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THE EUROPEAN DEPOSIT INSURANCE IN PERSPECTIVE

Theo Kiriazidis

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The European Deposit Insurance in Perspective

Theo Kiriazidis [#]

ABSTRACT

The DI operates as a rent-sharing arrangement. This paper argues that such an arrangement can operate effectively only if the appropriate level of deposits is mobilized towards this end, and highlights the inevitable outcome: fierce competition for deposits amongst the Eurozone MSs. To deepen the argument data analysis is provided indicating the existence of regulatory subsidy in the form of implicit though effective DI, moral hazard and adverse selection. Against this background, the EU Commission promotes the creation of an EDIS as the third pillar of the BU. The EDIS proposal is considered by Economic institutions in strictly economic terms. Yet, the EP promotes a restrictive course supporting a liquidity providing EDIS. The paper argues that such an EDIS would render regulatory subsidy and rent-seeking behavior persisting, by allowing national policies to be pursued with considerable discretionary power and in the context of increasing competition for deposits. This would run contrary to the BU objectives and constitute a major failure of the programme.

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[#]Theo Kiriazidis, PhD, Head of the Research Department at the Hellenic Deposit and Investment Guarantee Fund, Amerikis st. 10671, Athens, Greece.
Email: tkiriazidis@hdigf.gr

The European Deposite Insurance in Perspective

1. Introduction

The aim of this paper is to provide an analytical insight of the European Deposit Insurance (DI) configuration and foresee the way ahead. DI, especially when it covers a vast segment of bank liabilities, constitutes an ex ante commitment by the government to protect depositors against all sources of loss. Empirical evidence – both historical and contemporary — demonstrates that the DI costs offset its potential economic efficiency gains. DI operates as a rent-sharing arrangement with its key feature the growth of economic rents in the hands of depositors, banks and borrowers, with all parties seeing a value in enduring their relationship to the extent that these rents are shared.

However, the national DI arrangements can function successfully only if they attract the appropriate level of deposits, inevitably stimulating fierce competition for deposits amongst the eurozone Member States (MS). Governments are involved in an uncoordinated policy game wherein decide on the DI conditions, in order to attract deposits which are necessary for the rent-sharing arrangement to run. The important features of the explicit European DI can be explained by the relations of conflict or cooperation amongst the rational decision makers: the MS Governments.

Within this context, the European Commission in November 2015 published a legislative proposal for a European Deposit Insurance Scheme (EDIS), as the third pillar of the Banking Union (BU), in order to complete its institutional setup and facilitate the realisation of its objectives. Although the EDIS

proposal is promoted and deemed by Economic institutions in a pure economic frame, the European Parliament (EP) restraining and conditional approach reflects the political consideration of DI. What is the feasible form of EDIS? Would it be able to fulfill its objectives? What are its deficiencies? What is the impact of EU integration on the political/economic feasibility of government subsidies for banks? What are the implications? This paper is an attempt to answer these questions.

The rest of the paper is organized as follows. Section 2 develops the theoretical arguments for and against DI, examines relevant empirical evidence and illustrates the DI as a rent-sharing arrangement. Section 3 considers the European DI as a game of strategy amongst EU Member States. Section 4 assesses the impact of sovereigns' fiscal strength on the credibility of DI and deposit flows across the Eurozone. A model of deposits is developed in this respect. This, in turn, provides significant insight on the existence of moral hazard and adverse selection. Section 5 presents and analyses the proposal for EDIS within the theoretical framework. Section 6, then, concludes with an analysis of the main results.

2. DI Theoretical and Empirical Considerations

2.1 DI Theories: The Economic Approach

DI is an indispensable attribute of banking regulation acknowledged by prominent International institutions (e.g. the International Monetary Fund, the World Bank, and the EU). The economic approach reveals that liability insurance diminishes systemic liquidity risk and thus it may improve the efficient management of the banking system. Nevertheless, this potential

advantage emerges with significant drawbacks in terms of moral hazard and adverse-selection costs, which amplify essential insolvency risk, either due to greater conscious risk assumed by bankers (moral hazard) or through a raise of bankers acting imprudently. It is the empirical evidence that would reveal whether bank liability insurance, as an end result reduces or increases risk in the banking system.

Banks liquidity risk emerges by the issuance of short term demandable debt contracts with shorter maturities than banks' assets. This is essentially to the so-called "maturity mismatch" of banking attributable to two core banking processes: (a) the utilisation of information about borrowers (the so-called "delegated monitoring" operation of banks), and (b) the formation of banks' claims and their subsequent utilisation as transacting media by uniformed people concerning the bank underlying value.

The model of principal-agent conflict highlights the incentive to create maturity mismatch as a means of using deposits to discipline bankers' behavior. In principal–agent models, the principal bears agency costs in terms of a strictly positive rent attracted by the agent - i.e. his payoff exceeds his reservation utility, which he would obtain in case of no contract (Laffont and Martimort, 2002). Accordingly, the principal, with the aim to reduce the agency costs, normally endorses a second-best solution that differs from the economically optimal first-best solution – which would be accomplished in the case of perfect information. Applying this model to banking, the bankers (i.e. the agents) play a dynamic role in deciding on loans and managing respective risks, but where proceedings and implications are not observable at no cost to depositors or perspective depositors (i.e. the principals).

Banks' capacity to proficiently channel funds to their optimum uses entails banks producing a huge quantity of low-risk, short-term claims to finance their risky assets. Of course, such low-risk, short-term or demandable claims (deposits) may experience a substantial risk increase in the course of a severe economic outlook which would inevitably affect the underlying value of banks' assets. In this case, risk sensitive depositors would respond by withdrawing some of their deposits, contributing to banks' de-leverage until depositor confidence is restored. Unguaranteed banks are subject exactly to this form of market discipline by risk-intolerant depositors (Martinez-Peria, Soledad and Schmukler, 2001; Calomiris and Wilson, 2004; Calomiris and Carlson, 2016a).

The process of market discipline is costly (Diamond and Rajan, 2009). A sudden run on deposits withdrawal contributes to a credit crunch with severe recessionary effects, as banks and consumers seek to dispose of risky assets to hold up their financial positions (Adrian and Shin, 2009; Mitchener and Richardson, 2015; Calomiris and Carlson, 2016b). Banks' maturity transformation involves benefits but also costs. The latter arise in the form of banking liquidity risk with severe repercussions for the real economy if and when realised. DI eradicates liquidity risk in the banking system and evades the intensification of recessionary effects by disincentivising depositors to run to banks with default risk increase in the process of market discipline. The synchronised provision of liquidity to both depositors and borrowers is exclusively achievable by the operation of DI. In case of principal-agent conflicts which induce second best solutions, government intervention is

required to attain the socially optimal first solution. This is the particular role of DI.

Nevertheless, DI removes market discipline by eliminating the depositors' incentive as to the selection of banks to place their deposits, giving space to incompetent bankers (Acharya and Thakor, 2016). Excessive risk taking practices may be allowed to flourish. Deposit insurance may even incentivise undisciplined bankers to raise risk deliberately in anticipation of losses, in order to take full advantage of the deposit insurance safeguard (Merton, 1977).

DI is economically efficient if its benefits in terms of reducing the liquidity risk prevail over the costs of moral hazard and adverse selection. This depends on design features that prevent moral hazard and adverse selection and/or on the regulatory and supervisory system aptitude to efficiently remove deposit insurance subsidies and abuses by guaranteed banks. Partial and conditional protection has proven superior to either unrestricted DI or non-DI. The critical attribute of the bank safety net optimal design to preserve market discipline and enhance stability is the provisional aspect of bank support based on the nature of the underline shock: systemic shock losses should be absorbed, while idiosyncratic shocks losses should be allowed (Acharya and Thakor, 2016). Furthermore, in principle, prudential regulation and supervision may eradicate deposit insurance negative aspects in terms of moral-hazard and adverse-selection and thus restore discipline. This argument is assessed in practice later on.

2.2 Empirical evidence

Ample empirical evidence until approximately 20th century ending demonstrates that almost unconditional DI seems to provide strong incentives to even cautiously managed banks to enhance asset risk and leverage and generate moral hazard. More specifically:

A thorough empirical study of a large group of countries from 1980 to 1995 illustrates that explicit DI tends to undermine bank stability (Demirgüç-Kunt and Detragiache, 2005). In the US, DI systems in early 20th century eradicated market discipline and produced severe moral hazard, allowing protected banks, regardless of their prudence, to reap deposits away from unprotected counterparts (Calomiris and Jaremski, 2016). Evidence from the same country in the late 20th century indicates that commercial banks have a unique advantage in providing loan commitments with fixed-formula floating interest rates mainly due to their access to DI (Booth, 2004). In Germany, previously protected savings bank, following the elimination of their DI coverage, brought to a halt their riskiest borrowers and restructured their liability portfolio away from risk- sensitive debt instruments (Gropp, Gruendls and Guettler, 2014). More specifically, DI seems to increase the lending-deposit spread in banking with the main effect emerging not from the deposit side, but from an increase in the lending rate, demonstrating the existence of moral hazard linked to this instrument (Carapella and Di Giorgio, 2004). Generous DI harmed financial conditions and had a negative impact on the growth of the financial system across several countries (Cull, Senbet and Sorge, 2005).

Despite the fact that the drawbacks of unrestricted and unconditional DI were well- known from the early beginning, generous DI systems have persisted in most countries encouraging greater risk- taking by banks due to the reduction of market discipline. Latest empirical evidence focused across a large panel of countries is revealing.

Protected by DI, banks augmented their leverage and exposure to real estate assets, while focused more on short-term deposit for financing; yet such banks experienced larger exposure to macroeconomic disturbances, higher probability of failure and larger lending contractions during adverse economic conditions (Goodspeed, 2015). Generous DI systems amplified bank risk and systemic fragility in period prior to the recent financial crisis, although those trends were reversed during the crisis (Anginer, Demirguc-Kunt and Zhu, 2014). DI systems have considerably reduced the sensitivity of deposit withdrawals to any decline in banks solvency and enhanced risks (Chernykh and Cole, 2011; Karas, Pyle and Schoors, 2013; Yan, Skully, Avram and Vu, 2014). Generous DI, due to the decrease in market discipline especially from large depositors, encourage banks to initiate riskier loans which carry higher interest rates and are related with ex-post higher default and delinquency rates, without, however, imposing increasing collateral requirements or decreasing loan maturities, for the additional risk-taking (Ioannidou and Penas, 2010). DI not only encouraged banking sectors to raise their default risk by escalating asset risk and leverage, but also contained the expansion of non-bank financial markets (Bergbrant, Campbell, Hunter and Owers, 2014).

Regulatory control would be essential to contain moral hazard and leverage generated by DI since risk adjusted insurance premiums unaccompanied

would not be adequate to eradicate the bank's excessive risk-taking behaviour (Mishra and Urrutia, 1995). However, judging from the results, such control has not been effectively adopted. Prudential regulation and supervision have no demonstrated impact on systemic risk, while market discipline with identified stabilising role solely emerged from a mixture of limiting deposit insurance and increased disclosure (Barth, Caprio and Levine 2006).

