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Price Stability, Financial Stability, and Central Bank Independence

1 Introduction

One of the upshots of the recent global financial crisis is that in addition to maintaining price stability, central banks also have a key role in maintaining financial stability and in crisis management. This is not a completely new role, but it is one that has become much more central than in the past. This "new" role of central banks raises a number of questions. A crucial one among them is whether maintaining financial stability is helped or hindered by having a central bank that is independent.

The relationship between financial stability and central bank independence is nontrivial. Unlike price stability, financial stability is rarely within the sole purview of the central bank, as it is usually shared with other government bodies. The actual outcome then depends – much more than in the case of price stability – on a number of factors, both internal to the central bank (such as the tools it has available to deal with financial instability, and the potential conflicts between financial stability and price stability) and external (such as the actions of other players, including the ministry of finance and other government agencies). Arguably, a system in which the central bank is very autonomous and is narrowly focused on achieving the objective of price stability, may get into problems if maintaining financial stability requires policies that, in the short term at least, deviate from policies for achieving price stability. On the other hand, greater independence from outside pressures means that central banks are less politically constrained when it comes to addressing financial distress. This should allow them to act earlier and more decisively before a crisis erupts; also, it may give them wider latitude in managing a systemic crisis.

This paper focuses on central bank independence and its linkages to financial stability and price stability. The relationship between central bank independence and price stability has received much attention in the literature. In contrast – and despite the emergence of financial stability as an important item on central bank agenda in many countries in the last three decades – relatively little has been written on the relationship between central bank independence and financial stability. In the remainder of the paper, section 2 overviews central banks' role in financial stability, section 3 examines the tradeoffs between financial stability and price stability, section 4 discusses time inconsistency in financial stability policy, section 5 presents empirical evidence on the relationship between central bank independence and financial stability, and section 6 concludes.

2 Central Banks and Financial Stability

The global financial crisis has put into question many of the accepted "policy wisdoms." One of them was that that monetary policy should have a single objective, a corresponding single tool, and an operationally independent and accountable central bank. This view has been put to a major test during the cri-

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sis, as central banks have taken on important roles in financial stability, going far outside the narrow concept of monetary policy, taking on other objectives and tools, and arguably compromising their independence along the way.

Compared to central bank activities in the area of price stability, central bank work in the area of financial stability is characterized by lower clarity of the underlying concepts and operational definitions. Central bank work in the area of financial stability also uses tools that have only a partial impact on the ultimate objective of financial stability (table 2).

The legal basis for central bank involvement in financial stability is weaker than in the area of price stability. While price stability is usually listed as a primary objective in a central bank law, financial stability is rarely contained in basic central bank legislation as a key objective. Instead, central banks' financial stability role is often based on an interpretation of the law.[2] If financial stability is included in the law, it is often bundled with other tasks, such as the support for smooth functioning of the payment system, regulation and supervision of the banking system, or lender-of-the-last resort functions. Financial stability and the central bank's role in it are more commonly specified in other documents, such as mission statements or memoranda of understanding. Central banks typically justify their engagement in the stability and general health of the financial system by their monetary policy objectives, payment system functions, and lender of last resort roles (which they almost universally have) as well as their role in prudential supervision (which many have).

Corresponding to the absence of an explicit legal responsibility for financial stability, most central banks do not have clear accountability to their shareholders, the government, or the general public with respect to the area of

Table 1

Central Banks' Role in Financial Stability

Central bank:	% of All economies	Advanced economies	Others
has an explicit legal responsibility for financial stability	3	9	2
derives responsibilty for financial stability from interpretation of law	34	89	18
… derives it from monetary policy objectives	10	26	5
… derives it from from payment system tasks	8	20	4
… derives it from banking supervisory tasks	12	26	8
… other interpretations	5	17	1
oversees payment system(s)	100	100	100
supervises banks	47	34	51
supervises all financial institutions	16	11	18
publishes a financial stability report	29	77	15
has a seperate organizational unit on financial stability[1]	32	83	17
has clear general accountability (to shareholders/government/public)	45	63	40
has clear accountability for financial stability	2	6	1

