

Clemens, Marius; Gebauer, Stefan; König, Tobias

## Article

# European bank deposit insurance could cushion impact of corona-induced corporate insolvencies

DIW Weekly Report

## Provided in Cooperation with:

German Institute for Economic Research (DIW Berlin)

*Suggested Citation:* Clemens, Marius; Gebauer, Stefan; König, Tobias (2020) : European bank deposit insurance could cushion impact of corona-induced corporate insolvencies, DIW Weekly Report, ISSN 2568-7697, Deutsches Institut für Wirtschaftsforschung (DIW), Berlin, Vol. 10, Iss. 32/33, pp. 325-333,  
[https://doi.org/10.18723/diw\\_dwr:2020-32-1](https://doi.org/10.18723/diw_dwr:2020-32-1)

This Version is available at:

<https://hdl.handle.net/10419/224831>

## Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

## Terms of use:

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*

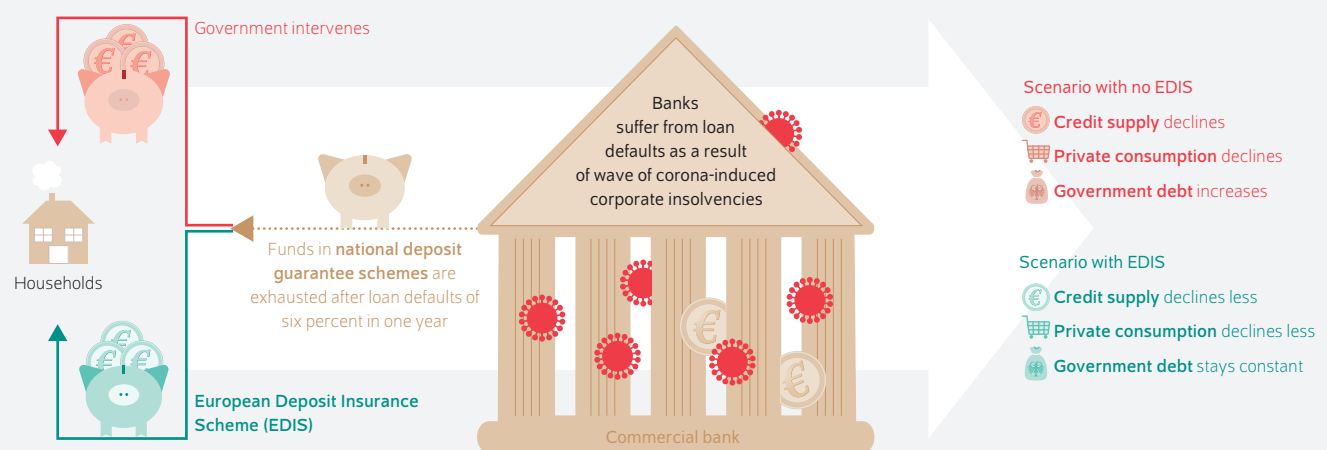
## AT A GLANCE

# European Bank Deposit Insurance Could Cushion Impact of Corona-Induced Corporate Insolvencies

By Marius Clemens, Stefan Gebauer, and Tobias König

- European Banking Union so far lacks third pillar: joint insurance fund for savers' deposits
- Study shows this to be a disadvantage in case of corona-induced corporate insolvencies and bank loan defaults—funds in national deposit protection schemes would be relatively quickly exhausted.
- If the European Deposit Guarantee Scheme (EDIS) were then triggered, the impact of a banking crisis, for example, on consumption, lending, and national debt would be less severe than that of a government bailout.
- The findings suggest there should be greater risk sharing in the European banking system and that EDIS should be introduced rapidly.
- However, this requires both an efficient funding mechanism so that banks are not overburdened and measures to counter any increased willingness by the banks to take more risks.

**The European Deposit Insurance Scheme (EDIS) would cushion the impact of a banking and financial crisis, as can be seen for example, in corporate lending.**



Source: Authors' own representation.

