Distortionary effects of anti-crisis measures and how to limit them

DNB Occasional Studies

Vol.7/No.3 (2009)

Jan Willem van den End
Silvie Verkaart
Arjen van Dijkhuizen

De Nederlandsche Bank
Eurosysteem

Central bank and prudential supervisor of financial institutions

©2009 De Nederlandsche Bank NV

Corresponding authors: Jan Willem van den End, Silvie Verkaart en Arjen van Dijkhuizen
e-mail: w.a.van.den.end@dnb.nl, s.a.m.verkaart@dnb.nl

Aim of the Occasional Studies is to disseminate thinking on policy and analytical issues in areas relevant to the Bank.
Views expressed are those of the individual authors and do not necessarily reflect official positions of De Nederlandsche Bank.

Editorial Committee
Jakob de Haan (chairman), Eelco van den Berg (secretary), Hans Brits, Pim Claassen, Maria Demertzis, Peter van Els, Jan Willem van den End, Maarten Gelderman and Bram Scholten.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form by any means, electronic, mechanical, photocopy, recording or otherwise, without the prior written permission of De Nederlandsche Bank.

Subscription orders for DNB Occasional Studies and requests for specimen copies should be sent to:

De Nederlandsche Bank NV
Communications
P.O. Box 98
1000 AB Amsterdam
The Netherlands
Internet: www.dnb.nl

Occasional Studies

Vol.7/No.3 (2009)

W.A van den End
S.A.M. Verkaart
K.A. van Dijkhuizen

Distortionary effects of anti-crisis measures and how to limit them

Summary

During the credit crisis, central banks and governments have taken extraordinary measures to preserve financial stability and prevent strong credit rationing of the private sector. Central banks cut official rates, provided liquidity support to the banking sector and supported specific financial markets with asset purchase programmes, whilst governments introduced measures such as guarantee schemes and made capital injections. These interventions prevented the financial system from collapsing and, in that sense, they have been effective. At the same time, the authorities have been aware that their measures may have distortionary effects on the markets. For instance, they may distort the level playing field between financial institutions that received support and those that did not, as is noticeable, for instance, from differences in funding costs. Furthermore, support aimed at specific market segments may lead to shifts in capital flows, and cross-border shifts may take place as a result of country-specific differences in support packages. Longer-term distortionary effects may follow, in particular, from excessive risk taking, e.g. by management, shareholders, bondholders and depositors of financial institutions. Such 'moral hazard' may also be created by extremely low policy rates and IMF measures. In designing their support measures, the authorities have sought to limit possible distortionary effects as much as possible. Thus, to the greatest possible extent, government support was granted on market-compatible and internationally harmonised conditions. Uncertainty among market participants may be mitigated by providing clarity on the details of the support policies, by creating an arm's length relationship between the government and the business management of the support-receiving institutions and by ensuring sustained responsibility on the part of private stakeholders. Of final importance is a smooth exit from support policies as soon as market recovery allows it.

Inhoud

1 Introduction 9

2 Crisis measures to rectify market failure 11

3 Proper design of support policies essential but complicated 15

4 Market conditions 17
4.1 Impact on position and conduct of financial institutions 17
4.2 Distortionary effects on financial markets 18
4.3 Cross-border effects 21

5 External effects, negative impact on confidence 23
5.1 Investor confidence in supported institutions 23
5.2 Confidence in the creditworthiness of governments 24
5.3 Confidence in central bank independence 25

6 Longer-term distortions 27
6.1 Moral hazard among management 27
6.2 Moral hazard among shareholders and bondholders 28
6.3 Moral hazard from deposit insurance 28
6.4 Moral hazard from extremely low interest rates 29
6.5 Moral hazard from IMF measures 29

7 Policy instruments to limit short-term and long-term distortions 31
7.1 Maintaining a level playing field: market-compatible conditions… 31
7.2 … and international harmonisation 31
7.3 Retain confidence by providing clarity… 32
7.4 … and by creating an arm's length relationship between government and business management 32
7.5 Limiting moral hazard through involvement of the private sector… 33
7.6 … temporary nature of support and a smooth exit… 33
7.7 … and prudential supervision 34

8 Conclusion 35

1 Introduction

The credit crisis, which started out in 2007 as a problem in the US mortgage market and subsequently spread like wildfire all over the world, severely impacted on many financial markets and institutions. Negative factors such as evaporating liquidity, falling asset prices, excessive debt positions and soaring losses at financial institutions reinforced each other. These factors undermined confidence within the financial sector and disrupted the functioning of various markets simultaneously, penetrating to the system's core: the interbank market. Even solid financial institutions became vulnerable in the autumn of 2008 as market sentiment went haywire. The creditworthiness of some countries with large primary borrowing requirements came under pressure as well. To restore confidence and safeguard system stability, governments and central banks instigated far-reaching interventions (Table 1).

The crisis shows that financial stability is definitely not a given. Information asymmetries and wrong incentives gave rise to imbalances that emerged during the crisis. Market failure occurred, forcing central banks and governments into active interventions in order to preserve financial stability. In doing so, they also supported the economy, depending as it does on a well-functioning financial system. Of course,

Table 1 Government support to banks and central bank balance sheet expansion
June 2007 to October 2009

	US	Euro area	UK
Government support to banks[1]			
in USD / EUR / GBP billions	270	117[2]	37
as a % of GDP	1.9	1.3	2.6
Central bank balance sheet expansion[3]			
in USD / EUR / GBP billions	1288	601	155
as a % of GDP	8.9	6.5	10.7

1 Solvency support only, amounts provided.
2 Joint solvency support of Germany, France, Italy, Spain, Netherlands, Belgium and Ireland.
3 Reflects in particular liquidity injections and asset purchase programmes.
Sources: Bloomberg, ECB, BoE, Fed and DNB calculations.

there is a risk that interference with the operation of market forces – even in times of crisis – produces distortionary effects that may cause inefficiencies and possible imbalances in the long run. This study analyses the various distortions arising from interventions in the financial sector and examines whether they have occurred in the recent situation. Where possible, such assessment is based on empirical evidence. Central banks and governments were well aware of possible distortionary effects when they decided on taking extraordinary measures during the crisis, and sought to limit these effects as much as possible in putting together their support packages. This study will discuss the conditions for support, and will review the various policy options that are open to central banks and governments to limit distortionary effects. One of these is a smooth exit from the financial support policies as soon as market recovery allows it.

Market failure and how the authorities responded to it are briefly discussed in Section 2. In Section 3 it is emphasised that a proper design of support policies is essential but complicated. This is followed by an analysis of possible distortionary effects of public interventions in the financial sector, in particular on market conditions (Section 4) and on investor confidence in financial institutions and support-providing authorities (Section 5). In the longer term, interventions by governments and central banks may lead to excessive risk taking and thus create 'moral hazard' among market participants and other stakeholders, as discussed in Section 6. Finally, Section 7 discusses the policy instruments that may limit the onset of possible distortionary effects.

2 Crisis measures to rectify market failure

The support measures initiated during the crisis have overcome a failure of the market in different respects (Table 2). Limited insight into risks and heightened uncertainty made banks reluctant to lend money to each other. As a result, the interbank market has not functioned properly since mid-2007. To overcome such market failure, central banks worldwide instigated robust interventions to safeguard banks' liquidity positions. These interventions took the form of expanding existing money market policies, by providing more short-term loans to the banking industry, by easing the collateral requirements on these loans and, where necessary, by introducing new liquidity facilities. For example, the Eurosystem and the Bank of Japan, in their liquidity operations, adopted a policy of fully allotting the bids submitted by banks at a fixed interest rate. The Eurosystem also introduced a new longer-term liquidity facility, allowing banks to borrow money for a one-year period. Furthermore, in response to the crisis, central banks sharply cut their policy rates and purchased debt securities, in order to support lending to households and enterprises.

