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The Political Economy of the Greek Debt Crisis: A Tale of Two Bailouts

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Abstract

We review the events that led to the May 2010 and July 2011 bailout agreements. We interpret the bailouts as outcomes of political-economy equilibria. We argue that the second bailout was not on the Pareto frontier and sketch political-economy arguments for why this may be so.

1   Introduction

Between 1999 and the fall of 2009 spreads between the sovereign debts of Germany and Euro-area countries have consistently been below 50 basis points, suggesting that Euro area government bonds were effectively seen as perfect substitutes by financial-market operators. Since the fall of 2009, spreads have widened dramatically, first in Greece, then in Ireland and Portugal, then in Spain and Italy, and so on towards the core, so that currently the cross-section of government-bond yields resembles the pre-Euro cross-section (see Figure 1). Because sovereign bonds in the Euro area are now denominated in a common currency, the widening of spreads reflects concerns with outright default. Accordingly, all of the rating agencies have duly downgraded many of the Euro area governments: there have been 77 downgrades of sovereign bonds since the summer of 2009, spread over 9 countries, including ones that were rated triple-A at the beginning of the process. Three countries, Greece, Portugal and Ireland, have currently virtually no access to private financing on a medium and long term basis but can only issue bills. As a consequence, they have had to be bailed out by other Euro-area governments and by the IMF. Other countries, Spain, Italy and Belgium, have been indirectly financed through purchases of their bonds by the ECB on secondary debt markets.

Most modern sovereign bond crises have been managed in Washington, DC, by a combination of the International Monetary Fund (IMF) and the US government. A distinctive feature of the current European debt crisis has been that, while the IMF has played an important supporting role, the key decisions and the overall management of the crisis have been taken by European institutions: the European Council (which is made up by all the heads of government of the European Union) and the European Central Bank (ECB). This distinction raises a number of potentially interesting questions.

First, to the extent that the IMF is largely a technocratic institution (though of course subject to political influence) while the European Council (EC) is made-up of politicians, one may expect the management of the crisis by the EC to be more conditioned by electoral concerns. Second, since there are 27 members to the EC, representing countries with potentially different interests, one may expect that bargaining and compromise will play a greater role than in cases where the two players are simply the IMF and the country whose debt is under pressure. Third, the presence of an additional powerful player, the ECB, whose actions can greatly affect the outcome of the crisis, may be expected to impact both the incentives and the constraints of the EC, and introduce further differences in its policy response.

In this paper, we revisit some salient passages of the crisis, keeping an eye out for indications that

the considerations above have indeed played a role in shaping the policy response. We do this with two modest goals in mind. First, we want to assess to what extent it appears possible to rationalize some of the observed decisions as political-economy equilibrium outcomes of the complex game briefly sketched out above. Second, we want to discuss the extent to which such political-economy equilibria appear to be efficient and, if they are not, what role the particularities listed in the previous paragraph may help understand why the policy response has been inside the Pareto frontier.

Because the ongoing crisis has engulfed many countries and the policy response has been complex and multidimensional, we have to limit our overview both in time and space. We have therefore decided to focus narrowly on policies towards Greece, where the crisis started, and to the period between September 2009 to July 2011. In practice, this takes us from the inception of the crisis, through the period leading up to the first Greek bailout (May 2010), and all the way to the second bailout at the end of our period of analysis. Hence, the paper largely turns into "a tale of two bailouts."

The paper is a first attempt to organize ideas about events that are exceptionally recent and "raw." Our comments are therefore speculative at best. With that caveat, we are inclined to judge the two bailouts very differently. In particular, we argue that the May 2010 bailout, as a political-economy equilibrium, appears to be potentially consistent with Pareto optimality. It is difficult for us to identify possible alternative deals that would have made all interested parties (weakly) better off. In contrast, we suggest that the political-economy equilibrium embodied in the July 2011 bailout looks to be inside the Pareto frontier. Specifically, had the deal *not* required that Greece seek a symbolic negotiated reduction in the value of its outstanding debt to private creditors, and had it contained more lenient austerity measures to be undertaken by the Greek government, all interested parties may have been (weakly) better off. We then use the three above-named features of domestic electoral concerns, bargaining among several parties, and presence of the ECB as an additional player to sketch arguments for why suboptimal equilibria can arise in the novel circumstances of the European debt crisis.

An implication of our discussion is that, had the "normal" procedure of entrusting the IMF with the management of the crisis been followed, the policy outcome may have been different. Naturally this begs the question of why the EC "took charge." Reportedly, on losing access to private funding the Greek government's first inclination had indeed been to turn to the IMF. This however was virulently opposed from within Europe, most aggressively by France and by the ECB.[1] We frankly admit that we are not

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[1] The French president Sarkozy is rumored to have told the Greek prime minister: <<You are not Botswana.>> Interestingly, as one of the most successful countries in Africa, Botswana is very unlikely to ever need IMF's, or anyone else's,

able to offer satisfying conjectures on the political and/or economic reasons why either of these players was opposed to allowing the IMF to manage the crisis, especially at a time where it appeared possible that the crisis would be limited to Greece.[2]

The paper is organized as follows. Section 2 looks at the period leading up to the first bailout, and assess the first bailout as a political economy equilibrium. Section 3 does the same for the period up to and including the second bailout, and sketches arguments for why bailout agreements reached within the EC may be inside the Pareto frontier. Section 4 summarizes and concludes.

2   The First Bailout

2.1   The Road to the May 2010 Bailout

The proximate trigger for the beginning of the erosion of market confidence in Greece's debt appears to have been the announcement, by the newly-elected socialist government in October 2009, that the overall budget deficit was much larger than stated by the outgoing government.[3] Previously thought to be in the order of 6 to 8% of GDP, the deficit was now deemed to be between 12 and 13%. With a debt/GDP ratio estimated to be 115%, and growth prospects generally seen as fairly mediocre, the announcement led market participants to begin questioning the long-run solvency of Greece. Such concerns came to a head in December when Fitch downgraded the Greek sovereign from A- to BBB+, the first time in ten years Greece was rated below the A grade. The December downgrade will prove to be the first of many. Overall, between October 2009 and July 2011 Greece was downgraded 6 times by S&P (leading it from a rating of A- before the crisis to one of CC) 6 times by Moody's (from A1 to Ca), and 7 times by Fitch (from A to CCC).

With Greek solvency now openly questioned by the rating agencies, Greek spreads begun to diverge from the rest of the Euro area. In a mechanism often seen during the crisis (and previously during the crisis in the financial sector in 2007-2009) markets views on Greece changed astonishingly rapidly, in

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help.

[2] One possibility in the case of France may be that president Sarkozy did not wish the then managing director of the IMF, and presidential challenger, Dominique Strauss-Khan, to play a prominent role on the European stage.

[3] This is merely an empirical statement about what appears to have triggered concern. Neither here nor anywhere else in the papaer we make any attempt to rationalize the behavior of financial markets (and rating agencies), before or during the crisis. Our arguments do require some assumptions on financial markets reaction functions to policy decision and other news, but the assumptions we make are purely empirical and based on observation, not on a theory that rationalizes such observations. We leave the task of coming up with such a theory to financial economists, and wish them best of luck with what appears to us to be an exceedingly arduous task.

seemingly self-reinforcing fashion. By the spring Greece, which only six months before could borrow at rates essentially identical to those paid by Germany, was effectively shut out of the financial market.

The Greek government's response to this predicament was twofold. On the domestic front, it announced and implemented a number of austerity measures, aiming to reduce the budget deficit. In the appendix we include a (partial) list of these measures. Overall, they appear to us to represent a considerable effort. Nevertheless, they were far from sufficient to close the enormous deficit, so with no access to private financial markets this left a very large prospective funding gap. On the external front, therefore, the government begun exploring options for a bail out that would allow it to fill the funding gap and avoid default.

As already discussed in the Introduction powerful European governments and institutions essentially told the IMF to seat in the passenger seat, thereby giving the leading role to European governments and the European Council. Nevertheless, the agreement that was struck by the European Council and the IMF in May 2010 had a distinctive IMF-like flavor, as it amounted to a fairly straightforward "division of labor" where Greece committed to a severe austerity programme in exchange for a significant amount of official financial assistance.

Specifically, with the May 2010 agreement Greece committed to bringing the deficit down to 3% of GDP by 2014, with detailed quarterly targets the compliance with which was to be monitored by officials from the IMF, the European Commission, and the ECB. All other Euro area states were to make bilateral loans to Greece, roughly in proportion to the size of their economies, for a total of approximately £80bn over three years. The IMF was to lend an additional £30bn over the same period. The role of the bailout funds was to fill the funding gap left by the austerity programme, for the period deemed necessary before Greece could return to borrow on financial markets at acceptable terms.