Conversely, restricted and provisional DI has proven superior to both extremes — i.e. unconditional DI and non-DI in theoretical terms (Acharya and Thakor, 2016) and on empirical grounds as demonstrated by the successful financial policies of limited and provisional protection pursued by many countries preceding the World War II (Calomiris, Flandreau and Laeven, 2016). Thus, the following two questions are inevitable: i) Why do countries persist in applying almost complete and enduring protection, notwithstanding its poor record in restraining systemic risk? ii) Why prudential regulation failed to operate as a risk reduction instrument which could contain the DI effects and consequences?

2.3 The theory revised

DI implies depositors receive interest generated by risk-taking activities without any downside outcome in case those risks are realized. Thus, it provides an incentive to depositors to make their funds available to banks which in turn use these funds to support lending and other risk-taking activities. This allows banks to expand their balance sheets, attracting inefficiently large volumes of deposits and expanding inefficiently high-risk loans.

The original economic theory considers DI impact on banks' lending and risk taking activities as a side effect. However, such an impact ought to be perceived as a deliberate political objective pursued by a winning political alliance. DI is used as political leverage. Domestic political influence plays a key role in the realization and design of DI (Demirgu-kane and Laeven, 2008; 2014).

Generally, DI provides subsidies to banks by reducing the cost of mobilising funds, through deposits rather than other forms of debt or equity and consequently allows them to expand their credit activity to a magnitude otherwise unattainable. Thus, it benefits specific borrowers by granting capital access. It is a transfer subsidy provided to banks but eventually passed on, in the form of credit, to politically preferential borrowers, subsequently crowding out high productivity investments. It could be an indispensable part of an attained political balance to pursue the prevailing interests of bankers, depositors and borrowers, since it allows all of them to increase their risk taking, at public expense.

In autocratic regimes DI may function as an instrument of attracting deposits and subsequently advancing loans to industrial corporations owned by crony economic political elites which would otherwise find hard to finance (Calomiris and Haber; 2014).

In democratic states, insured credit institutions could also be granted particular incentives to lend to politically favoured, though risky functions. Governments may utilise banks as the device for directing credit subsidies to favoured borrowers since banks are strictly regulated and, consequently,

effortlessly manipulated by way of a combination of DI, state incentives for various forms of lending, financial restrictions, use of “moral suasion” on domestic banks and lenient prudential supervision (Calomiris and Chen, 2016). In several countries banks focus on real estate by loan provisions for risky mortgages is mainly due to policy distortions, taking in DI (Calomiris and Haber, 2014). Furthermore, DI coupled with government financial restrictions and/or the use of “moral suasion” on domestic banks could induce the latter to engage actively in government bonds financing and provide national administrations with easier access to capital.

Following the 2008 financial crisis, DI was used as an instrument to uphold banks’ lending activity and liquidity to severely hit economies. Drawing on IMF-defined episodes of banking crises as shocks to market liquidity over the last 25 years reveals a major positive link between sustained loan expansion during crises and DI cover for banks. (Ngo, Puente and Virani, 2016).

In principle, prudential regulation and supervision are enacted as a substitute for market discipline and therefore may eliminate deposit insurance drawbacks in terms of excessive lending and risk-taking. However, in practice, the efficiency of regulators and supervisors in disciplining imprudent bankers depends on the incentives provided by the political process. Such incentives may be inferior to those of uninsured depositors, who incur substantial losses in case of bankers’ irresponsible actions. Thus prudential regulation and supervision may not provide an equivalent substitute to market discipline. Furthermore, regulatory failure is often a predictable consequence of the political bargains influence which challenges safety nets and prudential regulations safety nets ability to contain insured banks risk taking (Calomiris

and Haber, 2014). In case DI is subject to private interests, it is irrational to consider that the political process would provide effective prudential regulation and supervision to eliminate DI subsidies.

In short, the economic theory considers DI narrowly as a risk sharing arrangement amongst banks designed to limit systemic risk in the banking sector. In principle DI provides subsidy allowing elevated risk taking and therefore generates economic rents which subsequently should be shared amongst all parties involved. Thus, it should rather be conceived as a broad rent-sharing arrangement encompassing the interest of politically favoured borrowers along with bankers and depositors.

2.4 Illustrating DI as a rent-sharing arrangement

Generally, depositors are keen to invest their funds, via intermediation, in borrowers' projects since they foresee that the borrowers' collateral is of a good quality to provide a sufficient return on their deposits. However if the depositors foresee a declining collateral value, due to an economic shock, inducing borrowers even to default on their loans, they may withdraw funds from the investment projects. Nevertheless the shock has not inevitably influenced the investment projects' returns, but merely the share in these returns, and more precisely the depositors' ability to attract a sufficient portion of such returns rendering depositors unwilling to continue playing a part in the respective projects. In case of a soaring ex-ante bankruptcy risk, borrowers can seize such an amount of their projects' payoffs that cause depositors to be reluctant to participate in any contract to always ensure full completion of the investment project. Withdrawing funds, even though real investment projects' returns have not declined, leads to a complete

investment collapse with severe repercussions for real growth. In economic terms it is optimal to prevent depositors from running away from the projects by withdrawing their deposits. Completion of borrowers' projects may require an assurance to depositors offering safety of their funds against bankruptcy risks. Such an objective can be attained by DI.

Although in certain cases it is generally perceived that perspective loans are running at a loss (in terms of their expected repayments not covering their initial outlay), the respective projects might be socially desirable generating certain externalities. Such projects might be selected by the State, which through appropriate regulatory provisions and administrative practices attempt at inducing banking institutions to direct their loans towards these projects. While banks may not need deposits to create loans, balancing their books by attracting customer deposits is usually the lowest cost option. Thus, it is efficient depositors providing funds to the banking institution, the later extending loans to borrowers and taxpayers covering any losses. Ex-ante, the taxpayers are willing to provide DI since the transfers (taking into account the generated externalities) that they expect to receive from the socially desirable projects (and the accrued generated externalities) compensate for their taxes. Following a severe collateral shock, though, taxpayers are ex-post discontented, since they bear a large burden to keep lenders floating, DI ought not to be discontinued.

Consequently, state-backed DI, in case of a significant decrease in aggregate collateral value, generates large conveyance of funds from taxpayers to depositors. Several instances exemplify this form of DI as a vital segment of banks bailouts and resolutions with extensive transfers from taxpayers to

depositors. The single case of bail-in, namely Cyprus, is an exception that actually confirms the rule. The main factor leading to the bail-in decision was the heavy burden for the insurer – i.e. the State – to bear.

Thus, the DI is a rent-sharing arrangement which encompasses the contracting problem between the depositor, the banker, the State and the borrower, given that the latter can redirect his investment project' returns. This DI approach converges to the conceptions of:

i) 'Relationship banking' which refers to the intertemporal accumulation of specific information in the hands of the bank, and the subsequent development of informational rents, which, if shared by both the bank and the borrowers, their relationship upholds (Besanko and Thakor, 2004).

ii) Borrower-lender relationships in the presence of enforcement limitations (see for example Hart and Moore, 1998).

iii) The model of DI operating essentially as insurance (Kocherlakota, 2001).

Nevertheless, the above illustrated DI approach covers a wider spectrum since it encompasses the interest of all groups: depositors, taxpayers, bankers and borrowers.

A key feature of DI is the growth of economic rents in the hands of the banks and the borrowers. To the extent that these rents are shared not exclusively by the banks and the borrower, but also by the depositors and the taxpayers all parties see a value in enduring their relationship. The desire to protect such relationships affects the bank's borrowing and lending capacity as well as the economic growth. The political weight of any of the individual parties

involved plays an important role in the framing of and running the overall arrangement. In Cyprus, for instance, the nationality of the depositors played a role in the bail-in decision since the banks' problems were originated by foreign deposits serving as the backing for loans to the depositors (Kregel, 2013). Conversely, in Italy, the DI rent-sharing arrangement encompasses the protection of bond holders attained by the use of alternative measures such as transfer of ailing banks' deposits and bonds to viable banks, even if in breach of EU State Aid rules, since according to the EU Commission transfer of bonds constitute transfer of business (Kiriazidis, 2016). In any case, within this rent sharing arrangement providers of funds and depositors in particular may pursue their own interests by presenting the other parties with the specter of bank runs.

The 2008 financial crisis in Europe triggered by the adverse US financial developments which raised doubts about the ability of debtors to serve their debts, with sovereigns and banks facing difficulties to roll over their bonds and deposits respectively (De Grauwe, 2011). Sovereign creditworthiness represents the ultimate source of insurance for the banking system. Drawing on the Greek experience – the country worst hit by the financial crisis— capital controls were imposed in order to halt banks hemorrhaging deposits, given that large depositors in particular engaged in hoarding bank notes and capital outflows. In 2015, hoarding cash reached around 25% of the country's money supply M3 (Bank of Greece, 2016). Such a bank run was generated by the deterioration of the sovereign creditworthiness along with a new Law (3869/2010) on indebted units compelling banks to restructure their loans according to new financial circumstances in privileged terms for the borrowers allowing them to expropriate considerable amounts of their

projects' payoffs. Yet, the solvency problems of some individual banks appear to play only marginal role in causing deposits withdrawals (see Diagram 1). Thus, the bank run did not originate from financial difficulties faced by a limited number of credit institutions and subsequent spill-over effects stemming from irrational, uninformed, or panicked behaviour in particular of small savers.

The DI rent sharing arrangement does not embrace only the design features of the DI (such as level and scope of coverage and contribution system) but also all the spectrum of regulatory provisions and administrative practices governing the operation of all parties involved. Such provisions and administrative practices include in general: (a) the prudential treatment of banks, (b) the structure for banking resolution and insolvency, (c) the framework for business insolvency, and (d) the level of sovereign debt held by credit institutions.

In fact, the immense domestic sovereign debt inventory of many banks is a particular aspect of the DI arrangement. Most European governments consider their ability of using national banking sectors as sovereign debt last resort buyers as their prerogative. In May 2016, the Bank of Italy's Governor highlighted the necessity to "preserve banks' ability to act as shock absorbers in the event of sovereign stress" as a crucial aspect of the national policy (Visco, 2016). Even in Germany, the local banks (the Landesbanken) play an important role in financing public-sector projects at local or provincial level (Veron, 2016).