The crisis of confidence led to an increased risk of customers withdrawing their deposits from financial institutions. Banks, in particular, are sensitive to a 'run', because they finance their long-term loans predominantly with short-term funding (maturity mismatch). In response to the increased risk of bank runs, governments have extended their deposit insurance schemes from October 2008. They raised the amount of guaranteed deposits, abolished depositors' own risk and – in some instances – provided a blanket guarantee on all deposits (Germany) or all banking liabilities (Ireland). Also, because of the evaporation of liquidity in the financial markets, banks had difficulty raising long-term financing. As a result, the typical maturity mismatch between assets and liabilities threatened to reach unsustainable proportions. This made banks extremely vulnerable to financial market shocks. To reduce such vulnerability, governments established guarantee schemes in the final quarter of 2008, allowing banks once again to issue medium-term debt securities.

In the course of last year, sharply deteriorating market sentiment gave rise to doubts about the solidity of otherwise sound financial institutions. Uncertainty over the solvency position of financial institutions was fuelled by the downward spiral of assets losing market value and stock markets going down. Most financial institu-

Table 2 Overview of public policy responses to contain the credit crisis

	US	Euro area	UK	Japan
Central banks				
Adjustment to liquidity operations/instruments				
Exceptional fine-tuning	●	●	●	●
Extension of long-term operations	●	●	●	●
Expansion of traditional facility	●	●	●	●
Broadening of collateral list	●	●	●	●
Expansion of counterparties	●	● [1]	●	
Currency swap facility	○	○	○	○
Collateral swap with central bank	●		●	●
Full allotment at fixed interest rate		●		●
Support for CP market/money market funds	●			
(Effective) narrowing of interest rate corridor	● [2]	●	●	● [2]
Issuance of CB paper			●	
Change in monetary policy	●	●	●	●
Interest rate cuts	○	○	○	●
Asset purchases by central bank	●	●	●	●
Governments				
Guarantees on bank debt	●	●	●	●
Recapitalisation of financial institutions	●	●	●	●
Toxic asset schemes	●	●	●	
Nationalisation of financial institutions	●	●	●	
Adjustment to deposit insurance scheme	●	●	●	
Restrictions on short selling	●	●	●	●
Flexibility in accounting rules	●	●	●	●
Financial support to households	●	●	●	●
Financial support to enterprises (e.g. lending guarantees)	●	●	●	●
General stimulus packages	●	●	●	●
Support for housing market	●	●	●	
IMF measures				
Easing of lending framework	○	○	○	○
Abolishment of structural performance criteria				
Introduction of Flexible Credit Line (FCL)				
Increase in Standby Arrangements				
Increase in non-concessional access limits				
Bolstering of the IMF's lending capacity	○	○	○	○
Expansion and enlargement of the NAB				
Bilateral loans to the IMF				
Extra SDR allocation of USD 250 billion	○	○	○	○

Legend

○ a joint action by the authorities in the relevant countries

● an independent action by the authorities in the country concerned

1 Eurosystem: FTOS (fine-tuning operations).
2 In the US and Japan solely interest on reserves.
Sources: Various publications by public authorities.

tions thereby lost access to the equity market, although there was a great need for new capital to replenish substantial write-downs on loan portfolios and to remove uncertainty over the adequacy of future buffers. In this environment, governments have had to step in providing capital support from the autumn of 2008, e.g. in the Netherlands to ING, Aegon and SNSReaal. In the UK, capital support was provided for instance by guaranteeing equity issues made by banks (with the government buying shares in RBS and Lloyds as market players kept to the sidelines). The UK supervisory authority used stress tests to assess banks' capital requirements under ongoing poor economic conditions. In the spring of 2009, the Federal Reserve also subjected the largest US banks to adverse stress scenarios to determine their additional capital requirements. The test results lifted market sentiment, and some US banks subsequently managed to raise new equity. Crucial for the success of this strategy was the US authorities' advance committment that they would provide capital support to absorb possible capital deficits if banks themselves were not able to raise the amount they needed in the capital market. The existence of this safety net made realisation of the stress scenario all the less likely. In Europe, the Committee of European Banking Supervisors (CEBS) stress tested a number of large, internationally operating banks to gain insight into the stability of the financial sector at a regional level. The test results have not been published by institution as the test was not intended to determine the capital requirements of individual institutions. That remains, after all, the responsibility of the national authorities. Since 2004, DNB has used stress testing as a regular tool for the assessment of financial stability as well as the supervision of individual institutions (DNB, 2009).

Information asymmetries and heightened uncertainty had their strongest impact on securitised assets. The evaporation of liquidity in the markets for these products severely distorted the pricing of these assets. As a result, they became illiquid or could not be realistically valued. This caused great uncertainty over the solidity of financial institutions carrying such assets on their balance sheets. To remove this uncertainty, some governments have taken over the risks of toxic assets by introducing guarantee schemes, asset swaps (e.g. ING's US Alt-A mortgage portfolio) or 'bad bank' schemes (Germany) from early 2009. The advantage of a 'bad bank' is that it clears a bank's balance sheet from toxic assets, allowing it to focus on its actual banking business again. This may foster market recovery.

Partly on the G20's initiative, the IMF also undertook extraordinary measures, aimed at limiting the impact of the global financial crisis. These measures consisted of easing the IMF's lending framework, bolstering its lending capacity and issuing a new allocation of special drawing rights (SDRs), see Table 3. The IMF's measures were channelled through various lending windows – most of them already existing – that are geared to the situation and borrowing requirements of member countries. In April 2009, the decision was taken to expand the New Arrangements to Borrow (NAB), a supplementary safety net of the IMF, by up to USD 500 billion. In addition,

a group of countries (among which EU Member States) were willing, in the run-up to such expansion, to bolster the Fund's lending capacity through bilateral bridging loans or the purchase of debt securities to be issued by the IMF. Furthermore, the Flexible Credit Line (FCL) was introduced, eligible for countries with strong economic fundamentals and institutions and adequate economic policies. The FCL provides these countries with direct and broad access to Fund resources (possibly even up to 1000% of their quotas in the Fund) without ex-ante conditionality. The FCL can be used both as a preventive tool (a kind of insurance) but it can also be actually drawn upon in the event of balance of payments problems. So far, Mexico, Poland and Colombia have entered into a preventive FCL arrangement. Finally, it was decided to issue an historically exceptionally high allocation of Special Drawing Rights (SDRs) of USD 250 billion, aimed at supporting the most vulnerable emerging economies and developing countries. The underlying idea is that in a crisis it is precisely this vulnerable group of countries that will benefit from additional SDRs to support their reserve positions. Besides, unlike regular IMF programmes, no additional conditions are attached to an SDR allocation. The side effects of dramatic changes in a country's economic policy can thus be prevented. The bill for the costs of the IMF facilities eventually ends up with creditor countries and central banks, one of the reasons they are facing an expansion of their balance sheets.

