (iv) efficient use of a mix of tools; (v) accountability; (vi) democratic control; and (vii) whether a model facilitates international coordination.

- Model A appears to be most effective and efficient if the council is chaired by Riksbank governor to ensure its autonomy. The council—consisting of representatives of the Riksbank, FI, and experts—has both a risk identification/diagnostic role and decision making powers on macroprudential tools. The council has a clear responsibility, and thus it is easier to establish its accountability framework. Given that the council includes representatives of both the Riksbank and FI, their resources can be efficiently used, while the inclusion of experts would help enhance democratic accountability. A key weakness is that the council does not have decision making powers on microprudential tools (as FI’s operational autonomy should be respected).
- Model B is a weaker form of Model A, because a council does not have any decision making powers. Hence, the risk identification/diagnostic function is separate from the decision making function, weakening timely use of tools and accountability.
- Models C-D appear to be further weaker than Models A-B. In each of these models, resources of the Riksbank and FI will not be used efficiently, and the risk identification/diagnosis function and the decision making function are separate.
- In Model E, FI has full authorities on microprudential and macroprudential policies. While this model has advantages (e.g., FI is clearly responsible for macroprudential policy, should be accountable, and can decide on an efficient mix of macroprudential and microprudential tools), there are a number of weaknesses. The main drawbacks include: (i) this model will not ensure the autonomy of macroprudential policy; and (ii) the Riksbank’s resources will not be used.

17. If Model A or B is chosen, a representative from the MOF can be included in the council (though with no right to vote), without undermining the autonomy of the Riksbank and FI. In general, advantages and costs of including the MOF can be summarized as following:

- Potential advantages. The MOF can help creating new macroprudential tools through legislative changes or contribute to mitigation of macroprudential risks via tax changes. Furthermore, given that the MOF is ultimately responsible for a crisis management and resolution (which involves taxpayers' money), its views should also be listened to by macroprudential policy makers. In addition, the inclusion of the MOF in the macroprudential policy making loop could facilitate a smooth transition to a crisis management operation, if a crisis happens.
- Potential costs. The MOF is a government agency led by a politician. Thus, the participation of the MOF (even without right to vote in the committee) could (or be perceived to) undermine the autonomy of macroprudential policy making.

18. Berntsson and Molin (2012) argue for the merits of keeping the MOF at arm's length to ensure the autonomy of macroprudential policy decision in Sweden. In other jurisdictions (e.g., UK, and see Table 3), the MOF has some role (though limited) in a macroprudential policy committee. Were the MOF is excluded from the membership of the council, accountability and transparency obligations of the council would need to be designed even more strongly to ensure the council's democratic accountability.

19. Furthermore, some incentive mechanism needs to be built in to reflect a voice of regional countries in macroprudential policy making in Sweden. Prior to the crisis, warning signals from the Baltics were not effectively heard of by Swedish authorities, in part reflecting "asymmetry": while the size of Swedish banks' operations ranged from 60 to over 100 percent of GDP in each Baltic country, it accounted for less than 6 percent of GDP in Sweden. Accordingly, subsidiaries may have received less attention from the parent banks and home supervisors due to their low impact on banks' financial positions as groups, until unexpectedly large shocks in Baltics were recognized (for more discussions, see Ishi, 2010).

C. Tentative conclusions

20. The authorities' intention to formally establish a macroprudential policy authority is welcome. For a country with diversified supervision architecture like Sweden, one of the important aims in developing a macroprudential policy institution is to foster cooperation among various agencies in risk assessment and diagnosis and to make timely action possible. In this regard, the establishment of a formal arrangement by law will enhance cooperation, by addressing overlaps and gaps in risk identification and analysis and create a mutual understanding on which agency should tackle a problem that might otherwise fall between the cracks.

21. Various types of models can be considered, and each of which has potential advantages and disadvantages. Among the five models presented by Berntsson and Molin (2012), Model A, with the establishment of a macroprudential policy council, appears to have

most advantages. However, for this model to work effectively, the following factors should be taken into account.

- A macroprudential policy council should be autonomous with a clear financial stability mandate. To assure autonomy, the council should be chaired by Riksbank governor. At the same time, to ensure democratic control, the membership of the council can be evenly split among representatives from the Riksbank, FI, and external experts.
- The governance structure of the council, including meeting and voting rules, should be clearly stipulated. For example, voting rules can be carefully designed to reduce the risks of no action, as a result of persistent disagreement among constituent agencies.
- The council should be given a clear set of macroprudential policy tools, separate from micro prudential policy tools, avoiding overlapping powers to the extent possible.
- A strong accountability and transparency framework should be in place. This should be even stronger if the MOF is excluded from the council.
- Two complementary measures are important. First, the existing crisis management group (chaired by the MOF) should be formally institutionalized, with meeting schedule regularized. In addition, its mandate should be reconstituted to focus on contingency planning and crisis management. Second, establishing a regional macroprudential policy framework (on which the authorities have just initiated) will be equally important, given the lessons learnt from the Baltic crisis.