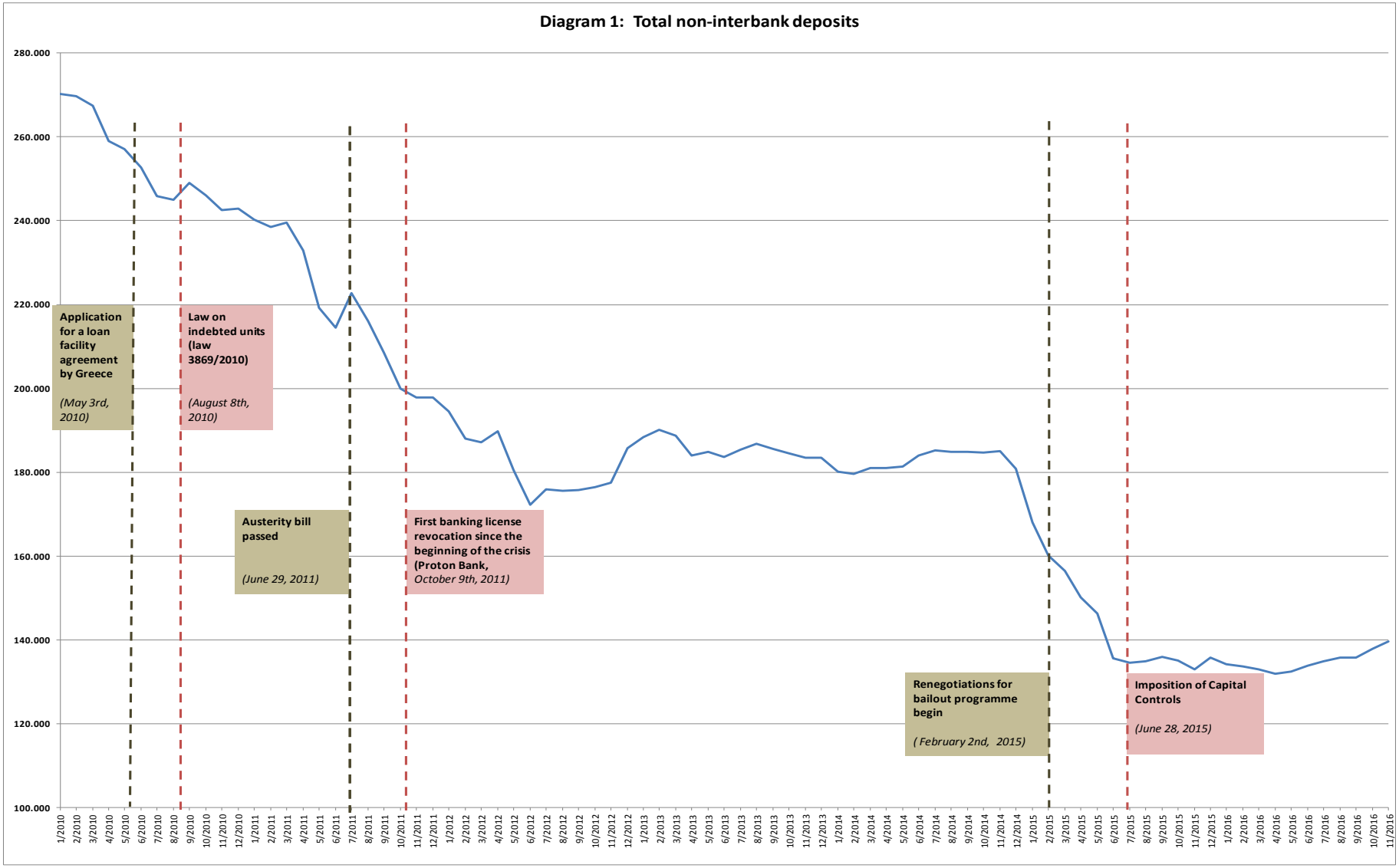
Diagram 1: Total non-interbank deposits
280.000
260.000
240.000
220.000
200.000
180.000
160.000
140.000
120.000
100.000
Application for a loan facility agreement by Greece
(May 3rd, 2010)
Law on indebted units (law 3869/2010)
(August 8th, 2010)
Austerity bill passed
(June 29, 2011)
First banking license revocation since the beginning of the crisis (Proton Bank, October 9th, 2011)
Renegotiations for bailout programme begin
(February 2nd, 2015)
Imposition of Capital Controls
(June 28, 2015)
1/2010
2/2010
3/2010
4/2010
5/2010
6/2010
7/2010
8/2010
9/2010
10/2010
11/2010
12/2010
1/2011
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11/2015
12/2015
1/2016
2/2016
3/2016
4/2016
5/2016
6/2016
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8/2016
9/2016
10/2016
11/2016

Since the DI arrangement is structured within a political framework, its function may diverge across countries according to the prevailing political interests. However, this arrangement can operate effectively given that the appropriate level of deposits is mobilized towards this end. Since the Eurozone incorporates free mobility of capital which is not restricted even by exchange rate changes (which could otherwise isolate the domestic economies from foreign disturbances), the national DI arrangements inevitably induce fierce competition for deposits amongst the eurozone MS. Governments are involved in an uncoordinated policy game wherein decide on DI conditions in order to attract deposits which are necessary for the rent-sharing arrangement to run.

3. European DI as a Game of Strategy

DI seems to play an essential role in cross-border European banking competition. Despite the integration process, differences in certain DI conditions (such as the scope and level of coverage) influence cross border deposit (capital) flows. In certain cases MSs are involved in an uncoordinated policy game wherein opt for particular DI conditions with the intention of attract deposits. Thus, such conditions are determined antagonistically with severe repercussions for financial stability and economic welfare. Behavior relations of conflict and cooperation amongst rational decision makers –the MS Governments – played an important role in the evolution and formulation of the European DI. The European DI game is a cooperative game since the players are capable to form binding commitments externally enforced through EU Directives and thus the analysis incorporates all the options available to players due to the prospect of externally imposed cooperation.

3.1 Prior to the Crisis

In 1994 the 94/19/EC Deposit Guarantee Schemes Directive[1] (DGSD) set a minimum cover limit of €20,000 with no upper limit. Competitive distortions emerged by differences in the coverage level. According to the DGSD banks' branches in host countries were covered by the home DGS. Depositors could promptly shift deposits amongst local branches and thus amongst DGSs. Nevertheless, most countries opted for the lowest coverage level with certain notable exceptions: France (€70,000) and Italy (€100,000). Therefore, prior to the crisis, the mass of deposits in the EU were essentially uninsured.

The low level deposit guarantee was an initial policy equilibrium. DI reduces the severity of bank losses by diminishing liquidity risk; yet, it involves a funding cost (from private or public sources) and generates moral hazard and adverse selection. Thus, in periods of financial stability, when there no concern for liquidity risk, it implies a net cost to economic welfare and, governments opt for unworthy DI. This resembles the initial situation in the EU with guarantee levels sufficiently low (€20,000) to be financed by the residual value of bank assets, without recourse to additional funds.

Furthermore, the low level explicit DI was initially enacted in the EU mainly by the necessity to protect the payment system given the banks' unique role in it, rather than financial stability considerations. In addition, prior to the introduction of the Euro, MS could accommodate their economies to foreign disturbances by changes in the exchange rate which offer a shield to the domestic money supply and therefore tackle liquidity risk. Nevertheless, the

[1] DIRECTIVE 94/19/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 30 May 1994 on deposit-guarantee schemes. Official Journal of the European Communities No L 135/5

introduction of euro and the financial crisis changed the economic landscape. The euro has increased international bank competition, while the crisis impacted banks in EU countries asymmetrically.

3.2 Following the financial crisis

Subsequent to the crisis banks liability insurance including DI soared to unprecedented levels. More specifically:

- In 30 September 2008 in Ireland the Government proclaimed, in terms of a political commitment, full deposit insurance in biggest 6 domestic banks (European Commission, 2010). The justification provided for such a move was the international financial crisis and the generated uncertainty which provoked substantial deposits withdrawals (Financial Times, 30th September 2008).
- In 3 October 2008 the UK Government announced a rise in coverage level from £35,000 to £50,000. Such a rise in coverage level was motivated by significant deposit outflow to the insured Irish banks, stressing UK banks in Northern Ireland (British Banker Association, 2008).
- In 5 October 2008 in Germany the government declared (political commitment) full guarantee for all deposits in domestic banks. Yet it had previously criticized publicly the Irish's "beggar-thy-neighbour" policy. Germany's shift was induced by significant electronic flows of deposits during the previous weekend (The Economist, 9th October, 2008).
- In 5 October 2008 the Austrian Government followed suit and announced the full guarantee of all deposits in domestic banks. Government official stressed explicitly the need to avert the flow of Austrian savings to Germany (Reuters, 5th October, 2008).

- In 6 October 2008 in Denmark the Government announced the full guarantee of all deposits in Danish banks (Financial Times, 7th October 2008). In 7 October 2008, in the EcoFin Council meeting in Luxembourg, the EU finance ministers decided to: i) increase the minimum guarantee level from €20,000 to €50,000 for one year, and ii) set the framework for the 2009/14/EC DGSD[2] adopting a harmonized level at €100,000 since Jan 2011

Obviously, governments engage in a strategic game setting DI levels and policies. The explicit actors of this game are depositors, banks and governments. Depositors are non-forbearing as far as risk is concerned. In absence of Deposit insurance, if their claims' risk increases, they withdraw some of their deposits, contributing to banks' de-leverage and market discipline, or even a bank run, if the risk increase is sufficiently large and swift. In case of DI existence, depositors' incentive shifts from the selection of banks to the selection of DI jurisdictions. In this case market discipline is removed. Banks are highly competitive. The probability of banking failure might be inversely related and vastly sensitive to the level of domestic deposits. Attracting deposits from abroad enhances domestic banking stability, but undermines stability in foreign countries. Loosing deposits compromises domestic banking stability. Governments are welfare maximizes. They seek to protect their banking systems from destabilizing capital flights and compete for deposits. Their policies aim at attracting depositors and DI levels are selected given the choice of other governments.

[2] DIRECTIVE 2009/14/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 March 2009 amending Directive 94/19/EC on deposit-guarantee schemes as regards the coverage level and the payout delay. Official Journal of the European Union L 68/3.

A country would unilaterally increase the level of its DI, either in order to retain the level of domestic deposits following an economic shock (in this respect the rise in the DI level is a means of fending off external disturbances) or as a beggar- thy-neighbour policy. The Irish action was clearly a defensive response to protect the domestic deposit base rather than as a beggar-thy-neighbour policy, as claimed by the German Government. Nevertheless, such an action would inevitably affect unintentionally other MS. In this respect, Germany was rightly distressed by the Irish action which influenced the German banking system.

The dominant strategy for each government (player) was to increase the level of DI. However, if every government does the same, they all end up worse-off. It is a clear case of conflict between individual rationality and the common good –i.e. a prisoner's dilemma situation (Amadae, 2016).

The introduction of Euro amplified competitive distortions and scope for externalities. The DI seems to play a central role on cross-border banking competition with the protection level perceived by the governments as a key policy variable affecting the location of deposits. External pressures determine significantly the provision of national DI. Differences in coverage levels lead not only to flight of deposits from low guarantee countries to higher guarantee countries, but also from lower guaranteed banks to higher guaranteed banks, which nevertheless operate within the same market. Governments engage in a strategic interaction setting DI policies. By trying to avert potential destabilizing capital flights they may be forced to level the regulatory playing field towards the highest denominator. The looser the

coordination, the higher the DI protection prevails, and the more severe the implications are, in terms of moral hazard and adverse selection.

Eventually, the mutual benefits from cooperation were recognized and in 7/10/2008, EcoFin Council meeting the MSs adopted the DGSD providing a level of €100,000. Cooperation involves strong positive externalities rendering cooperative equilibrium more efficient than non- cooperative ones. Since the Governments had increased the guarantee from low levels to full guarantee, they would not be able to return to the previous low levels without seriously irritating depositors leading to deposits withdrawal (the total size of the pie would shrink).