© DIW Berlin 2020

## FROM THE AUTHORS

*“A European deposit insurance scheme would make a positive contribution to harmonizing and integrating Europe’s financial markets. There is, however, a catch: the more comprehensive the safety net, the greater the incentive for banks to take bigger risks. A solution to this and other issues must be found before the scheme can be introduced.”*

— Stefan Gebauer —

## MEDIA



**Audio Interview** with Stefan Gebauer (in German)  
[www.diw.de/mediathek](http://www.diw.de/mediathek)

# European Bank Deposit Insurance Could Cushion Impact of Corona-Induced Corporate Insolvencies

By Marius Clemens, Stefan Gebauer, and Tobias König

## ABSTRACT

The European banking union has so far lacked its third pillar: a joint insurance fund for bank savings deposits. As the present study shows, this could be a major disadvantage in dealing with the economic impact of the corona pandemic. A scenario in which a wave of corporate insolvencies leads to loan and deposit losses reaching six percent over a year would overwhelm Germany's national deposit insurance scheme. Even if the government were to step in and guarantee all deposits, a European deposit insurance scheme (EDIS) would be by far the better option. With EDIS in place, private consumption would fall by 20 percent less and lending by around ten percent less than if the government were to initiate a bailout, which would also significantly increase public debt. From a German perspective, a swift introduction of EDIS would greatly increase risk-sharing. However, it is important to develop an efficient EDIS funding mechanism in order to minimize the burden on banks. Precautions should also be taken to prevent banks from taking greater risks as a result of EDIS being implemented.

The European financial and debt crisis of 2009 and 2010 has intensified efforts to achieve deeper integration of European financial markets.<sup>1</sup> Since then, the focus of reforms to financial market policy has been to create a banking union based on three pillars. These pillars are the introduction of EU-wide banking supervision, a resolution mechanism, and a European deposit insurance scheme (EDIS). While the first two pillars have already been implemented with the creation of the Single Supervisory Mechanism (SSM) and the Single Resolution Mechanism (SRM), EDIS has yet to be introduced.

The EU Commission's proposal presented in November 2015 envisaged the introduction of EDIS in three stages by 2024. In the first stage, an EU reinsurance policy valid until 2020 was only to take effect if funds in the national deposit guarantee schemes were exhausted—for example, as a result of a systemic banking crisis in a member state. Then, in the second stage, a European co-insurance scheme would apply from 2020 to 2023, in which EDIS would already cover some deposit losses due to bank insolvencies *before* national guarantee funds were exhausted. Here, insurance benefits would already be paid directly to the countries concerned in the event of deposit losses, and EDIS contributions would progressively increase over the years compared to national contributions. Finally, the EU proposal envisaged full integration of the national deposit guarantee systems into a European system from 2024. European bank deposits would then be covered by EDIS regardless of the bank's background or location. In each phase, the funds would be made available from a European deposit guarantee fund to be financed by bank contributions.

The theoretical stabilizing effect of EDIS is not fully evident because of a variety of potentially opposing effects. On the one hand, the introduction of EDIS would strengthen risk-sharing at the European level, something which already

<sup>1</sup> This Weekly Report is based in part on the DIW Discussion Paper by Marius Clemens, Stefan Gebauer, and Tobias König, "The Macroeconomic Effects of a European Deposit (Re-)Insurance Scheme," *DIW Discussion Papers*, no. 1873 (2020). (available online, accessed July 23, 2020; this applies to all other online sources in this report unless stated otherwise). Interested readers should refer to the paper, which contains a variety of other applications, including a welfare analysis and an empirical application of the European financial crisis.

occurs with the national deposit guarantee schemes, and thereby further integrate cross-border financial activities. If a bank runs into financial difficulties, an efficiently designed deposit insurance scheme will likely prevent mass withdrawals (bank runs) and compound liquidity risks.<sup>2</sup> If this reduces the likelihood of bank-specific problems spreading to other institutions—for example due to mutual obligations in the interbank market—a deposit insurance scheme can also prevent systemic banking crises.<sup>3</sup>

On the other hand, default protection might also increase the risk appetite of banks because any losses incurred by the banks' creditors will be cushioned by the deposit insurance scheme.<sup>4</sup> This cushioning effect might also undermine any incentive for banks to carefully check and monitor borrowers and their creditworthiness, possibly resulting in greater risk in the financial system as a whole.<sup>5</sup> At the same time, savings could be concentrated as investors place their money where the highest deposit rate is offered. Since all member states would be involved in sharing the risk, it could lead to a mismatch between existing risks and liability claims.