Some key elements of the May 2010 plan are shown in Table 1. The plan called for Greece's large primary deficit to disappear by 2012 and turn into a significant surplus by the end of the programme. Overall deficit reductions were significantly front-loaded, presumably in order to establish credibility but also, of course, to reduce the needed external assistance. This plan was expected to lead the debt/GDP ratio to stabilize by 2013. Clearly, any such expectation was contingent on assumptions about the future path of GDP, which are also shown in the table. Greece was expected to go through a severe recession lasting until 2012, with sub-standard growth in that year as well. Perhaps more importantly, the adequacy of the bailout to fill the funding gap depended not only on Greece's meeting its deficit targets, but also on it recovering access to credit from private agents in a relatively short time. The last column of Table

1 shows the assumed path of interest-rate spreads underlying the May 2010 agreement.

In evaluating this, or any other, agreement, a key question is whether the actions it commits its parties to are in the feasible set. In particular, given the severity of the austerity programme it asked Greece to implement, one may question whether on an *ex-ante* basis the plan was a realistic one. Any answer to this question is necessarily highly speculative, but a rough stab at it is contained in Table 2. In this table, we report data from the 8 largest fiscal adjustments in OECD countries since the 1980s.[4] For each episode, each column shows the *percentage-point change* in the *primary* deficit achieved in each year of the programme. It also shows the average annual and cumulative percentage change in the primary deficit, and (implicitly) the programme duration. In the penultimate column, we present equivalent numbers for the May 2010 austerity programme. Note that while the figures in the first eight columns are ex-post numbers, i.e. they reflect adjustments that were actually achieved, the column for Greece reports ex-ante numbers, i.e. what was expected of Greece going forward.

The overall impression from Table 2 is that the austerity programme that Greece was called on to implement by the May 2010 agreement was tough but not unprecedented. The numbers for the Greek plan are of comparable magnitudes of these very large adjustments, and correspondingly call for a vast effort. But there is no dimension of the programme that appears to be an outlier. There are countries that have had larger average annual and cumulative percentage-point declines in the primary deficit, larger declines in individual years, more front-loaded, and longer programmes. In conclusion, we submit that a dispassionate observer may legitimately have deemed the May 2010 agreement as committing its parties to actions that were in the feasible set.

2.2 Understanding the first Bailout

It is quite possible to rationalize the May 2010 agreement using the simple logic of bargaining over the division of a surplus. We first discuss the make-up of the surplus in some detail and then turn briefly to its division through bargaining.

As all the key players in the agreement were elected heads of government (or aspiring ones, in the case of

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[4]The Table shows the largest eight episodes of cumulative reduction in the primary deficit/GDP ratio in a sample of 20 OECD countries from 1970 to 2010. We consider episodes of fiscal tightening all years in which the primary deficit/GDP falls. We cumulate the decline in the primary/deficit over consecutive years in which it falls. Note that we would select a similar set of countries/years if we used a measure of cyclically adjusted primary deficit/GDP ratio to select episodes of fiscal tightening. Countries included in the sample are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, the Netherlands, New Zealand, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States. The methodology is quite similar to the one used in Alesina and Ardagna (2009) in their study of the determinants of success in fiscal consolidations.

the IMF) the appropriate assumption concerning objective functions is that they have two arguments: the probability of reelection and a measure of social welfare. The relative importance of these two arguments reflects the head of government's relative public spiritedness, and may conceivably vary across heads of governments, or with expected distance in time from the next election. In general, the more office-motivated the head of government, the greater the weight on reelection probabilities in his or her objective function. The more public-spirited, the greater the weight on social welfare. Note that social welfare here is intended very broadly, and, in particular, may not refer exclusively to the welfare of one's own citizens. For example, hypothetically there may be heads of government that feel such a very strong European identity that they may be willing to trade-off one's own citizens' welfare for the greater good of Europe.[5] In sum, to discuss the possible surplus from a deal among the key players we need to identify both the economic and the electoral implications of different outcomes (as perceived by the players themselves).

Begin with the possible surplus for the Greek head of government. Since Greece was shut out of the financial markets, and running a deficit in excess of 10% of GDP, it would certainly have defaulted on its debt had it not been bailed out. The consequences of a possible default were deemed (correctly, in our view) to be catastrophic for Greece. With a primary deficit still in the order of 8% of GDP in mid-2010, it is highly unlikely that a default would have restored market access. This means that Greece would still have had to incur a gigantic and instantaneous fiscal adjustment of a magnitude at least equal to the primary deficit. Furthermore a Greek sovereign default would have devastated the Greek banking and financial sectors, both of which had massive positions in Greek government bonds. And, needless to say, the Greek government would have been incapable of recapitalizing them. Hence, both because of the brutal fiscal retrenchment that a default would have required, and because of the collapse of the banking and finance sector, Greece was likely to experience a deep depression following a default.[6] Such economic dislocation would nearly certainly have spelled political death for the head of state (and possibly a long

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[5] A related point is that in some cases maximizing social welfare is actually the reelection-probability maximizing strategy, in which case there is no trade-off between the two arguments in the objective function. The distinction is only relevant in cases where pursuing socially beneficial policies is electorally damaging. By and large, this has been the predicament of politicians in many continental European countries not only during the crisis but for many years and even decades before the crisis. Indeed it is precisely this trade-off that explains why many of these countries had disorderly public finances and/or desperately distorted economies on the eve of the crisis.

[6] This discussion assumes that Greece's relevant outside option was just default. In fact it was often assumed at the time that in case of deafult Greece would also leave the Eurozone. While there is of course no logical reason why Greece could not default while staying in the Eurozone, it is possible that, conditional on defaulting, it would make sense for Greece to abandon the Euro, *and impose capital controls* (without capital controls the benefits of leaving the Euro for a country in Greece's situation would likely be very limited). Even so, it seems difficult to imagine that Greece could have avoided a deep depression had it have to default on its debt.

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exclusion from power for his party).[7]

A bailout deal that prevented default could easily have appeared to be a better option. To be sure any such deal would impose significant austerity on Greece, but as we have seen savage austerity would have been in the cards in the case of default as well. Furthermore, a bail out would have prevented the collapse of the Greek financial sector. There was therefore a wide range of austerity/bailout packages that dominated default, both for the Greek economy and for the electoral prospects of the Greek head of government.

The consequences of a possible Greek default for other European countries were more complex. There were some significant exposures to Greece, especially within the German and French banking sectors. Nevertheless, given the small absolute size of the Greece government bond market, few of such exposures were large enough to threaten the solvency of individual financial institutions, and even in these cases the respective governments could have underwritten the risks relatively easily. For example in June 2010, Germany and France's foreign claims vis-a-vis Greece were respectively \$31bn and \$57bn, of which \$23bn and \$18bn exposure to Greek government debt. As a fraction of the total assets of the monetary financial institutions, these sums were trivial: for Germany foreign claims vis-a-vis Greece were equal to 0.3% of total assets and the exposure to Greek government debt was 0.22%. For France, foreign claims vis-a-vis Greece were 0.55% of total assets and the exposure to Greek government debt was 0.17%.[8] However there was a high perceived probability that a Greek default would trigger "runs" on other Euro-area sovereigns. In particular, it was thought at the time that a Greek default may shut Portugal, Ireland and, possibly, Spain out of the financial markets, leading to defaults in these countries as well. A Greek default was often described as the sovereign equivalent of the Lehman Brothers bankruptcy in finance.

Such contagion would be very costly, for the countries engulfed in it, obviously, but also for other Euro area members. In particular, exposure of core-country financial institutions to assets from potential victims of contagion was obviously much more significant than to Greece only, and the corresponding costs of recapitalizing domestic financial institutions correspondingly much larger. For core European countries, failing to bail out Greece might well have meant having to bail out their own financial system not only for the loss of Greek assets but also for those issued by Portugal, Ireland, and, possibly, Spain.[9] Such

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[7]Debt default frequently spells political instability. For example Borensztein and Panizza (2008) show that in half of the defaults episodes in the sample they considered there was a change in the chief of the executive either in the year of the default episode or in the following year.

[8]Here and elsewhere in the paper data on bank exposures are from the Bank for International Settlements (BIS).

[9]The following calculation may be instructive: Germany's contribution to the first Greek bailout was \$29.3bn. Germany's banks at the time owned \$23bn of Greek government bonds. Hence, the costs of bailing its banks directly for Greek bond

potentially large bail outs of domestic banks would not only be costly for the economy, but also for the electoral prospects of the heads of government. In 2010 there was still much lingering resentment for the dislocations caused by the 2007-2009 financial crisis, a resentment exacerbated by government bailouts of banks. Further direct bank bailouts would be deeply unpopular, and it may plausibly have appeared to be politically less costly to disguise such bailouts as bailouts to a fellow Euro area government.

