

Vítor Constâncio: Contagion and the European debt crisis

Keynote lecture by Mr Vítor Constâncio, Vice-President of the European Central Bank, at the Bocconi University/Intesa Sanpaolo conference on “Bank Competitiveness in the Post-crisis World”, Milan, 10 October 2011.

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Ladies and Gentlemen,

The financial and economic crisis that started in August 2007 is a clear case of the materialisation and propagation of systemic risk. The banking crisis reached a climax in September 2008 with the demise of Lehman Brothers and the subsequent support to the financial system. In spring 2010, it turned into a sovereign debt crisis. And we are now in a situation where widespread instabilities reach new heights.

In my speech today, I would like to address the phenomenon which is at the very centre of what we are experiencing in the euro area, the phenomenon of contagion.

Contagion is one of the mechanisms by which financial instability becomes widespread that a crisis reaches systemic dimensions. The other two mechanisms that constitute sources of systemic risk are the unwinding of financial imbalances and the occurrence of severe macro shocks.¹ I will argue that contagion phenomena play a crucial role in exacerbating the sovereign debt problems in the euro area. As a consequence, crisis management by all competent authorities should focus on the policy measures that are able to contain and mitigate contagion. Several of the ECB's interventions have been motivated by the need to address contagion, which impairs our ability to maintain price stability in the euro area. By focusing on contagion today, I do not mean to say that other sources of systemic risk do not play any role in the instabilities we are currently experiencing. Quite the contrary. An important role is also played by the unravelling of widespread financial imbalances, which contaminated fiscal balances.

As I go along, I shall first look at contagion conceptually. I will discuss its meaning from a policy maker's perspective against the background of the academic literature. I shall then dwell in some depth on the evidence of contagion phenomena and risks in the euro area government debt crisis. Next, I shall look at some historical episodes where sovereign contagion also played some role and see what we can learn from them. Finally, before concluding I will refer to the ECB's policy responses, and more broadly European policy responses, to contagion.

The phenomenon of contagion: from research to policy

Broadly speaking, financial contagion refers to a situation whereby instability in a specific market or institution is transmitted to one or several other markets or institutions. There are two ideas underlying this definition. First, the wider spreading of instability would usually not happen without the initial shock. Second, the transmission of the initial instability goes beyond what could be expected from the normal relationships between markets or intermediaries, for example in terms of its speed, strength or scope.

¹ ECB, “The concept of systemic risk”, Financial Stability Review, December 2009.

Contagion is crucial for policy-making. This is in particular the case because it usually constitutes an externality, in the economic meaning of the term. The actions of economic agent A adversely affect the situation of economic agent B. These effects are external to the economic agent A but the economic agent B cannot make A pay for them. Hence, the price mechanism will not solve the problem. There is a market failure that policy should try to address. In particular in financial markets, where many agents interact at high frequency, it is difficult for economic agents to get together and negotiate a contractual solution to the externality problem, as Nobel Laureate Ronald Coase has suggested in other contexts.² In the heat of a financial crisis this will undoubtedly be impossible.

Contagion as I have just defined it is, in principle, distinct from other forms of systemic instability, notably the unravelling of widespread imbalances and aggregate shocks causing simultaneous failures or crashes. But if imbalances or aggregate shocks already weaken the system, then the different transmission channels can interact and contagion may well become much stronger than in the absence of such additional vulnerabilities.³ This is likely to be relevant in the present context, where many financial intermediaries have not as yet overcome their problems and fiscal deficits and debt levels are relatively high.

It is probably fair to say that an inherent problem in the extant literature is that it is difficult to identify empirically the presence of pure forms of contagion. This identification problem is not unexpected, as there are so many factors that could also cause the follow-up problems observed and it is so difficult to control for all of them. Criteria that have been used in the literature to identify contagion include:⁴ (i) the transmission is in excess of what can be explained by economic fundamentals;⁵ (ii) the transmission is different from regular adjustments observed in tranquil times;⁶ (iii) the events constituting contagion are negative extremes;⁷ and (iv) the transmission is sequential, for example in a causal sense. But there is no agreement about which ones of these four criteria are necessary or sufficient to characterise a contagion event.