Table 1. Alternative Macroprudential Institutional Models (Berntsson and Molin, 2012)

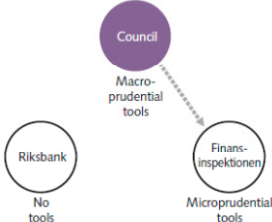
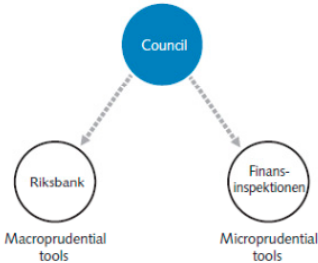
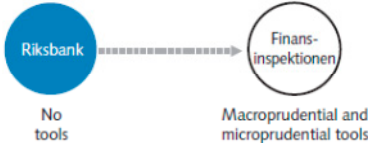

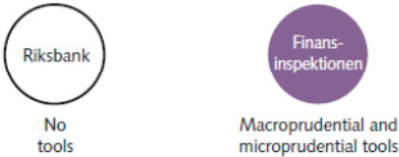
Model	Comments
<p>A. A new decision making macroprudential council under the Riksdag</p> 	<ul style="list-style-type: none"> • A new macroprudential council with representatives of the Riksbank, FI, and independent experts, will be established as a separate authority under the Riksdag. • The main authorities of the council are: <ul style="list-style-type: none"> ➢ Identifying and diagnosing risks ➢ Making use of macroprudential tools ➢ Giving recommendations to FI on the use of microprudential tools, with FI obliged to “comply or explain.”
<p>B. A new recommending macroprudential council under the Riksdag</p> 	<ul style="list-style-type: none"> • Similar to Model A., a new macroprudential council with representatives of the Riksbank, FI, and independent experts, will be established as a separate authority under the Riksdag. • The main authorities of the council are: <ul style="list-style-type: none"> ➢ Identifying and diagnosing risks ➢ Giving recommendations to the Riksbank on the use of macroprudential tools, with the Riksbank obliged to “comply or explain.” ➢ Giving recommendations to FI on the use of microprudential tools, with FI obliged to “comply or explain.”
<p>C. Riksbank issues recommendations and FI makes a decision</p> 	<ul style="list-style-type: none"> • The Riksbank’s authorities are: <ul style="list-style-type: none"> ➢ Identifying and diagnosing risks ➢ Giving recommendations to FI both macroprudential and microprudential tools • FI’s authorities are: <ul style="list-style-type: none"> ➢ Making a decision on the use of macroprudential and microprudential tools.
<p>D. Riksbank is responsible for macroprudential policy</p> 	<ul style="list-style-type: none"> • The Riksbank’s authorities are: <ul style="list-style-type: none"> ➢ Identifying and diagnosing risks ➢ Making use of macroprudential tools ➢ Giving recommendations to FI on the use of microprudential tools with FI obliged to “comply or explain.” • FI’s authorities are: <ul style="list-style-type: none"> ➢ Making use of microprudential tools.
<p>E. FI is responsible for macroprudential policy</p> 	<ul style="list-style-type: none"> • The Riksbank has no authority at all. • FI has all authorities including: <ul style="list-style-type: none"> ➢ Identifying and diagnosing risks ➢ Making use of macroprudential and microprudential tools

Table 2. Strengths and Weaknesses of Different Models

	Model A	Model B	Model C	Model D	Model E
Primary agency responsible for macroprudential risk identification	Council	Council	Riksbank	Riksbank	FI
Decision making agency					
Macroprudential tools	Council	Riksbank	FI	Riksbank	FI
Micro prudential tools	FI	FI	FI	FI	FI
Macroprudential institutional autonomy 1/	Strong	Strong	Weak	Strong	Weak
Efficient identification, diagnosis, and resource use 2/	Strong	Strong	Weak	Weak	Weak
Timely and effective use of tools 3/	Strong	Weak	Weak	Strong	Strong
28 Efficient use of a mix of tools 4/	Weak	Weak	Strong	Weak	Strong
Accountability 5/	Strong	Weak	Weak	Strong	Strong
Democratic control	Likely not an issue	Likely not an issue	Likely not an issue	Riksbank may be seen as too powerful	Likely not an issue
International coordination 6/	Strong	Strong	Strong	Strong	Weak

1/ Strong if Council (chaired by the Riksbank) or the Riksbank is a macroprudential policy decision making body.
 2/ Strong if both the Riksbank and FI are involved in macroprudential risk identification and diagnosis.
 3/ and 5/ Strong if a risk identification agency and a decision making agency is the same on macroprudential policy.
 4/ Strong if a single agency has both macroprudential and microprudential tools.
 6/ Strong if the Riksbank (representing at European Systemic Risk Board) leads macroprudential policy.