3.3 Repeated strategic game

The strategic games are barely played merely on one occasion. Most of them last for infinitely many moves, with the winner not known until after the completion of all those moves. They are repeated games since in future periods certain players could exert defection. Acting cooperatively implies benefits, yet there are powerful individual incentives to breach joint agreements. In the case of DI attracting deposits from foreign banking systems is the dominant and a powerful incentive. A key issue in repeated games is generally not so much on the best strategy to play the game, but whether one player has a winning strategy. Repeated games are played even if perfect information exists, the single outcomes are unambiguously "win" or "lose" and neither player has a winning strategy (McCain, 2014 and Owen, 1995).

In the context of the new DGSD[3] 2014/49/EU depositors' Temporary High Balances (THB) coverage represent another aspect of uncoordinated game of strategy between MS Governments competing for deposits. The 2014/49/EU DGSD made significant progress towards harmonization. However, it provided that depositors' THB emerging from certain transactions of social significance (such as real estate and insurance indemnity) should be protected by higher coverage levels which should be set taking into account the *living conditions* in the MSs.

Table 1 below presents THB coverage level in various MSs, and table 2 presents GDP per capita in PPS (purchasing power standard) in various MSs as a proxy to their living conditions. Further below, Diagram 2 (combining Table 1 indicator MSs' THB coverage levels with Table 2 indicator MSs' GDP per capita) reveals that the two indicators follow completely different patterns. Undeniably, some countries while experiencing lower GDP per capita, have set higher THB coverage levels. Running a simple statistical test confirms the visual presentation. The correlation coefficient between THB coverage levels and GDP per Capita is 0.08, indicating essentially no correlation between the two indicators.

[3] DIRECTIVE 2014/49/EU of 16 April 2014 on DGS. OJ EU L 173/149.

Table 1 Temporary High Balances Coverage Level in selected Member States					
Countries		THB Coverage	Countries		THB Coverage
AT	Austria	500,000	IE	Ireland	1,000,000
BE	Belgium	500,000	LV	Latvia	200,000
CY	Cyprus	50,000	LT	Lithuania	300,000
FI	Finland	Full	MT	Malta	500,000
FR	France	500,000	PT	Portugal	Full
DE	Germany	500,000	SI	Slovenia	Full
EL	Greece	300,000	ES	Spain	Full
HU	Hungary	50,000	UK	United Kingdom	1,000,000 (GBP)

Source: Individual countries' data on Temporary High Balances coverage level, May 2016.

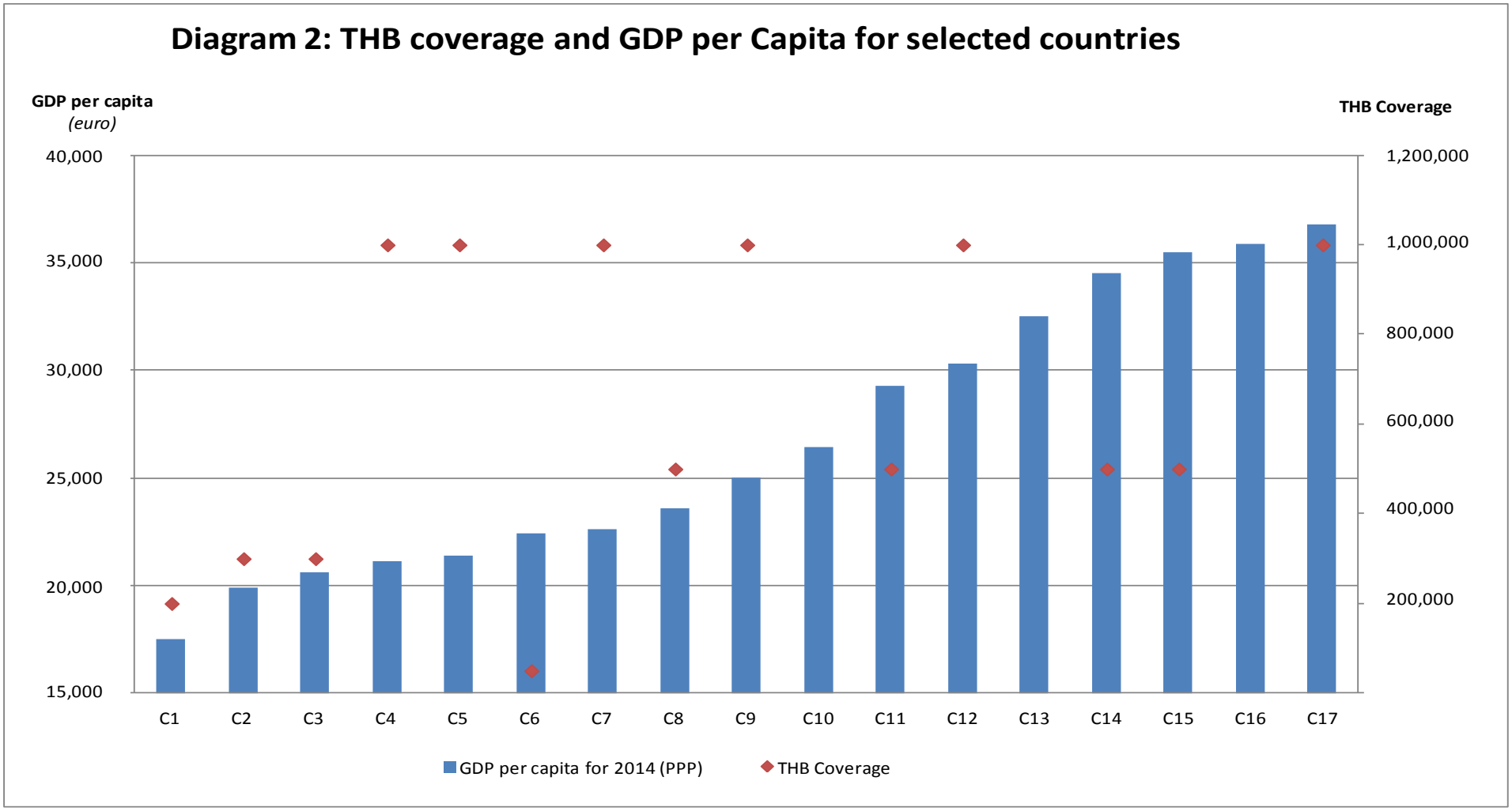
Table 2 GDP per capita in Purchasing Power Standard (PPS) in Eurozone in 2014			
Countries	Euro	Countries	Euro
Austria	35,500	Italy	26,400
Belgium	32,500	Latvia	17,500
Cyprus	22,400	Lithuania	20,600
Finland	30,300	Malta	23,600
France	29,300	Netherlands	35,900
Germany	34,500	Portugal	21,400
Greece	19,900	Slovenia	22,600
Ireland	36,800	Spain	25,000

Source: Eurostat Newsrelease, February 2016

Thus the conclusion is inevitable: MSs Governments set THB coverage levels divergently to their respective living conditions and hence in stark contrast to the spirit of the DGSD. Accordingly, an imperative question emerges. What was the factor behind THB protection level determination?

To that end a cluster analysis is performed and illustrated in Table 3. Selected countries are categorized in clusters according to identical THB coverage levels. Subsequently, intra-cluster competition is assessed taking into consideration that the degree of competition corresponds to cross border banks' operation via branches. Table 3 reveals that THB coverage levels seem to correspond to the structure of cross-border branching which reflects the respective degree of competition amongst the MS concerned. In clusters A and B, countries C2 and C3 respectively (both in Ranking 1) are the competitive grounds. In cluster C, all countries are involved in competition. Thus, THB protection levels were set antagonistically. Competition determines the level of DI.

National THB protection policies represent a beggar-thy-neighbour" motive for setting levels of DI. Such policies aim at increasing the domestic welfare at the expense of other MSs because the benefit is realised only by attracting deposits from foreign banking systems. It is an instance of the prisoner's dilemma since each country individually has an incentive to pursue such a policy, rendering finally everyone (including themselves) worse off.



Sources: Individual countries' data on Temporary High Balances coverage level (May 2016), Eurostat News Release (February 2016).

Note Countries' GDP per capita are set in ascending order, while their respective THB coverage levels are presented with red dots. For data analysis reasons full THB coverage is assigned the highest THB coverage numerical level –i.e 1,000,000.

Table 3 THB Coverage Level and Cross Border Operation via Branches in Selected Member States				
Clusters	Countries	THB Coverage Level	Intra-cluster competition	
			Number of branches from other countries within the cluster as a percentage of total Eurozone branches in Host country	*Ranking*
Cluster A	C1	Full coverage	11.7%	*3*
	C2		27.3%	***1***
Cluster B	C3	1,000,000	36.4%	***1***
	C4		7.2%	*7*
Cluster C	C5	500,000	56.6%	***1***
	C6		51.4%	***1***
	C7		38.7%	***1***
	C8		61.5%	***1***
	C9		71.4%	***1***

Sources
- Data on branches: European Banking Authority.
- Individual countries data on THB Coverage Level, May 2016.
Calculations by the Author

The developments above lead inevitably to a number of essential questions:

i) Is the current situation in equilibrium?
ii) In case a high coverage country bank expands via branches in a low coverage country, would the latter react by raising its coverage level irrespective of cost and consequences?
iii) Should a bank's policy expansion determine the coverage level in a certain country?
iv) What are the implications in terms of moral hazard and adverse selection?
v) Conversely, would an efficient low coverage country bank find any expansion via branches in a high coverage country hindered due to the difference in coverage levels?
vi) Does this constitute somewhat a barrier to entry?

These concerns highlight the merits of coordinated equilibrium versus non-coordinated equilibrium.

In effect, in the case of DI, Governments' interaction seems to involve tit-for-tat trigger strategies. They act in the same way as their adversaries previously. Some governments defected on the agreement and as response the other governments reacted in a tit-for-tat row to punish defectors by stopping to cooperate. Since the latter also defects themselves on cooperation the eventual outcome is mutual defection (defect-defect). The key factor contributing towards cooperation via trigger strategies is the exceeding size of punishment over defecting gain. Nonetheless, in this particular case, the defecting gain (in terms of attracted deposits net of the cost of raising DI) as well as the size of the punishment (in terms of losing the deposit attracted by defecting in the first place) cannot be calculated

precisely. In such an uncertain framework the outcome is inevitably towering DI protection levels.

Is harmonization of the explicit DI conditions as induced by the EU Directives sufficient to attain uniform DI provision throughout the EU and therefore avert antagonism for deposits? Up until now, State antagonism on deposits involved coverage. Nevertheless, in reality there are several aspects of DI that may affect deposits' protection and as a result deposit flows. The credibility of DI plays a crucial role in this respect. Such credibility, given the low capitalization level of domestic DGSs, depends on their particular backstops' credibility and consequently on the vigour of state finances. Thus, the game can be repeated indefinitely.