Against this background, ECB staff has developed and is using a series of start-of-the-art analytical tools to assess contagion risks. But these tools often face the same identification problem as the previous literature. Nevertheless, policy makers should act to stem pure contagion risks if data or analytical tools show sizeable spillover risks and there is no convincing evidence that this is caused primarily by economic fundamentals or common shocks.

² Coase, "The problem of social cost", *Journal of Law and Economics*, 1960.

³ For example, Chen, "Banking panics: The role of the first-come, first-served rule and information externalities", *Journal of Political Economy*, 1999, develops a model in which the presence of aggregate shocks makes bank contagion more likely.

⁴ See Hartmann, Straetmans and de Vries, "Banking system stability: A cross-Atlantic perspective", Carey and Stulz (eds.), *The Risks of Financial Institutions*, NBER and Chicago University Press, 2006. For a broader survey of the contagion literature and discussions of particular channels through which financial contagion emerges, see de Bandt and Hartmann, "Systemic risk: A survey", *ECB Working Paper Series*, No. 35, November 2000; Pritsker, "The channels for financial contagion," Claessens and Forbes (eds.), *International Financial Contagion*, Kluwer Academic Publishers, 2001; ECB, "Financial market contagion", *Financial Stability Review*, December 2005; or ECB, "The concept of systemic risk", *Financial Stability Review*, December 2009.

⁵ See Eichengreen, Rose and Wyplosz, "Contagious currency crises: First tests", *Scandinavian Journal of Economics*, 1996, or Bekaert, Harvey and Ng, "Market Integration and Contagion", *Journal of Business*, 2005.

⁶ Forbes and Rigobon, "No contagion, only Interdependence: Measuring stock market comovements", *Journal of Finance*, 2002, capture this through increased correlations during times of stress.

⁷ See, for example, Longin and Solnik, "Extreme correlation of international equity markets", *Journal of Finance*, 2001, or Hartmann, Straetmans and de Vries, "Asset market linkages in crisis periods", *Review of Economics and Statistics*, 2004.

Evidence of Contagion from the ongoing government debt crisis

Let me now turn to the evidence from the ongoing debt crisis. I will start by reviewing evidence of contagion across euro area government debt markets.

Sovereign-sovereign contagion

When Moody's downgraded Portugal on 5 July, it cited, among other factors, developments in Greece.⁸ Moody's believed that contagion from a default of Greece made it more likely that Portugal would require a second round of official financing. Moreover, referring to Greece as a precedent,⁹ Moody's indicated that a second round of official financing would entail private sector participation also in Portugal.

Unfortunately, this was not the end of the story. The downgrade of Portugal and, above all, the continuing fears of a Greek default apparently triggered a sell-off in Spanish and Italian government bonds. There had not been adverse data releases concerning the Spanish and Italian economies or budgetary situations around that time. By 18 July Italian government bond yields had increased by almost 100 basis points, while Spanish ones had increased by more than 80 basis points.¹⁰

What mechanism triggered these market moves? I believe it is fair to say that contagion played a major role. The initial rises in bond yields can be largely explained by the concerns raised by the scope and possible extent of the "private sector involvement" in Greece, which was set as a condition for a second programme at the euro area summit of 21 July.¹¹ Some investors may find it rational to start shortening sovereign debt and others simply to reduce their exposures to countries in the currency union since market concerns about government debt sustainability can become self-fulfilling if not tackled. Some other investors may also prefer to withdraw from some market segments in view of high volatility. Reduced demand leads to falling prices, which in turn reduces the value of bonds held by other investors. Investors may prefer to reduce exposures while their positions are still in positive territory, or to take small losses early, so as not to be exposed to potentially large losses or high volatility later. Markets may then also become illiquid, which can further increase the downward pressure on bond prices. Falling bond prices translate into higher yields, which worsens debt sustainability prospects for those governments which have significant funding needs, thus validating investors' expectations.¹²

⁸ According to Moody's, "the growing risk that Portugal will require a second round of official financing before it can return to the private market, particularly if the country were to suffer contagion from a disorderly Greek default, or merely from the growing likelihood of a default. Such contagion would meaningfully change the risks for investors that currently hold Portuguese bonds given the increasing possibility that private sector creditor participation will be required as a prerequisite for any further finance".