Table 3. Stylized Models for Macroprudential Policy

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Degree of institutional integration of central bank and supervisory agencies	Full (at a central bank)	Partial	Partial	Partial	No	No	No
Ownership of macroprudential policy mandate	Central bank	Committee related to central bank	Independent committee	Central bank	Multiple agencies	Multiple agencies	Multiple agencies
Role of fiscal authorities	No	Passive	Active	No	Passive	Active	No
Separation of policy decisions and control over instruments	No	In some areas	Yes	In some areas	No	No	No
Existence of separate body coordinating across policies	No	No	No	No	Yes	Yes	No
Country examples	Ireland (new)	UK (new)	France (new) US (new)	Belgium (new)	Australia	Canada	Iceland

Source: IMF (2011).

REFERENCES

- Berntsson, C.N., and J. Molin, 2012, “A Swedish framework for Macroprudential Policy,” Sveriges Riksbank Economic Review 2012:1, February.
- European Systemic Risk Board, 2012, “The Macro-prudential Mandate of National Authorities,” March.
- Finansinspektionen, 2005, *Stability of the Swedish Financial Sector Report 2005:10*, 2005-10-18.
- Finansinspektionen, 2007, *Stability of the Swedish Financial Sector Report 2007:16*, 2007-10-15.
- FSB, IMF, and BIS, 2011, “Macroprudential Tools and Frameworks,” Update to G-20 Financial Ministers and Central Bank Governors, February.
- International Monetary Fund, 2011, *Macroprudential Policy: An Organizing Framework*.
- Ishi, K., 2010, “Regulating Financial Sector Outward and Inward Spillovers,” Attachment II, Sweden: Staff Report for the 2010 Article IV Consultation, IMF Country Report, No. 10/220.
- Nier, E.W., J. Osiński, L. Jácome, and P. Madrid, 2011, “Institutional Models for Macroprudential Policy,” IMF Staff Discussion Note, SDN/11/18, November.
- Sveriges Riksbank, 2005, *Financial Stability Report 2005:1*, June.
- Sveriges Riksbank, 2007, *Financial Stability Report 2007:1*, June.
- Sveriges Riksbank, 2008, *Financial Stability Report 2008:1*, June.
- Swedish National Audit Office, 2011, *Managing Financial Stability in Sweden: Experiences from the Swedish Banks’ Expansion in the Baltics*, RiR 2011:9.

III. SWEDEN MONETARY FRAMEWORK: SOME INSTITUTIONAL AND OPERATIONAL CONSIDERATIONS¹

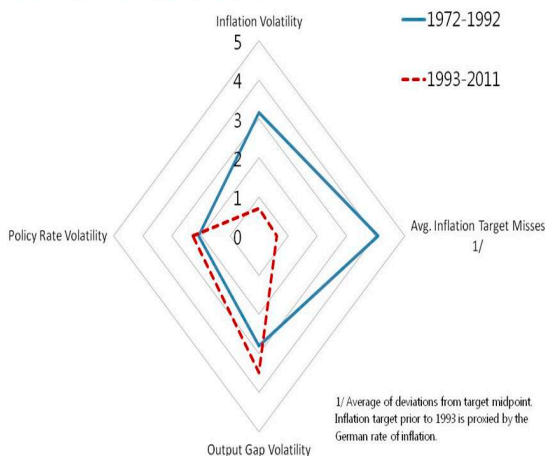
A. Introduction

1. In January 1993, Sweden's central bank announced a new monetary policy based on an inflation targeting framework, while allowing the exchange rate to float freely. Under the new framework, the inflation target would apply from 1995 and thereafter.
2. The Swedish model, shared by several other small open economies, including Canada, the United Kingdom, Australia and New Zealand, has proven resilient to severe shocks dealing well with the aftermath of the 1991–1993 Swedish financial crisis, and more recently, with the global financial crisis.

Figure 1: Sweden: International and Historical Comparison of Monetary Policy Outcomes

Sweden: Historical Performance Comparison

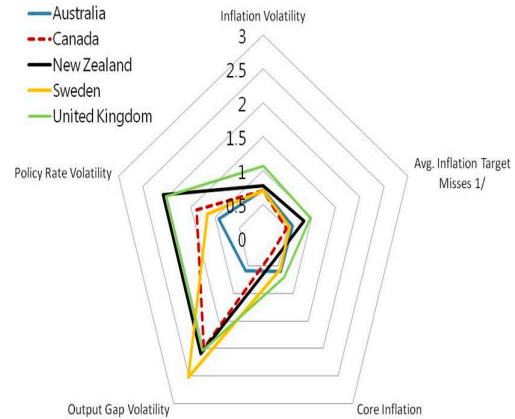
(Standard deviations except where noted)



Sources: Haver Analytics, IMF World Economic Outlook, and Fund staff calculations.

