Why Official Bailouts Tend Not to Work: An Example Motivated by Greece 2010

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Market commentary in April 2010 suggested that once the IMF and EU aid package was finalized, Greece would be all right and bond spreads would fall. Exactly the opposite has been happening. We use the Greek event to illustrate why official bailouts in the form of loans are hard to implement successfully when countries have fundamental fiscal ('insolvency') problems, constructing a numerical example to show why this should not come as a surprise. The intuition is that the official loan to the troubled government does not guarantee an increase in the net present value of fiscal resources and so ends up providing liquidity support while adding new

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official debt that market investors may perceive as senior, devaluing their own claims falling due in the future and prompting a sell-off.

Here's what happened: in March 2010, the Greek government announced fiscal austerity measures and began discussions with the EU and IMF. On March 26, Eurozone leaders endorsed a plan to help Greece avoid default, which would include IMF assistance. At the end of the month, the Greek government warned that it might not be able to rein in the deficit unless interest rates came down.

There were then three successive announcements of assistance, each involving a substantial increase in the sum of money forthcoming:

- The Eurozone announced a €45 billion package on April 12 (of which €15 bn from the IMF)
- On Monday May 3, the size of the EU-IMF package for Greece was upped to €110 bn
- Exactly a week later, a €750 billion package was announced to help Greece as well as countries vulnerable to contagion from Greece (€440 billion in EU loans and guarantees; €60 bn in EU balance-of-payments support; and €250 bn from the IMF)

These official 'bailout packages' consist of interest bearing loans which in effect replace maturing private debt; if grants were given instead, this would be an entirely different story as it would lower government indebtedness and hence risk.

Table 1 contains a timeline of key events with the accompanying bond and credit default swap (CDS) spreads for Greece.

Three observations are striking: (i) In spite of the announcement of progressively bigger bailout packages (April 12, May 3, May 10) Greek bond spreads continued to increase substantially.[1] A peak was reached on May 7; but even though spreads fell on May 10 with the announcement of the mega €750 billion package, these spreads were much higher than on April 12. (ii) The decline in spreads from the peak on May 7 was much greater for the 2-year bond; but what is puzzling is why this spread does not fall to zero, since the mega package amounted to guaranteeing all outstanding two-year bonds! (iii) Notwithstanding the finishing touches to the mega-package on June 8, by June 15, spreads were much higher than on April 12 when a 'mere' €45 bn package was announced. The upward trend has been maintained subsequently as shown in the last row of the table. Remarkably, the two-year bond spread is consistently higher than the 10-year spread after March 4, 2010.

A NUMERICAL EXAMPLE

We start with a simple two-period situation where the government has a

Table 1
Key Events and Accompanying Market Signals for Greece

Date/Event	2-year bond spread	10-year bonds spread	CDS spread
Jan 4 2010: Reference point	183	233	281
March 4: Greece sells new 10-year bond after announcing fiscal austerity measures	429	297	307
Stage 1 bailout			
March 26: Eurozone reaches accord on Greek contingency plan but at market interest rates	346	305	296
March 31: Greek government warns it may not be able to cut fiscal deficit if bond yields stay high	416	344	343
April 9: Friday prior to bailout package announcement	593	399	426
April 12: Monday, Eurozone announces €30 bn plus €15 bn from IMF for Greece	502	350	364
April 14: Investors skeptical about bailout implementation	571	394	433
April 23: Greece formally requests assistance	932	560	616
April 28: S&P downgrades Greece to junk	1512	693	750
Stage 2 bailout			
May 3: Monday, EU-IMF €110 bn package announced for Greece	947	544	643
Stage 3 bailout			
May 7: Friday: Contagion fears hit global markets	1773	965	941
May 10: Monday, massive EU-IMF €750 billion funding facility announced to help Greece and curb contagion	693	481	586
June 8: EU puts finishing touches on its €440 bn rescue package	708	561	795
June 15: Moody's cuts Greek rating to junk	811	641	815
January 28, 2011: Markets seem unconvinced	1198	831	892

Source: Bloomberg. Bond spreads relative to German bonds. CDS spread is the five-year credit default swap spread based on New York data.

liquidity but not a solvency problem, in the sense that the present value of primary fiscal surpluses equals that of the debt to be repaid. Let's call this Scenario 1. In Scenario 2, the government has a solvency problem as well and has to explore options on how to deal with it. Table 2 shows these scenarios.