Source: Author's survey of central bank laws and other information listed on the 157 central bank websites listet at: www.bis.org/cbanks.htm

[1] *Percent of all central banks that publish their detailed organizational structure on their website.*

[2] *For an earlier overview of institutional frameworks for financial stability, see Oosterloo and de Haan (2004).*

Table 2

Schematic Comparison of Price Stability and Financial Stability

Element	Price stability	Financial stability
General definition	Clear	A range of definitions
Operational definition	Clear (variable and target), especially in inflation targeting	Typically not specified
Legal base for central bank's role	Based on law	Based on an interpretation of law
Scope of central bank's responsibility	Full responsibility	Partial/shared responsibility, exact boundaries not clear in some countries
Interventions	Regular, high frequency	From time to time
Research	Well developed	Developing

Source: Author's compilation.

financial stability. Many central banks have general accountability requirements with respect to their main objectives, and some include reporting on financial stability under those requirements.

Correspondingly, central banks' responsibility for financial stability is usually only partial or shared with other institutions. The exact boundaries of this responsibility are often unclear. Some countries use memoranda of understanding among the various institutions to delineate the responsibilities more clearly. However, such memoranda are nonbinding by their nature, and their resilience in a situation of crisis is an open question.

3 Conflicting Mandates?

Bigger involvement of central banks in financial stability has some advantages. It may enable them to better respond to important developments in credit growth and asset prices, which may be more difficult for central banks focusing on narrow price stability objectives. There are also potential synergies between monetary policy and financial regulation and supervision. A central bank's role in financial supervision can inform its response to banking sector stresses. Indeed, in response to the crisis, both monetary and prudential policies are being revised to take greater account of the need to mitigate systemic risk.

The bigger role in financial stability is, however, not without challenges for central banks. First, there are potential tensions between monetary policies on one hand and prudential policies (as well as lender-of-last resort functions) on the other. These tensions, as illustrated by the recent crisis, are quite real, and need to be carefully managed and communicated.

Second, there are reputational risks for monetary policy. If a central bank has responsibility for financial stability, an occurrence of financial instability may be seen as a sign of ineptitude. If this damages the central bank's credibility, it might also impair its ability to conduct monetary policy. These risks are not insurmountable. They can be mitigated by steps such as institutional separation and different accountability mechanisms for price stability and for financial stability. Moreover, these kinds of risk are not entirely new: there are already important reputational risks arising from non-price-stability tasks that central banks manage (e.g. use of lender of last resort facilities).

Third, the greater role of central banks in financial stability raises the issue of concentration of power. Adding a wide-ranging objective such as financial stability to an already independent

central bank can be seen as giving too much power to decision makers who are appointed rather than being directly elected. At the same time, the crisis has illustrated that there is a premium on a well-coordinated policy framework. Arguably, to achieve this, it is important to balance increased independence with more accountability.

Fourth, there is a risk that the increased involvement in "non-core" areas, such as those relating to financial sector issues, will threaten central bank independence. The risk can be managed by ensuring that the improved accountability does not threaten the legal

boundaries that secure central bank independence.

To some extent, it could be argued that the issue of conflicting mandates can be addressed by extending the policy horizon. If the policy horizon is sufficiently long, the tradeoff between price stability and financial stability diminishes substantially. However, it is still necessary to address the practical challenges, in particular how to come up with operational measures of financial stability in the short term, how to improve forecasting tools, and what are the appropriate policy tools to achieve financial stability. On the last point, this clearly needs to go beyond report writing (although better and more regular informing of the public is important). More regulatory and supervisory powers are needed, and other important tools include roles in ensuring integrity of payments systems, broader roles in crisis management

