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# How does cross-border collateral affect a country's central bank and prudential supervisor?

# 1 Introduction

Although – partly as a result of the financial crisis – central banks are increasingly inclined to accept foreign collateral, it is hard to find analyses dealing explicitly with the consequences of such collateral for a country's central bank and supervisor. The scientific literature on this issue is thin on the ground, Manning and Willison (2006) being an exception. Policy forums, too, have paid little attention to this subject. The BIS's *Cross-border collateral arrangements* report (BIS, 2006), which focuses on the operational arrangements to facilitate the cross-border use of collateral, is the only one to deal explicitly though scantily with the relationship between foreign collateral and central bank tasks. The IMF (IMF, 2008) provides a sound general overview of central banks' collateral frameworks, but does not look into the relationship between foreign collateral and the tasks of a central bank cum supervisor.

The objective of the present analysis is to take a closer look at this relationship, building forth on the BIS's (2006) brief analysis. Sometimes euro area central banks which also exercise supervision serve as examples, but the analysis holds, *mutatis mutandis*, more widely. Section 2 starts with a brief overview of the possible definitions of foreign collateral and of the types of changes with which central banks may consequently be confronted. Section 3 briefly goes into practical experiences with foreign collateral. Section 4 describes the tasks of a central bank cum supervisor and the potential impact of the acceptance of foreign collateral on these tasks. Conclusions are presented in section 5.

Focused as it is on the duties of a central bank which also exercises supervision, this analysis does not go into the possible wider economic effects of foreign collateral. One of these is that central bank acceptance of certain foreign paper may influence what the market accepts in the way of collateral, and hence the functioning of the inter-bank market. Another economic effect is that competitive conditions between financial institutions, currency areas and financial markets are likely to be affected. Internationally-oriented banks with centrally organised liquidity management are able to economise on foreign collateral, but this does not apply (or not to the same extent) to locally-oriented institutions or institutions whose liquidity management is organised locally or regionally. In addition, the mutual introduction of foreign collateral may lower demand for collateral from

smaller currency areas or smaller financial markets. Banks could, for instance, opt to concentrate their collateral portfolios on the three major currency areas (euro, US dollar or Japanese yen) if such collateral were accepted more widely in other, smaller currency areas (although substitution between these three blocs is also conceivable).

# 2 Different categories of foreign collateral and the risks they may pose to central banks

## 2.1 Foreign collateral defined

Collateral is foreign or cross-border if, from the perspective of the central bank accepting the collateral, at least one of the following aspects is foreign (BIS 2006, p.1):

a. the currency of denomination;
b. the jurisdiction in which the assets are issued; or
c. the jurisdiction in which the assets are located.

In other words, several types of foreign collateral may be distinguished, depending on which of these aspects is foreign. To keep the discussion theoretically 'pure', each relevant aspect of foreign collateral is analysed in isolation. As a consequence, the analysis in fact assumes that there are three conceptually different categories of foreign collateral because – as will become clear below – each of these categories poses different types of risks to the central bank. In practice, however, matters are more complex. In reality, collateral is often foreign in several aspects at once, for instance, because it is both denominated in foreign currency and located abroad. Insight into the influence of such collateral on the central bank's tasks can then be obtained by 'summing' the effects of two or three conceptual categories of foreign collateral.

## 2.2 What is foreign?

Exactly when does the term 'foreign' apply? This depends on which aspect(s) of collateral is (are) foreign. When it comes to denomination, the relevant aspect is that the collateral is not denominated in the national currency. So for a national central bank (NCB) in the euro area, for instance, all collateral which is not denominated in euro is foreign.

Where collateral issued in other jurisdictions is concerned, all the collateral issued outside the home jurisdiction should be characterised as being foreign. However, from an operational and legal point of view there are significant differences between foreign jurisdictions when it comes to establishing security on foreign assets. For instance, in some cases the home central bank may be able to make an appeal to official authorities abroad when it needs legal expertise, or conclude agreements with the central bank of the country concerned about certain collateral issued there and the relevant procedures to be followed[2]. In other cases, where these are no such agreements, networks or systems of mutual legal and operational assistance, it can be more cumbersome to obtain legal advice or this advice may not always be reliable. Hence, the legal risks attached to collateral issued in other jurisdictions may vary widely from one country to the other. A central bank that considers accepting foreign collateral should be well aware of these differences.

A case in point: NCBs within the European System of Central Banks (ESCB) give each other legal and operational assistance when establishing security on credit claims. Therefore, it is usually riskier for an NCB within the euro area if the claim itself or the establishment of security on it is governed by the law of a country outside the eurozone than if the claim or the establishment of security is governed by the law of another country within the eurozone.