Sweden vs. Selected Advanced Economies, 2002-2011

(Standard deviations except where noted)



Sources: Haver Analytics, IMF World Economic Outlook, and Fund staff calculations.

3. When compared to that of its peers, Sweden's monetary policy performance has been as good or better in controlling inflation and output gap volatility, while avoiding large interest rates gyrations. And controlling for swings in mortgage rates and energy prices—two key but highly volatile determinants of headline consumer price inflation in Sweden— inflation volatility has been practically eliminated by virtue of the inflation targeting system. This is remarkable, especially when measured against Sweden's own outcomes following the collapse of the Bretton Woods system (Figure 1).

¹ Prepared by Nicoletta Batini (nbatini@imf.org).

4. The Swedish monetary and financial policy framework has undergone two comprehensive independent reviews by the Riksdag's Committee on Finance as part of the Riksdag's work of follow-up and evaluation: the Giavazzi-Mishkin² review in 2006 (covering the period 1995–2005) followed five years later by the Goodhart-Rochet³ review (covering the period 2005–2010). While the first review focused largely on the monetary policy function of the Riksbank, the second review concentrated on its financial stability function, examining, among other things, whether this has incorporated well lessons from the global financial crisis. The recommendations of the two reviews are summarized in Table 1.

5. This chapter raises additional issues not considered in the reviews, regarding some practical aspects of operating monetary policy in an almost perfectly-transparent fashion. In particular, it focuses on issues related to the publication of the projection of official rates (Section B). It discusses existing dilemmas for the implementation of monetary policy in the context of Sweden's current institutional and legal structure for financial supervision and regulation (Section C). And finally, it reevaluates the scope for a discussion of measures of resource utilization in the context of monetary policy (Section D).

B. To Publish or Not To Publish: That Is the Question

6. As emphasized by the Goodhart-Rochet review, the Riksbank compares favorably to advanced economy peers in terms of transparency and scores at the top of Eijffinger-Geraats⁴/Dincer-Eichengreen⁵ Central Bank Transparency Index. The Riksbank also ranked as the best communicator among the sample of central banks chosen by the authors of a J.P. Morgan (2007) report focusing on monetary policy communication.^{6,7}

² Giavazzi, F. and F. S. Mishkin (2006), *An evaluation of the Riksbank's monetary policy 1995- 2005*, Rapporten från Riksdagen 2006/07: RFR 1, Finansutskottet, Stockholm.

³ Goodhart, C. and J-C. Rochet (2011) *Evaluation of the Riksbank's monetary policy and work with financial stability 2005-2010*. Rapporten från Riksdagen 2010/11: RFR5. Finansutskottet, Stockholm.

⁴ Eijffinger, S. C. and Geraats, P. M. (2006). 'How transparent are central banks?', *European Journal of Political Economy* 22(1), 1–21.

⁵ Dincer, N. N. and Eichengreen, B. (2007). 'Central bank transparency: Where, why, and with what effects?', NBER Working Paper 13003.

⁶ The sample includes the Federal Reserve System, the European Central Bank, the Bank of Japan, the Bank of England, Norges Bank, the Bank of Canada, the Reserve Bank of Australia, the Reserve Bank of New Zealand and the Swiss National Bank.

7. In the effort to achieve maximum transparency—and in addition to publishing comprehensive forecasts—in 2007 the Riksbank has begun to publish the 3-year-out Executive Board’s expected future path of the repo rate accompanied by a probability distribution. This has several benefits. First, contrary to other central bank forecasts that are made conditional on constant interest rate paths or market rates, the Riksbank forecast is inherently consistent with the Executive Board’s preferred policy path. Second, announcing the entire future path of the policy rate communicates unequivocally to the public, the (at the time of publication) likely direction of monetary policy in the future. However, the Riksbank makes clear that the path is a projection, not a commitment. In turn, this can help anchor the public’s expectations about interest rates by affecting directly long-term interest rates, which can potentially reduce the output gap cost of price stabilization. From June 2007, the Riksbank’s Executive minutes were also attributed.

8. However, publishing an interest rate forecast entails several complications. The Goodhart-Rochet review’s main criticism to the Riksbank’s new forecasting regime relates to the fact that the announcement of the outcome of the voting on the policy rate should be made at the time of the meeting during which the inflation and growth forecasts are finalized, in that these are necessarily produced simultaneously. Or else, the title, function and remit of the MPC meeting—where interest rates are de jure but not de facto determined—should be altered. This critique is not persuasive. Although these are largely decided by then, the final decisions on the final forecast and policy rate paths are actually taken during the monetary policy meeting—in the sense that these are preliminary until then—and so there is no artificial delay between the announcement of the policy rate path and the finalization of the forecast. At the pre-monetary policy meeting the staff briefs the Board on the forecast and their recommendation for monetary policy, and gets feedback from the Board so that it can finalize the forecasts (including the policy rate) coincidentally with the monetary policy meeting.)