⁹ Moody's noted that "European policymakers have grown increasingly concerned about the shifting of Greek debt held by private investors onto the balance sheets of the official sector. Should a Greek restructuring become necessary at some future date, a shift from private to public financing would imply that an increasingly large share of the cost would need to be borne by public sector creditors. To offset this risk, some policymakers have proposed that private sector participation should be a precondition for additional rounds of official lending to Greece."

¹⁰ Negative news regarding developments within the Italian government surfaced 7 July and could have contributed to the narrowing of the yield gap between Italy and Spain, but they could not have triggered the joint sell-off.

¹¹ Chen's model, op.cit., explains in a banking context how a combination of such information and payment externalities can trigger contagious runs.

¹² Calvo, G (1988), Servicing the public debt: The role of expectations, *American Economic Review*, 1988.

This is merely anecdotal evidence of contagion. I therefore would now like to use some elements of the ECB staff's analytical toolkit in order to take a more systematic look at the data.

The first approach estimates the extent to which the deterioration (or improvement) in the sovereign CDS spreads for the three countries with a stabilisation programme supported by the European Union and the International Monetary Fund – Greece, Ireland and Portugal – affected the CDS spread for Italy or Spain. The spreads are estimated in two steps using multivariate frequency decompositions.¹³ First, the pattern of each CDS spread is ascribed to long-, medium- and short-run shocks. Second, the long- and medium-run shocks (which produce lasting effects) for Greece, Ireland and Portugal are used as additional explanatory variables in the models of the CDS spreads of Italy and Spain, over and above their respective own shocks. If this addition into the model leads to a statistically significant improvement in the forecast accuracy over a 100-day horizon, I will denote this as a contagion effect.

In 2010 these contagion effects accounted for about 37% of the variability observed in the Italian CDS spread. The impact of contagion became more relevant in 2011. As of mid-April 2011, the contagion effects acquired a trend-like shape, signalling that they were poised to be long-lasting. The situation deteriorated further in July 2011. The model thus provides evidence that the observed deterioration in Italian and Spanish CDS markets, especially in July 2011, can be explained to a large extent by contagion effects from the three programme countries.

Since these results and the interpretation I just gave might be dependent on the specific model used, let me consider another, very different approach. In this model, government bond yield spreads can switch between a low level – “normal regime” – and a high level – “crisis regime”.¹⁴ The likelihood of going from “normal” times to a “crisis” or vice versa is affected by three determinants: (i) markets' perceptions of the sustainability of a country's fiscal situation, (ii) markets' general risk aversion, and (iii) direct cross-country interactions, which I will denote as contagion effects. Estimating the model for Greece, Ireland, Portugal, Italy, Spain and France suggests for example that contagion effects to Italy are much more pronounced after the Lehman crisis than in the previous period. Until the beginning of 2008 the cross-country interactions increase the crisis transition probabilities by at most 5 percent. From 2009 onwards, the contagion effects to Italy increase to more than 20 percent according to this model.

In the third model a country's government bond spread vis-à-vis Germany is regressed on a measure of risk aversion, a measure of own sovereign solvency risk, the country's credit rating and the spillover effect from Greece, captured by the credit ratings on the Greek sovereign debt. Results confirm that besides general risk aversion and own credit risk also the Greek credit rating affected other euro area countries' bond spreads in a statistically significant way, in a small magnitude for some countries such as France and in a larger magnitude for other countries such as Ireland, Spain, Italy or Portugal.¹⁵ These “contagion” effects are more pronounced for countries with comparatively weak fundamentals. The findings are also consistent with the observation that CDS spreads of each euro area country have recently been higher, in some cases markedly, than the CDS spreads of other countries with the same ratings.

¹³ Based on Donati, Modelling spillovers and measuring their impact and persistence: Application to CDS spreads during the euro area sovereign crisis, internal ECB's unpublished manuscript, 2011.

¹⁴ Amisano and Tristani, Disentangling fundamentals and contagion in euro area sovereign bond spreads, internal ECB's unpublished manuscript, 2011.