Aside from the potential costs of contagion and consequent bank bailouts, a Greek default may have been perceived by some heads of government as a threat to the integrity and long-term viability of the common currency. As already mentioned (footnote 6) it was often assumed that Greek default would be accompanied by Greek exit from the Euro. Some heads of government might have felt that such an exit would be seen as a precedent, to be used by other countries in the future to engineer more accommodating monetary conditions. The possibility of further future exits would also make it harder to establish the Euro as an international reserve currency. To the extent that some of these same heads of government are deeply ideally committed to the European unification agenda, they may have perceived such potential threats to the Euro as very costly.[10]

A final consideration that would probably have weighed strongly against allowing Greece to default was fierce pressure from the ECB to avoid such an outcome. The ECB would obviously have been particularly alive to the just-discussed possibility of Euro-zone shrinkage or breakup, given that its very influence and existence depends on the size and existence of the Euro zone. Furthermore it was in the ECB's political interest to make sure that the crisis continued to be perceived as merely a sovereign debt crisis, while keeping the banking implications below the surface of the public debate. As we have seen a default would have exposed the banking implications. As preeminent monetary authority in the Euro area, such exposure would have been embarrassing and would have had the potential of weakening the independence of the Bank. Finally, the bank itself was exposed towards Greece, as it accepted Greek sovereign bonds as collateral for its liquidity provision operations.[11] Given the enormous influence of ECB policy on Euro area

losses or indirectly through the bail out of Greece had similar orders of magnitude. However, once the consequences of a Greek bailout on potential losses on other countries' debt are factored in, the indirect bail out appears to be much the cheaper option. German banks at the time owned $60bn of Greek, Portuguese, Irish and Spanish government debt and $151bn of banks' debt of these countries.

[10]We do not want to overemphasize this point, as we suspect a majority of European heads of government (and certainly their electorates) would actually be quite happy to get rid of the Euro at this stage, if they only knew how. However, it must be said that several such governments explained the decision to bail out Greece as motivated by their desire to <<save the Euro.>> To be sure, the main reason for couching the decision in these terms was that <<save the Euro>> sounded better, at the time, than <<save the banks.>> Still, we can't rule out that some heads of government might have meant it.

[11]After the bailout the ECB's exposure to Greece further increased as it begun engaging in direct purchases of Greek (and other countries') soverign bonds.

macroeconomic conditions, it is very likely that the ECB's lobbying will be highly influential with Euro area heads of governments, so its opposition to a default is likely to have weighed in their calculations.[12]

Against all of these considerations that appear to favor bailout over default, the critical countervailing issue is moral hazard. A bailout may encourage Greece to over-borrow in the future. More importantly, a bailout of Greece may lull other Euro-area governments into believing they will also be bailed out, thus indulging in over-borrowing as well. We should note that this moral-hazard argument is less straightforward than it seems. In particular, as an effective tool to kill moral hazard, core countries governments would have had not only to let Greece default, but also refuse to recapitalize their banking sectors following the capital losses on Greek (and Portuguese, and Irish, etc.) debt. Without this second ingredient banks in the Euro area would simply have learned that a sovereign default in the Euro area can happen, but is of little consequence for their balance sheets, as any losses will be repaid by taxpayers in their own country. Thus reassured, these banks would have continued to lend to other Euro-area governments at relatively favorable terms, and the problem of over-borrowing would not necessarily have been removed. Since we think it exceedingly unlikely that core-country governments would have refused to bail out their own banks, we believe the moral-hazard argument for allowing Greece to default is probably overrated.

Even assuming that allowing Greece to default is an effective means to remove moral hazard, it does not follow that any bailout deal generates moral hazard. In particular, any bailout deal is a "burden sharing" agreement, whereby the funding shortfall is filled with a combination of austerity and financial assistance. It seems highly plausible that there is a range of austerity/assistance combinations that make the deal "painful enough" for the recipient country as not to wish to go through the same experience again. And, by observing the painful sacrifices undertaken by the recipient of the bailout (not to mention a Greek prime minister losing his job in the process), other countries as well should be able to infer that over-borrowing is not rewarded.

In sum, it seems possible to conjecture that, as long as the austerity component of the bailout deal satisfied the "painful enough" condition just stated, there was significant surplus from avoiding default in May 2010. In practice, the figures in Table 1, as well as extensive reports of plummeting living standards in Greece over the last two years, suggest that the "painful enough" condition was more than met by the conditions of the deal. In fact, given the harshness of the conditions imposed on Greece we speculate that most of the surplus from the deal went to the core countries. No doubt this reflects Greece's very weak

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[12] Another European institution that lobbied heavily against a default was the European Commission. However there is no evidence, nor reason to believe, that the Commission's views carry much weight with EU heads of governments.

bargaining position, owing to the catastrophic consequences for itself from a failure to reach a deal.[13]

3   The Second Bailout

3.1   Road to the Second Bailout

Things initially went as planned in the May 2010 agreement, and for the rest of 2010 there was considerable optimism that Greece would succeed in eventually stabilizing its debt-GDP ratio without a default. A large number of fiscal provisions and other reforms were implemented by the Greek government, and the IMF and the European Commission issued a sequence of favorable reports on the implementation of the deal. In the appendix we present a partial list of major bills approved by the Greek Parliament as part of the austerity and reform programme. In early 2011 Greece was still judged to be substantially on track to meet its deficit targets. Several bailouts tranches were duly paid out.

Unfortunately, such optimism begun evaporating in the first months of 2011. Two factors contributed most to the growing realization that the May plan would have to be revisited. First, Eurostat published a revised estimate of the 2009 deficit which placed it at 16% of GDP, or 2% higher than it had been thought to have been in May. To appreciate the full impact of this discovery it is important to note that the bailout agreement expresses targets in terms of the *level* of the debt/GDP ratio, not the change. Hence, a fiscal contraction in, say, 2010 deemed to be sufficient to reach targets if the initial deficit level is 14%, is no longer sufficient if the starting point turns out to have been 16%. This is akin to a marathon runner who has run 40 Km, and hence believes to be in the proximity of the finishing line, and is then told that, due to a mismeasurement, the start line had been incorrectly set at 52Km from the end, so there are in fact another 12Km to go. Figure 2 shows the path of the deficit-GDP ratio implied by the first bailout as well as the path required to meet targets following the Eurostat revision.[14]

Second, and most pernicious, there was by early 2011 clear evidence that assumptions on relatively

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[13] Another reason for Greece's very low bargaining power may be the sheer force of numbers. The deal is made in a room with 27 finance ministers, and finalized in one with 27 heads of government. Essentially, it is1 against 26. The intimidating nature of this situation should not be underestimated.

[14] There is an interesting discussion to be had on the rationale for couching bailout-agreements in terms of deficit-GDP targets rather than in terms of changes to the absolute value of the deficit. Targeting levels rather than changes means that the recipient of the bailout carries all the risk from data revisions. Targeting the ratio of the deficit to GDP rather than the absolute level of the deficit means that the recipient of the bailout carries all the risk from fluctuations in the growth rate. In IMF-led bailouts such asymmetric allocation of risks may be of relatively little consequence as the IMF has the flexibility to renegotiate relatively easily and frequently. But for a bailout involving 17 creditors renegotiation is immensely costly and slow, as the events we are about to recount demonstrate, so the recipient of the bailout does effectively carry a disproportionate share of the risks.

early return to private sources of funding were not materializing. Figure 3 shows how IMF assumptions on the path of Greek spreads changed between May 2010 and December of the same year. As already mentioned we do not in this paper attempt to rationalize developments in financial markets (footnote 3). Spreads on Greek bonds had fallen somewhat in the early months of the programme. For example yields on 2-year bonds had fallen to 8% in late October. But the November Irish bailout appears to have unnerved markets and to have opened a new phase of rising spreads. The 2% budget shortfall unveiled in early 2011 then further increased uncertainty on Greece's prospects, and so did the prolonged round of bargaining we discuss below.

The failure of markets to respond positively to Greece's reasonably faithful implementation of the austerity programme was further exacerbated by some non-Greek specific decisions taken by the European Council in March 2011. Such decisions had the laudable goal of setting up a systematic approach to deal with future sovereign debt crises in the Eurozone. They consisted in creating a long-term mechanism, called the European Stability Mechanism (ESM), to enter into force in 2013, as well as a bridging institution, the European Financial Stability Facility, to deal with the intervening period. The introduction of such mechanisms in itself should surely have bolstered financial-market perceptions of sovereign-debt credit risk in the Euro area. However, in a crucial caveat, the agreement also suggested, or was widely interpreted to suggest, that ESM interventions were expected to be matched by "private sector involvement (PSI)." Rightly or wrongly, financial markets took this to mean that any future bailouts would entail haircuts on private holdings of sovereign bonds, and spreads reacted accordingly, including on Greece.[15] The 2-year interest rate on Greek government bonds increased from 14.6% on March 1 to 17.8% on March 11 when the collective action clauses were first officially discussed. The spread over Bunds of the same bonds increased 200bp over the same period.