When it comes to collateral located abroad, again all this collateral should be seen as foreign from a legal point of view, the consequences being similar to those of collateral issued abroad, which have just been sketched. Apart from this, the most relevant criterion is how long it takes before the home central bank has the disposal of the collateral. If the collateral is submitted to the home central bank itself, the time gap is obviously very small. In other cases, it could be considerable. Hence, here too, it is important to examine what the exact legal and operational risks are of collateral located in different countries and – again – central banks should be well aware of the differences between foreign countries. Relevant factors are whether procedures governing the cross-border use of collateral have been agreed with the foreign central bank, how these procedures are shaped, how fast they are and how reliable from a legal point of view. Another important aspect is the time zone factor: if there is a chance of the foreign central bank or central securities depository (CSD) being closed when the collateral is needed for domestic use, this collateral may turn out to be inaccessible in some emergency situations.

For a euro area NCB, for instance, the CCBM area could be regarded as a relevant boundary in this respect. Within the CCBM (Correspondent Central Bank Model) – in which all euro area countries, as well as Great Britain and Sweden, participate – collateral becomes available relatively rapidly. Also, legal experts of all the jurisdictions concerned have verified that the security, applying to the

procedures foreseen in CCBM, is established in a valid manner in all the different jurisdictions. Moreover, these countries operate in almost the same time zone[3].

## 2.3 What risks are relevant to a central bank?

If a central bank is about to accept new, previously unknown, assets as collateral, it should always think carefully about how to manage this collateral and about any infrastructural changes and operational efforts that this management may require. For instance, the central bank probably wants to keep track of the developments in the value of the new collateral. This implies – among other things – the monitoring of credit and liquidity risks and any other market developments that affect the collateral's value and – if necessary – the implementation of measures like margin calls to make sure that the collateral deposited does not lose too much of its value. In this respect, there is no fundamental difference between new domestic and new foreign collateral. However, new foreign collateral also poses some specific risks that stem from its foreign characteristics. These specific risks, which are different for each of the three conceptual categories of collateral discussed above, are discussed in this section.

### 2.3.1 Foreign currency collateral

The first category of foreign collateral is attended by exchange rate risk on the collateral portfolio. This exchange rate risk may be limited by applying an extra haircut to foreign currency assets, by curbing the period during which these assets are accepted as collateral and by setting margin calls. Another control measure is to limit acceptance to the currencies of countries which pursue prudent macro-economic policies, thus minimising the chances of major devaluations. Active management of foreign currency collateral also requires an adequate operational infrastructure.

### 2.3.2 Collateral issued abroad

The second category is attended notably by legal complications for the home central bank, as well as possible operational and tax complications. It may take special expertise and extra time to ascertain whether this collateral meets statutory (quality) requirements. This is to prevent legal problems from arising when the collateral needs to be sold off, for example, because more parties believe they can lay claim to it. Operationally, too, this collateral may come with a higher risk, as systems and operational procedures may have to be adjusted to administer such foreign collateral at home. Another operational concern is the management information

required by a central bank for in-house use. If the collateral is issued abroad, such information becomes more difficult to compile.

The central bank may seek to curb the legal risks of this type of foreign collateral by accepting collateral only from another country, if good procedural agreements have been made with the central bank of that country and if it can rely on the expertise of the local central bank. Moreover, the greater the similarities between foreign and domestic collateral (for example, because the same 'fields' in administrative systems can be used), the more manageable the operational problems.

### 2.3.3 Collateral located abroad

For a central bank, the third category of cross-border collateral comes mainly with legal and operational risks. Legal complications may arise if the home central bank believes it can lay claim to collateral located abroad, while the foreign central bank or CSD has a different interpretation of the agreements. In other words: can the home central bank be sure that its claim is acknowledged by foreign parties? In the operational sphere, the agreements concluded with foreign central banks and CSDs should provide for timely availability of collateral which is located abroad. Here the question arises to what purpose domestic institutions will actually put this collateral. If domestic institutions have ample collateral, and use the foreign collateral in practice only to absorb fluctuations in domestic liquidity needs which can be foreseen well in advance, rapid procedures are not all that necessary. However, if domestic banks wish to use collateral located abroad to meet emergency liquidity needs (e.g. to obtain intraday or overnight credit), this collateral needs to be available within a short period of time. In this case, operational problems could also arise if the home central bank and the foreign organisations involved operate in different time zones, so that the foreign 'counter' may be closed when the need for collateral arises at home. A final operational concern is whether it is at all possible to compile proper management information on collateral which is located abroad.

These operational and legal complications may be mitigated by making clear agreements with other authorities about the procedures concerning cross-border collateral[4]. One possible solution could be a tri-party arrangement, where a third party ensures that a financial institution's collateral is allocated right on time to the different parties demanding collateral (central bank, clearing institute, repo market etc.). The fact that cross-border arrangements across different time zones and with less familiar jurisdictions may involve extra risk only adds to the importance of the arrangements being formulated with due care.