Table 3 Financial injections by IMF
USD billions

	Year-end 2007	Year-end 2008	2009 [1]
1 Bolstering the IMF's lending capacity			
One-year forward commitment capacity	202	150	224 [2]
NAB/GAB	54	52	53
Total lending capacity	256	202	277
Additional commitments in the pipeline			259 [3]
Outstanding IMFcredit	9	27	55 [4]
2 Expansion of SDR allocation [5]			*Cumulative*
Total allocations 1970-1972/1979-1981	33		33
Special allocation 1997 (effective 2009)	33		67
Total allocation 2009	250		317

1 Balance at mid-November, unless indicated otherwise.
2 Including bilateral loans and notes meanwhile extended and still available.
3 Rest of EU, Canada, Russia, Brazil, Korea, Australia, India. It is not certain whether these commitments will eventually be rolled into the NAB.
4 Balance at end-September.
5 Based on the SDR/USD rate at mid-September 2009.

3 Proper design of support policies essential but complicated

In crisis containment, the practical design of government support schemes is essential in order to mitigate the risk of new distortions. The authorities were aware of this when they put together their extraordinary measures. Determining the most

Table 4 Instruments to limit distortionary effects

	Distortionary effects		Mitigating instruments
Short term	**Market conditions**		**Market-compatible and harmonised conditions for support**
	- uneven playing field	→	- adequate support conditions (price, instrument, governance)
	- distortion of international capital flows	→	- harmonisation of national programmes
	- financial protectionism	→	- no territorial discrimination - equal treatment of foreign subsidiaries/branches
	- crowding out non-supported markets	→	- purchase of debt securities at market prices
	External effects / confidence		**Authorities act supplementary to market forces and clearly**
	- uncertainty over outcome of support	→	- clarity on details of support policies
	- limited market access for institutions	→	- clarity on position of private financiers
	- uncertainty over public influence on firms	→	- government at arm's length from business management
	- government creditworthiness	→	- budgetary consolidation, multilateral initiatives
	- central bank independence	→	- limiting financial risks or ex-ante government guarantees
Longer term	**Moral hazard**		**Disciplining mechanisms**
	- stakeholders (management, shareholders, bondholders and depositors)	→	- private sector involvement - temporary character of support, incentives for timely and smooth exit - prudential supervision
	- search for yield	→	- timely increase of policy rates

appropriate design is rendered more difficult, however, because governments and central banks are faced with uncertainties in the middle of a crisis. First, with their unconventional measures, central banks stepped out of their traditional 'comfort zone': the interest rate pass-through to the economy has changed under the influence of the crisis, whilst liquidity injections have de facto given rise to a money market surplus, causing a change in the way in which central banks steer short-term interest rates. Furthermore, new instruments were wielded, in particular by the Federal Reserve (Fed), the effectiveness of which was not clear in advance. Second, the distinction between functioning and non-functioning market segments was not evident, which made it difficult to choose the proper form of intervention. The system went through phases of heightened stress and recovery with highly volatile market prices. That is why central banks extended liquidity in the money market as a whole and why governments aimed their support in the first instance at direct capital reinforcement instead of specific toxic asset solutions. A factor at play here was that, in a crisis, the distinction between solvent and insolvent institutions is not always clear. Any assessment in this respect is complicated by the high degree of uncertainty over balance sheet positions, which involves the risk that support is given to institutions that will ultimately prove not to be solvent. These aspects are also of influence in countries with unsustainable debt. These countries may not receive IMF loans until they restructure their debt and adjust their policies. Third, in a crisis it is difficult to determine the proper conditions for support. Volatile market prices are not a proper yardstick in this respect. Besides, blueprints for specific solutions are mostly not available, whereas a crisis calls for immediate and direct action. All of this makes it conceivable that interventions have entailed distortionary effects. The following sections contain a detailed discussion of a range of possible distortionary effects.

4 Market conditions

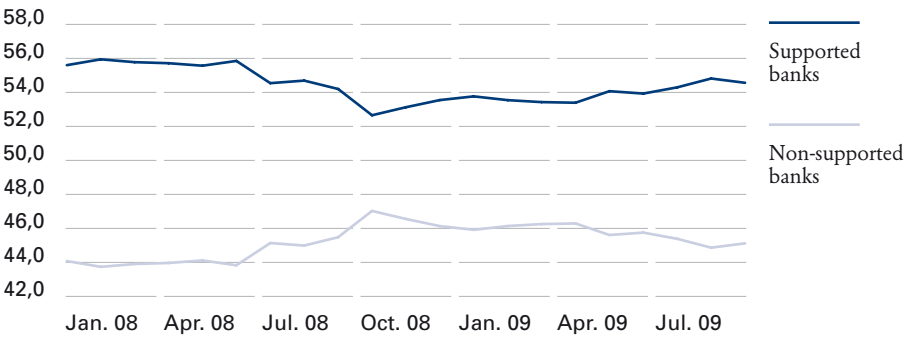
4.1 Impact on position and conduct of financial institutions

Although government support is provided as much as possible on market-compatible conditions to preserve a level playing field (see also Section 7), such support may distort the competitive conditions between financial institutions. Market participants and depositors may regard institutions in which the government has a stake, as safer than non-supported institutions. The latter consequently find it more difficult to fund themselves, or can only do so at relatively higher risk premia. Some semi-public financial institutions which used to be able to borrow at relatively favourable interest rate surcharges, appeared to have become less attractive to investors as compared with banks with a funding guarantee. At certain instances during the crisis, some non-supported AAA-rated banks had to raise funding at a surcharge over the swap rate, something they could previously do below this rate. Because of these advantages, it is conceivable that non-supported institutions will also apply for support. This would unintentionally frustrate the functioning of market forces. Competitive conditions could be distorted further by the fact that foreign subsidiaries or branches are not provided with the same measure of support. For instance, foreign financial institutions that are active in the US are not eligible for all US support programmes, which may put them at a competitive disadvantage in the US market.

In the savings market, the level playing field may also be distorted by state-supported institutions that offer relatively high deposit rates and benefit from a more stable image. In addition, extension of the maximum coverage under deposit insurance schemes may influence competitive conditions in the banking sector. It seems, however, that the recent government measures in the Netherlands have not given rise to sharply distorted market conditions between individual banks. Banks' shares of the deposit market have, on balance, changed only little, with government interventions apparently helping to stabilise the decline in deposits at a number of institutions during the stressful times in the autumn of 2008 (Chart 1). DNB is currently making a detailed analysis of competitive conditions in the deposit market. Based on current insights, increased competition for deposits does not seem to result from government support schemes, but rather from substitution effects.

Chart 1 Shares of Dutch deposit market[1]

Percentages of total outstanding amounts



1 Interest-bearing deposits of households and enterprises.

The demand for retail funding increased because wholesale funding had become scarcer for banks. Extended deposit insurance coverage made it easier for them to compensate for the restrictions on wholesale funding by raising savings deposits. As a result, some banks aggressively offered high deposit rates to the public, and banks with a relatively high risk profile were able to attract deposits at high interest rates. In some cases, however, banks' growing demand for retail funding does not fit in with their business model, and extended deposit insurance coverage may therefore lead to inefficiencies in the financial sector. The same risk is associated with central banks' more accommodative money market policies, as banks benefit from high amounts of relatively cheap funding and therefore have less incentive to adjust their business model.