Recall that a critical plank of the May bailout agreement was that after the first emergency loans Greece would finance part of the funding shortfall through the markets. The critical implication of the continued market refusal to buy Greek bonds was that the May agreement was insufficient to avoid default *even if Greece was to meet all its deficit targets*. In other words, the May plan was now outside the feasible set. This meant the beginning of a new round of bargaining.

The new round of bargaining took extremely long, and only came to fruition in July 2011, some six months after it had become clear that the original plan would not work. We conjecture that there were two

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[15]Once again our paper focuses on specific policies towards Greece, so we do not discuss directly the political economy of the EFSF and ESM. Needless to say in a comprehensive history of the Eurozone crisis these decisions would feature very prominently, more so than any decision pertaining to a specific country.

(related) reasons for the long delay in coming to a new agreement. First, the surplus from avoiding default must have been felt to have shrunk. Clearly any agreement would have had to have a combination of more aggressive fiscal tightening for Greece, and additional financial assistance from the rest of the Eurozone, making an agreement correspondingly costlier. On the other hand, the costs of a default had arguably not changed very much, so the surplus was smaller. Second, with a smaller surplus on the table, participants naturally looked for additional margins of adjustment. Germany in particular begun arguing for forms of reduction in the value of debt held by private creditors.[16] For reasons discussed above, this attracted fierce opposition from the ECB, which then became an important player at the negotiating table. With an extra player and an extra margin of adjustment, the bargaining became all the more complicated and sluggish.[17]

Eventually the agreement of July 2011 featured concessions on all three sides: Greece agreed to an even tougher austerity and reform programme, including the disposal of large numbers of state-owned assets, countries in the Euro zone and the IMF committed to a new £109bn in bailout funds, and the ECB had to acquiesce to an element of PSI. While this may superficially look like an efficient bargaining outcome, with attendant sharing of the surplus, we will now suggest that it probably is not.

3.2   Evaluating the Second Bailout

We make two points. First, it seems fairly likely that the actions to be undertaken according to the July 2011 agreement were outside of the feasible set. In particular, the austerity measures Greece committed

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[16]Germany's greater willingness to contemplate PSI to a Greek bailout may have been partially due to the exposure to Greece of German banks had fallen from $60bn to $25bn between May 2010 and July 2011 (foreign claims fell from $31bn to $21bn and exposure to Greek government bonds felll from $23bn to $12bn). It is also the case that while cds spreads on Greece, Portugal, and Ireland had increased dramatically since late 2010, those on all the other Eurozone countries had fallen slightly. This may have led Germany to underestimate the risk of contagion.

[17]During the months leading to the July agreement the IMF and the other Eurozone countries made some minimal concessions to Greece, in the form of a lengthening of the schedule of repayments for their loans to Greece, and a slightly lower interest rate. For its part, until March Greece largely stuck to its austerity plans, meaning that throughout this perod it was 2 percentage points of GDP behind targets, i.e.by the amount of the Eurostat data revision. After March serious slippages in Greece's implementation began to appear. Indeed it is fair to say that Greece largely gave up on implementing austerity and reform measures from March 2011. This severe slackening likely reflected a variety of reasons. To some extent it may have been part of a "chicken game" vis-a-vis the Eurozone partners, to put pressure on them to come to a quicker resolution of the bargaining round. It could also be that, while there was uncertainty on whether a new bailout (which was essential to avoid default) was forthcoming, the political cost of implementing reforms that may later appear to have been pointless was perceived as higher. In addition, the program for 2011-2013 was emphasizing structural reforms together with fiscal reforms and the former are not easy to implement in a short period of time in a country where various different groups enjoyed monopoly power for years and in which the justice system, the rule of law, and the underground economy also need to be tackled to make reforms in other areas possible. Finally, unreasonable privatization targets were introduced in March to cover the program funding gap. These targets became an issue in all discussions, as Greece was pointed as being unwilling to privatize enterprises while it could have used the revenue to fund itself. However, it is fair to recognize that market conditions were not at all making the process of privatization feasible in the time horizon that was set by the troika.

to in July 2011 may well have been too draconian to overcome the economic and political difficulties they implied. This is our reading of the last column of Table 1, which again shows changes in the primary deficit called for by the plan in each of its years. It is immediately clear that the new plan calls for two consecutive years of massive fiscal adjustment, a feat rarely encountered in previous successful austerity programmes. It is also clear that there is only one precedent of a country succeeding in implementing an average annual primary-deficit reduction larger than the one Greece was to undertake, and none that has achieved a comparable cumulative reduction over a similar number of years. Recall that the comparison programmes are the most aggressive on record in the OECD in the last 40 years.

Second, even assuming that Greece was to pull off such a demanding deficit-reduction plan, the provisions for PSI are very difficult to rationalize as part of an efficient bargaining outcome. The agreement committed Greece to open negotiations with representatives of private lenders to achieve a voluntary reduction in the value of the debt of approximately 20%. Needless to say, by specifying a target haircut of 20%, the agreement effectively made it an upper bound on the size of the equilibrium outcome. With a publicly stated goal of 20%, the Greek negotiators could hardly have picked an initial negotiating position of, say, 50%. Hence, it was built into the bailout agreement that the haircut on private holders was to be between 0 and 20%. As private creditors (ECB excluded) held an estimated eur213bn, or 57% of the overall stock of Greek debt outstanding, the absolute upper bound on the debt relief that might come from the deal was about eur43bn, corresponding to a 12% reduction of the debt/GDP ratio (20%x57%). The mid-point of the bargaining range would have delivered a 6% reduction. In other words, the PSI component of the deal was purely symbolic, and provided no meaningful debt relief. Nobody gained from it.

On the other hand, all indications are that the presence of a PSI component in the July agreement has immensely increased the costs and the complication of the broader European debt crisis. It lead to a ferocious bout of contagion and, most importantly, it dragged Italy into the crisis. For those who have followed the day-to-day unfolding of the crisis it is impossible not to see a direct causal link between the inclusion of PSI in the July agreement and the run on Italian government bonds in late July and August. With the third biggest economy of the Euro zone engulfed, the extent of the existential threat to the Euro project rose to a whole new level. Since PSI provided no meaningful benefits in terms of debt reduction, and caused considerable havoc through contagion, it seems that not having included PSI in the final deal might have been Pareto improving.

3.3 Understanding the Second Bailout

Why would parties to a negotiation agree on something that is almost-certainly unfeasible? Why would they agree on something that is not on the Pareto frontier? We organize our discussion of these points in two stages. First, we argue that for each of the various parties the agreement was still better than what we call the "walk away" option. Namely, confronted with a choice between accepting the agreement in its final July 2011 form and having no agreement whatsoever (equivalent to more or less immediate default) all of the parties probably did well to accept the agreement. Second, we sketch arguments for why multilateral negotiations may reach a point where the parties have to choose between an agreement inside the Pareto frontier and walking away, or for why multilateral negotiation may fail to iterate all the way to the Pareto frontier.

3.3.1 July Agreement v. Walk-Away

The choice of accepting or rejecting the July agreement for the Greek head of government is somewhat of a no brainer. It is true that accepting implies committing to a brutal austerity plan that, if implemented, will devastate the economy and cause irreparable electoral damage to himself, but, with a primary deficit still at 5% of GDP and Greek banks if anything even more exposed to the Greek sovereign that they were in May 2010, rejecting it and hence defaulting would lead to the same amount of economic and political catastrophe. However, accepting the plan and thus avoiding default for the time being has a clear option value. In particular, there may be some chance of a change in attitudes from the other players that could conceivably lead, in the future, to more lenient terms.

The dominance of the July agreement over walking away for other Eurozone countries is less clear cut, but an argument can still be made. Again, the argument is based on the option value of postponing default.[18] One source of this option value are potential changes in core-country electorates' attitudes towards intra-Eurozone financial transfers. In particular, should such electorates develop a more sympathetic attitude the electoral costs of offering more lenient terms to Greece would fall, potentially allowing for renegotiation along more realistic lines on what Greece can achieve. In such a scenario, default delayed could conceivably turn into default avoided.