## 2.4 Acceptance of foreign collateral and the quantity of collateral available for domestic use

Distinguishing between the different categories of foreign collateral is also imperative because not every type of foreign collateral necessarily adds to the store of collateral potentially available for use at home. One should be aware that this potential often far exceeds the quantity of collateral actually submitted to the home central bank. To begin with, a financial institution may maintain financial assets for its own purposes; these could be transferred to the central bank as collateral when the need arises for more liquidity from the central bank. Secondly, an internationally active financial institution may have a store of financial assets abroad, which are considered eligible as collateral by the home central bank.

The collateral which financial institutions actually wish to maintain at a central bank is determined not only by supervisory requirements and the institution's risk and liquidity management but also by the total costs of depositing collateral at a central bank. These costs are partly explicit (the possible costs of collecting collateral and of transferring the collateral to the central bank) and partly implicit (the return which could be made on the collateral by the financial institution if the collateral were not maintained at the central bank). If financial institutions are allowed more choice in composing their pool of collateral, it will often become cheaper for them to submit collateral since there is then a higher chance that the institution already has eligible collateral in its possession (reducing the costs of collecting it) or that the institution can deposit collateral at the central bank which yields no or little revenue when put to other use. As will be discussed below, the downside of the latter may be that the central bank ends up with the collateral of the lowest quality. However, this is not necessarily the case as central banks can impose quality requirements on the collateral that they are willing to accept.

If the home central bank accepts **collateral denominated in foreign currency or collateral issued in other jurisdictions** (the first two categories listed above), presumably more collateral will become available domestically. Given more options, financial institutions will have more opportunities to select collateral at - for them - lower cost; *ceteris paribus,* they may be expected to pledge more collateral at the home central bank.

There is no telling in advance whether acceptance of **collateral located abroad** (the third category) will lead to either more or less collateral being deposited at the home central bank. If collateral located abroad is accepted, certain securities or debt certificates may be used as collateral in more than one country. An institution would then be motivated to manage the collateral internationally[5], to economise on the total quantity of collateral pledged worldwide[6] and to select the collateral with the –

internationally – lowest costs. These considerations could be conducive to submitting either more or less collateral to the home central bank. Another relevant factor is whether the home central bank accepts foreign collateral unilaterally, or whether such acceptance would be mutual, and whether this collateral would be accepted only in crisis situations or under normal circumstances too. See Manning en Willison (2006) for a model-based analysis of the various relevant factors.

Even if less collateral were deposited at the home central bank, the access created to a large international pool of collateral could very well mean that a larger pool of collateral becomes potentially available for domestic monetary policy or payments purposes than was the case before the acceptance of collateral located abroad.[7] However, this is not necessarily the case. One requirement is that it must be possible to transfer the collateral located abroad to the home central bank quickly and reliably. This is especially important when it comes to liquidity needs which are not easily foreseeable. Here, a major consideration is how systems work in practice (for example, via fax or SWIFT).

## 2.5 Overview

| Categories of collateral | More collateral for domestic use? | Main risks to central bank | How to manage the risks |
|---|---|---|---|
| Foreign currency collatera | Yes | Exchange rate risk | Haircut, margin calls, only countries with a sound macro-economic policy |
| Collateral issued abroad | Yes | Legal risk | Only collateral from countries with which good procedural agreements have been made and where local legal expertise can be relied on. |
| | | Operational risk | Only collateral which is administratively comparable to domestic collateral |
| Collateral located abroad | Possibly but not necessarily | Operational risk | Operational agreements on reliable and rapid transfers; watch out for time zone problems, especially if the collateral is required for acute liquidity needs |
| | | Legal risk | Clear legal agreements with familiar jurisdictions |

Table 1: Different categories of foreign collateral and the concomitant effects for the central bank.

As summarised in Table 1, the various conceptual categories of foreign collateral pose different types of risks to the central bank and may differently impact the total quantity of collateral available for use at home. A discussion of the consequences of foreign collateral for the central bank's tasks should therefore distinguish between these categories of foreign collateral.

# 3 Practical experience with foreign collateral

## 3.1 Acceptance of foreign collateral in the euro area

The euro area NCBs accept the collateral on the Single List which is located or issued in other euro area countries, in other words, foreign collateral with relatively low legal and/or operational risks. By this definition, the use of non-domestic collateral has soared in the euro area. The ECB's annual report for 2008 noted that at year-end, 45% of collateral maintained in the euro area was foreign. The euro area has recently also been gaining experience with foreign currency collateral. In a press release of 15 October 2008, the ECB announced that the list of eligible collateral in the euro area would be expanded by, among other things, euro area-issued marketable debt certificates denominated in US dollars, sterling or Japanese yen. So far, there is no experience of collateral issued or located outside the euro area. However, as from 1 February 2009, the Governing Council may decide to accept specific central government paper in non-euro currencies which is maintained outside the euro area, i.e. at the Fed, the Bank of England or Sveriges Riksbank, as emergency collateral. This collateral is foreign in all three aspects mentioned earlier. As this central government paper stems from G10 countries, the exchange rate and legal risks are relatively well manageable.