4.2 Distortionary effects on financial markets

Interventions by governments and central banks may also impact on the performance of markets relative to each other. In market segments that receive support from the authorities, financial intermediation is likely to recover more quickly because it enhances the willingness among financiers to step in. After all, state support ensures a certain degree of liquidity and/or guarantees a certain level of market prices. This could impact negatively on non-supported market segments as investors withdraw from them.

This mechanism has recently been visible in various market segments. The access to term financing for banks has improved, as appears from a growing number of state-guaranteed loans in early 2009, followed by a growing number of issues of

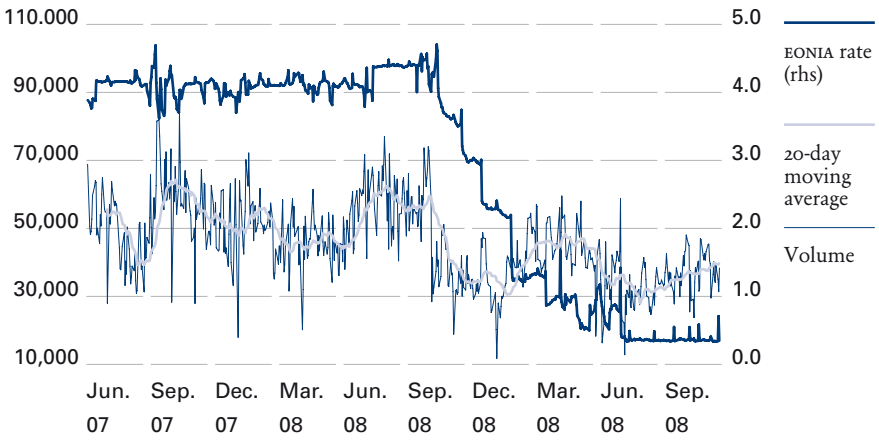
non-guaranteed debt since the second quarter. There are signs, especially in the UK, that funding guarantees have crowded out non-guaranteed debt; in the euro area, the issues of both asset classes were more on a par (Panetta et al, 2009). The US markets for commercial paper and mortgage-backed securities have also picked up thanks to the Fed's asset purchase programmes. Negative effects could be seen in the US markets for car and credit card loans and for commercial real estate, which initially received no support and where capital was withdrawn (IMF, 2009). With effect from March 2009, car and credit card loans also qualify for government financing through the Term Asset-Backed Securities Lending Facility (TALF). The Eurosystem's covered bond purchase programme, which the IMF deems effective (IMF, 2009b), has potential side effects. Purchases are carried out in a specific market segment, thereby influencing relative prices between market segments. In addition, it proves very difficult to distribute the purchases neutrally over institutions and countries. After all, in some euro area countries, the covered bond market is more developed than in others, and some institutions issue more covered bonds than others. Also, the conduct and financing structure of banks may unwittingly be influenced, because the purchases render just one of the many funding opportunities for banks more attractive. All in all, full neutrality is not always feasible in asset purchase programmes, which could cause distortions at the micro level.

The mechanism whereby recovery of supported markets could go at the expense of non-supported markets also applies to the easing of collateral conditions for central banks' liquidity operations, also called endogenous credit easing. Assets that are added to the list of eligible collateral would have a higher liquidity and thus an eligibility premium vis-à-vis debt securities that are ineligible. Such premium will be high in particular for illiquid assets such as bank loans, even though this is difficult to quantify because of the absence of a market price (ECB, 2007). This distortion of market prices may crowd out other (ineligible) assets. The fact that euro area banks have only made limited use of the easing of collateral conditions suggests that this distortion has not become a widespread phenomenon in the euro area.

Due in part to full or high allotment in the liquidity operations since October 2008, several central banks have fully or partially taken over the interbank money market. An added factor was that low money market rates made banks less willing to lend money to each other. Consequently, volumes in the euro area interbank overnight market (EONIA) are currently still low (Chart 2). In times when the interbank money market does not function properly for longer periods of time, banks may gradually lose their expertise and interbank contacts, which would complicate a restarting of this market. In the Japanese situation, for instance, it was not uncommon that younger bank employees had never seen positive money market yields (Inoue, 2009). To mitigate this risk, it is important that the anti-crisis measures be phased out as soon as markets are able to operate under their own steam. A complication in this respect is that the provision of support may thwart market recovery if market

Chart 2 EONIA euro area overnight market: volumes and interest rates

Daily figures; EUR millions



participants have too little incentive to adjust their business model or trade with each other. To prevent such from happening, it should be clear in advance that support is provided temporarily and as much as possible on conditions that should ensure that support becomes unattractive as soon as the market recovers (see Section 7).

Extremely low policy rates in many countries may cause more market distortions. They may cause pressure on the business model of money market funds, as these invest exclusively in short-term debt securities. If money market rates are very low, the yields on these short-term debt securities will barely exceed the costs of money market funds, making it no longer interesting for investors to invest in money market funds. In the US, where money market funds invest heavily in Commercial Paper (CP), problems at money market funds have also put pressure on the CP market. To counter such pressure, the Fed introduced asset purchase programmes to support both the CP market and money market funds (CPFF, AMLF and MMIFF). The Eurosystem cut its interest rates less aggressively than the Fed (to 1% vs to 0%-0.25%), so the pressure on money market funds is somewhat lower in the euro area. As euro area money market funds invest predominantly in short-term exposures to banks and governments and less so in corporate CP programmes, pressure on money market funds in the euro area has had fewer adverse side effects for corporate funding opportunities than in the US. As problems at money market funds have caused a greater inflow into bank deposits, banks (at an aggregated level) need not be greatly affected either.

Extremely low short-term rates may also frustrate the functioning of the repo market. In the repo market, parties lend each other financial securities for short periods of time, against payment of a money market rate. With money market rates at a very low level, little if any costs are involved if the securities are not delivered on time. As a result, there has been an increasing incidence of failed repo settlements, and parties stopped lending securities to each other. To support the repo market, a penalty for non-delivery of the securities was instituted in the US. Such penalty leads to negative interest rates on the repo market, so that the party who lends the securities in exchange for cash needs to repay less if the other party delivers late.

As low short-term rates have also led to low long-term rates, partly as a result of the public and private asset purchase programmes instigated by various central banks, the capital base of pension funds and insurance corporations could also deteriorate. Not only will their investments generate less income, the present value of pension funds' liabilities will also increase and, in the event of a longer period of low interest rates, the public will likely be less interested in the long-term savings products that are offered by insurance corporations and pension funds. Finally, if long-term yields were to decline further, with short-term rates having hardly any scope to come down any further, the yield curve could flatten. This could put banks' business model under pressure, as banks are using short-term funding to finance their longer-term lending operations. So far, however, the yield curve has steepened, because short-term (policy-driven) interest rates had fallen much more strongly than long-term rates.

4.3 Cross-border effects

Support measures may also lead to a redirection of cross-border financial flows, with capital flowing out of markets where no government guarantees or asset purchase programmes exist. These are, for instance, emerging countries, which have to compete for financing with state-guaranteed debtors in industrial countries. It was feared earlier this year that the capital inflow to emerging countries would decline strongly. Besides overall risk aversion, such was due in part to the crowding-out effects of government support in industrial countries (FT, 2009). These cross-border effects may lead to higher volatility in financial markets and undermine the integration of capital markets. In the course of 2009, capital flows into emerging markets have picked up again, in an environment of increased risk tolerance in financial markets. In some emerging countries, strong capital inflows have even caused abundant domestic liquidity, credit expansion and rising asset prices.