¹⁵ De Santis, R.A. The euro area's sovereign debt crisis: Credit ratings agencies and the spread of the fever from Greece, Ireland and Portugal, internal ECB's unpublished manuscript, 2011.

Sovereign-bank contagion

Let me now turn to the evidence on contagion between government debt markets and banks. In July this year sovereign tensions spread not only to Italy and Spain, but also to banks exposed to the sovereign debt of these countries.

The sovereign crisis has clearly affected funding availability and funding costs for individual banks in the euro area. The coincidence of the sovereign debt problems and banks' funding problems constitutes only anecdotal evidence. Additional evidence can be obtained by applying the frequency decomposition model, the first one of the three models I described earlier, to bank CDS spreads. This shows that from the beginning of April 2011 onwards developments in the CDS spreads of Greece, Ireland, Portugal, Italy and France explain an increasing share of the variability in the CDS spreads of, for example, Société Générale and Crédit Agricole, whose CDS spreads doubled from early July up to mid-August. However, the two banks' exposures to Greece or any other of the programme countries did not increase during these months. In other words, contagion effects from government debt markets to banks, as defined in the model, have become more important in recent months in the euro area.

Overall, there seems to be significant evidence of actual contagion effects during the European sovereign debt crisis, despite the policies aimed at containing the spreading of instability. Note, however, that there may be latent contagion risks that have not yet materialised. It is quite likely that if the various crisis management measures had not been taken, contagion would be much more severe than presently observed.

Looking back in history

Before I turn to the ongoing European policy responses to contagion I would like to look back and consider what one can learn from history.

Fiscal stability in successful monetary unions

A first step is to consider the relationship between fiscal developments across countries in monetary unions when accompanied by political integration, although differences to the present European situation are still large. Michael Bordo and co-authors observe a common pattern in the experiences of the United States, Canada, Germany, Argentina and Brazil during the 19th and 20th centuries.¹⁶ Successful fiscal federalism seems to have been associated with "explicit or implicit no-bail-out clauses, constitutional restrictions and through discipline exercised by financial markets for government debt".¹⁷ In the cases of the US and Canada, the adoption of fiscal federalism entailed a shift of state debt onto federal hands. For the US this was achieved in the aftermath of the Revolutionary War through a plan developed and executed by Alexander Hamilton. Hamilton's plan transferred state debts accumulated during the Revolutionary War to the federal budget. In addition, it also converted state debts into bonds and established a "sinking fund", in which revenues were collected to finance bond purchases on the open market. In this way the US created an efficient way to smooth fiscal revenues over time and managed to tap into the bond market at reasonable rates.

Another interesting experience, albeit again different in terms of environment, is the Italian unification in 1861, when the Kingdom of Sardinia integrated various previously independent

¹⁶ Michael Bordo, Lars Jonung and Agnieszka Markiewicz, "A Fiscal Union for the Euro: Some Lessons from History", NBER working paper 17380, September 2011.

¹⁷ Bordo et al., op.cit., p. 26.

states. One of the first decisions of the newly constituted Finance Ministry of the Italian Kingdom was to underwrite all the outstanding debt of the integrated states.

The insight that may be gained from these historical examples is that a well functioning monetary union requires strong and innovative approaches to deal with regional fiscal problems. This includes appropriate incentives for keeping public deficits under control, also in a low-interest rate environment, and effective means for dissipating contagious sovereign solvency concerns.

Let me utter a word of caution here. All of the historical cases I have just mentioned are ones in which the political union was in place at the time of the monetary union. This implies that changes to the fiscal framework were more straightforward in these cases.

Central banks' role in containing the spreading of instability

Another relevant historical episode of significant contagion risks is the Russian sovereign debt default of August 1998. This event started a dramatic chain reaction, which included the subsequent failure of the hedge fund Long-Term Capital Management. As Russia defaulted and its currency collapsed so did its domestic banking system. The stress spread across the globe, and a number of international investors, in particular financial institutions, made large losses. Stock prices dropped sharply across emerging markets and the developed world. As security prices fell, the capital of investors and financial firms was eroded, liquidity withdrew from markets, volatility increased, and credit spreads for sovereign debt widened globally, abruptly and simultaneously.