4. Sovereigns' Fiscal Status as Determinants of Deposits

This section seeks to assess the sovereigns' fiscal strength on the credibility of DI across the Eurozone and thus depositors' perceptions of explicit DI. This in turn provides significant insight on the existence of moral hazard and adverse selection.

Diagram 3 presents domestic and foreign deposit trends versus tier-1 ratio and deposit interest rates in selected Eurozone countries. Sovereign risk is based on the average ratings of Moody's, Fitch and Standard and Poor's. High risk is defined as BBB or worse. Tier–1 ratio is used as a proxy of the banking sectors' financial strength since is superior[4] to other banks

[4] Tier -1 ratio is defined as Tier -1 capital over risk-weighted assets. Tier 1 capital generally refers to equity capital and disclosed reserves (including retained earnings) and is viewed to be of higher quality than total

capitalization indicators and is the less procyclical. One year maturity deposit interest rate is used as a proxy of the interest rate. Country specific, instead of bank specific, data manipulation was selected due to persisting fragmentation of the Eurozone banking sectors. ECB financial integration indicators, both quality and quantity based, signal relatively low levels of retail banking integration in the Eurozone, despite the ECB's non-standard monetary policy measures (European Central Bank, 2016).

The diagram reveals that in all countries deposits from foreign euro area counterparties tend to follow wider volatility than deposits of domestic counterparties. High risk sovereigns experience a marked outflow of deposits from foreign euro area counterparts, while low risk sovereigns experience the opposite course despite the substantial improvement in the capitalization of the banking sector and their relatively higher deposit interest rates.

The above findings demonstrate that the Eurozone banking sectors are characterized by the existence of: regulatory subsidy in the form of implicit, though effective, DI; perception of such subsidy; uneven level of confidence depending on the fiscal status of the respective MSs; moral hazard; and, adverse selection. Furthermore, the relationship between the timing of changes in deposits and changes in interest rates is important. If the change in interest rates preceded the change in deposits, then an increase in deposits should have been associated with a relative increase in the interest rate. Whereas, if the change in deposits preceded the change in interest

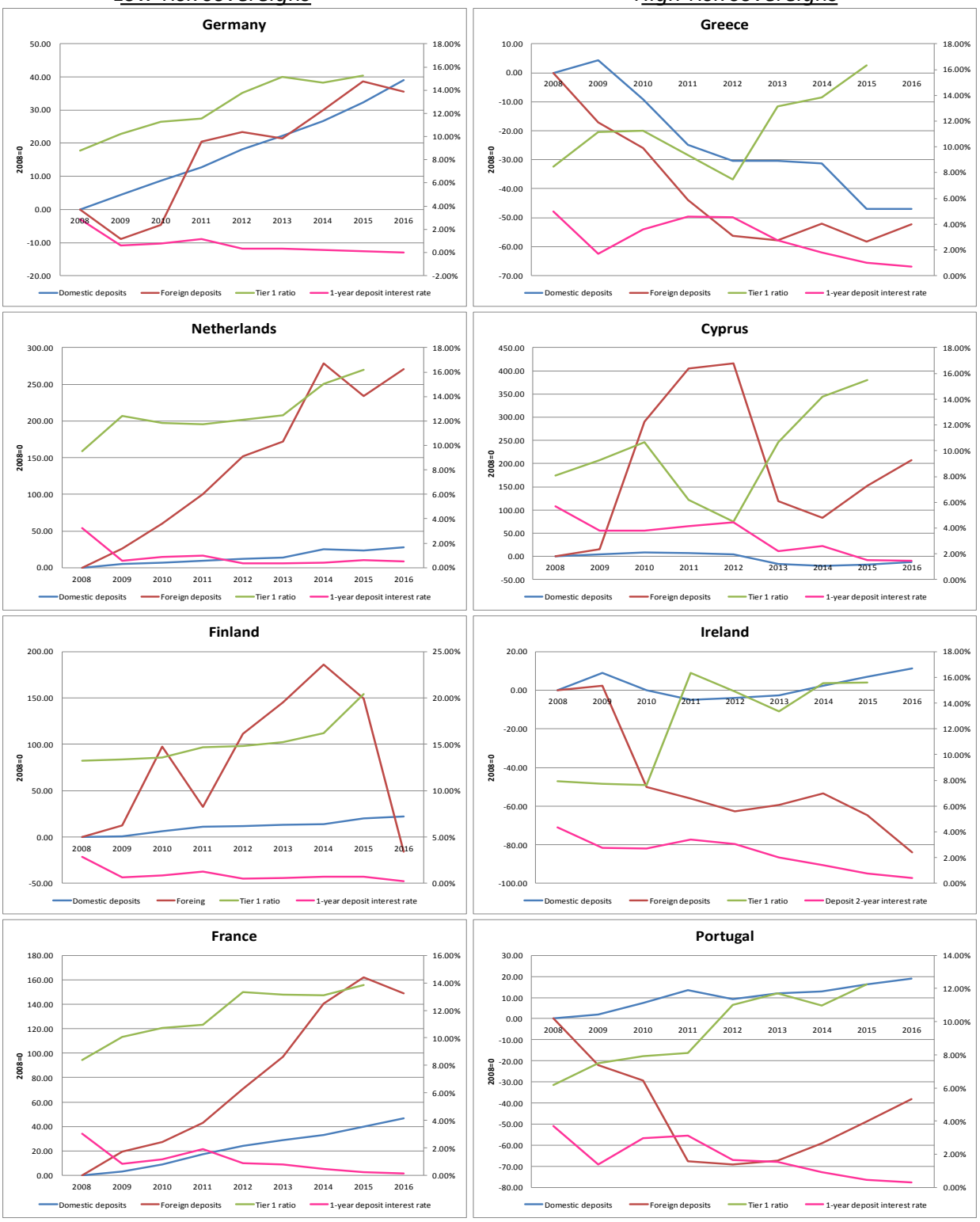
capital. The latter includes items such as hybrid debt instruments, including cumulative preferred shares and other "innovative" capital instruments, and also longer-term subordinated debt. Total risk-weighted assets encompass exposure to credit, market and operational risk.

rates, then an increase in deposits should have been associated with a relative reduction in the interest rate.

Since the low risk sovereigns are characterized by relatively lower interest rates this implies that the flow of deposits preceded the decline in interest rates. Thus, it is deposit flows that determine the interest rates (rather than vice versa) and consequently the financing conditions in the respective countries. This is supportive to the argument that DI is used as an instrument to uphold banks' lending activity and liquidity to domestic economies.

Diagram 3: Domestic and foreign deposits'[1] trends (left axis) versus tier 1 ratio and 1-year deposit interest rates (right axis) in selected Eurozone countries.

Low-risk sovereigns[2] *High-risk sovereigns*[2]



Source: ECB Statistical Data Warehouse

[1] Deposits of non- financial corporations, households and non-profit institutions serving households (Index: 2008=100). Foreign deposits refer to other Euro area member states.

[2] The risk is based on the average ratings by Moody's, Fitch and Standard and Poor's. High risk is defined as BBB or worse.

In order to provide a thorough analysis highlighting the effects of sovereign risk on deposits across the Eurozone, a model is employed which is similar to the research methods in evaluating moral hazard in the area of DI presented in the recent literature (e.g. Karas, Pyle, and Schoors, 2013; and Yan, Skully, Avram and Vu, 2014; Calomiris and Jaremski, 2016). Such methods examine the response of depositors to the specific balance sheet characteristics of the respective banks and model the change in deposits reacting to specific ratios capturing the solvency of these banks. Cross-sectional time-series data (Panel data) analysis is used. This is a dataset in which the behaviour of entities is observed across time (Kohler and Kreuter, 2009). Panel data allows control for variables which cannot be observed or measured such as variables that change over time but not across entities (Baltagi, 2008).

Deposits are modelled using a linear model. The equation for this model is:

$Y_{it} = \beta_0 Y_{it-1} + \beta_1 X_{it} + \beta_2 Z_{it} + \beta_3 D_{it} + \alpha_i + u_{it}$

Where:

- α_i (i=1….n) is the unknown intercept for each entity i.e. country
- Y_{it} is the dependent variable-i.e. DEPOSITS where i = entity and t = time
- X_{it} represents the independent variable- i.e. TIER-1 RATIO
- Z_{it} represents the independent variable- i.e. SOLVENCY RATIO
- D_{it} represents the independent variable – i.e. SOVEREIGN RISK
- β is the respective coefficient for every independent variable
- u_{it} is the error term

Tables 4, 5 and 6 provide data for the variables: Deposits, Tier-1 ratio and Solvency ratio respectively. The independent variable Sovereign risk presented in Table 7 is a binary variable, taking values: 0 for high risk

sovereigns and 1 for low risk sovereigns. The definitions of these variables are presented in Appendix I. The model captures the national banking sectors in their entirety rather than reflecting on individual banks in correspondence to the fragmentation of the national banking sectors as manifested by the ECB financial integration indicators. Various statistical Tests are performed.

Table 4: Eurozone deposits of non-MFIs excluding central government sector (EUR million, outstanding amounts at end of period)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Austria	278,020	297,032	302,976	302,683	315,911	321,267	328,126	334,665	341,325	357,817
Belgium	422,382	444,181	454,914	466,070	473,441	496,300	505,120	524,138	536,117	536,018
Cyprus	33,547	40,393	42,144	49,290	48,929	48,428	35,099	34,045	35,424	39,197
Finland	95,899	107,898	109,245	118,026	125,211	136,282	144,199	148,348	152,063	151,579
France	1,426,339	1,513,813	1,606,738	1,733,500	1,870,912	1,937,676	1,994,874	2,029,149	2,153,594	2,255,324
Germany	2,620,069	2,822,603	2,875,710	2,972,771	3,090,965	3,142,897	3,119,582	3,190,508	3,298,325	3,404,849
Greece	201,826	233,587	244,237	215,639	180,085	167,930	170,874	167,526	129,441	129,073
Ireland	216,557	217,173	219,180	201,067	196,298	197,013	206,085	195,403	205,252	206,308
Italy	1,048,410	1,141,247	1,209,695	1,454,560	1,393,440	1,502,251	1,525,810	1,546,452	1,620,245	1,691,542
Luxembourg	224,190	207,470	203,081	200,956	215,103	214,019	224,855	245,773	266,455	278,147
Malta	8,521	8,704	8,762	9,385	10,636	11,570	13,014	16,013	17,168	18,617
Netherlands	745,167	792,271	814,399	820,061	857,415	889,243	885,688	936,008	927,317	955,375
Portugal	175,674	196,992	209,649	226,165	232,805	210,637	213,072	211,493	214,584	217,578
Slovakia	31,529	36,821	34,696	36,462	38,147	40,629	42,560	43,543	47,538	50,207
Slovenia	18,246	19,133	19,988	20,806	21,330	20,867	20,795	22,133	23,141	24,679
Spain	1,463,765	1,656,962	1,686,023	1,730,187	1,679,411	1,521,972	1,496,564	1,478,159	1,451,732	1,450,398