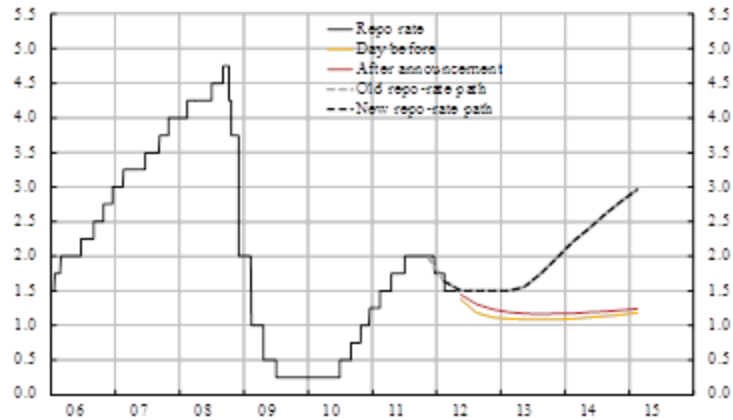
9. In fact, there may be more difficult issues related to the publication of the path—some of which but not all mentioned in the Goodhart-Rochet review—to be concerned about.

10. Over the past 4 years—largely coinciding with the period that followed the collapse of Lehman Bros.—Swedish market yield curves and the projection for official rates have deviated substantially, especially for maturities beyond the very short run. Although this gap disappeared in early 2011, it has reappeared more recently (Figure 2).⁸

⁷ J.P. Morgan Research (2007). “Central Bank communication hits diminishing marginal returns”, May 11, 2007.

⁸ Initially market rates were above the policy rate path. But lately market rates have been below the policy rate path. These two episodes are very different.

(continued)

Figure 2: Repo Rate Actual and Projected Paths: April 2012

11. There are various hypotheses of why market yields tend to show little or no adjustment towards the published path of official rates. These include: (i) problems when extracting market expectations from forward rates, as term premia (especially at a few years' horizon) are very low, or even negative. Survey expectations are somewhat more in line with the Riksbank's policy rate path; (ii) a systematically more gloomy read of the outlook on the side of the markets, relative to the Executive Board; (iii) an upward bias in the way in which the Riksbank's predicts future TCW-weighted policy rates abroad to evolve, which, other things equal, has the property of pushing up artificially the forecasting model's implied repo rate path (which is one key input of the published official rate projection), causing it to deviate systematically from the market yield curve;⁹ (iv) for the period when market rates are below the policy rate path, the existence of persistent dissent (documented in the minutes to the monetary policy meetings of the Riksbank's Executive Board) within the MPC relative to the right course for interest rate. This has possibly undermined the interpretability of an Executive Board's joint repo rate projection in outer periods.

12. Whatever the cause, the persistence of this unresponsiveness risks eroding the credibility of the Riksbank: it reflects a concrete rejection by markets of the Riksbank's expectations of its own policy actions. This makes monetary policy less effective, because, over time, it blocks the expectational channel of monetary transmission, which is one of the

⁹ The TCW-forecast is made using models (GPM) and judgment, including information from forward rates. The staff has consistently made the judgment that the market rate has been too low, and that a reasonable forecast is higher than forward rates.

key ways via which monetary impulses are transmitted in an inflation targeting regime. So far these issues have not compromised the credibility of the Riksbank's inflation target—expectations remain firmly anchored at the target. But the gap between market expectations of the policy rate and the Riksbank's projection for it represent an ongoing qualification to the overall credibility of the inflation targeting regime.

13. Against this background, there are various options for development of the new forecasting regime that could be considered simultaneously to alleviate or remove this problem. The Riksbank, for example, could:

- Produce inflation and unemployment forecasts conditional, first, on market expectations of the repo rate and then on the Riksbank's preferred repo rate. This would bring to the fore the differences in outlook and risks—if any--between the markets and the Executive Board and help cross-check the markets' trust in the forecast assumptions rather than just their trust in the Board's preferred policy path.
- Condition the forecasts (including the one for the official rate) on TCW-weighted market implied forward rates (adjusted for credit risk and maturity premia). Deviations in assumed and implied foreign forward rates explain a sizeable part of the current misalignment between market yields and thus using this different conditioning assumption would reduce the misalignment, likely reducing the erosion of credibility caused by the existence of a large gap between market yields and Riksbank projections of its own policy rate. This recommendation does not come with the drawback that the forecast becomes less consistent than before, since TCW-weighted forward rates are already determined off-RAMSES II (Version II of the Riksbank's Aggregate Macromodel for Studies of the Economy in Sweden).
- *Shorten the minutes of the Executive Board's monetary policy meeting.* Long minutes tend to emphasize the perception of dissent, and risk impairing the clear and effective communication of policy decisions (and rationales thereof). The views of the Executive Board's minority voters could then be reported in a table containing their growth, inflation and interest rate forecasts. This would help quantify divergencies in the members' assessment of the best course of action and, thus, help markets evaluate the impact of dissenting votes onto the projection of the official rate. In addition, MPC members could vocalize their views in more depth online with, for example, individual web pages on the Riksbank website; or through speeches; or through individual hearings in front of the Committee on Finance of the Riksdag.