4 Financial Stability, Time Inconsistency and Independent Central Banks: Some Theory...

The relationship between central bank independence and financial stability is far from trivial. In a long-term perspective, price stability can be seen as a key component of financial stability (e.g. Christl, 2005). So, the relatively well-documented relationship between central bank independence and price stability (e.g. Arnone et al., 2008) may well translate into a positive relationship with financial stability. However, the relationship between price stability and financial stability is rather complex in the short- and medium-term, with potential tradeoffs between the two. An independent central bank charged with maintaining financial stability is likely to end up with levels of inflation that are higher than those in similarly independent central banks that do not follow the financial stability objective (Bauducco et al., 2006).

There are reasons to expect a positive relationship between central bank independence and financial stability. In particular, greater independence from outside pressures should mean that central banks are less politically constrained in acting to prevent financial distress. For example, if the central bank's monitoring picks up signals of emerging financial sector problems, it is free to act as a "whistle-blower," alerting the relevant parties, and triggering their adjustment actions, ultimately helping to prevent crisis. Moreover, if the central bank has prudential powers, it can use its enforcement ac-

tions to require adjustments by market participants. In contrast, if a central bank lacks independence, it may become captured by political interests associated with weak financial institutions threatened by insolvency. This is likely to prevent the central bank from tough and timely action.

Financial institutions' owners and managers may have good reasons to capture the central bank. If a financial institution gets close to insolvency, the incentive structure of its owners and managers (in particular the combination of deposit taking and limited liability) encourages a "gamble for resurrection": continue to absorb deposits from the public and invest them in increasingly risky projects. If the projects turn up successful, they can create substantial profits to owners, and allow saving the bank; if not, they usually create only limited costs to the owners or managers, but they substantially increase the costs of the ultimate failure (Kane and Klingebiel, 2004 document the effects of such gambles for resurrection on a sample of 12 systemic crises). This creates incentives for financial institutions' owners and managers to capture the central bank. These incentives are likely to be stronger if the public sector plays an important role as an owner of financial institutions. Additionally, central bankers themselves may have motivation not to "blow the whistle" or enforce prudential action. For example, Kane (2000) notes that opportunistic forbearance offers personal and bureaucratic rewards, while officials who confront bank insolvency in a timely way are threatened with substantial reputational and career penalties.

If the central bank is perceived weak or hesitant to act in a situation of growing financial instability, the very perception can make financial crises more likely. The problems with moral hazard arise well before a crisis, and weak banks are tempted to "gamble for resurrection" by undertaking very risky projects. Central bankers can try to claim that they would be "tough" in response to a crisis. However, as long as the weak behavior is ex-post efficient for the central bank, the "tough" strategy would be seen as time inconsistent and not credible. In terms of game theory, is can be shown that an inferior equilibrium exists if the central bank cannot pre-commit to a "tough" course of action (Kydland and Prescot, 1977).

I illustrate this problem (of time inconsistency in financial stability policy) in table 3, using a stylized payoff matrix of the financial stability policy game. The policymaker has two possible responses in the face of financial instability: "tough" and "lenient." If the market believes the policymaker to be of the tough type (i.e., it believes that the policymaker would enforce a prudential action in a weak financial institution or "blow a whistle" in a situation of financial sector weakness), he has a short-term incentive to act leniently (i.e., engage in regulatory forbearance, pump liquidity into an insolvent institution, or be silent about the weaknesses in the system and allow "gambles for resurrection") if a stressful situation actually arises. In other words, being lenient is *ex-post* efficient in this case. However, rationally behaving participants knowing about this motivation of the policymaker would expect the policymaker to be lenient. This expectation leads to worse payoffs to the policymaker. Specifically, it leads to a (Nash) equilibrium (–1,0), in which the policymaker

would be worse off than if he were able to credibly commit to being tough (0,0).[3]

The time inconsistency problem in the area of financial stability is arguably even more acute than time inconsistency in the area of price stability. A part of the reason is that monetary policy decisions are taken relatively regularly and their impact on inflation can be evaluated on a frequent basis. Therefore, the strategic interaction between the monetary policy maker and the public has the nature of a repeated game, giving the policy maker an opportunity to establish a track record of being tough. In contrast, a financial crisis may strike a given country once in a generation or even less frequently. In other words, before the next financial crisis strikes, the existing generation of policymakers is usually gone. This makes it difficult for a policy maker to establish a credible track record.