Source
ECB MFI Balance Sheets

Table 5: Tier 1 ratio *(tier 1 capital / total risk exposure amount)*								
	2008	2009	2010	2011	2012	2013	2014	2015
Austria	7.92%	9.55%	10.04%	10.30%	11.26%	11.85%	12.28%	13.16%
Belgium	10.84%	12.64%	14.14%	13.25%	14.75%	16.92%	15.50%	17.01%
Cyprus	8.08%	9.26%	10.65%	6.16%	4.48%	10.67%	14.20%	15.46%
Finland	13.22%	13.40%	13.55%	14.71%	14.84%	15.25%	16.21%	20.42%
France	8.40%	10.08%	10.74%	10.94%	13.34%	13.15%	13.10%	13.83%
Germany	8.79%	10.21%	11.28%	11.56%	13.76%	15.16%	14.62%	15.28%
Greece	8.46%	11.15%	11.27%	9.37%	7.47%	13.12%	13.83%	16.31%
Ireland	7.96%	7.71%	7.65%	16.32%	14.90%	13.36%	15.56%	15.59%
Italy	6.88%	8.33%	8.75%	9.62%	10.66%	10.52%	11.80%	12.33%
Luxembourg	10.40%	15.57%	17.58%	14.96%	21.20%	28.29%	25.96%	27.63%
Malta	11.83%	14.10%	13.34%	13.29%	12.65%	12.52%	12.13%	15.54%
Netherlands	9.55%	12.42%	11.84%	11.74%	12.12%	12.48%	15.05%	16.19%
Portugal	6.18%	7.48%	7.91%	8.10%	11.01%	11.71%	10.96%	12.25%
Slovakia	21.89%	20.92%	19.18%	16.86%	16.31%	17.26%	16.59%	17.42%
Slovenia	8.72%	8.86%	8.26%	8.82%	9.07%	12.95%	18.94%	19.27%
Spain	8.10%	9.32%	9.64%	10.19%	9.68%	11.74%	11.73%	12.64%

Source
ECB Satistical Data Warehouse

Table 6: Solvency ratio *(own funds / total risk exposure amount)*								
	2008	2009	2010	2011	2012	2013	2014	2015
Austria	11.42%	13.24%	13.59%	13.86%	14.96%	15.84%	16.25%	16.54%
Belgium	16.46%	15.74%	17.52%	16.68%	16.74%	19.83%	18.18%	20.17%
Cyprus	10.96%	12.07%	12.00%	7.29%	5.23%	11.39%	14.55%	15.79%
Finland	13.94%	14.37%	14.52%	15.73%	16.16%	16.37%	18.11%	23.02%
France	10.36%	12.24%	12.57%	12.25%	14.01%	15.03%	15.27%	16.53%
Germany	12.59%	13.91%	15.21%	15.70%	17.42%	18.71%	17.17%	17.79%
Greece	9.92%	11.87%	12.26%	10.07%	7.89%	13.51%	14.06%	16.45%
Ireland	10.80%	10.87%	10.43%	17.74%	16.57%	15.10%	17.82%	18.09%
Italy	10.40%	11.75%	12.20%	12.80%	13.56%	13.76%	14.30%	14.86%
Luxembourg	14.10%	20.95%	22.22%	17.61%	27.09%	32.61%	26.86%	28.35%
Malta	13.27%	17.31%	17.28%	16.96%	16.82%	16.30%	14.80%	18.45%
Netherlands	11.88%	14.93%	13.92%	13.42%	14.20%	14.89%	17.95%	20.11%
Portugal	9.14%	10.39%	10.20%	9.48%	12.52%	13.22%	11.89%	13.02%
Slovakia	21.91%	20.93%	20.63%	17.84%	17.46%	17.94%	17.05%	17.86%
Slovenia	12.02%	11.82%	11.28%	11.69%	10.78%	13.21%	19.02%	19.38%
Spain	11.30%	12.22%	11.87%	12.12%	11.36%	13.16%	13.54%	14.48%
Euro area	11.48%	12.85%	13.14%	13.09%	14.28%	15.49%	15.63%	16.66%

Source
ECB Statistical Data Warehouse

Table 7: Sovereign risk -binary variable	
Countries	Risk Category
C1	1
C2	1
C3	0
C4	1
C5	1
C6	1
C7	0
C8	0
C9	1
C10	1
C11	1
C12	1
C13	0
C14	1
C15	0
C16	0

Source
Ratings of Moody's, Fitch and Standard and Poor's
Calculations by the author

Test 1 is performed i) as a pooled regression and with no cross sections, ii) with *two* independent variables, TIER 1 RATIO and SOLVENCY RATIO. (Sovereignty risk variable is not included). The first Test runs as pooled regression, and essentially captures all Eurozone as one country, while it does not control for unpredictable events (shocks) that affects the national economies. This test is based on the assumption that all countries are homogeneous and there are no shocks affecting the national economies. However, this assumption does not appear correct since firstly, the Eurozone countries are subject to the same regulation and monetary policy, but fiscal policies to some extent diverge and secondly, there are changes in macroeconomic factors and regulation. The results of this Test are presented in Panel 1 revealing statistically significant results for the two independent variables TIER 1 RATIO and SOLVENCY RATIO since their respective probability

values are less than the significance level (5%). Thus, the two ratios, under the above assumptions, are statistically significant predictors of deposits.

Test 2 is performed i) under period fixed effects, which captures changes in each year that were common to all countries and thus controls for macroeconomic factors and changes in regulation, and ii) with *two* independent variables TIER 1 RATIO and SOLVENCY RATIO (Sovereignty risk variable is not included). This test is performed under the underlined assumption that all countries are homogeneous and there are time shocks affecting the national economies, but such shocks are common to all. This assumption is partially correct since the Eurozone countries are subject to the same Regulation and monetary policy, but fiscal policies to some extent diverge. The results of this Test are presented in Panel 2 revealing *statistically significant* results for the two independent variables TIER 1 RATIO and SOLVENCY RATIO (significance level 5%). Thus, the two ratios, under the above assumptions, are statistically significant predictors of deposits. However, in this test, the value of F-statistic may imply that that the proposed regression model does not fit the data well.

Test 3 is performed i) as a pooled regression and with no cross sections, and ii) with *three* independent variables included TIER 1 RATIO, SOLVENCY RATIO and SOVEREIGNTY RISK. The Test essentially captures all Eurozone as one country, implying that all countries are homogeneous while it does not control for unpredictable shocks that affects the national economies. The underlined assumption is to a degree correct, at least as far as the homogeneity is concerned, since the Eurozone countries are subject to the same regulation and monetary policy; while divergences in fiscal policies are

incorporated to the model via the independent variable sovereignty risk; however, there are shocks affecting national economies. The results of this Test are presented in Panel 3 revealing *statistically significant* results for the independent variable SOVEREIGNTY RISK and *statistically insignificant* results for the independent variable SOLVENCY RATIO.

The fourth Test 4 is performed i) under period fixed effects, which captures changes in each year that were common to all countries and thus control for macroeconomic factors and changes in regulation, and ii) with *three* independent variables included TIER 1 RATIO, SOLVENCY RATIO and SOVEREIGNTY RISK. The Test implies that all countries are homogeneous and there are time shocks affecting the national economies, but such shocks are common to all. The underline assumption appears correct since the Eurozone countries are subject to the same regulation and monetary policy, but divergences in fiscal policies are incorporated to the model via the independent variable sovereignty risk. The results of this Test are presented in Panel 4, revealing *statistically significant* results for the independent variable SOVEREIGNTY RISK and *statistically insignificant* results for the independent variable SOLVENCY RATIO. These results demonstrate that when sovereignty risk is incorporated into the model not only it is a statistically significant predictor for deposits but also renders the solvency ratio statistically insignificant. Thus, the sovereignty risk absorbs the explanatory property out of the solvency ratio.

Furthermore, between Test 2 and Test 4 there is a large increase in R-squared when the variable SOVEREIGNTY RISK is added to the model. This change in R-squared represents the amount of unique variance that each variable

explains above and beyond the other variables in the model. The adjusted R-squared also increases indicating that the new term improves the model more than would be expected by chance. These findings provide a strong support to the argument of the existence of perception of regulatory subsidy based on the fiscal status of the government, which increases risk by removing market discipline and enhancing moral hazard and adverse selection. Standardised coefficients represent the mean change in the response given a one standard deviation change in the predictor. Sovereign risk coefficient (dummy variable with value 1) implies that, other things being equal, there is a 'premium' of additional 636,104 million euro in deposits in low risk countries.

Banking institutions, operating under the umbrella of implicit, though effective, DI provided by fiscally strong MS, can attract deposits away from their counterparts in fiscally weak MS. This in turn would prolong the legacy of the crisis. It might also continue to exert deflationary dynamics in the Eurozone (De Grauwe, 2016).

Table 8: Regression Analyses outputs																
	Test 1: Restricted Model (pooled regression)				Test 2: Unrestricted Model (fixed effect)				Test 3: Restricted Model (pooled regression				Test 4: Unrestricted Model (fixed effect)			
VARIABLE	COEFFICIENT	STD. ERROR	T-STATISTIC	PROB.	COEFFICIENT	STD. ERROR	T-STATISTIC	PROB.	COEFFICIENT	STD. ERROR	T-STATISTIC	PROB.	COEFFICIENT	STD. ERROR	T-STATISTIC	PROB.
DEPOSITS t-1	801498.9	300919.9	2.663495	0.0088	1017822.	328284.2	3.100429	0.0024	956857.7	292165.2	3.275054	0.0014	1252663.	318247.0	3.935800	0.0001
TIER -1 RATIO	-12942060	5306930.	-2.438709	0.0161	-17493462	5847006.	-2.991867	0.0034	-7839034	53022187.	-1.478453	0.1418	-12569855	5711911.	-2.200639	0.0297
SOLVENCY RATIO	10191719	5310738.	1.919078	0.0573	12652335	5570232.	2.271420	0.0249	2393109.	5575497.	0.429219	0.6685	4258799.	5756768.	0.739790	0.4609
SOVEREIGN RISK									582282.1	169179.0	3.441811	0.0008	636104.2	171701.7	3.704705	0.0003
R-squared	0.052955				0.084541				0.135540				0.180655			
Adjusted R-squared	0.037803				0.014717				0.114625				0.110625			
S.E.of regression	840218.8				850238.5				805979.3				807797.8			
Sum squared resid	8.82E+13				8.53E+13				8.06E+13				7.63E+13			
F-statistic	3.494777				1.210780				6.480695				2.579698			
Prob (F-statistic)	0.033354				0.294859				0.000413				0.007367			

5. The European Deposit Insurance Scheme Proposal

In June 2015, the Five Presidents Report set the stage for the launching of the third pillar of the Banking Union: a fully-fledged European Deposit Guarantee System with appropriate risk- reduction measures, alongside bank supervision and resolution.

In line with the report, in November 2015 the EU Commission published a legislative proposal for a European Deposit Insurance Scheme (EDIS)[5] jointly with risk-reduction measures. The EU Commission's proposal involved the establishment of EDIS over time and in three phases:

1. Re-insurance phase: national DGSs could access EDIS funds only when it had first exhausted all its own resources (2016 – 2020).
2. Coinsurance phase: a national scheme would not be required to exhaust its own funds before accessing EDIS funds. EDIS would contribute to loss cover (2020 – 2024).
3. Full insurance phase: complete coverage by 2024 onwards, to align EDIS with the Single Resolution Fund and the requirements of the current DGS Directive (see Table 9).