Alternatively, and more drastically, the Riksbank could :

- *Consider adjusting the form in which it publishes the projected paths for the official rate and, in the extreme case, it could discontinue publication altogether.* Alternative forms include shortening the horizon for the projections and/or publishing less

frequently. In this context, or in case of discontinuation, the likely direction of future rates could be discussed in the minutes, like in other central banks (for example the Bank of Canada, or the Bank of England) where press releases on interest rate votes are at times accompanied by the expression of a bias for future policy rate decisions. Alongside, the Riksbank could publish an explanatory note describing the interest-rate rule used as a basis for the MPC interest rate discussions, which would help guide a mechanical guesstimate of future levels of the repo rate, given the Executive Board's published inflation and GDP growth forecasts. Projected repo rate paths could still be produced and shown to the public (for example during hearings of the Executive Board at the Committee on Finance of the Riksdag; or in speeches) but only on an occasional basis. Discontinuation of publication of the projected official rate would not imply changing the conditioning assumption of the inflation and growth forecasts regarding monetary policy, which would remain the Executive Board's (unpublished) projected official rate path.

14. While it is clear that, in the long run, discontinuing the publication of the projected official rate could halt the potential erosion of credibility of the Riksbank as a result of the misalignment of market yields from its own forecast, such discontinuation potentially carries reputational risks from a retrenchment in transparency that needs to be evaluated against the reputational benefits of ceasing to see the credibility of the Riksbank's repo rate forecast systematically challenged. Likewise, it is hard to judge whether continuing with the publication of the projected interest rate path but shortening the minutes, better quantifying the impact of dissent and nearing the conditioning assumption on foreign policy rates to markets' expectations would make market yields more responsive to changes in the projection of official rates. However, since all these measures would deliver additional overall benefits to the clarity and rigor of the Riksbank's communication, they could be implemented nonetheless especially if the publication of the projection of official rates is retained.

C. Setting Monetary Policy in the Context of Sweden's Macprudential Framework

15. The Sveriges Riksbank Act (1988) tasks the Riksbank with—among other goals--the mandate of keeping the payment system stable.¹⁰ To this end the Riksbank is allowed to extend discretionary credit to market participants,¹¹ and demand information from financial institutions.¹²

¹⁰ Sveriges Riksbank Act (1988), Chapter 1, Article 2, third paragraph.

¹¹ Sveriges Riksbank Act (1988), Chapter 6, Article 7, second paragraph.

¹² Sveriges Riksbank Act (1988), Chapter 6, Article 9.

16. In the absence of clearer and more extensive official assignments on financial stability, the Riksbank has in practice interpreted its responsibility for promoting stability in the payment system in the broader sense of promoting stability in the financial system, recognizing however that this responsibility is shared with other public bodies, notably the Swedish SFSA (Finansinspektionen), the Swedish National Debt Office (SNDO), and the Ministry of Finance.¹³

17. However, despite such restrictive de jure arrangements, the Riksbank is de facto a key player in the design of Sweden's macroprudential policy and both during the global financial crisis and in normal times, it has closely collaborated and provided inputs to other governmental agencies (notably the SFSA) in this area. In January 2012, this relationship was strengthened through the creation of a council between the SFSA and the Riksbank acting as a forum where assessments of risk and questions regarding macro-prudential policy are discussed jointly. The council, which meets twice a year and includes among its members the governor of the Riksbank and the head of the Financial Supervisory Authority, met for the first time on February 24, 2012, but has not changed the two institutions in terms of their responsibility.

18. The limited de jure, but considerable de facto responsibilities of the Riksbank with regard to macroprudential policy and financial stability, mean that it is presently not clear whether past, present and future policy actions in these areas are currently treated as endogenous or exogenous in the MPC's decisions on monetary policy.

19. This confusion translates into the decision making process of the Riksbank: judging from the minutes of the monetary policy meetings of the Executive Board, it is evident that different MPC members have different attitudes toward what are the MPC financial stability and macroprudential responsibilities, which complicates the Board's debate about the best course of interest rate policy action. Prominent examples of this are individual MPC's member views about the role of monetary policy with respect to house price dynamics; and, to a lesser extent, the exchange rate.