How to address this version of the time inconsistency problem? Similarly to the time inconsistency in monetary policy, the policymaker needs a commitment device that will persuade the market that he or she will indeed be tough in a stressful situation. This commitment device can have the form of delegating the task of "acting tough on financial instability" to an independent agency, such as the central bank, and appointing as its head a person with a strong aversion to financial instability (or designing a contract with the central bank head in a way that rewards tough behavior and penalizes leniency).

Table 3

Time Inconsistency in Financial Stability Policy: Payoff Matrix

Policymaker chooses to be:	Market expects policymaker to be:	
	Tough	Lenient
Tough	0, 0	–2, –1
Lenient	1, –1	–1, 0

Source: Author's compilation.

Note: In each cell, the first number is the policymaker's payoff and the second one is the payoff to the public.

The above discussion suggests a positive relationship between central bank independence and financial stability. However, there are also several complicating factors. In particular, it is possible that publication of a central bank report at a time of increasing risk to financial stability might precipitate the very shocks or crisis that the central bank is trying to avoid, by inducing liquidity problems in particular markets or financial institutions. These considerations may lead even an independent central bank to be cautious about issuing strong warnings or implementing harsh measures that may ultimately defeat their own purpose.[4] Nonetheless, the danger of precipitating a crisis by "whistle-blowing" is reduced if the central bank publishes its analyses regularly, and has an established track record of unbiased analysis. Establishing such a track record may be more feasible for central banks that are independent and thereby better insulated from political and other pressures.

Another reason why the relationship between central bank independence and financial stability may not be straightforward is that central banks

[3] *It is possible to generalize this matrix by using variables such as crisis costs and supervision/monitoring costs instead of parameter values to denote the payoffs; however, it adds little in terms of analytical insights.*

[4] *Empirical literature has so far offered little evidence on the pros and cons of publishing timely information on financial stability. However, preliminary empirical data suggest that there are net benefits (Čihák, 2006).*

have an incomplete degree of control over policy outcomes in the area of financial stability. Unlike price stability, financial stability is rarely within the sole purview of the central bank. It is usually a shared responsibility with other agencies, including the ministry of finance, and often also a separate supervisory agency and a deposit protection fund. The actual outcome therefore depends on a number of factors not only inside the central bank (the availability of tools to the central bank, and its ability to resolve conflicts between financial stability and price stability) and outside the central bank (e.g., the actions of other players, including the government).

5 … and Some Empirical Results

What do empirical data say on the relationship between central bank independence and financial stability? To examine this question, I use the central bank independence index (CBI) from a recent world-wide survey of central bank independence (autonomy) by Arnone et al. (2008). They apply the methods developed by Grilli et al. (1991) and Cukierman (1992) to assess CBI for 163 central banks representing 181 countries.

For measuring the degree of financial instability, use a dummy variable taking on the value one if a systemic banking crisis surfaced in a particular year or zero otherwise. I use two widely employed databases of financial crises, namely those by Demirgüç-Kunt and Detragiache (2005) and Honohan and Laeven (2005), and define a country being in a crisis in a certain year if it has be classified as such in at least one of the two databases. Using this classification, I record up to 61 systemic crises since 1980.