Economic institutions consider the EDIS proposal in strictly economic terms. More specifically: The EU Commission promotes the introduction of EDIS (risk sharing) and the implementation of risk-reduction measures in parallel. According to the EU Commission, *"EDIS would increase the resilience of the Banking Union against future financial crises by reducing the vulnerability of national DGSs to large local shocks and further reducing the link between*

[5] Proposal for a Regulation to establish a European Deposit Insurance Scheme, COM/2015/0586 final - 2015/0270 (COD), published on 24 November 2015.

banks and their home sovereign. [It] can help to reassure depositors across the Banking Union and so reduce the risk of bank runs and increase financial stability. [It] is the logical complement of elevating responsibility for bank supervision and resolution to the Banking Union level."[6]

According to the European Central Bank, *"… EDIS is the necessary third pillar to complete the Banking Union, following the establishment of the Single Supervisory Mechanism (SSM) and the Single Resolution Mechanism (SRM). An EDIS would bring benefits resulting from risk diversification and is more likely to be able to withstand shocks, since risks would be spread more widely across a larger pool of financial institutions, and individual pay-out events would therefore be less likely to overwhelm the capacity of the system*".[7]

According to the International Monetary Fund, *"[…] [A] common deposit insurance and a common fiscal backstop [are] essential to completing the banking union. […] The EDIS is a step towards breaking bank – sovereign risk links. It is also linked to member states' implementation of the Deposit Guarantee Scheme Directive (DGSD) and with a gradually increasing insurance coverage."*[8]

Conversely, the EP promotes a more cautious and conditional approach which fits more to the political nature of DI. In order to facilitate allegedly a broad majority within the Parliament, the EP Rapporteur in November 2016,

[6] Communication from the Commission "Towards the completion of the Banking Union", Strasbourg, 24.11.2015, (link) [http://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A52015DC0587]
[7] Opinion of the European Central Bank of 20 April 2016, (link) [https://www.ecb.europa.eu/ecb/legal/pdf/en_con_2016_26_f_sign.pdf]
[8] IMF Country Report No. 16/219: Euro Area Policies (July 2016), IMF Executive Board Concludes 2016 Article IV Consultation on Euro Area Policies

in its draft EDIS proposal[9], transforms the substance (by incorporating only two implementation phases) and the timeline of the Commission proposal (see Table 8). While a reinsurance period would initiate in 2019, the second and final phase would be launched in 2024 the earliest and solely subject to certain strict conditions such as:

i) The complete implementation of the international standard for Total Loss Absorbing Capacity (TLAC), for Global Systemically Important Banks (G-SIBs), and of revised rules in relation to a minimum requirement for own funds and eligible liabilities (MREL), for all banks.
ii) The full application, of a harmonized insolvency ranking for credit institutions, in relation to subordinated debt.
iii) The complete implementation of a harmonized framework for business insolvency, in order to avert and better manage non-performing loans.
iv) The implementation of legislation introducing the moratorium powers to supervisors and/or resolution authorities regarding credit institutions
v) The implementation of a binding leverage ratio requirement.
vi) The implementation of a revised prudential treatment of sovereign debt held by credit institutions.

Differences do not involve solely implementation phases and conditionality. In the EU Commission approach a common DGS Fund is envisaged with complete 100% post-2024 funding. Conversely, in the EP approach the common Fund will coexist along with national Funds. Funding provisions from the national DGSs and EDIS will follow a precise hierarchy. More specifically the proposal essentially involves the establishment of a re-insurance scheme

[9] *Draft proposal*: Working Document on EDIS, 16.6.2016, (EP link) *[http://www.europarl.europa.eu/legislative-train/theme-deeper-and-fairer-economic- and-monetary-union/file-european-deposit-insurance-scheme-(edis)]*

for national DGSs not before 2024 at the earliest. During this phase, such a scheme will only contribute to national DGS liquidity shortfall, without offering any loss coverage, contrary to the EU Commission proposal. EDIS will possess loss absorbing capacity after 2024 not only under strict conditionality but also national DGS financial means are depleted (see Diagrams 4-6).

The EP proposal incorporates a different logic: DI is deemed partially a national and partially a European affair. Thus it sustains the present asymmetric national DI framework with diverse level of depositor confidence across the Eurozone. Furthermore, the EP proposed scheme will be complete in 2029 at the earliest, which does not coincide with the BU framework of supervision and resolution and in this respect it fails to align liability for depositor protection and control over the key factors influencing depositor risk.

Differences in approaches reflect divergent views. Economic institutions view DI narrowly and as a risk-sharing arrangement, anticipating the broad benefits of mutualisation in terms of reducing the overall potential for significant financial loss to any one entity. Yet, the EP, being a political institution, reflects on the DI rent-sharing arrangement in its entirety, considering the economic and political consequences such mutualisation entails, in terms of dividing up the costs associated with risks and financial losses among national DGSs and consequently national banking sectors. The strict conditionality incorporated in the EP Rapporteur assimilates important aspects of such an arrangement determining the distribution of rent amongst the parties involved.

Table 9: European Commission and European Parliament approaches to EDIS

CD = Covered Deposits / **FM** = Financial Means of national DGS according to its funding path / **RC** = Recovered amount / **EpC** = Ex-post contributions

Years	European Commission					European Parliament (de Lange report)				
	Phase	Funding path (% of CD)[1]		Liquidity shortfall coverage	Excess loss coverage (capital)	Phase	Funding path (% of CD)[1]		Liquidity shortfall coverage	Excess loss coverage (capital)
		EDIS	National DGS				EDIS	National DGS		
2017	**Re-insurance**	0.004	0.14	20% of CD – FM – EpC[2]	20% of CD – RC – FM – EpC[3]		0.05	0.05		
2018		0.005	0.21				0.10	0.10		
2019		0.007	0.28			**Re-insurance**	0.15	0.15	20% of CD	-
2020	**Co-insurance**	0.12	0.28	20% of CD	20% of CD – RC		0.20	0.20	40% of CD	-
2021		0.24	0.26	40% of CD	40% of CD - RC		0.25	0.25	60% of CD	-
2022		0.40	0.20	60% of CD	60% of CD - RC		0.30	0.30	80% of CD	-
2023		0.59	0.11	80% of CD	80% of CD - RC		0.35	0.35	100% of CD	-
2024	**Full insurance**	0.8	0	100%	100%	**Insurance** (Under strict condition-ality)	0.40	0.40	100% of CD	20% of CD – RC – FM
2025		0.8	0	100%	100%		0.40	0.40	100% of CD	40% of CD – RC – FM
2026		0.8	0	100%	100%		0.40	0.40	100% of CD	60% of CD – RC – FM
2027		0.8	0	100%	100%		0.40	0.40	100% of CD	80% of CD – RC – FM
2028		0.8	0	100%	100%		0.40	0.40		100% of CD – RC – FM

[1] Assuming universal target level of 0.8% of covered deposits and even annual distribution
[2] Ex-post contributions the DGS can raise within 3 days
[3] Ex-post contributions the DGS can raise within 1 year

Diagram 4: EDIS warranty of DGSs liquidity shortfall

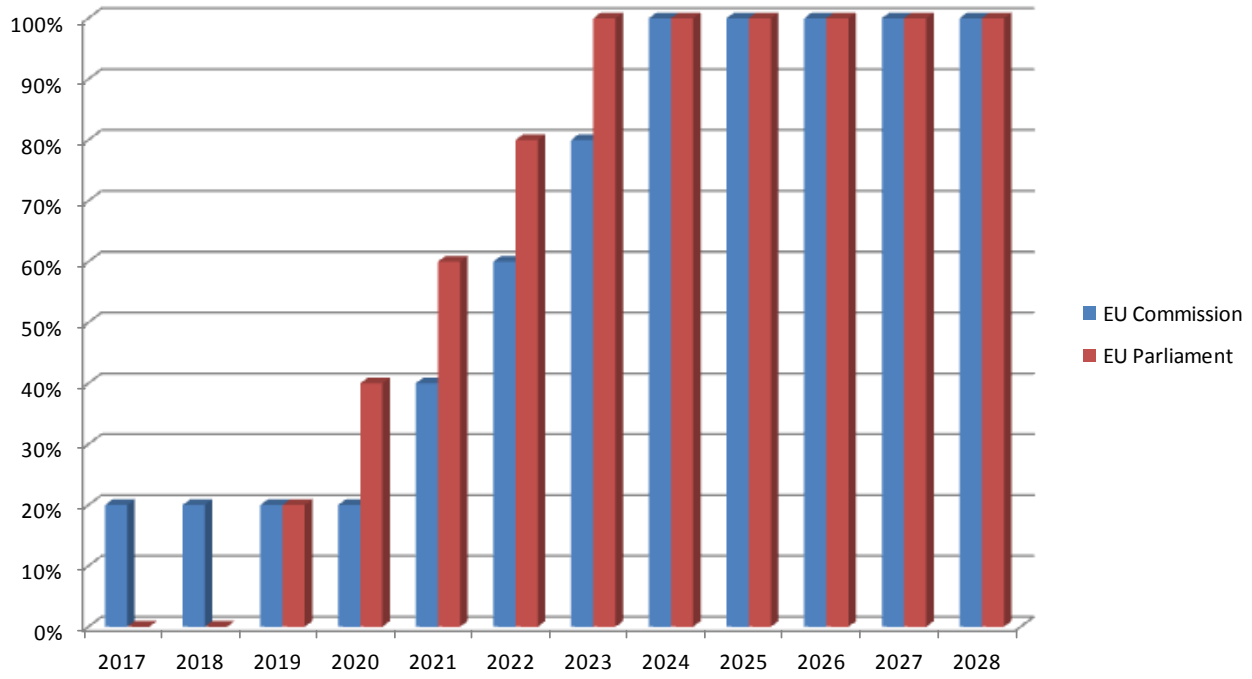
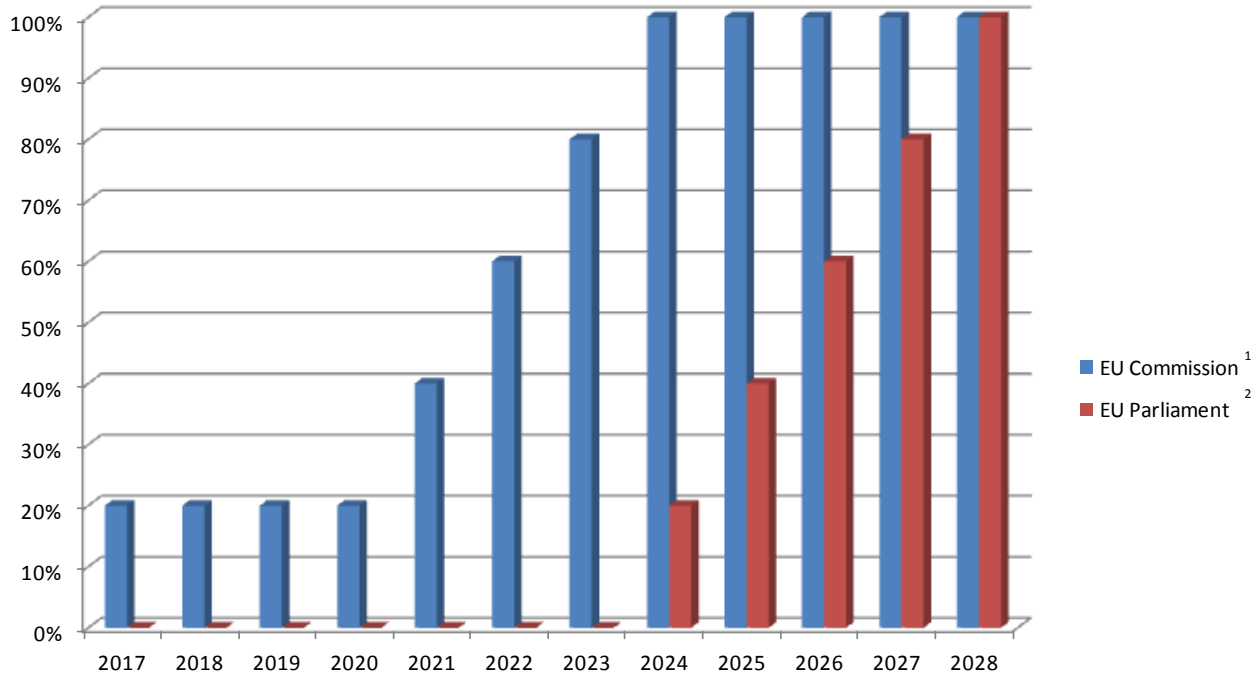