¹³ Apart from direct responsibility, there are basically three forms of central bank involvement in banking supervision and macroprudential regulation that are not mutually exclusive. First, central banks can carry out specific supervisory tasks such as monitoring categories of risks incurred by financial institutions and conducting audits at financial institutions (e.g. Germany and Austria). Second, central banks can participate in the supervisory boards and/or management Boards of the supervisory agencies, thereby contributing to the management of the agency in question. In the European Union, for example, this type of involvement is rather common in almost all cases. Third, central banks may share resources (e.g. information technology, staff and administration) with the supervisory agency (e.g. France and Ireland). The SFSA and the Riksbank have concluded a Memorandum of Understanding, which includes similar features as that between the UK authorities, namely sharing information, avoiding duplication of labor is stated, while foreseeing to reach an agreement on the collecting institution and on data communication in cases where the SFSA and the Riksbank need the same information, apart from explicit arrangements for the secondment of staff.

20. Since it remains questionable whether the Riksbank should use the policy rate to affect asset prices, or constrain its actions in the pursuit of the primary objective of stabilizing consumer prices to limit potential consequences of these onto asset markets (tasks that should be addressed preferably and primarily through specific macroprudential policy instruments like capital requirements, LCR and NSFR floors, LTVs ceilings—similarly to how it is done, for example, in Canada which is faced by similar asset price dynamics as Sweden), the first best option that could be considered is a separation of roles within the Riksbank with regard to monetary and financial stability policies (see Chapter I of the Selected Issue Paper). More specifically, following the Bank of England model:

- *A Financial Policy Board* ('FPB', operating as an interim body modeled on the Executive Board and akin to the Bank of England's Financial Policy Committee or the Fed's Office of Financial Stability Policy and Research) *could be created* to spot unsustainable rises in credit that threatened the financial system. In addition to voicing concern, the FPB would be able to force banks to maintain larger buffers in case of an impending crisis. The Riksbank's Executive Board would hence be free to use the interest rate to aim at its primary objectives, better aligning members' policy preferences and thereby facilitating discussions about the best course of policy and the communication thereof to the external world.¹⁴

21. As a second best, under the assumption that the institutional status quo is maintained, the Riksbank could:

- *Explore whether, using Swedish data, there is empirical support for the idea that the policy rate has any relevant effect on financial stability in the banking sector or on risks in the housing- and mortgage market, especially given the already available tools of capital requirements, LCR, NSFR, LTV and other macroprudential instruments.*¹⁵

¹⁴ There is already a separate decision procedure for the Executive Board for the Financial Stability Report with its concrete macroprudential recommendations and the meetings with the Council with the SFSA. However, as evidenced by the minutes of monetary policy meetings, this is not sufficient to keep the monetary and financial stability functions separate in practice.

¹⁵ The Riksbank is conducting substantive analysis on the link between monetary policy and financial stability with the primary aim of answering questions like: (i) how does bank capital affects the dynamics of the economy and the monetary transmission mechanism ?; (ii) what are the long-term macroeconomic effects of an increase in capital requirements ?; (iii) what are the interactions between monetary policy and macroprudential policy ? (iv) how does they the transition to a steady state with higher average capital requirements work and does this transition depend on monetary policy ? (v) may a too protracted monetary expansion lead to a credit boom and an increased risk of a crash ? This work however has not been completed and thus the results are not publicly available.

- *Augment its forecasting toolkit to fully embed transmission to and from the financial markets.* Inflation and growth forecasts could increasingly be generated by models that fully encompass financial markets and the loop from these and back onto the real economy.¹⁶ Although the issue in macroprudential policy is not to fine-tune financial variables, but lies in building up sufficient resilience to disturbances,¹⁷ this would allow a more focused debate inside the Board about the potential implications of policy actions on these markets, allowing the Board members to place explicit priors on assumptions, shocks and sensitivities in the model—as well as helping them quantify their preferences for financial stabilization vis-à-vis those for inflation and employment stabilization in the context of internal debates and the minutes. In turn, this could aid both internal and external communication, help the Riksbank take positions vis-à-vis other supervisory and regulatory agencies, and possibly, in the near future, help institutionalize a stronger de jure financial stability role for the Riksbank.