The Russian crisis did not lead to a financial meltdown. First, central banks around the world provided ample liquidity to market participants, in various ways. Second, central banks helped in coordinating the actions of market participants, such as the eventual bailout of LTCM by the private sector. Arguably, central banks' action in the fall 1998 prevented the worst.

Key euro area policy responses to contagion risks

I now turn more specifically to policy actions in the euro area addressing the sources and propagation of the debt crisis. I start with the ECB and then move to the responsibilities of other public authorities.

In order to secure the working of the monetary policy transmission mechanism which is essential for the ability of the ECB to maintain price stability over the medium term, we drew on a number of non-standard monetary policy measures introduced over the course of the financial crisis had that started in the summer of 2007. The measures taken have overall contributed to stabilizing financing conditions and the flow of credit to the economy, all with the view to maintaining price stability.

Following the outbreak of the crisis in August 2007 and its dramatic worsening in September 2008, the ECB provided liquidity in more varied ways and at longer terms in order to address dysfunctions in the money market. It also cooperated with other central banks to contribute to an international response to an international money market problem. The joint provision of US dollar liquidity by initially three central banks, including the ECB, and later by many more central banks, was labelled by some observers as the Plaza Accord for money markets.

In the aftermath of the failure of Lehman Brothers, the ECB launched its policy of "enhanced credit support", a series of measures to enhance the flow of credit above and beyond what could be achieved through policy interest rate reductions alone. These measures include the unlimited provision of liquidity through "fixed rate tenders with full allotment"; the provision of liquidity at lengthened maturities of up to one year; and the provision of more liquidity in foreign currencies to euro area banks and of euro liquidity to other central banks for them to provide to their local banks; and a programme of purchases of covered bonds. As banks can

only make use of the ECB liquidity-providing facilities if they have sufficient collateral, the ECB also extended the list of assets it accepts as collateral. As it had been the case in the years before the crisis, we also adjusted collateral eligibility criteria in view of market developments in order to remedy evolving inconsistencies and avoid possible abuses. The total value of eligible collateral is very large. It equals about EUR 14 trillion,¹⁸ which amounts to about 150 percent of euro area GDP. From this total, the euro area banks have in their balance sheets about EUR 4 trillion with EUR 1.7 trillion already approved for utilization and creates the necessary room for manoeuvre in our liquidity provision that right now amounts to just EUR 570 million .

Facing the repercussions of the euro area government debt crisis, the ECB established the Securities Markets Programme (SMP). Under the SMP the Eurosystem buys securities in dysfunctional debt market segments in order to safeguard the transmission of monetary policy.

This framework has enabled the ECB to quickly respond to the market tensions resurfacing over the summer of 2011. Let me briefly recapitulate the most recent measures. On 10 August, the ECB has again provided liquidity at a maturity of six months. On 15 September, the ECB has announced three additional US dollar operations with a maturity of about three months, which cover the end of the year. Importantly, the ECB has, in response to disorderly conditions in euro area debt securities markets, resumed the active implementation of the SMP on 8 August to buy sovereign debt securities. The SMP aims to create a better functioning transmission mechanism of monetary policy to all parts of the monetary union and is in full compliance with the prohibition of monetary financing. The relative size of the programme, representing just 1.7% of the euro area GDP against 13.7% of GDP that has been bought by the Bank of England or the 11.4% purchased by the Federal Reserve, makes it easier to be fully sterilised.

On the other hand, at the recent October 6 meeting, the ECB decided to conduct two further one-year LTROs; to continue to apply fixed rate full allotment procedures in all monetary policy liquidity-providing operations for as long as needed and at least till the middle of 2012; and to conduct a second Covered Bond Purchase Programme (CBPP2) with an intended purchase amount of EUR 40 billion and over a period of one year starting in November 2011. All of these actions had clear positive impacts in line with their objectives. If we look at the past experience, the ECB's measures have enabled the monetary policy transmission mechanism to continue operating relatively well at the level of the euro area, containing also contagion, although it should be recognised that the transmission mechanism remains severely disrupted in some euro area countries.