Country-specific differences in support and support conditions may also generate capital flows. National interests to support the economy may translate into

targets for domestic lending. In France, the Netherlands and the UK, for instance, state-supported banks committed themselves to keep up domestic lending. Such conditions may reinforce the home bias of the financial services industry, which threatens to distort the internal market in Europe, at the expense of an efficient international allocation of credit and economic growth. Countries where most of the banks are foreign-owned (in particular, Central and Eastern Europe) may be strongly affected by this. A withdrawal from foreign markets may, however, also be based on strategic choices that are made by banks as part of an overall balance sheet restructuring and risk mitigation package. Because of the global nature of the credit crisis, the diversification advantages supposedly deriving from foreign operations were not always realised, which may have prompted financial institutions to be less active abroad.

Macro figures from the Bank for International Settlements (BIS) confirm that cross-border lending has declined strongly during the crisis. At the height of the crisis – in the fourth quarter of 2008 – global lending fell by more than 5% and even by 12% compared with banks in emerging countries (BIS, 2009). In 2009, this type of financing has remained under pressure, due in part to the deleveraging process where banks in developed countries are going through. In addition, central banks' asset purchase programmes and easier collateral conditions, aimed by definition at their own currency areas, could also lead to a withdrawal of capital from non-supported foreign financial markets. Finally, internal market distortion is possible as a result of crisis-driven prudential supervisory requirements that are imposed nationally, such as more stringent requirements for the liquidity management of foreign subsidiaries by the host country supervisor, or the unilateral imposition of higher capital ratio requirements. To prevent a 'race to the top', such regulations are currently being set up in an international framework.

5 External effects, negative impact on confidence

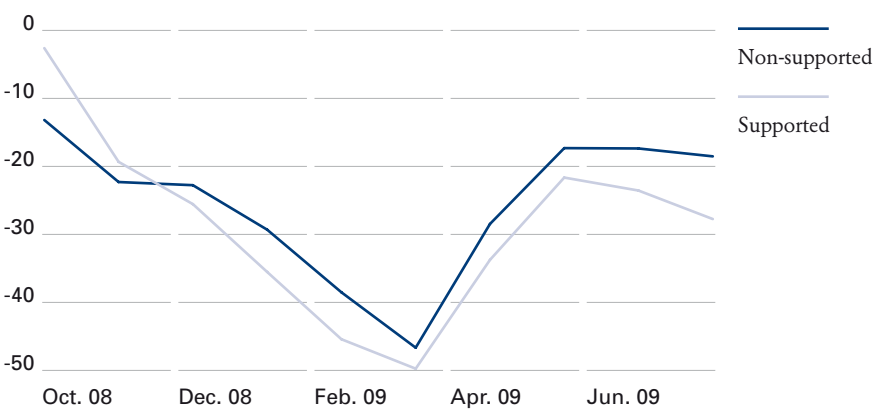
5.1 Investor confidence in supported institutions

Government support may damage confidence in the financial markets if it is accompanied by uncertainty over the implementation and duration of the support measures. For example, investors may be uncertain about the government influence on the business management of a supported institution. Or they may be deterred by the prospect of profit dilution, resulting from the state's generally preferential stake in the institution's capital base. This may give rise to a negative spiral of successive provision of support and withdrawal of private capital, which will, at worst, make full government control necessary.

This effect is evidenced by the share prices of supported financial institutions worldwide. Following a temporarily favourable impact of government-provided

Chart 3a Share prices of non-supported vs supported financial institutions, worldwide

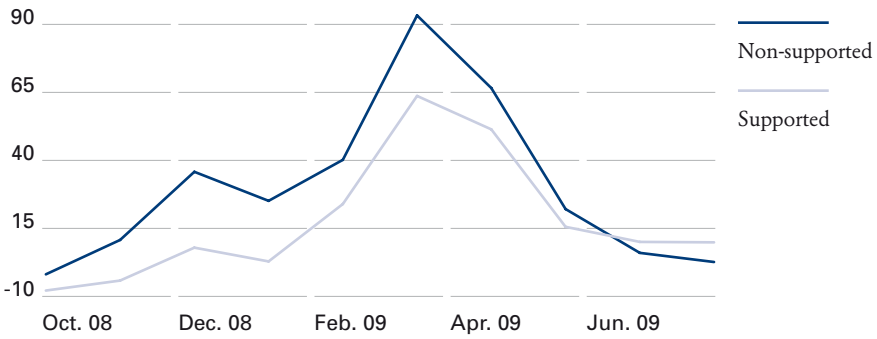
Percentage of cumulative change in share prices since mid-October (monthly averages)



Source: Datastream, own calculations, based on data from 38 major banks and insurers worldwide.

Chart 3b CDS premia for non-supported vs supported financial institutions, worldwide

Percentage of cumulative change in CDS premium since mid-October (monthly averages)



Source: Datastream, own calculations, based on data from 38 major banks and insurers worldwide.

support in October and November 2008, share prices of supported institutions have shown a more unfavourable development than those of non-supported institutions (see Chart 3a). Also, as appears from CDS premiums, the default risk-reducing effect of government support has faded gradually (see Chart 3b). The cumulative difference between the risk premiums of supported vs non-supported institutions even became negative in June, from which it can be concluded that, nine months after the date of the first government injections, investors have begun to regard government influence as a relative drawback. Hybrid loans (subordinated debt) have also been adversely affected by government interventions. These loans have been subject to sizeable declines of market value as investors feared that government ownership stakes would be at the expense of subordinated debt (earlier this year, S&P downgraded its ratings for hybrid loans issued by state-supported banks). Investors have increasingly begun to realise that these loans are, in fact, risk-bearing capital. Of influence here was the fact that a number of financial institutions, in conformity with contractual terms but against market expectations, defaulted on their subordinated debt obligations.

5.2 Confidence in the creditworthiness of governments

Another side effect of government support may be the deterioration of the creditworthiness of support-providing governments. Partly as a result of large-scale support, such as capital injections into banks, the sovereign debt of some countries has increased rapidly. 'Bad bank' schemes, in which the authorities take over assets from banks, may lead directly to an increase in sovereign debt. This explains the reticence

Chart 4 CDS spread differential between banks and governments

Change in the differential between the average CDS spread for the major banks per country and the sovereign CDS spread between early May 2009 and September 2008, in basis points

on the part of governments to adopt such a solution. In assessing the financial position of governments, market participants also weigh any obligations governments may have, e.g. arising from guarantees. Indeed, government interventions have been accompanied by an increase in country risk spreads (in West-European countries by about 50 to, occasionally, more than 100 basis points since October 2008). The financial position of governments is more and more associated with that of the banking sector (and vice versa). This is evidenced by the decline in the risk spread differential between the banking sector and the government from October 2008 (when governments began to intervene) to May 2009, when the market prices of financial institutions had recovered to some extent. The decline in the spread differential is clearly visible in, e.g., the UK, Belgium, Spain and Ireland (Chart 4). This signifies that the support measures have translated indirectly into rising costs for the taxpayer. In order to limit the negative impact of support on government financing costs, governments need to follow a credible path of consolidation in the future.