## 3.2 Acceptance of foreign collateral outside the euro area

Outside the euro area, foreign collateral is routinely accepted in several G10 countries: the United States (but only for the Standing Facility), the United Kingdom, Sweden and Switzerland. The United Kingdom furthermore has a facility for the acceptance of US Treasury paper in emergency situations. Of these countries, Switzerland is the most liberal when it comes to accepting foreign currency collateral: over 96% of the collateral accepted there is denominated in a foreign currency (IMF 2008, p. 47). In the euro area, credit is provided to foreign institutions which meet the prevailing conditions; the Fed and the Bank of Japan have stricter requirements. According to the BIS, the relatively limited supplies of suitable domestic collateral available in the United Kingdom, Switzerland and Sweden may explain why foreign collateral is accepted there. This argument does not hold for the United States and the euro

area, where the quantity of domestic collateral appears to be sufficient in normal circumstances (BIS 2006, p. 9).[8]

Then there is the Scandinavian Cash Pool (SCP), a system of cross-border collateral operated by Denmark, Sweden and Norway. In the SCP, liquid assets held at the central bank of one of these three countries (i.e. cash collateral) may be used to obtain intraday credit from the central bank of one of the other two. The SCP was set up when the Scandinavian currencies began to participate in CLS, and Scandinavian banks suddenly needed much more intraday liquidity. In practice, the SCP is usually used by banks active in several Scandinavian countries to enlarge liquidity in Norway and Sweden on the basis of their Danish securities.

# 4 Effects for central bank cum supervisor

## 4.1 What objective does a central bank cum supervisor pursue?

A central bank cum supervisor is likely to pursue the following five broadly defined objectives: (1) an effective monetary policy, (2) smoothly functioning payment systems, (3) financial stability, (4) adequate prudential supervision and (5) an effective and efficient in-house organisation. In the following sections the effect on these objectives of **an increase in the normal pool of eligible foreign collateral** is analysed. It turns out that this effect often depends on the type of foreign collateral (foreign currency collateral, collateral issued in other jurisdictions or collateral located in other jurisdictions). Another possibility is that foreign collateral is only accepted as **emergency collateral**, i.e. not to be accepted in normal situations. Since this will mainly affect the objective of financial stability, this possibility will be discussed in section 4.3, which focuses on financial stability issues.

## 4.2 Foreign collateral and effective monetary policy

Monetary policy aims to realise price stability for which appropriate monetary conditions have to be created. Monetary policy is actually implemented by steering short-term market interest rates (and hence total demand and inflation). The possibility to steer rates stems from the fact that banks are structurally in need of liquidity while central banks have a monopoly position when it comes to providing this liquidity.[9] Depending on its precise objectives, the central bank can determine the amount of liquidity it provides and, as a monopolist, steer the interest rates against which this liquidity is supplied.

Within the ESCB, liquidity is provided through open market operations (OMOs). Banks can also make use of the so-termed Standing Facilities. To make use of the liquidity supplying facilities, financial institutions must have sufficient collateral, as the NCBs making up the ESCB do not grant unsecured credit (neither for monetary operations, nor for intraday credit in the context of payment systems).[10] For monetary policy to be effective, collateral must be available in sufficient quantities and in a sufficiently wide range, so as to give a large number of financial institutions potential access to central bank credit.[11] If banks have a larger

collateral pool at their disposal, they can – in the cases where they actually need more liquidity – participate in monetary operations with higher volumes. Hence, when institutions are given more choice in selecting collateral, this adds to the effectiveness of monetary policy.

However, collateral also serves to mitigate the central bank's own credit risk (see section 4.6), and to ensure the fairness of monetary policy.[12] From this perspective, it is desirable to impose quality requirements, implying that eligible collateral should be subject to restrictions. Expanding the range of collateral may mean that concessions to its quality or liquidity have to be made, with concomitant risks for the central bank (see also section 4.6). However, this does not have to be the case. Central banks that consider enlarging the pool of eligible collateral could benefit from performing a cost-benefit analysis. This could shed light on the potential benefits of different new collateral categories (which would depend on – among other things – the overall need for more collateral in the financial sector and the type of collateral that financial institutions already have at their disposal or can obtain at low cost) and the precise costs/risk profiles attached to these different categories of collateral.