D. Should the Riksbank Evaluate and Use Measures of Resource Utilization ?

22. During the period 1997–2011, average CPI inflation (the measure of inflation targeted by the Riksbank at 2 percent announced in 1993 and applying from 1995) has undershot the target by 0.6 percentage points on average. There are at least four possible reasons of why this might have happened. One possibility is that the Riksbank may have conducted monetary policy in an asymmetric manner, de facto favoring lower inflation outcomes to higher ones. Alternatively, despite symmetric stabilization preferences, the Bank may have systematically overestimated potential unemployment. (This is reminiscent of the argument of Orphanides that the Fed caused too high inflation in the 1970s by underestimating potential unemployment).¹⁸ Or more generally, the Riksbank may have systematically overestimated inflationary pressures, one story being that imported inflation systematically came in below expectations and growth in productivity higher than expected. Last but not least, (at least since the Great Recession) the pass-through from the repo rate to other rates, notably the mortgage rate, may have weakened, meaning that easy monetary conditions were not

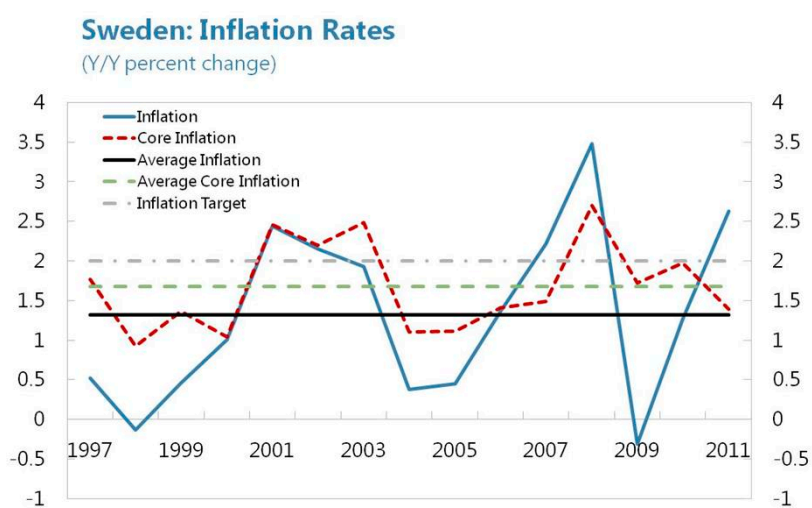
¹⁶ The Riksbank has begun more intense analytical work in this direction following the global financial crisis. As a result of this, the Riksbank current forecasting model incorporates some financial frictions following the Christiano-Motto-Rostagno (2009) version of Bernanke-Gertler-Gilchrist (1999), and so allows for a time-varying corporate spread. The corporate spread is also typically closely correlated with other spreads (e.g. mortgage spreads), so the model can at least potentially capture some of the effects of financial turmoil.

¹⁷ Also, the policy horizon in macro-prudential policy is much longer than in monetary policy.

¹⁸ For a discussion of the potential costs in terms of higher unemployment of undershooting the inflation target, see Svensson, L. (2012), “The Possible Unemployment Cost of Average Inflation below a Credible Target”, mimeo.

reflected de facto in an easier monetary stance, and implying a stronger disinflationary effect of policy than desired.

23. In either case, a persistent undershooting of the inflation target raises concerns because it can be associated with large, unnecessary unemployment costs, which—under the Sveriges Riksbank Act (1988) and its preparatory works—should be acted against conditional on achieving the inflation target. The Government Bill proposing the Riksbank Act states that the Riksbank should, without neglecting the price stability target, support the objectives of the general economic policy with the purpose of attaining sustainable growth and high employment.



Sources: Haver Analytics and Fund staff calculations.

24. This concern is particularly germane in Sweden today, given the national debate about the reasons of the persistence in unemployment following the global financial crisis,¹⁹ and the debate on what measures could be employed to bring unemployment back to its long-run equilibrium level.

25. To address this issue the Riksbank could:

- *Derive estimates of the short-run sustainable unemployment level.* The gap between unemployment and the short-run equilibrium measure can be a useful indicator of

¹⁹ See, for example, the government's 2012 *Spring Fiscal Policy Bill*, and the NIER (2010) study "The Persistent Labour-Market Effects of the Financial Crisis", Working Paper No. 117.

inflationary pressures, and therefore these are more relevant for monetary policy than long-run estimates. The short-run and the long-run measures of equilibrium unemployment rate can be very different, due to persistence phenomena in the labor market. Eventually the short-run equilibrium converges to the long-run equilibrium.

- Employ its own estimates of the long-run and short-run unemployment equilibria to help guide the internal debate on policy setting, alongside forecasts from the main model. The Riksbank could use these estimates as inputs to estimated Phillips curves or could jointly estimate measures of equilibrium unemployment with consumer and price inflation to provide additional and alternative inflation forecasts. This is a common practice in other advanced economy central banks that target inflation and use a DSGE model for forecasting (e.g. the Bank of England, the Bank of Canada and the Reserve Bank of New Zealand). Augmenting information from the main model with information from smaller models may help avoid blind spots in the determinants of inflation, leading to better policy outcomes. In this sense, information from long-run estimates of equilibrium unemployment and Phillips curves based on unemployment gaps could be used to guide judgment in the interpretation of forecast results of the main model, and to apply skews to the inflation and GDP growth probabilistic distributions (also dubbed “fancharts”) used to set rates and then presented to the public in the Monetary Policy Report.