European integration of the national guarantee deposit schemes has, for a long time, faced resistance from some member states, especially Germany, because of the negative effects resulting from such 'moral hazards'. Politicians and banking associations generally recognize the need for cross-border risk-sharing guarantee schemes to successfully stabilize and consolidate the European banking sector. However, covering the losses incurred by weaker banks in other countries, in particular, is generally viewed with skepticism, as this could tempt banks to take greater risks and national regulators might pass these losses on to the European level. Furthermore, there is certainly potential for conflict when it comes to integrating the national systems into EDIS, as envisaged in the third stage of the Commission proposal, especially in Germany, where treatment of the cross-guarantee schemes of the savings and cooperative

banks and their integration into EDIS would need careful consideration.<sup>6</sup>

That said, there have recently been signs of a revival of the debate on EDIS and a change of mind by some representatives of politics, banks, and the supervisory authorities in Germany. In early November 2019, the German finance minister submitted a proposal to break the long-standing deadlock in EDIS negotiations, caused mainly by reservations from his own government. The proposal provided for the introduction of a permanent reinsurance scheme.<sup>7</sup> Similar to the first stage of the EU Commission's proposal, this would only take effect once funds in the national guarantee schemes were exhausted. So alongside the national funds, a European deposit guarantee fund would be set up and financed by contributions from the banks. However, at least for the time being, the fund would only provide repayable loans and no grants. Further conditions for introducing EDIS should include reducing risks in the banking sector and moving away from the risk-free valuation of government bonds on bank balance sheets. Although these conditions aroused skepticism in some member states,<sup>8</sup> on the whole, the proposal from the Federal Ministry of Finance was received positively by its European partners, by German policymakers, and the banking sector. In addition to moving away from the long-term integration of national guarantee schemes into a European system, as envisaged in the second and third stages of the original EU proposal, recent developments in the European financial sector are also likely to have contributed to this change of heart. In Germany, recent financial scandals, but also the failed merger plans of some large German banks as well as their structural weaknesses have shown that additional protection and further harmonization of European financial markets through EDIS may have a positive effect for all market participants. While major and international institutions, in particular, would benefit from the proposal and are therefore relatively open to a new round of negotiations on EDIS, there are still concerns, especially among the smaller, national banks such as the Volksbanks and savings banks. However, they are now

<sup>2</sup> See also Douglas Diamond, and Philip Dybvig, "Bank runs, deposit insurance, and liquidity," *Journal of Political Economy* 91, no. 3 (1983): 401–419.

<sup>3</sup> The greater degree of stability this scheme gives the banking sector will ultimately reduce fiscal policy risks as well, such as making bank bailouts from national government less likely. Particularly in past crises, this created major difficulties for some European governments as a resulting increase in sovereign debt caused the value of government bonds to fall and the risk premiums payable on them to rise. As mainly domestic banks had invested in these government bonds, this 'doom loop' exacerbated problems in the banking sector. See also Giovanni Dell'Ariccia et al., "Managing the sovereign-bank nexus," *Working Paper Series 2177* (2018), European Central Bank.

<sup>4</sup> See also Claudia Lambert, Felix Noth, and Ulrich Schüwer, "How Do Insured Deposits Affect Bank Risk? Evidence from the 2008 Emergency Economic Stabilization Act," *Journal of Financial Intermediation*, no. 29 (2017): 81–102; George Pennacchi, "Deposit Insurance, Bank Regulation, and Financial System Risks," *Journal of Monetary Economics* 53, no. 1 (2006): 1–30; David C. Wheelock and Subal C. Kumbhakar, "Which Banks Choose Deposit Insurance? Evidence of Adverse Selection and Moral Hazard in a Voluntary Insurance System," *Journal of Money, Credit and Banking* 27, no. 1 (1995): 186–201.

<sup>5</sup> See Viral V. Acharya, Itamar Drechsler, and Philipp Schnabl, "A Pyrrhic Victory? Bank Bailouts and Sovereign Credit Risk," *The Journal of Finance* 69, no. 6 (2014): 2689–2739; Aslı Demirci-Kunt and Harry Huizinga, "Market Discipline and Deposit Insurance," *Journal of Monetary Economics* 51, no. 2 (2004): 375–399; Charles W. Calomiris and Matthew Jaremski, "Stealing Deposits: Deposit Insurance, Risk-Taking, and the Removal of Market Discipline in Early 20th-Century Banks," *The Journal of Finance* 74, no. 2 (2019): 711–754.

<sup>6</sup> Certainly, the European Deposit Guarantee Schemes Directive has established uniform rules for deposit protection in all EU member states which provide for a statutory minimum protection of private deposits of up to 100,000 euros. Nevertheless, there are sometimes considerable differences in the structuring of national deposit guarantee schemes in EU member states, for example with regard to the types of assets covered. In Germany, there are a total of four bank deposit guarantee schemes. These include the liability association schemes (institutional protection systems) of the savings banks and the cooperative Volksbanks, which are also recognized as deposit guarantee schemes. Germany's private and public banks also have their own voluntary systems which guarantee coverage that exceeds the minimum requirements, at their own risk. See, for example, Deutsche Bundesbank, Deposit guarantee scheme (available online).