Diagram 5: EDIS warranty of DGSs excess loss



1. In EU Commission apporach a common DGS Fund is envisaged with post -2024 funding 100%.
2. In EU Parliament approach the common Fund will coexist along with national Funds. Funding provisions from the national DGSs and EDIS will follow a precise hierarchy. Specifically, post -2028 EDIS funding will be 100% minus the national DGSs financi al means.

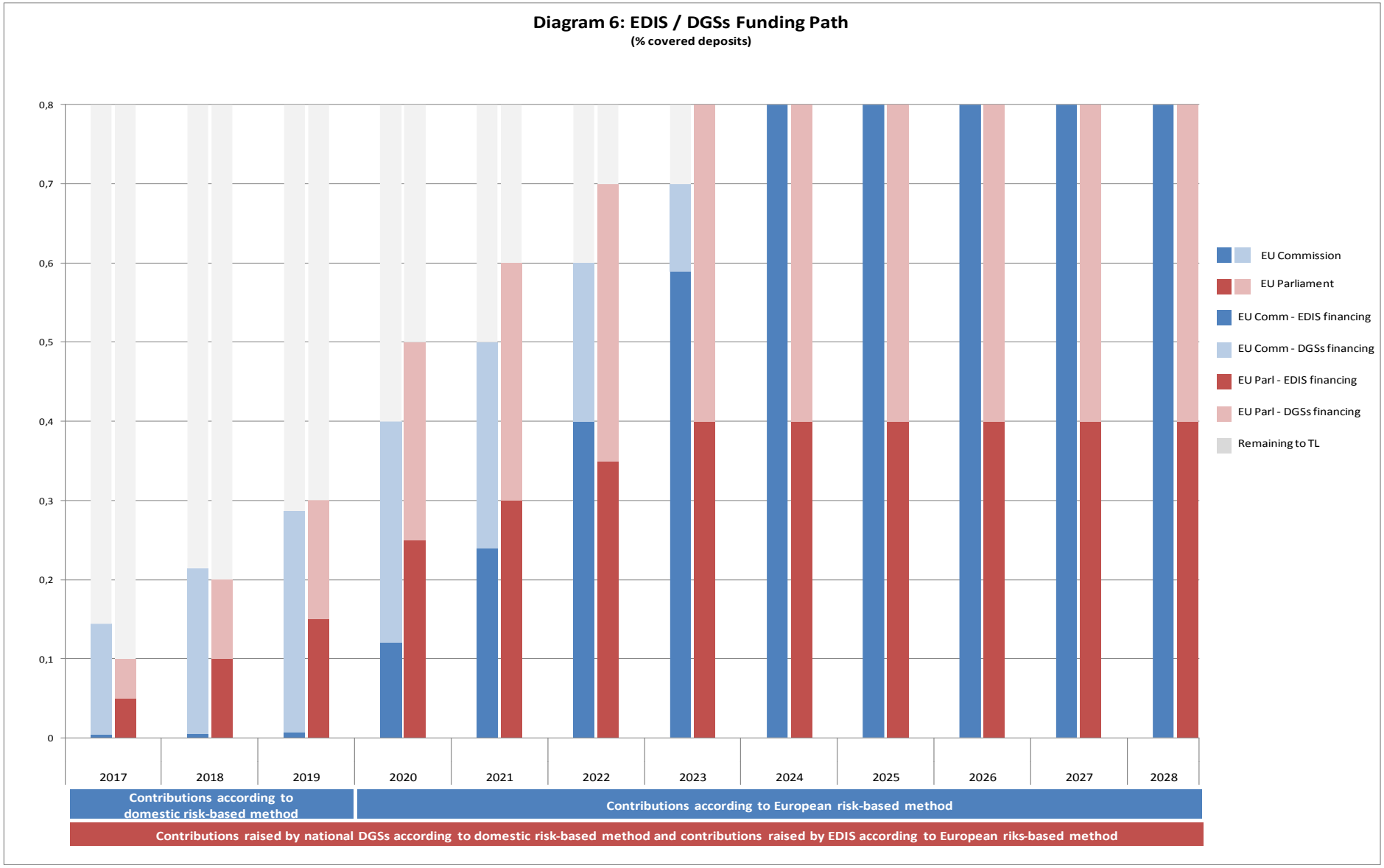


Diagram 6: EDIS / DGSs Funding Path
(% covered deposits)
0,8
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
EU Commission
EU Parliament
EU Comm - EDIS financing
EU Comm - DGSs financing
EU Parl - EDIS financing
EU Parl - DGSs financing
Remaining to TL
Contributions according to domestic risk-based method
Contributions according to European risk-based method
Contributions raised by national DGSs according to domestic risk-based method and contributions raised by EDIS according to European riks-based method

DI is high politics. Given the present level of political integration in the Eurozone, the only feasible form of EDIS is one relying mainly on liquidity support with limited mutualisation –i.e. the form envisaged in the EP approach. The political motivation in the Eurozone is far from allowing the taxpayer of one MS supporting the depositor in another MS.

6. Conclusion

Most of the irrationalities of the present DI arrangements in Eurozone emerge by the combination of unrestricted capital (including deposits) flows and fragmented national banking sectors. In this setting, the EU Commission proposes the enactment of an EDIS with emphasis on DGSs resilience enhancement and sovereign-bank nexus erosion.

The EDIS proposal was strongly welcomed by some MSs, but it met tough resistance by some other MSs with this divergence reflecting differences in the respective payoffs, positive for the former but negative for the latter. Opposing countries apprehension entails the risk-sharing inherent to EDIS which could be subjugated by destitute governments. The concern is that EDIS could loosen the government financing conditions and enhance moral hazard. Furthermore opposing to EDIS countries attract considerable “benefits” by the depositors’ lack of confidence in their counterparts and such benefits would disappear in case of EDIS. Although EDIS overall is beneficial from a pan EU point of view, it is a distribution game amongst MSs. In this respect it would turn into a sub-

game within the EU. In political terms, this process might contribute to resentment and even confrontation.

In economic terms, competition for deposits would bring into competition not only the DI in its explicit and narrow sense, but also the national DI arrangements in their entirety. This implies that there would be increasing competitive pressure on various aspects of these arrangements such as the prudential treatment of banks, the structure for banking insolvency and the framework for business insolvency. The increasing competitive pressures might enhance regulatory subsidy and the value of rent the DI arrangement generates, but also affect the distribution of such rent in favour to depositors and at the expense of other parties involved. However, if the market is allowed to determine the outcome in an area where there are market failures, such a as principal-agent costs, moral hazard and adverse selection, it would lead inevitably to sub-optimal results.

More specifically, given that the EU rules (despite the process towards establishing the BU) still provide to the national authorities ample discretionary power with respect to banks crisis management tools employed. These authorities may resort to resolution instruments rather than insolvency as preferable option to tackle failing banks. In the former case full protection to depositors and to other providers of capital (such as bondholders) would be offered even with resort to national fiscal funds, while in the latter case the scope of protection and level of coverage will be contained to the official DI limits utilising mostly or solely funds obtained from the banking sector. This implies mainly full and unconditional protection rather than limited and conditional

protection which constitute, in both theoretical and empirical terms, the optimal guiding principle. Regulatory subsidy and rent-seeking behaviour would persist and even be enhanced at the expense of the society as a whole in terms of elevated systemic risk.

In a nutshell, national policies allowed to be pursued with considerable discretionary power and in the context of increasing competition for deposits would run contrary to certain objectives of the BU, such as reducing the misjudgement of risks by the banking sector, limiting the bank-sovereign loop and eliminating the vicious link between banks and public finances.

The European Institutions should act to attain a high quality integration throughout the Eurozone DI, removing its design features from interest groups' influences and along the optimal guiding principle analysed above. Unless the European Institutions act, then the Eurozone will ultimately be seen to have failed to complete the BU in an important part, namely the market for deposits. Such a failure will not be a marginal failure, but a major failure of the programme: it was precisely from the integration of this sector which dominates the European financial system that much of the benefit was expected to arise.

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Appendix

Definition of Variables

The independent variable Tier -1 ratio (Table 5) is defined as Tier -1 capital over total risk exposure amount (i.e. risk-weighted assets). Tier 1 capital generally refers to equity capital and disclosed reserves (including retained earnings) and is viewed to be of higher quality than total capital. The latter includes items such as hybrid debt instruments, including cumulative preferred shares and other "innovative" capital instruments, and also longer-term subordinated debt. Total risk-weighted assets encompass exposure to credit, market and operational risk. The higher the Tier-1 ratio the lower is the likelihood of default.

The independent variable Solvency ratio (Table 5) is defined as own funds over total risk exposure amount (i.e. risk-weighted assets). The own funds of banks consist of original own funds (tier 1) and additional own funds (tier 2) which includes items such as hybrid debt instruments and longer-term subordinated debt. The own funds of banks are subject to the deductions and prudential filters. Total risk-weighted assets encompass exposure to credit, market and operational risk. The higher the Solvency ratio the lower is the likelihood of default.

The independent variable Sovereign risk (Table 7) is a binary variable. It takes values: 0 for high risk sovereigns (defined as BBB or worse based on the average ratings of Moody's, Fitch and Standard and Poor's) and 1 for

low risk sovereigns — defined as better than BBB based on the above standards. It is taken for every single year as an average during the year.

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