5.3 Confidence in central bank independence

Intervention may weaken central banks' financial positions and thereby potentially affect their financial independence vis-à-vis the government. The risk profile of central bank balance sheets may deteriorate in various ways. First, the provision of much greater quantities of liquidity for longer periods of time (in the case of the Eurosystem, up to one year) exposes the central bank more than before to credit risk, even though it is secured by collateral. Second, the easing of collateral conditions in combination with the diminished liquidity of all but the safest government bonds

Table 5 Composition of collateral pledged at the ECB
in percentages of total collateral pledged

	2006 average	2007 average	2008 average	2008 Dec.	2009 Jul.
Sovereign bonds	21	15	10	9	12
Corporate bonds issued by banks	31	32	28	27	27
Asset-backed securities (ABS)	11	16	28	30	23
Covered bonds	18	14	11	11	13
Illiquid assets	4	10	12	12	15

Explanatory note: Selected categories; do not add up to 100%.
Source: ECB.

means a greater risk burden for central banks. For the Eurosystem this appears, e.g., from the fact that the collateral provided by banks in July 2009 consisted for 12% of (relatively risk-free) sovereign debt, as against 21% in 2006 (Table 5). Third, the purchase of private sector debt has led to an increase in financial risks on central bank balance sheets. The purchase of sovereign debt, as has been done by several central banks, carries fewer financial risks, but the risk of political interference remains, certainly if central banks wish to unwind these portfolios again. Partly on that account, the Eurosystem has decided not to buy sovereign debt, but only covered bonds issued by banks. Finally, in the event of continued strong demand for IMF loans, substantial amounts could be drawn on bilateral loans and, after some time, on the NAB. This, too, will feed through to central banks' financial positions, as will the additional SDR allocation. Central banks may try to compensate the increase in financial risks in monetary operations by risk reduction elsewhere on their balance sheets, e.g. in reserve management. Against this backdrop, DNB has recently reduced the Value at Risk on its reserves by 30%.

6 Longer-term distortions

Distortionary effects in the longer term could arise in particular from excessive risk taking ('moral hazard'). Anti-crisis measures may result in moral hazard among the various stakeholders of supported institutions: management, shareholders, bondholders and depositors. Moral hazard may also be created by extremely low policy rates and IMF measures. In designing their support measures, the authorities have sought to limit possible distortionary effects as much as possible.

6.1 **Moral hazard among management**

A lesson to be learned from the financial crisis is that variable remuneration structures and short-termism on the part of shareholders may create the wrong incentives for the management. It sometimes entails unjustifiable credit, market and reputation risk. Institutions that threatened to come into the danger zone because of this, have – in some instances – called for government support, with consequences for sitting board members.

However, government interventions may lead to excessive risk taking in the future as well, as the disciplining influence of the market diminishes. As soon as the government acquires an ownership stake, private shareholders lose some of their influence. The incentive to monitor institutions fully disappears in the event of nationalisation; if an institution ceases to be quoted on the stock exchange, the market signal of it will disappear. Market discipline also diminishes in the case of guarantees on bank funding. The premium to be paid for the credit risk of banks is then dictated by the government and no longer by the market. In schemes for toxic assets, moral hazard may arise from information asymmetry. The management has more information on the quality of the assets than the state (which has taken over the risks of the assets), but has less incentive for a sound management of the assets. Market discipline also diminishes by the central banks' virtually unlimited provision of liquidity at a fixed low interest rate. After all, all banks can obtain central bank liquidity at the same rate, whereas in the interbank money market banks with more risky operations would have to pay more for liquidity. This may diminish the incentive of weak banks to clean up their balance sheets. Finally, the easing of

collateral conditions may have the effect that banks substitute high-grade (and thus expensive) collateral for lower-grade collateral, so that their financial position will deteriorate.

6.2 Moral hazard among shareholders and bondholders

Government support may encourage institutions to take on excessive risk, with the upward potential benefiting shareholders and the downward risks being for the government's account (risk shifting behaviour). The incentive for risk taking exists as long as the expected proceeds surpass the costs of support. At the height of a crisis, when institutions are highly risk averse and private financiers remain on the sideline, moral hazard is not the government's prime concern. Shareholders of financial institutions will then shy away: being the risk-bearing parties, they would suffer the most pain (between the onset of the crisis and early 2009, on average three-quarters of the market value of financial institutions had evaporated worldwide). At that stage, governments are treating shareholders and bondholders with gloves so as not to cut off financial institutions from the capital market. Governments were the most reticent vis-à-vis bondholders, as the losses they sustained from the bankruptcy of Lehman Brothers and the restructuring of Washington Mutual had strongly intensified market turbulence and cut off systemic banks from liquidity. By sparing bondholders in their support actions, governments implicitly take over the downward risk from them. This may create moral hazard as financiers of debt capital lack the incentive to carry out a thorough risk assessment of financial institutions. It would give them the opportunity of free riding on the government. Therefore, the crisis justifies taking measures that would reduce such moral hazard among shareholders and bondholders, by providing greater clarity ex ante about their rights, see Section 7.3.

6.3 Moral hazard from deposit insurance

Research shows that extensive deposit insurance coverage is a source of moral hazard, encouraging financial institutions to enter into risky exposures (Demirgüc-Kunt and Detragiache, 2000). The reasoning behind this is that it gives depositors less incentive to monitor banks, in the assumption that the risk is (fully or partially) borne by the state. Generally, however, retail depositors have not the expertise or the resources to monitor the financial position of banks. In addition, the market discipline of depositors works differently in a crisis. Evaporating confidence in a bank may create a bank run, enforcing abrupt and spasmodic adjustments.

Extended deposit insurance coverage may create moral hazard among banks as they engage in risky exposures assuming that the downward risk for their retail funding will be covered by the state via the deposit insurance scheme. This may preserve already weakened business models, e.g. in the case of merchant banks that try to continue their business by attracting guaranteed savings deposits at a high interest rate. To realise a positive interest rate spread, they will engage in risky exposures. The resulting risks to stability appear from a recent study, which shows that a high deposit rate is correlated with a high probability of distress among banks (Đihák and Poghosyan, 2009).

6.4 Moral hazard from extremely low interest rates

Very low (short-term) interest rates encourage a search for yield and lead to risk taking by market participants. This is, on the one hand, precisely how it all works. By stimulating risk taking (e.g. through a search for yield), interest rates go down across the board, which in turn stimulates the demand for credit and boosts the economy. At the same time, however, excessive risk taking may result in a new bubble, certainly if market participants assume that central banks and governments will relieve the pain once the bubble bursts. So it is important not to take policy measures too far and ensure that accommodative policies are unwound in a timely fashion (Agur and Demertzis, 2009). Meanwhile, risk aversion in the financial markets has declined strongly again relative to the peak of end-2008, but the improvement in sentiment has so far been in line with the decline in downward economic risks and is still vulnerable to negative news. In addition, a longer period of low interest rates may incite governments to take on more debt than is good for them. Japan, for example, where interest rates have been extremely low for more than a decade, has meanwhile built up a debt-to-GDP ratio of 180%, the highest of the developed world. In the debt build-up phase, this may lead to a misallocation of funds. Also, public finance will thereupon become more sensitive to a rise in (long-term) interest rates as soon as the economy recovers. To limit this effect, the government's consolidation process should move in parallel with economic recovery. Finally, governments with a high debt-to-GDP ratio have less room to absorb future setbacks.