ECB action was fast, targeted and decisive. But we cannot shoulder the burden of solving the problems alone. The euro area governments have to live up to their responsibilities. First, in the context of the recent agreements about improving the economic governance of the EU, governments need to adopt and implement ambitious medium-term fiscal consolidation plans and introduce structural reforms restoring the bases for competitiveness and growth of their economies. In this context, the ECB also welcomes the adoption of the so-called "six-pack" of new rules. Looking ahead, we however need to remain very ambitious in reinforcing economic governance in the euro area. Moreover, obviously, EU/IMF programme countries need to stick particularly closely to the commitments made.

Second, following the intensification of the euro area government debt crisis in May 2010, the euro area member states decided to create the European Financial Stability Facility (EFSF). The EFSF enables financing of euro area member states in difficulty, where financing is subject to conditions negotiated with the Troika consisting of the EU Commission, the IMF,

¹⁸ ECB, *Annual Report*, 2010.

and the ECB. The adjustment programme over time improves economic fundamentals and thus dissipates solvency concerns, which in turn enables the country to return to the markets.

On 21 July, the euro area Heads of State and Government reaffirmed their commitment to ensure the financial stability of the whole area and of its Member States and decided to improve the effectiveness and flexibility of the EFSF, particularly with regard to address contagion.¹⁹ The reform adopted at the summit enables the EFSF to act on the basis of a precautionary programme; finance recapitalisation of financial institutions through loans to governments also in non programme countries; and intervene in primary and secondary markets on the basis of an analysis of the ECB and mutual agreement of member states. Many countries have already ratified the agreements of 21 July and it is of utmost importance that the final ratifications are concluded and all elements are rigorously implemented.

The ECB considers it essential that governments swiftly implement the new instruments of the EFSF in line with the decisions of the Heads of State or Government of the euro area on 21 July. In this regard, it is, overall, absolutely crucial that the EFSF will have the capacity to fulfil its function for safeguarding financial stability in an effective manner. This implies that in order to maximize its efficiency, the EFSF's resources should be dedicated to enhance sovereign debt new issuance of securities, thus multiplying their effect. It would be less efficient to spend most of the funds available in the secondary market or in supporting bank's capitalisation. Capitalisation of banks is of course important but what is at the moment more important for the EFSF to do is to provide support to new bond issuance by, for instance, Italy or Spain.

At the same time, it is essential that the affected governments do not see the implementation of the new stabilization tools as incentives to weaken their efforts of strengthening their financial positions. Rather it is crucial that all support measures – be it in the form of loans or security purchases – are subject to strict conditionality regarding fiscal budget measures and structural reforms to increase the economic growth rate that is so essential to stabilize the debt ratio.

Conclusions

Let me now conclude by reiterating a few main messages that I wanted to convey today.

First, long historical experience suggests that central banks have an important role to play in contributing to financial stability, including containing contagion risks. They can do so by providing an anchor for stability through delivering on their primary objective of price stability, by providing as much liquidity as quickly and widely as needed, and by providing analysis and coordination to other policy makers and market participants.

Second, in the context of its systemic risk surveillance the ECB spends significant resources in identifying and assessing contagion risks. No matter how difficult it is to collect all the relevant information and to design the appropriate analytical tools, most pieces of evidence point to the existence of very significant financial and sovereign contagion risks in the euro area at the present juncture.

Third, containing such contagion is of great importance for overcoming the ongoing European debt crisis. There would be enormous economic and social damage if the ECB and other competent authorities do not respond appropriately and decisively within their respective mandates.

Fourth, whilst the ECB's action has been decisive and effective this alone is not enough. All parties need to live up to their responsibilities. It is of utmost importance that the agreements

¹⁹ Statement by the Heads of State or Governments of the euro area and EU institutions, Brussels, 21 July 2011.

of the heads of state or governments of the euro area and EU institutions of 21 July are honoured and rigorously implemented. This concerns particularly the ratification of the reform of the EFSF by all member states that have not yet done so. Moreover, all countries should meet their fiscal targets and introduce structural reforms that restore competitiveness and growth potential where they have been lost over the last decade.

If all parties honour their commitments, I am sure that Europe will successfully weather these difficult times. Thank you for your attention. I would be pleased to answer a few questions if you have any.