Just how much collateral is needed and what kind of quality requirements are called for depends on the market situation. During a crisis there may be good reasons to enlarge the pool of eligible collateral because of financial stability concerns (see also section 4.4). In the present credit crisis, for example, interbank trade dropped sharply after Lehman Brothers' default because of the waning mutual trust between banks. This led to higher demand for liquidity from banks that depended on the interbank market for their funding. By enlarging the number of liquidity-expanding monetary operations and by easing the list of eligible collateral, the ECB has gone a long way to meeting the banks' liquidity needs. A possible side effect of a more accommodating approach towards collateral by central banks in crisis situations – apart from the possible higher risks to the central bank itself (see section 4.6) – may be that interest rates become more difficult to forecast.[13] A broader collateral list allows financial institutions that are facing difficulties in funding themselves in stressed markets to attract liquidity more easily. A possible side-effect is that interbank trade activity and interest rates are further affected. As a consequence, most notably in crisis situations, a good appraisal of the different objectives of the central bank is needed when deciding whether or not to accept new collateral.

For monetary policy to be effective, collateral should – as has been argued above – be available to financial institutions in sufficient quantities and in a sufficiently wide range. As acceptance of **foreign currency collateral** and **collateral issued abroad** helps to widen the range (see section 2.4), monetary policy becomes more effective. **Collateral located abroad** may enhance the availability of collateral for

domestic monetary policy, but this requires fast and reliable procedures. Here, the dependence on foreign CSDs is usually the weakest link, because it cannot be influenced by central banks. In the event of emergency liquidity needs, in particular, the actual availability of foreign collateral could prove disappointing. Even within the euro area, financial institutions requesting collateral located in another country in the course of the afternoon to obtain overnight credit from the ECB may not invariably succeed in getting this organised in time.[14] In other words, it may be impracticable to use collateral located abroad to obtain overnight credit.

### 4.3 Foreign collateral and smoothly functioning payment systems

Financial institutions maintain collateral at the central bank not only to be able to take part in monetary operations, but also to prevent frictions in their large-value payment transfers. The reason is that collateral allows them to obtain intraday credit from the central bank with which they can meet their payment obligations, even when incoming payments are overdue.[15] How much collateral a financial institution wishes to maintain at the central bank depends on both the implicit and explicit costs of collateral mentioned earlier as well as the bank's normal payment flows and any peaks in these flows (see McPhail and Vakos 2003).

Payment systems run most smoothly when a financial institution always has sufficient collateral to ensure that – after deduction of the collateral needed for monetary operations and other purposes – its maximum debit position in respect of payments can be met. If this condition is fulfilled, the institution has permanent access to sufficient intraday credit to continue to pay out, and there is no need for frictions to arise within the payment system.

**Foreign currency collateral** and **collateral issued in other jurisdictions** add to the efficiency of payment systems. Acceptance of this collateral will make it easier for some institutions to obtain collateral. As maintaining collateral at the central bank then becomes less costly, more collateral will be pledged and more will thus become available for payments.

However, as time is usually a critical factor for payments, **collateral located abroad** cannot contribute very much to making payment systems more efficient. A financial institution which foresees that the balance on its cash flows will be strongly negative at some point can lay claim to collateral located abroad in time to ensure sufficient intraday credit when needed. But payment problems often arise unexpectedly, for instance, because an expected large incoming payment is not received. Even within the euro area, it regularly takes several hours – depending on the processing speed of the foreign CSD – before collateral located in another

euro area country is released for use elsewhere. In such a time span, frictions may arise within the payments system. In the case of operational arrangements with authorities in other time zones, the time lines are often even longer, so that it is impossible to adequately meet a sudden need for intraday credit.[16]

## 4.4 Cross-border collateral and financial stability

Financial stability is boosted – and the chance of a financial crisis reduced – if central banks are able to ensure that healthy financial institutions can rapidly obtain sufficient liquidity wherever necessary. This means that measures which prompt financial institutions to deposit more collateral at the central bank make a positive contribution to financial stability. For the central bank and its reputation, it is essential that this collateral is of sufficient quality. If not, the central bank may incur losses during a crisis which could – if substantial – jeopardise its independence. This is why the acceptance of **foreign currency collateral** or **collateral issued in other jurisdictions** has a positive influence on financial stability, provided that it is of sufficient quality.

However, the acceptance of **collateral located abroad** has an ambiguous effect on financial stability. If countries accept each other's collateral, a larger pool of worldwide collateral emerges from individual countries can draw. Assuming that there are reliable operational arrangements, this may be beneficial to international financial stability because the chances of problems in a single country and thus the chances of contagion from an individual country are reduced. On the other hand, however – as noted above – mutual acceptance of collateral may prompt financial institutions to economise on the total quantity of collateral worldwide, thus creating a stimulus to generally centralise liquidity management. The result can be that there are insufficient liquid buffers, should many countries be confronted with negative shocks at the same time.[17] Moreover, as 'bad collateral drives out good collateral', the quality of collateral may well be expected to decline.