6.5 Moral hazard from IMF measures

With the FCL, the IMF has created a new lending facility without ex-ante conditionality. This means that countries that draw on this instrument would experience less pressure to implement reforms aimed at removing underlying vulnerabilities than under traditional IMF programmes with ex-ante conditionality. The absence of

such conditionality applies, in principle, also to countries wishing to convert their stock of SDRs that has recently increased sharply, into hard currency. In this respect, moral hazard may arise in debtor countries in the form of a breakdown in policy discipline. Furthermore, the easing of the IMF lending framework and the increase in lending capacity of the IMF may also lead to excessive risk taking by market participants (banks, mutual funds), because they might rely more heavily on the IMF stepping in if balance of payments crises occur.

7 Policy instruments to limit short-term and long-term distortions

7.1 Maintaining a level playing field: market-compatible conditions…

To maintain a level playing field in the financial sector, state support should be granted on normal, market-compatible conditions. Whilst these conditions should not detract from the effectiveness of the support schemes, they should also discourage improper use being made of them. One way to do this is to base the premium on an institution's longer-term risk profile plus a surcharge, which would render the support prohibitive under normal circumstances, but not in a crisis. Also, additional conditions may be imposed on directors of state-supported institutions, such as remuneration restrictions or dismissal in case of poor performance. Such conditions reduce the risk that institutions which do not need state support would be at a disadvantage (and competitive conditions would be distorted) or would also use state support (and so frustrate the operation of market forces). Adherence to market compatibility is the basic principle of the directives for capital support, funding guarantees and toxic asset solutions, as instituted by the Eurosystem and the Commission (during the crisis, market compatibility has been ensured by setting price conditions that would prevail on normally functioning markets in the longer term). To maintain a level playing field, the Commission also requires that state-supported institutions that are non-viable or have received a certain measure of state aid, should implement a restructuring plan (EC, 2009).

7.2 … and international harmonisation

European directives contribute towards the international harmonisation of support conditions. This is important to prevent disorderly cross-border capital flows and unnecessary distortion of competition in the internal market. The directives confine themselves to the more unequivocal parameters of support programmes such as premium, duration and instrument. This allows countries a measure of freedom, e.g. with respect to the institutional setup of bank funding guarantee schemes

(individual vs collective) and the structuring of toxic asset solutions. Stipulations against territorial discrimination in support conditions have not been harmonised, which with hindsight is an omission. After all, equal provision of support to foreign subsidiaries and branches can prevent distortion of the international playing field. All of this underlines the importance of ongoing monitoring of the cross-border effects of support, as already occurs at a European level.

7.3 **Retain confidence by providing clarity…**

To prevent negative confidence effects, the objective and design of the support policies should be clear. This provides investors something to hold on to and can prevent an uncertainty-driven downward share price spiral. Furthermore, the position of private financiers following the provision of state support should be clear, e.g. by respecting the legal protection of bondholders. To provide clarity about the position of shareholders in case of government intervention, it may be necessary for the government to have more ex-ante instruments at its disposal to curtail shareholder rights (e.g., to restrict voting rights during future state interventions). This would allow the government to act more rapidly, which would benefit the credibility of the support measures. On the other hand, however, the effects of government interventions on market participants' holdings are likely to be factored into prices and market participants' conduct. Due to this, financial institutions could be faced with higher financing costs. The credibility of toxic asset solutions would benefit from clarity on the valuation of the assets (e.g. by having them valued by a third, independent party), on the effectiveness of the solution and on a possible restructuring of the assets. These are lessons from the Scandinavian crisis of the early 1990s (Honkapohja, 2009).

7.4 **… and by creating an arm's length relationship between government and business management**

To feed the uncertainty among investors as little as possible and not to obstruct a commercially viable business management, the government should remain at arm's length from the day-to-day business of supported financial institutions. Therefore, participation in subordinated loans or preferential non-voting shares is preferable over holding common stock or over full government control. The government can also remain at arm's length by moving its interests to a management company. One such example is UK Financial Investments, which manages the British government's shares in RBS, Lloyds, HSBC, Northern Rock and Bradford & Bingley. DNB is in favour of a structure (a management company) in which the government operates at an

appropriate arm's length of its interests. This will reduce the political influence on the institutions and contribute to preserving the value of the investments.

7.5 Limiting moral hazard through involvement of the private sector…

Moral hazard among directors may be limited by having the supported institution share in the risks. In toxic asset insurance schemes, this can be done by having the institution bear the 'first loss' on the assets (e.g. as in the UK and US schemes), or by having the state and the institution share any losses proportionally (e.g., as in the ING scheme). This would still give the management an incentive for responsible management and a proper unwinding of risk assets. Risk sharing is also important in other forms of government support. To divide up the costs among the various stakeholders, the European Commission wants to pass on a larger share of the costs of government support to private financiers (EC, 2009). Last but not least, moral hazard among directors may be limited by remuneration structures that provide incentives to pay heed to the long-term position of an institution, and by dismissal in case of poor performance.

7.6 … temporary nature of support and a smooth exit…

In order not to give the wrong incentives to stakeholders of government-supported institutions, it should be clearly communicated that the support provided is of a temporary nature and is only intended for exceptional circumstances. Support should be withdrawn as soon as markets are able to operate under their own steam. This requires flexibility and smooth exit policies in the support programmes to prevent the safety nets from being cast for too long. If support is provided at arm's length (e.g., government guarantees and central bank collateral conditions), a more flexible response can be given to changing market conditions than in the case of a strong involvement on the part of the government (e.g. through shareholdership). A smooth exit is promoted by an incentive towards accelerated buyout of state holdings (e.g. by using the government's progressive profit sharing as an incentive) and by a low premium for repayment. It should be noted that, in buying out the government's stake, an institution must continue to comply with supervisory capital requirements. A smooth exit has also been built into the design of funding guarantees, by setting an end date for guaranteed issues (end-2009 in the Netherlands, after which a possible extension may be considered), a maximum maturity for loans to be guaranteed (five years in the Netherlands) and a premium rate that makes the guarantees unattractive in the event of market recovery. To prevent that deposit insurance is relied on too strongly and for too long a period of time, it is

preferable not to issue full guarantees but to provide limited coverage only. Moral hazard may also be diminished by a system with ex ante funding and risk-weighted premia. In the system's design, the confidence of market participants in banks should be carefully taken into account.

Also, central bank interventions must be unwound as and when market conditions allow it. The Fed has designed various support facilities in such a manner that they become inoperative as soon as the market segment in question recovers. The recent market recovery, for instance, has made the fee rates for the Term Securities Lending Facility (TSLF) so unattractive that the facility is de facto no longer used. Also, as regards other central bank measures, the challenge is not so much of an operational nature – liquidity can be absorbed quite simply and policy rates can be raised – but it is more a question of the right timing. The unwinding of monetary stimulus and support to the financial sector will have to be subject to the soundness of financial institutions, the recovery of financial markets, macroeconomic developments and the risks to price stability. If central banks were to unwind their policies too early, such could harm economic recovery, but if they are phased out too late, it could lead to inflationary risks and permanent behavioural distortions. Apart from that, the exit policies of the various support schemes should be harmonised. The IMF has outlined a possible time path in which, first, liquidity support is unwound, then the guarantee schemes and finally the government's ownership stakes and toxic asset schemes (IMF, 2009c). This should facilitate a more even transition that would benefit financial stability. After all, banks' counterparties must, in the first instance, take liquidity risk on board again, to be followed only in the second instance by solvency risk.