Other sources of option value of delaying default are based on possible changes in the cost of default itself. As already noted, some core-country banking sectors had been steadily reducing their own exposure

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[18] For a broad discussion of option-vaue considerations in delaying radical decisions in politics see, e.g., Drazen (2000), especially chapter 10.

to Greece, and this process would likely continue in subsequent months. The lower the exposure, the lower the electoral costs of shoring up core-country financial sectors following a default. Another reason why delayed default might turn out to be less costly is the possibility that other peripheral governments would get out of the sphere of contagion in the intervening period.

Last but not least, there might have been a potential blame-shifting value to postpone default. As we have discussed, the failure of the May 2010 plan was due to circumstances largely outside the control of the current Greek government, so "pulling the plug" on Greece might have appeared a somewhat callous measure to take. Giving Greece a nearly impossible task and wait for the inevitable failure to accomplish it, and then blame the default on Greece's lack of discipline might have appeared a politically astute manoeuvre.

Finally, the July agreement was clearly preferable to default for the ECB. It kept any haircuts to a virtually symbolic level and was couched in terms of a voluntary contribution by the private sector, both of which dominated a large and messy default that would have almost certainly extended to the ECB's holdings of Greek debt.

3.3.2   July Agreement v. Pareto Frontier

For reasons already largely anticipated above, we believe it is quite possible to argue that the July deal, while preferable to the walk-away option for all participants, may well have been inside the Pareto frontier.

Consider a deviation in which the core countries offer somewhat more generous terms to Greece, so as to push the required austerity programme within the realm of the feasible. The corresponding decline in the future probability of Greek default would be a direct benefit for the core countries themselves, who would also benefit indirectly from the potential calming implications on financial markets - particularly as regards their attitudes to other peripheral countries. This could easily be achieved without violating the "painful enough" requirement, so it is implausible that a somewhat more realistic plan would have created moral hazard. If anything, having been given a feasible plan might have strengthened Greece's resolve to actually implement it. There may well be a "conditionality Laffer curve" which implies that austerity requirements that are too demanding end up inducing less fiscal effort.

Hence, against the (considerable) benefits of a smaller chance of default, core-country heads of governments had only to weigh the possible electoral costs of a larger bailout. But this consideration should have

been second order. First, once again, such electoral costs had to be compared to the likely electoral costs of having to bail out domestic banks, after a Greece default and, possibly, the default of other peripheral governments due to contagion from a Greek default. It is far from clear that the latter would be smaller. Second, it is very doubtful that electoral costs of a bailout are very elastic to the size of the bailout. Voters, even sophisticated ones, become fairly insensitive to figures that are of an order of magnitude outside their practical experience. Had a core-country head of government come out of the bargaining room with an announcement that she had committed £40bn rather than £20bn it seems unlikely that she would have borne a much larger electoral cost.

As we discussed, an even clearer-cut case can be made, we believe, for the symbolic PSI provisions contained in the July package. As we argued, a deviation containing no PSI whatsoever would have benefited all participants. In particular, we believe that the payoff functions of the key players on this particular dimension of the bargaining game can be plausibly assumed to take the forms shown in Figure 4. On the horizontal axis we measure the size of the haircut to be negotiated with the private creditors. On the vertical axis we measure the loss functions of a typical core country (henceforth Germany, for brevity) and of the ECB. The ECB simply wants as little haircut as possible, so its loss function is monotonically increasing. Germany would like to get the private sector to share in the burden so we assume that its loss function is globally minimized at some significant level of the haircut, denoted "Germany's bliss point" in the figure. Germany's loss monotonically increases as the size of the haircut diminishes. However, our discussion above implies a discontinuity at the origin. Because of the devastating effects the symbolic PSI provisions had on other peripheral countries, a zero haircut is discretely to be preferred to a purely symbolic but strictly positive haircut. In other words, no PSI whatever is a local minimum in Germany's loss function - and more generally Germany's preferences are not single peaked. In the Figure we have also denoted by "Bargaining outcome" the empirically observed outcome, of a very small, symbolic haircut. Clearly this is well within the Pareto frontier. In the rest of this section we sketch possible reasons for this suboptimal outcome. While we focus on the haircut decision, we believe the same frictions we are about to discuss can also be used to understand why the bargaining process may have led to an overly harsh austerity programme.

We sketch two possible mechanisms that we think could have given rise to a Pareto-inferior deal. In both cases the key problem is the non single-peakedness of some of the participants' loss functions.

The first mechanism is based on the dynamics of bargaining with a time limit. To motivate this conjecture it is important to note that European Council meetings, where key decisions are ironed out,

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are infrequent and time-limited affairs. A typical meeting will begin in the late afternoon and go through the night, until an agreement is reached. If the matter is relatively uncontentious and the key points have already been agreed in advance by the diplomatic staff or finance ministers the meeting is simple and brief, and mostly an opportunity for communication with the voters. However on difficult and controversial matters the meeting is a true "end game" negotiating session. Ample anecdotal evidence indicates that as the negotiations continue in the night tiredness and personal animosities among the heads of state become meaningful factors in the negotiation process. Similarly, anecdotally it appears that negotiations are sometimes concluded not so much out of a feeling of having achieved the best possible deal but out of sheer exhaustion and/or impossibility to overcome hardened attitudes.

We believe it should be possible to conceptualize the bargaining process in a way that makes some sense of these anecdotes. Consider the following bargaining protocol. At the beginning of the bargaining session a "political auctioneer" asks all participants to state their most preferred outcome, say 70% haircut for Germany, 0 haircut for the ECB - through its voice in the Council. The political auctioneer then tables a proposal that is a convex combination of each participant's most preferred outcome, with weights equal to each participant's bargaining weight (assumed to be known to the auctioneer). Hence, for example, if the ECB has a large bargaining weight on the issue of PSI, the auctioneer will table a proposed haircut that is between 0 and 70%, but much closer to 0 than to 70%.

In most cases it is likely that participants have single-peaked preferences, and under single-peaked preferences this bargaining protocol generates a Pareto efficient proposal. It is therefore plausible that negotiations will follow this protocol in general, and will often quickly converge to outcomes on the Pareto frontier. However occasionally some parties to the negotiation will have non single-peaked preferences and in these cases clearly the proposal of the auctioneer is inefficient. It may be that this inefficiency will be felt by the participants but it is also likely that this will lead to a time-consuming search for a better deal. Furthermore it seems likely that the auctioneer will for a considerable time continue to search in the interior of the set delimited by the participants' ideal positions, perhaps because it attributes the failure of the first proposal to private information on the value of outside options and hence bargaining power. To be sure, should the search process be allowed to continue indefinitely it is likely it will lead to the discovery of a Pareto efficient deal. But, as discussed above, the bargaining session is time limited, as exhaustion, bad feelings, or important commitments back at home make it necessary to break off the session. The time at which the session must end may well be a random variable, but this does not change the reasoning. When the time to end the session comes, the entire negotiation boils down to a "take it or

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walk away" decision by each participant, where "it" is the latest iteration in the search for a deal. If the end time comes too early, the deal on the table will still be inside the Pareto frontier. As we discussed, "take it" can dominate "walk away" for everyone even if "it" is not on the Pareto frontier.[19],[20]

The second mechanism that we think might explain Pareto inefficient bargaining outcomes in the EU is based on a plausible friction in communication between politicians and voters. Again, some background on context is in order before describing our hypothesis. EU summits, at least in crisis periods, are big political events that are eagerly anticipated. In the weeks leading to each summit there is pervasive coverage and extensive public commentary on the possible and/or desirable outcomes. In such a climate, heads of governments and their spokespersons are under intense pressure to comment on their goals and strategies. Some of them are even required to report to Parliament on their negotiating position in the upcoming meeting. Needless to say, such public pre-summit positioning has important implications for the head of government's negotiating stance. It implies that her performance will be judged by voters on the distance between the bargaining outcome and her stated bargaining goal, giving her powerful incentives to negotiate hard for her stated position. Indeed, it is very likely that some leaders use such public pronouncements simultaneously as a commitment device and a signalling tool to other leaders. By publicly stating their negotiating position they make it costlier for themselves to fail to achieve an outcome close to it. Not only this strengthens their own resolve but also increases their bargaining power, as other governments now know that for this head of government the cost of scuppering a deal relative to accepting one that is distant from her preferred option are relatively small.

Imagine now that there is some communication friction which implies that political leaders can only convey fairly simple messages to voters concerning their negotiating strategy. This does not have to be due to voter irrationality or lack of sophistication, though these are undoubtedly plausible assumptions in their

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[19] The conjectures above are mainly inspired by anecdotal newspaper accounts of participants' leaks of the dynamics of EU summits. Additionally, they may or may not be influenced by a dozen year experience of attending faculty meetings.