A preliminary analysis suggests that countries with more independent central banks are indeed less likely to experience a systemic crisis. In particular, pairwise correlation coefficients between the CBI index and the crisis dummy variable are consistently negative for the different definitions of the crisis dummy and the different sample sizes (table 4). Similarly, countries with

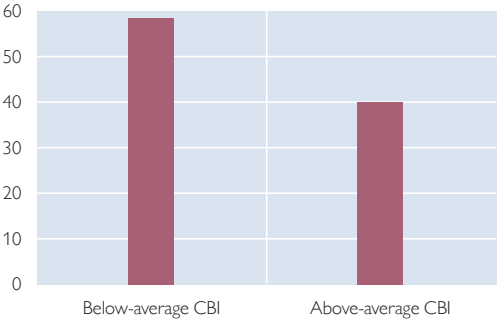
above-average values of the CBI index (CBI>0.64) have a markedly lower probability of ending up in a systemic crisis at least once during the observation period than other countries (chart 1). This preliminary analysis suggests that whether a country has an independent central bank matters for financial stability.

These preliminary results are confirmed by a more rigorous regression

Chart 1

Central Bank Independence and Financial Stability

Probability of (at least one) crisis in the sample period



Source: Author's calculations.

analysis, based on a logit model. The model estimates the probability of a crisis in a given country and a given year as a function of the CBI and other explanatory variables. Specifically, to distinguish whether a central bank is involved in banking supervision, I use a "CB supervisor" dummy that takes a value of 1 it is a banking supervisor and 0 if it is not. To approximate quality of banking supervision, I use information from the assessments of compliance with the Basel Core Principles (BCP), collected by IMF missions.[5] I also include a range of macroeconomic control variables that are commonly employed in early warning system models (real GDP growth, the real interest rate, the rate of inflation, changes in the terms of trade, changes in the foreign exchange rate, credit growth, and the ratio of M2 to gross foreign reserves). To avoid simultaneity, these variables are lagged by one period. I account for the effect of deposit insurance schemes on bank stability, using a "moral hazard index" by Demirgüç-Kunt et al. (2005). To capture the effect of ownership structure in the countries' banking systems, I include the proportion of bank assets controlled by foreign entities (Barth et al., 2001), and the degree of government ownership (La Porta et al., 2002).

The results (presented in detail in Čihák, 2007) suggest that central bank independence indeed maters for financial stability. Both the CBI index and the "CB supervisor" dummy variable have the expected signs. The Basel Core Principles (BCP) index, which approximates quality of banking supervision, has the expected (positive) sign, but is not significant. The other explanatory variables previously used in the early warning systems literature (see e.g. Demirgüç-Kunt and Detragiache, 1998) have the expected signs.[6]

Based on the estimates, one can compute the impact of an increase of a one standard deviation in the CBI index (0.20) using the marginal effect, evaluated at the mean, on the probability of observing a crisis in a country. The results suggest that a one standard deviation increase in central bank independence (which, for illustration, corresponds roughly to the difference between observations for the United States and Uganda) decreases the probability of observing a crisis by about 3%.[7]

The empirical analysis also provides some evidence supporting the statement made earlier that a more independent central bank is more likely to act as a "whistleblower." Many central banks nowadays publish financial stability reports (FSRs), and previous research finds little empirical evidence that overall, financial stability reports provide useful early warning (Čihák, 2006). In the run-up to the recent global financial crisis, some financial stability reports for instance warned of risks from the U.S. economy, but more in terms of its impact on global imbalances rather than U.S. mortgage mar-

[5] *The BCP contains 25 "Core Principles" (CPs) that cover aims of supervision, autonomy, powers, and resources, capital adequacy, regulation of risks, supervision of foreign banks, and other issues. I calculate a "BCP compliance index," which is an unweighted average of all the 25 CP gradings, normalized to be from 0 (no compliance) to 100 (full compliance). The website www.imf.org/external/standards/index.htm has more details on the BCP and shows the gradings for the subset of countries that agreed to publication.*

[6] *In particular, I find that strong credit growth, higher inflation, higher real interest rates, and exchange rate devaluations are associated with higher likelihood of banking crisis.*

[7] *As regards the reliability of the estimates, some 25% of the crises in the sample are misclassified (Type I Error), which compares favorably with the existing early warning system literature (for a survey, see Demirgüç-Kunt and Detragiache, 2005).*

kets. And some financial stability reports have clearly missed risks that have materialized in a dramatic fashion (the financial stability report published on Iceland, for example, seriously underestimated the extent of risks in the domestic banking system).