7.7 … and prudential supervision

Prudential supervision may also play a role in reducing moral hazard. Supervisory authorities are able to determine whether corporate decisions are based on rational economic grounds or are influenced by moral hazard. A case in point is the high deposit rates offered by some state-supported banks and their impact on risk propensity and profitability. A more objective manner of limiting moral hazard is to prescribe adequate liquidity and solvency buffers. A greater proportion of the insurance costs of excessive risk taking is thus allocated to the institutions and their shareholders, reducing systemic risks. This macroprudential angle plays a significant role in raising the capital requirements for banks, a Basel-led initiative currently being developed. A subject of research is whether the capital requirements for systemic banks, in particular, should be raised (BIS, 2009).

8 Conclusion

Central banks and governments, certainly in the Netherlands, have made robust interventions in order to preserve financial stability. Measures have been taken rapidly and preventively, with respect to individual institutions (capital injections, asset solutions) as well as more generally (guarantee schemes, liquidity operations). Government and central bank support measures have reduced the default risks among financial institutions and have thus helped to safeguard financial stability. However, the interventions may lead to distortionary effects, because the rapid unfolding of the crisis and the instability of the financial system have complicated the proper design of support policies. Setting conditions for support cannot always prevent that the level playing field between supported and non-supported institutions is affected and that undesirable shifts in capital flows occur. It is not to be ruled out that interventions also damage the confidence of market participants, also with regard to the financial strength of support-providing governments and central banks. To reduce such negative side effects of support, it is important that the support policies are market compatible and unambiguous and are timely withdrawn (using a good exit strategy). Furthermore, the government should remain at arm's length of the business management of supported institutions, e.g. through a management company. To reduce moral hazard, the private sector should remain involved in the operational risks.

References

Agur and Demertzis (2009), 'A Model of Monetary Policy and Bank Risk Taking', draft DNB Working Paper, http://home.kpn.nl/m_demertzis.

Bank for International Settlements (2009a), 'Statistical commentary on provisional locational and consolidated international banking statistics at end-December 2008' http://www.bis.org.

Bank for International Settlements (2009b), '79th Annual report', http://www.bis.org, June 2009.

Caballero (2008), 'Moral hazard misconception', Financial Times, 14 July 2008.

Čihák and Poghosyan (2009), 'Distress in European Banks: An Analysis Based on a New Data Set', IMF Working Papers 09/9.

Demirgüc-Kunt and Detragiache (2000), 'Does Deposit Insurance Increase Banking System Stability?', IMF Working Papers 00/3.

De Nederlandsche Bank (2009), 'Macro stress testing as a tool for supervision and financial stability', Quarterly Bulletin, June 2009.

European Commission (2009), 23.07.2009 Commission Communication 'The return to viability and the assessment of restructuring measures in the financial sector in the current crisis under the State aid rules'

ECB (2007), 'The Collateral Frameworks of the Federal Reserve System, the Bank of Japan and the Eurosystem', ECB Monthly Bulletin, October 2007.

Financial Times (2009), 'Capital flows to developing world at risk of collapse', Financial Times, 28 January 2009.

Honkapohja (2009), 'The 1990's financial crises in Nordic countries', Bank of Finland Research Discussion Papers 5.

IMF (2009a), 'Global Financial Stability Report, Market Update', January 2009.

IMF (2009b), 'Global Financial Stability Report', October 2009.

IMF (2009c), 'Crisis-Related Measures in the Financial System and Sovereign Balance Sheet Risks', July 2009.

Inoue (2009), 'Ultra-low interest-rate policy leads to dysfunctional markets', Nomura Research Institute, Lakyara vol. 50, 10 February 2009.

Kashyap and Rajan (2008), 'Rethinking Capital Regulation', conference paper Jackson Hole.

Panetta, Faeh, Grande, Ho, King, Levy, Signorretti, Taboga and Zaghini (2009), 'An assessment of financial sector rescue programmes', BIS Papers, No. 48, July 2009.

Publications in this series as from January 2003

Vol.1/No.1 (2003)	Requirements for successful currency regimes: The Dutch and Thai experiences *Robert-Paul Berben, Jan Marc Berk, Ekniti Nitihanprapas, Kanit Sangsuphan, Pisit Puapan and Piyaporn Sodsriwiboon*
Vol.1/No.2 (2003)	The blurring of distinctions between financial sectors: fact or fiction? *Annemarie van der Zwet*
Vol.1/No.3 (2003)	Intermediation, integration and internationalisation: a survey on banking in Europe *Jaap Bikker and Sandra Wesseling*
Vol.1/No.4 (2003)	A Survey of Institutional Frameworks for Financial Stability *Sander Oosterloo and Jakob de Haan*
Vol.2/No.1 (2004)	Towards a framework for financial stability *Aerdt Houben, Jan Kakes and Garry Schinasi*
Vol.2/No.2 (2004)	Depositor and investor protection in the Netherlands: past, present and future *Gillian Garcia and Henriëtte Prast*
Vol.3/No.1 (2005)	Labour market participation of ageing workers Micro-financial incentives and policy considerations *W. Allard Bruinshoofd and Sybille G. Grob*
Vol.3/No.2 (2005)	Payments are no free lunch *Hans Brits and Carlo Winder*
Vol.4/No.1 (2006)	EUROMON: the multi-country model of De Nederlandsche Bank *Maria Demertzis, Peter van Els, Sybille Grob and Marga Peeters*
Vol.4/No.2 (2006)	An international scorecard for measuring bank performance: The case of Dutch Banks *J.W.B. Bos, J. Draulans, D. van den Kommer and B.A. Verhoef*
Vol.4/No.3 (2006)	How fair are fair values? A comparison for cross-listed financial companies *Marian Berden and Franka Liedorp*
Vol.4/No.4 (2006)	Monetary policy strategies and credibility – theory and practice *Bryan Chapple*
Vol.4/No.5 (2006)	China in 2006: An economist's view *Philipp Maier*
Vol.4/No.6 (2006)	The sustainability of the Dutch pension system *Jan Kakes and Dirk Broeders*
Vol.5/No.1 (2007)	Microfinanciering, deposito's en toezicht: de wereld is groot, denk klein! *Ronald Bosman en Iskander Schrijvers*

Vol.5/No.2 (2007)	Public feed back for better banknote design 2 *Hans de Heij*
Vol.6/No.1 (2008)	Towards a European payments market: survey results on cross-border payment behaviour of Dutch consumers *Nicole Jonker and Anneke Kosse*
Vol.6/No.2 (2008)	Confidence and trust: empirical investigations for the Netherlands and the financial sector *Robert Mosch and Henriëtte Prast*
Vol.6/No.3 (2008)	Islamic Finance and Supervision: an exploratory analysis *Bastiaan Verhoef, Somia Azahaf and Werner Bijkerk*
Vol.6/No.4 (2008)	The Supervision of Banks in Europe: The Case for a Tailor-made Set-up *Aerdt Houben, Iskander Schrijvers and Tim Willems*
Vol.6/No.5 (2008)	Dutch Natural Gas Revenues and Fiscal Policy: Theory versus Practice *Peter Wierts and Guido Schotten*
Vol.7/No.1 (2009)	How does cross-border collateral affect a country's central bank and prudential supervisor? *Jeanette Capel*
Vol.7/No.2 (2009)	Banknote design for the visually impaired *Hans de Heij*
Vol.7/No.3 (2009)	Distortionary effects of crisis measures and how to limit them *Jan Willem van den End, Silvie Verkaart and Arjen van Dijkhuizen*