[20] We are not aware of formal models that fully capture the mechanism we have sketched. Such a mchanism would have to combine elements from the literature on *deliberation* [e.g. Austen-Smith and Feldersen (2005, 2006), Coughlan (2000), Eliaz, Ray, and Razin (2007), Gerardi and Yariv (2007, 2008), Meirowitz (2006), Persico (2004), and Lizzeri and Yariv (2011)] with elements from the literature on *wars of attrition* [e.g. Alesina and Drazen (1991), Drazen and Grilli (1993), Ponsati and Sakovics (1996), Hsieh (1997)]. The former literature is relevant for its emphasis on how protocols for committee decision-making affect decision outcomes. In this literature the most relevant contribution is Lizzeri and Yariv (2011) which studies *sequential deliberation*: a jury decides every period whether to keep sampling information or stop deliberation and make a decision based on the information hittherto uncovered. But in their paper there is no time limit to the possible length of deliberation. More importantly, there is no fundamental conflict of interest on the final outcome, nor asymmetric information on the preferences of members of the jury. These features are, of course, central to war of attrition models, where they offer endogenous mechanisms that generate delay in solving problems. In the deliberation literature another paper that offers a relevant ingredient is Eliaz, Ray, and Razin (2007), who emphasize how members of the decision-making body may decide to accepet a feasible (but for them suboptimal) outcome of the deliberation rather than having "disagreement," i.e. a collapse of decision making equivalent to our "walk away" option.

own right. It could be that voters have rational inattention towards politics, hence devoting only limited scarce cognitive resources to it. Or it could be that voters rationally distrust excessively complicated messages as they believe that they could be used by politicians to inject noise in their assessment of the politician's performance.[21]

Under such communication and/or cognitive frictions it is likely that heads of government will tend to limit the amount of information contained in their pre-summit statements. In particular, a plausible working hypothesis that also seems consistent with casual observation is that such statements will be limited to descriptions of the head of government's ideal point, and not of the entire profile of her loss function. Similarly, it is very likely that voters will automatically assume simple peakedness, and will judge the outcome strictly in terms of its distance from the stated ideal point. Once again, in most cases single peakedness is probably a good assumption, so this heuristic is a reasonably efficient way to deal with communication frictions between politicians and voters. However it is immediately apparent that when single-peakedness is violated constraints on communication can become quite costly. In particular, knowing that she will be judged by voters on the distance of the negotiating outcome from the ideal point, the head of government who is (sufficiently) concerned with her electoral prospects might act to minimize that distance. With a non single-peaked loss function this is not the same as minimizing the loss.

4   Conclusions

This paper has focused on the political-economy of Eurozone bailout agreements. It has looked at the cases of the May 2010 and July 2011 bailouts of Greece. In both cases accepting the conditions of the agreement, rather than walking away and triggering an immediate default by Greece, can be argued to have been a plausibly rational decision by all parties. However while the May 2010 agreement can plausibly be argued to have been an efficient bargaining outcome, the July 2011 seems to us to have been well inside the Pareto frontier.

We have sketched two possible arguments for why EU-wide bargaining could lead to inefficient outcomes. Both arguments rely crucially on the existence of non single-peaked objective functions for at least some of the participants. In one argument this non single-peakedness interacts with the infrequent and

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[21]There is a literature on communication frictions between politicians and voters [e.g. Cukierman and Tommasi (1998a, 1998b)] but we are not aware of models in which these take the form of constraints on the form of the messages that can be sent. However, in the "cheap talk" literature there is a tradition of formulating models where senders are limited to "coarse" messages, for example announce a discrete interval rather than a specific real number, and some of these tools may be relevant to model the mechanism we are sketching [e.g. Crawford and Sobel (1982), Austen-Smith (1990, 1993)].

time-constrained nature of EU negotiations (which is due to the difficulty of bringing together 27 heads of government and assorted heads of European institutions for more than a few hours every few months). In these negotiations, a "political auctioneer" will tend to search for deals that are convex combinations of the participants' ideal points. Under non single-peakedness and time-limited search this will tend to produce outcomes that are acceptable relative to walking away but inside the Pareto frontier. In another argument non single-peakedness interacts with communication frictions that limit the ability of heads of state to provide accurate descriptions of the entire profile of their loss functions. This induces voters to judge the negotiating outcome on the basis of its distance from the global minimum of the loss, rather than from the realized value of the loss. Electoral considerations imply that the head of government inherits this monotonicity in shaping her attitudes during the negotiation.

It is useful to contrast these mechanisms with the situation that arises in "normal" bailout situations, where the emergency lender is the IMF rather than the European Council. It is not the case that the IMF's loss function is necessarily always single peaked, though we suspect this is likely to be the case more often. The main difference is that neither the problem of infrequent and time-limited negotiations nor the problem of communication with domestic electorates is particularly relevant in the case of the IMF. As already mentioned, the IMF is able to renegotiate often and at leisure, while the 27 heads of state can only meet infrequently and for a few hours. This makes it much easier for the IMF and its partners to search exhaustively for a solution on the Pareto frontier. Similarly, the IMF is not compelled to make public announcements of its "game plans" to its constituency before opening discussions, not is it forced by communication frictions with voters to oversimplify its negotiating position. In other words, domestic political considerations are paramount in EU bailouts, but not in IMF ones. If the EU is bent on continuing to take the lead in future bailouts it should give careful considerations to way to limit the pernicious effects of these frictions.

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Table 1: Greek package signed in May 2010

|	Primary deficit/GDP	Total deficit/GDP	Gov. debt/GDP	Real GDP growth (%)	Spread over bunds	T-bill issuance (Eur bn)	Bonds issuance (Eur bn)
2009	-8.6	-13.6	115.1	-2.0		6.1	55.6
2010	-2.4	-8.1	133.2	-4.0	250	8.0	25.4
2011	-0.9	-7.6	145.2	-2.6	200	8.0	4.4
2012	1	-6.5	148.7	1.1	150	8.0	23.4
2013	3.1	-4.9	149.2	2.1	100	8.0	34.9
2014	5.9	-2.6	146.1	2.1	100	8.0	64.5
2015	6	-2	140.4	2.7	100	8.0	66.8

Source: IMF May 2010, Country Report No. 10/110

Table 2: % point reduction of primary deficit/GDP in largest episodes of fiscal adjustments in OECD countries versus Greek programs

|	NLD 96-00	BEL 84-90	UK 93-00	DNK 83-86	SWE 94-98	CAN 93-97	IRE 87-89	FIN 94-98	May-10 GRC 09-15	Jul-11 GRC 09-15
T	7.3	4.6	1.3	4.0	2.9	0.4	2.0	3.0	6.2	5.4
T+1	0.4	0.9	1.4	5.6	1.1	1.9	3.3	0.4	1.5	4.0
T+2	0.2	0.4	1.7	2.5	4.4	1.9	1.3	3.2	1.9	0.1
T+3	0.9	1.7	2.0	4.8	2.0	2.1		2.5	2.1	2.3
T+4	0.9	0.5	2.0		2.1	2.4		2.7	2.8	2.1
T+5		1.0	0.5						0.1	2.8
T+6		1.2	2.6							1.3
Mean	1.9	1.5	1.7	4.2	2.5	1.7	2.2	2.4	2.4	2.6
Cumulative	9.7	10.2	11.6	17.0	12.4	8.7	6.7	11.8	14.6	18.0