Finally, the collateral channel itself could become a source of contagion if financial institutions in different time zones successively resort to a certain pool of collateral. In that case problems arising in, say, Asia, (leading to depletion of the collateral pool there) could easily spread to Europe (where insufficient collateral would then be available at the beginning of the day).

It is consequently not that easy to tell whether collateral located abroad will, on balance, make a positive or negative contribution to international financial stability. The likelihood of a negative contribution is substantial when there is a considerable chance of a shock being global rather than country- or institution-specific, when

there is a real possibility of contagion via collateral channels, and when, in practice, institutions economise strongly on the total quantity of global collateral and liquid assets if given the opportunity.

So far, the analysis has focused on the acceptance of (more) foreign collateral as part of the central bank's normal collateral pool. However, during the present crisis we sometimes see that accepting foreign collateral is considered an option for emergency situations only. In the latter case, foreign collateral will almost certainly have a positive impact on financial stability because it will not or barely stimulate financial institutions to cut down on their global collateral pool. However, the drawbacks of emergency-only acceptance are that it is relatively expensive (procedures are designed but will never or rarely be used in practice) and that – due to the lack of practical experience with this collateral in normal times – this collateral may pose extra operational and financial risks during a crisis.

### 4.5 Cross-border collateral and prudential supervision

Prudential supervision seeks to ensure that financial institutions are sufficiently capitalised to meet their liabilities, and engage in sound and integrity-based operations. The acceptance of cross-border collateral can influence prudential supervision in two ways:

(1) via a possible influence on the total quantity of liquidity which the institution can mobilise for domestic use;

(2) via possible effects on the type of liquid assets which the institution wishes to maintain, and the concomitant risks.

Here, too, the effects for prudential supervision depend on the category of cross-border collateral accepted by the NCB.

The acceptance of foreign currency-denominated collateral or collateral issued abroad will presumably have little impact on the quantity of liquid assets maintained by a bank, but it will influence the type of assets. Acceptance may encourage some internationally oriented financial institutions to post more collateral at the NCB, but it is unlikely to stimulate them to create larger liquid buffers within the institution. However, the acceptance of certain assets as collateral will probably lead banks to maintain such assets more often for their own purposes, all the more so as supervisory rules sometimes give the collateral accepted by central banks a more favourable weight in the calculation of liquidity buffers. In the case of **foreign currency collateral**, this may mean a change in exchange rate risk[18],

which is unlikely to have much impact on prudential supervision because this risk is generally well understood and properly manageable. **Assets issued abroad**, on the other hand, are a greater cause for supervisory concern because of the legal complications involved. Section 4.6 discusses these risks and their consequences in more detail. In short: foreign currency-denominated collateral and collateral issued abroad probably affect prudential supervision via the type of liquid assets which the institution wishes to maintain rather than via their quantity.

The reverse holds when **collateral located abroad** is accepted by a central bank. Here, there is no clear effect on the type of liquid assets which the institution wishes to maintain worldwide, but the quantity is affected. After all, if institutions embark on international collateral management, it would be logical to centralise total liquidity management as well, because this offers opportunities for economising on the total quantity of liquid buffers held worldwide. Incidentally, this need not have a negative impact on prudential supervision, so long as these global assets can be freely transferred to the home country. In practice, however, such free transferability – notably in times of a global crisis – often turns out to be an illusion because supervisors engage in 'ring-fencing'. That is why some supervisors argue that liquidity supervision should be exercised on a solo basis, so that the liquidity ratio for domestic operations becomes subject to requirements, and institutions would in fact be discouraged from centralising their liquidity management. In other words, central bank acceptance of collateral located in another country could be at loggerheads with any solo liquidity supervision envisaged by the supervisor in that country.

Incidentally, the acceptance of cross-border collateral may also boost the competitiveness of the own financial sector, and thereby have a positive impact on the soundness of financial institutions. As depositing collateral at a central bank is attended by costs for a financial institution, possibilities for economising on the total international pool of collateral, as well as a wider range of commonly held assets from which to choose, may reinforce the sector's competitiveness.

## 4.6 Cross-border collateral and the effectiveness/efficiency of the central bank itself

From the point of view of the effectiveness and efficiency of the central bank's internal organisation, it is important what extra risks and additional costs attend the various types of cross-border collateral. At the same time, cross-border collateral makes for greater diversification of the collateral portfolio, and hence lower market risk. This offers some counterweight to the extra costs and risks discussed below. Acceptance of **foreign currency-denominated collateral** exposes the collateral

pool to exchange rate risk. This may present the central bank with costs if it is required to sell off the collateral. In practice, this effect is mitigated by hedging the currency risk or by using haircuts or margin calls. The IMF, for instance, indicates that the haircut should depend on the exchange rate volatility expected but that a haircut of around 5% is customary for exchange rate risk (IMF 2008, p.23).[19]

**Collateral issued abroad** is attended notably by legal risks. In particular, when collateral is accepted from countries with which no good agreements or procedures have been formed, it can be difficult to ascertain whether this collateral meets the legally determined (quality) requirements. The resulting risks and costs of this may be considerable. Operational concerns are that systems may have to be adjusted to administer this collateral and that it may be harder to compile useful management information on collateral issued abroad.