The debt service due in each period is shown in the second row of the table; the risk-free rate is assumed to be 5 percent. In Scenario 1, the government has debt service payments falling due of $100 in period 0, but can generate a primary surplus of only $75. But this is not a problem because it can borrow $25 at the risk-free rate r*=0.05 to make up the difference; r* is the interest rate in a benchmark country like the U.S. or Germany. This means the total amount it must repay in period 1 is 25x1.05+157.50=$183.75, which can be exactly met out of the primary surplus in period 1.

In Scenario 2, there is a problem because the primary surplus for period 1 goes down to $175. On equity grounds, the government decides to give an identical haircut to creditors in both periods. How much should it borrow in period 0 and what interest rate will the new lenders, anticipating a haircut, charge? Let p be the number of cents per dollar that creditors get back in both periods. In that case, new lenders will solve the following pair of simultaneous equations, where i is the interest rate they will charge:

(1) $p(1+i) = 1+r^*$

(2) $[(100p-75)(1+i)+157.50]p=175$.

Equation (1) is simply an arbitrage condition for new lenders: they lend 100p-75 at i but will get only p cents back on the dollar and the right-hand-side is the opportunity cost, as they could simply buy treasury bills issued by the benchmark country. Equation (2) depicts the budget constraint of the government in period 1. Solving these equations yields p=0.9667 and i=8.62 percent. In other words, creditors get 96.67 cents on the dollar and the spread jumps from zero to 362 basis points. Note that this is the spread on period 1 debt: that on period 0 debt is much higher since the debt in both periods is subject to an identical haircut but period 0 debt is due instantaneously (analogous to 2-year spreads being much higher than 10-year spreads in Table 1).

Now consider a situation where the government wishes to avoid restructuring its debt (or defaulting). So it borrows $25 from official sources at r* in period 0. Since official debt is implicitly senior and nonnegotiable, period 1 creditors get (175-25X1.05)/157.50=0.9444 or 94.44 cents on the dollar. Thus, while period 0 spreads stay at zero (since the official loan enables the amount due to creditors to be paid off fully) period 1 creditors now get only 94.44 cents versus 96.67 cents earlier and the spread on period 1 debt jumps from 362 basis points to 620 basis points![2]

CONCLUSIONS

When would an official bailout work in the sense of lowering risk spreads to

Table 2
Two Hypothetical Fiscal Scenarios

		Period 0	Period 1
	Debt service due	100	157.50
Scenario 1 (liquidity)	Primary surplus	75	183.75
Scenario 2 (solvency)	Primary surplus	75	175

pre-crisis levels? Giancarlo Corsetti, Bernardo Guimaraes and Nouriel Roubini as well as Stephen Morris and Hyun Song Shin argue this would be the case if official lending in a crisis worked as a catalyst, encouraging new private sector lending and government reforms towards a higher future primary surpluses (at least 183.75 in our example). Our example illustrates that a lending program must generate a strategic complementarity that is sufficiently strong to overcome the higher risk premium associated with private lending perceived by the markets as junior to official lending. A complete analysis requires a model with uncertainty, imperfect information and multiple periods and is the subject of our current research.

Greece's bailout would work only if its ability to generate future primary surpluses went up substantially. Otherwise, bond spreads would rise as indeed they have and the only ones gaining would be those whose bonds mature as the official loans flow in, as they would be able to exit at 100 cents on the dollar. With this reasoning, the stubbornly high risk-spread on two-year bonds is noteworthy. It indicates a persisting lack of confidence in the feasibility of the announced bailout or the Greek government's fiscal program. Alternatively, it could be reflecting the risk that a country in Greece's position may decide to pull the plug on the program and seek a debt restructuring instead of taking on official debt which must be paid off in full.