Source: OECD Economic Outlook and IMF

Figure 1: 10yr interest rate spread vs Germany
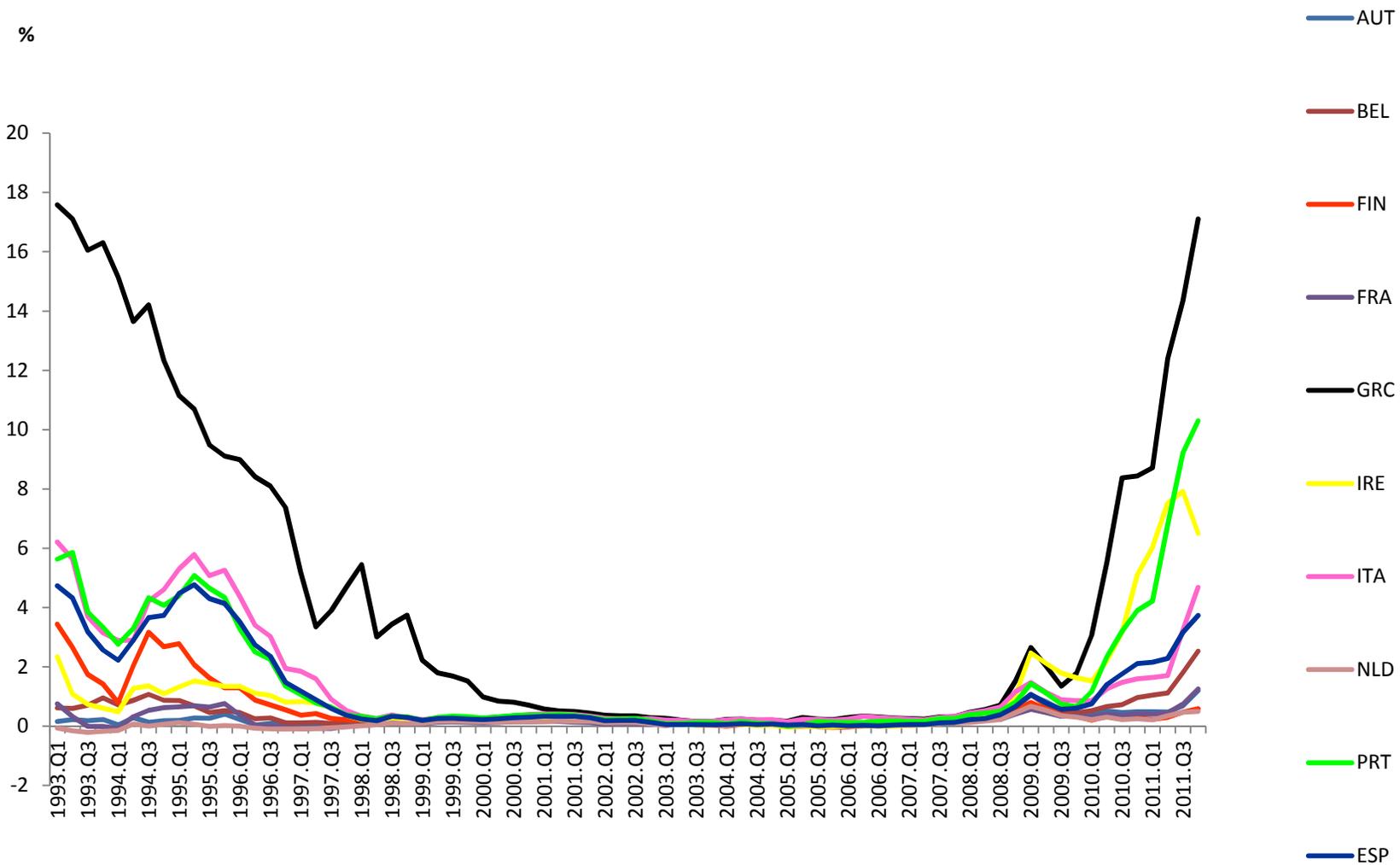
Source: Eurostat

Figure 2: Government balance/GDP

% of GDP

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |

May-10   Dec-10   Jul-11
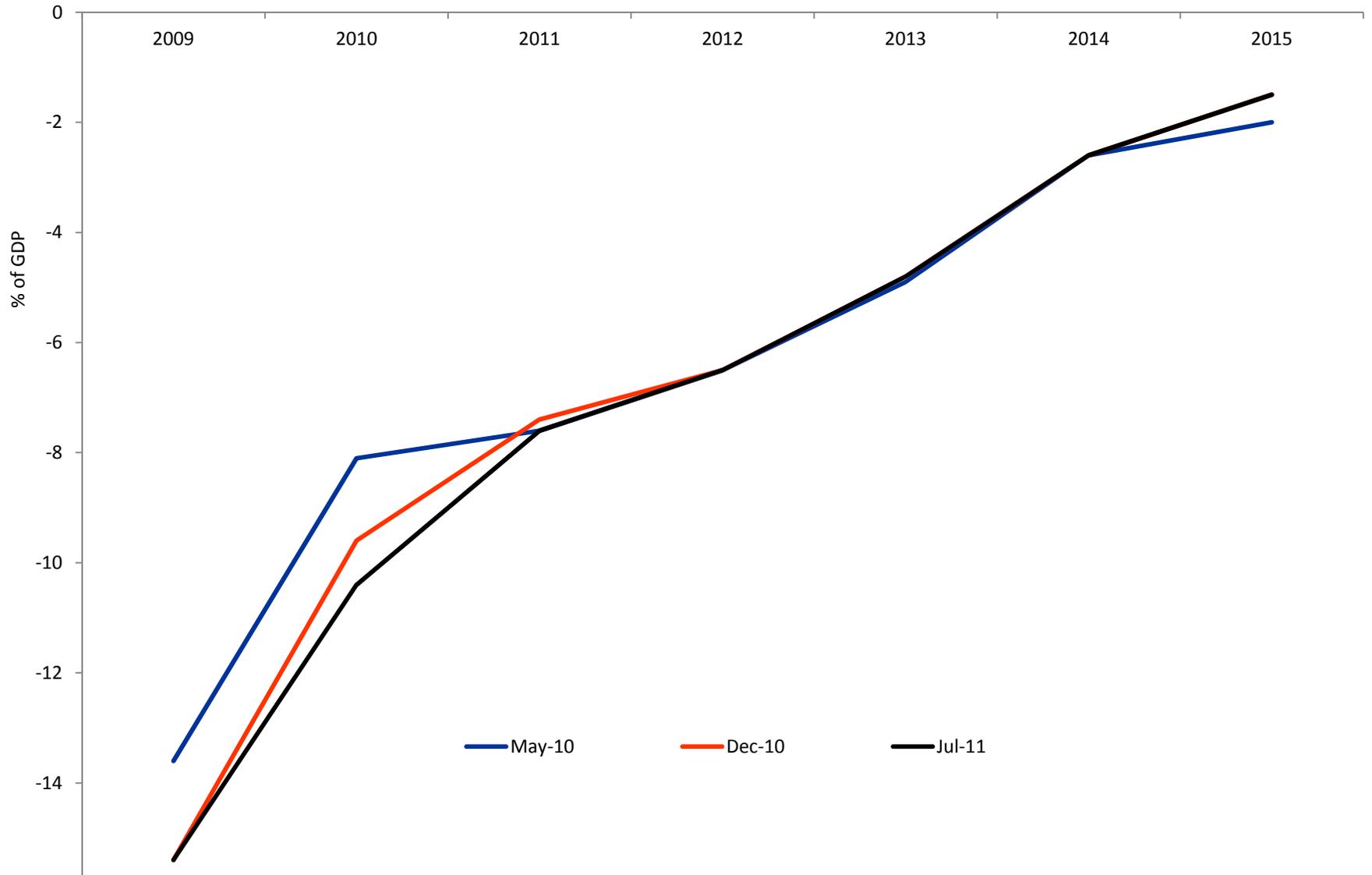
Source: IMF

Figure 3: IMF Forcasts of Spreads above German bund
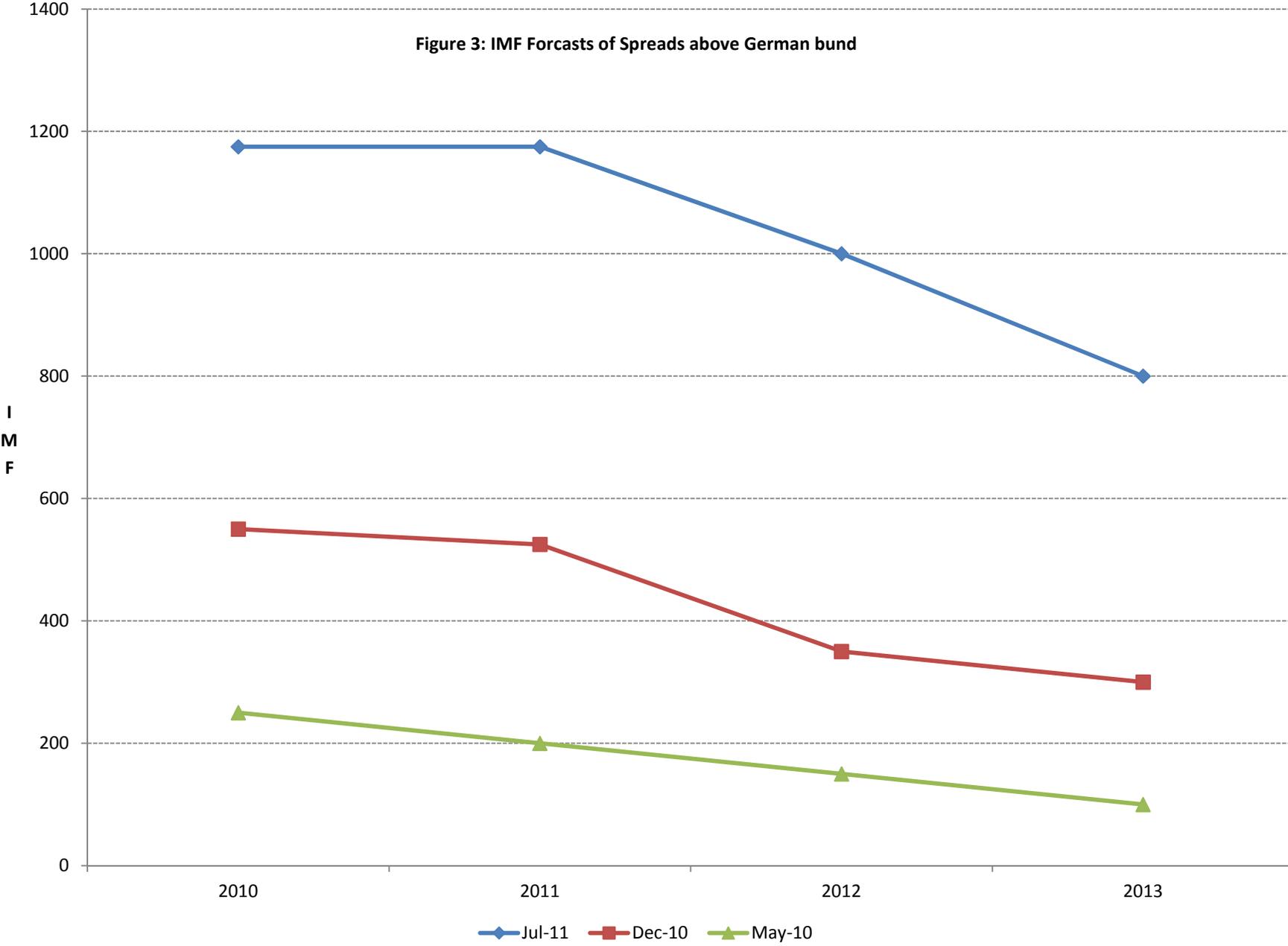
Figure 4: Negotiation with Non-Single Peaked Preferences