**Collateral located abroad** comes notably with operational challenges and risks. The crucial question is whether agreements with foreign central banks and CSDs can be formulated so that collateral located abroad can be mobilised for domestic use in time. The problem is compounded when foreign authorities operate in other time zones. Within the euro area, these risks are mitigated by the CCBM and the fact that most euro area countries operate in the same time zone. Another operational concern is the lower availability of sound management information on collateral located abroad. Furthermore, there may be legal complications if the home central bank believes it can lay claim to collateral located abroad, while the foreign central bank of CSD wields another legal interpretation. This could lead to long drawn-out legal procedures. Following the recent failure of Lehman Brothers, it was pointed out that it will take years before all collateral claims have been legally dealt with.

# 5 Conclusions

In the current crisis, central banks seem more inclined to accept cross-border collateral. The ESCB, for example, now accepts foreign currency collateral and – as *emergency* collateral – certain collateral which is located or issued outside the euro area. Yet, in practice, there are virtually no scientific or policy analyses which deal explicitly with the impact of cross-border collateral on the tasks of a central bank cum supervisor. This paper analyses how cross-border collateral affects the tasks of a central bank which also exercises supervision.

To begin with, different categories of cross-border collateral must be distinguished (foreign currency collateral, collateral issued in other jurisdictions and collateral located in other jurisdictions), as each category entails specific changes (see Table 1) and may thus have different effects on how a central bank cum supervisor performs its duties.

*Foreign currency collateral and collateral issued abroad*
As a result of the acceptance of foreign currency collateral and collateral issued abroad, more collateral becomes available in the home country. For the home central bank, this will have a positive effect on **monetary policy, payment systems and financial stability**. Thanks to acceptance of these two categories of collateral, financial institutions have a wider range of collateral to deposit at the central bank; this means greater access to monetary operations and contributes to a more effective monetary policy. And, as it becomes more attractive for various institutions to deposit collateral at an NCB, they can, if need be, take out more intraday credit to prevent hitches in payment systems, or obtain more liquidity in the event of a negative shock.

Compared to collateral denominated in the home currency and collateral issued at home, foreign currency-denominated collateral and collateral issued abroad do pose extra risks to **prudential supervision** and to the **effectiveness and efficiency of the central bank's own organisation**. Foreign currency collateral exposes financial institutions and central banks to exchange rate risk, which they can manage by hedging or by limiting acceptance to several 'hard' currencies. Moreover, central banks can apply (extra) haircuts or use margin calls. Collateral issued in other jurisdictions, on the other hand, is often attended by legal complications which

may be hard to fathom, and which may generate extra costs and risks for both prudential supervision and the central bank's own organisation. The latter goes especially for collateral stemming from countries, where the domestic central bank has not made agreements with the local authorities about legal assistance and about sufficiently guaranteed procedures.

*Collated located abroad*
Although the acceptance of collateral located abroad may be positive for **monetary policy and payment systems**, this is not self-evident owing to the potential operational and legal problems. In particular, if the agreements with the foreign authorities are unclear, if no procedural agreements or agreements about legal assistance have been made, if there is a time zone problem and if there is uncertainty about the quality of supervision and the processing time at the CSDs, it is doubtful whether collateral used for overnight or intraday credit can be obtained in time. Even within the euro area, with its clear and reliable agreements governing the cross-border use of collateral, and little differences in time zone, overnight or intraday credit cannot always be organised on time.

The greatest risk inherent in accepting collateral located abroad lies in the fact that such collateral offers institutions the possibility to economise on their collateral by maintaining a single, global pool. This makes the effects of this collateral on **prudential supervision and financial stability** ambiguous. There is admittedly a larger international pool of collateral which may potentially be used at home, but the question is whether this collateral really is available for domestic use in the event of global shocks, given the practice of ring-fencing. Finally, this collateral can detract from the **effectiveness and efficiency of the central bank's own organisation** as a result of operational problems.