The negative interaction between official seniority and solvency problems was first pointed out in a 2001 paper on the 1998 Russian crisis. Homi Kharas, Brian Pinto and Sergei Ulatov noted (page 43): "A debt-based (official) liquidity injection that aims to boost confidence could worsen public debt dynamics while offering heavily exposed (private) investors a convenient selling opportunity....the financing portion of the package could actually trigger a crisis if the market is sufficiently skeptical about the implementation of fiscal and structural reforms. This argument is even stronger if the (official) liquidity injection involves debt that is perceived to be senior to existing claims of private creditors."[3]

The chances of success could be increased by combining official senior loans in such situations with an upfront haircut for market investors: in our example, an official program which raises the period 1 primary surplus to 180 (which might be regarded as more credible than a return to 183.75) with an equal haircut for all investors on equity grounds would lead to a p of 0.9857, a period 1 risk spread of just 152 basis points and an official loan of 23.57 instead of 25.

Postscript

We submitted this article to The Economists' Voice in mid-November 2010. Just prior to publication, a similar article by Daniel Gros dated December 5, 2010 was brought to our attention. He attributes the problems with the Irish bailout in part to the November 28, 2010 announcement that from mid-2013, official financing to countries from the Eurogroup would be senior to private loans. However, problems have been evident with the Greek bailout long before the November seniority announcement, indicating that what matters is the market's perception of implicit official seniority and the credibility of the fiscal package—otherwise we would have seen Greek 2-year bonds drop to zero well before that.

NOTES
1. By February 2010, i.e., before any bailout formulation, the manipulation of Greek fiscal and data was well-known and therefore would not

have been a major factor in the subsequent rise in bond spreads. See "Eurostat experience highlights doubts over Greek data", dated 22 October 2009: http://euobserver.com/?aid=28871; and "Greece rattled by 'hidden debt' controversy" dated 2 February 2010: http://www.telegraph.co.uk/finance/comment/ambroseevans_pritchard/7140233/Greece-rattled-by-hidden-debt-controversy.html.

2. This can be obtained by solving for i from 0.9444(1+i)=1.05, which yields 11.2 percent or a spread of 620 basis points.

3. Words in parentheses added. The 1998 Russian bailout involved an upfront official liquidity injection to preserve the ruble's peg to the dollar, which backfired as ruble Treasury bill holders seized the opportunity to exit, precipitating the crisis.

REFERENCES AND FURTHER READING

Aizenman, Joshua, Kenneth E. Kletzer and Brian Pinto (2005) "Sargent-Wallace Meets Krugman-Flood-Garber, or: Why Sovereign Debt Swaps Don't Avert Macroeconomic Crises," Economic Journal, 115: 343-367. Available at: http://papers.nber.org/papers/w9190.

Corsetti, Giancarlo, Bernardo Guimarães, and Nouriel Roubini (2006) "International Lending of Last Resort and Moral Hazard: A Model of the IMF's Catalytic Finance," Journal of Monetary Economics, 53(3), 441–71. Available at: http://www.nber.org/papers/w10125.

Gros, Daniel (2010) "The Seniority Conundrum: Bail out countries, but bail in private, short-term creditors?" Available at: http://www.voxeu.org/index.php?q=node/5891.

Kharas, Homi, Brian Pinto and Sergei Ulatov (2001) "An Analysis of Russia's 1998 Meltdown: Fundamentals and Market Signals," Brookings Papers on Economic Activity, 1: 1-68. Available at: http://muse.jhu.edu/login?uri=/journals/brookings_papers_on_economic_activity/v2001/2001.1kharas01.pdf.

Morris, Stephen and Hyun Song Shin (2006) "Catalytic Finance: When Does It Work?" Journal of International Economics, 70(1), 161–77. Available at: http://hyunsongshin.org/www/catalytic9.pdf.