ECB Loss Function

German Loss Function

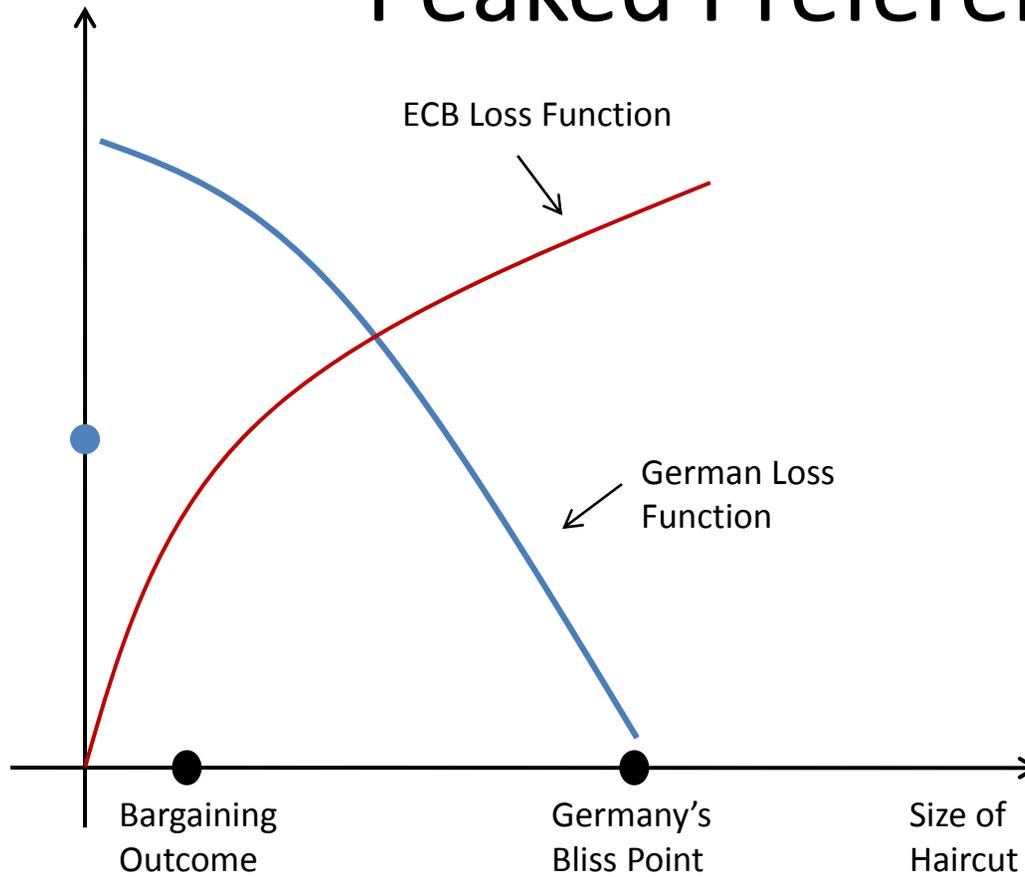Bargaining Outcome

Germany's Bliss Point

Size of Haircut

Table A1: Major bills passed in March 2010-March 2011

2010

3 March: bill on Hellenic Statistical system and authority

23 March: bill on a new system to select heads of units in civil service

24 March: bill on decentralizing and making more efficient procedures connected with the National Strategic Reference Framework

20 April: bill on tax reform

27 April: bill on liberalizing the provision of services in the internal market

4 May: bill on flexibility and security in labour market

11 May: bill on the new school (rules for hiring assessing performance of teachers and school units, meritocratic selection of head of units)

18 May: bill amending provisions of early legislation and of the penal code in corruption

1 June: bill on the restructuring of regional and local government and the decentralization of public administration (Kallicrates law)

7 June: set-up a single payment authority for general government employees

8 June: bill on simplification of business start-ups

5 July: bill on transparency of public administration and online publication of general gov. decisions

12 July: bill on pension and labor legislation reform

13 July: bill on financial stability fund

30 July: e-census of general gov. employees

15 July: social partners sign the private sector 3 year wage agreement on minimum wages and wage growth

16 July: bill on public sector (central government) pension reform

31 Aug: bill on rules on sea cruises

31 Aug: set-up of a structure of 5 task forces to fight tax evasion and improve tax compliance

28 Sept: bill on liberalisation of commercial road transport

26 Oct. Bill on restructuring and consolidation of state-owned enterprises and railways

23 Nov.: ill on electronic monitoring of doctors' prescription

1 Dec: bill that provides for closing 18 public sector entities and merging 13 into 5

13 Dec: Bill on rationalising procedures and speeding uo administrative trials

2011

15 Feb: bill on structural changes in health system

22 Feb: bill on the opening p of closed professions

10 March: publication of law setting up 1 single authority for fighting money laundering ad checking asst statements of individuals

31 March: publication of law fighting tax evasion and restructuring of public administration

Source IMF, Bank of Greece, Greek Finance Ministry

Table A2: Major reforms passed in March 2010-March 2011

Pension reform: combination of measures reducing the actuarial deficit by 2060 by 10ppt of GDP. Retirement age raised to 65 years and 40 years of work required for full pension. Pension benefits linked to lifetime contributions, retirement penalties increased and voluntary exit plans abolished

Labour market reform: fully symmetric arbitration system, reduction in severance payments by 50%, cut in overtime remuneration by 20%, extension of probation period from 3 to 12 months, oncrease pf permissible dismissals from 2% to 5% per month; promoting part-time employment, firm level agreements

Independent statistical authority: president and majority of board appointed by a 4/5 majority of parliament; full validation of data by Eurostat after reform

Fiscal management: medium-term fiscal framework introduced; parliamentary budget office, expenditure monitoring mechanism strengthened by creating a commitment registry and imposing binding expenditure ceilings in ministries

Tax reform: new management information systems, a special administrative structure to assist reform, shortened judicial procedures for tax cases

Tax evasion: 3.4bn of fines (+182% relative to 2009). Increase in audits on self-employed professionals and penalties for undeclared assets (555 yachts seized, 10mil in fines for offshore real state assets)

Local administration reform: reduction of number of municipalities from 1034 to 325; decrease in local authority entities from 6000 to 2000; decrease in elected officials from 30795 to 16657; abolishment of 30000 working positions in prefectures; fixed term contracts reduced by 50%

Health sector: reduction in average expenditures by 30% yoy. 10 hosptials out of 133 to be merged

Online publication: of all decisions involving commitments of funds in general government sector

Simplification of the start-up of new business: set-up in 1 day from 19 days

Liberalization of road haulage sector: unlimited licenses with fees gradually declining to zero from Jan 2011 to June 2012

Liberalization of closed professions: new law imposes default of opening effective July 2011 and covers 150 professions: reversal of the burden of proof for retaining restrictions

Abolition of cabotage restriction to boost cruise tourism