*Summary*

Table 2 presents a summary of the effects of the various categories of foreign collateral on the tasks of the central bank (CB) cum supervisor.

| Type of collateral CB task | Foreign currency collateral | Collateral issued abroad | Collateral located abroad |
|---|---|---|---|
| Monetary policy | Positive, as financial institutions can take more part in monetary operations | Positive, as financial institutions can take more part in monetary operations | Positive insofar as liquidity need can be planned in advance, arrangement may be too slow for e.g. overnight facility |
| Payment systems | Positive as lower costs allow of pledging more collateral at CB, so that potentially more intraday credit can be obtained | Positive as lower costs allow of pledging more collateral at CB, so that potentially more intraday credit can be obtained | Positive, but less suitable for solving acute payment problems |
| Financial stability | Positive as lower costs allow of pledging more collateral at CB to absorb shock | Positive as lower costs allow of pledging more collateral at CB to absorb shock | Ambiguous, depending on nature of shock and degree of economising on collateral worldwide. Emergency collateral, generally positive effect |
| Prudential supervision | Limited effect on account of exchange rate risk | Negative effect because institution may opt for more risk-bearing financial assets | Potential negative effect if institutions economise on global quantity of liquidity and if supervisors engage in ring-fencing |
| Effectiveness/ efficiency of internal organisation | Limited negative effect on account of exchange rate risk | Negative effect on account of legal complications and costs | Operational risks which may be considerable owing to, for example, time zone differences |

Table 2: Effect of different categories of cross-border collateral on a central bank (CB)'s tasks

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## Notes

1 The author wishes to thank Hans Brits, Nynke Doornbos, Rien Jeuken, Jeanine Palstra and Daniëlle Walraven for their valuable comments on an earlier version of this paper and Liesbeth Klein for her translation of the manuscript into English.
2 Within the euro area these agreements have been laid down in the so-called Internal Manual
3 There is at most a two-hour time difference between two CCBM countries. Most countries have *Central European Time*. In Great Britain, Ireland and Portugal it is an hour earlier, in Finland and Greece an hour later.
4 BIS (2006) distinguishes five different models which each have their merits when it comes to facilitating cross-border collateral. These are: (1) a correspondent central bank model, (2) a guarantee model, (3) links between securities settlement systems, (4) remote access to securities settlement systems and (5) a collateral management system.
5 This could provide a further stimulus to generally manage liquidity more centrally, rather than nationally or decentrally. This aspect is discussed in more detail in section 4.5, which deals with prudential supervision.
6 This can be illustrated by the following example. A financial institution is active in three countries (A, B and C), whose central banks accept domestic collateral only. The institution has deposited EUR 10 million worth of collateral at each of these central banks. Let us suppose that these central banks decide to fully accept each other's collateral. The financial institution will then investigate which collateral, from country A, B or C, is the cheapest. In other words, institutions may increasingly opt for collateral that can be used at a number of central banks or for collateral of a lesser quality (after all, "bad collateral drives out good collateral"). In addition, if there is little chance of the institution needing the maximum amount of collateral in all three countries at once, it will be stimulated to pledge a total of – for example – EUR 25 million worth of collateral at the three central banks combined, rather than a total of EUR 30 million. In the analysis, this is termed economising on global collateral.
7 See the example presented in the previous note: in the new situation, a maximum of EUR 25 million is potentially available for every country at a given time.
8 The ECB's recent decision to expand the list of eligible collateral temporarily probably indicates that, in the current crisis, the collateral available in some euro area countries was considered insufficient.
9 Banks have liquidity shortages because the public is provided with banknotes via the banks, and because banks themselves have a need for reserves.
10 Article 18.1 of the Statutes of the ESCB and ECB determines that in case of credit transactions, by the national central banks or the ECB on behalf of credit institutions, any credit granted has to be covered by a sufficient amount of collateral.
11 If this is not the case, some financial institutions would receive preferential treatment over others when central bank credit is allotted, there would be no level playing field, which would not be conducive to the effectiveness of monetary policy.
12 If all parties are required to pledge qualitatively sound collateral in order to receive liquidity from the central bank, banks should logically receive this liquidity on the same conditions. Another way to realise fairness between more and less creditworthy financial institution, is price differentiation. This method is applied by the Fed in the Standing Facility.
13 Under normal circumstances, most institutions can access inter-bank credit so that market rates and official rates will barely diverge.
14 In addition, CSDs in several countries close early in the afternoon, so that, in some cases, credit institutions must submit requests to a foreign CSD before 15.30 hours to obtain central bank credit the same day.
15 The Fed provides unsecured intraday credit, subject to a maximum.
16 In such situations, the necessary liquidity may become available in time through cash collateral or swaps.
17 From the viewpoint of financial stability, the quantity of collateral posted by financial institutions at the central bank is not as important as the quantity which they can mobilise at short notice in the event of a shock. A bank can, for instance, maintain certain securities in its trading portfolio and pledge these securities as collateral at the central bank when necessary (see also section 2.4).
18 A financial institution's exchange rate risk may increase or decrease, depending on the currency composition of assets and liabilities.
19 The haircut must be calculated on the basis of the volatility of the currency in question vis-à-vis the own currency, and the time during which the exchange rate risk is run. During a crisis, such as the present one, higher haircuts may be needed or margin calls considered.

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