But perhaps, going beyond this aggregate picture, more independent central banks are more effective in their FSRs. To examine this relationship between central bank independence and its ability to act as a "whistleblower," I have calculated the correlation between the CBI index and an index of FSR quality developed in Čihák (2006).[8] The correlation coefficient is significantly positive (table 4), suggesting that independent central banks are indeed likely to be more transparent in their analysis of domestic financial stability.

Finally, as expected, we find a positive correlation between the CBI index and an index of compliance with the Basel Core Principles (for central banks that are also banking supervisors). In other words, independent central banks that are also bank supervisors are likely to have higher degrees of compliance with international good practices.

In sum, the analysis suggests that central bank independence is correlated positively with financial stability. A one standard deviation increase in central bank independence index (corresponding roughly to the difference between Uganda and the United States) is associated with 3 percentage point decrease in crisis probability. This relationship holds even controlling for macroeconomic and other systemic factors identified by the literature. The relationship holds even in a series of robustness tests, such as different crisis coding, country samples, and time spans (central bank independence index becomes insignificant in some specifications, but its sign holds). The analysis also suggests that if a central bank publishes a financial stability report, the effectiveness of the report is positively correlated with central bank independence. In central banks carrying out banking supervision, supervisory quality (compliance with international standards) is positively correlated with independence.

Table 4

Central Bank Independence and Financial Stability

	CBI Index[1]	
	Narrower sample (68 countries)	Broader sample (163 countries)
Crisis Dummy		
– Honohan and Laeven (2005)	–0.229 (0.055)	–0.346 (0.038)
– Demirgüç-Kunt and Detragiache (2005)	–0.233 (0.050)	–0.352 (0.041)
Financial stability report grading	0.583 (0.012)	0.584 (0.011)
Compliance with Basel Core Principles	0.314 (0.051)	0.423 (0.032)

Source: Author's calculations.

[1] *Central bank independence index. For definitions and country samples, see Arnone et al. (2008).*

Note: Pairwise correlations, p-values in parentheses.

[8] *The index is based on a framework that identifies 5 key elements of a FSR (aims, overall assessment, issues, tools, structure and other features) and 3 characteristics (clarity, consistency, and coverage). Each FSR was assessed against each of the criteria, on a 4-point scale: 4 (fully compliant), 3 (largely compliant), 2 (partly compliant), and 1 (not compliant) and averages were used to arrive at the aggregate gradings (Čihák, 2006).*

Concluding Thoughts

An expanded role of central banks in financial stability may enhance overall effectiveness of financial regulation, allowing synergies to be exploited among tools to mitigate systemic risk. Independent central banks can help in achieving financial stability. This paper points to new empirical evidence that higher central bank independence is associated with more financial stability.

At the same time, higher independence needs to be complemented by robust mechanisms for transparency and accountability in safeguarding financial stability. One of the reasons why this is important is that it is usually the treasury that bears the ultimate responsibility for fiscal (or quasi-fiscal) costs incurred in the resolution of financial institutions.

Whether central banks actually achieve the objective of financial stability (and price stability) also depends on some factors not explicitly captured here. One of the factors is the quality of leadership, difficult to model, but very important in practice. A central bank governor needs to be a skilled manager and leader to be successful. Leadership skills are useful in normal times, and they become absolutely critical in situations of financial instability, when the going gets tough and the monetary and financial policies enter "unexplored waters."

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