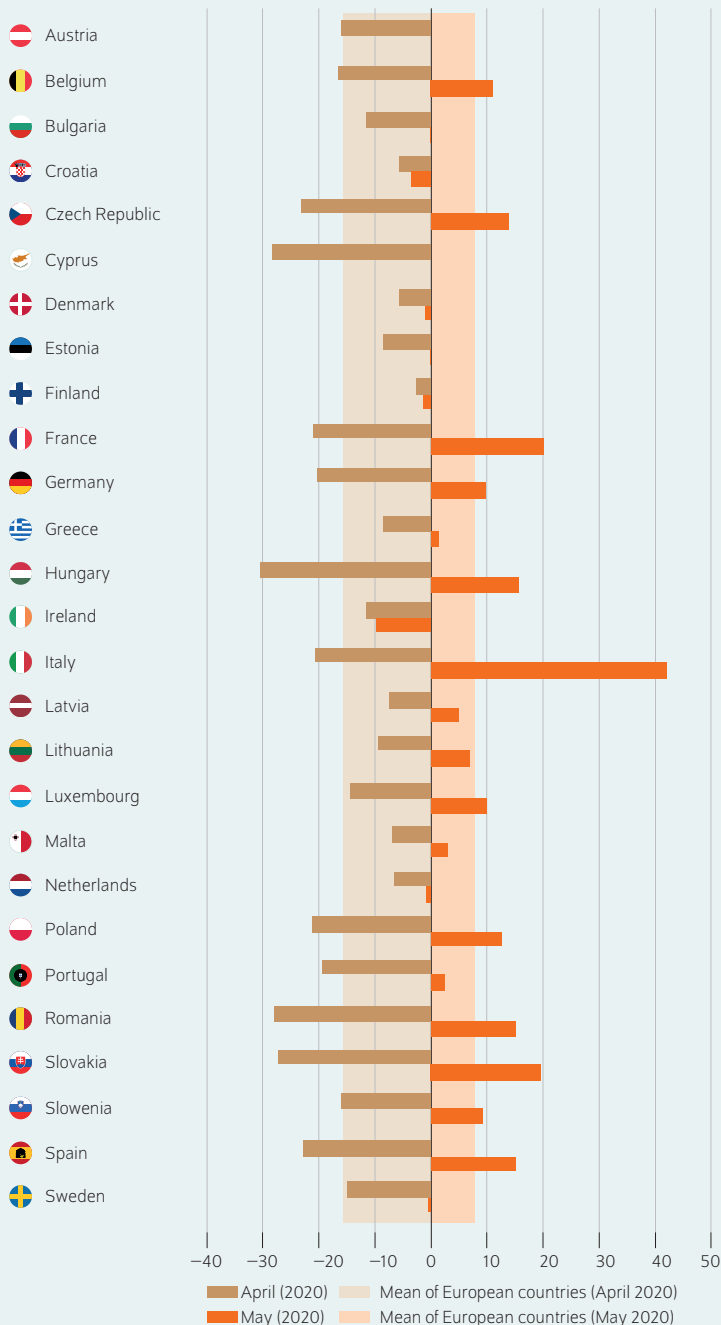
<sup>7</sup> Similar proposals have already been presented by a Franco-German group of economists and by the EU Parliament. See Agnès Bénassy-Quéré et al., "Reconciling Risk Sharing with Market Discipline: A constructive approach to Euro Area Reform," *CEPR Policy Insight January*, no. 91 (2018); European Commission, *Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EU) 806/2014 in order to establish a European Deposit Insurance Scheme. Com/2015/0586 final – 2015/0270*.

<sup>8</sup> At the beginning of December 2019, for example, the EU Commissioner for Economic Affairs expressed concern that some of the conditions contained in the German proposal, such as the condition for introducing risk weights on government bonds, were unacceptable to some member states. Cf. Wirtschaftswoche, "EU-Finanzminister uneinig bei Euro- und Bankenreformen," *Wirtschaftswoche Online*, December 5, 2019, (available online).

Figure 1

### Monthly growth rates of industrial production for EU-countries during the lockdown month (April 2020) and after (May 2020)

Percentage change compared to the previous month



Source: Eurostat.

© DIW Berlin 2020

Measured by the slump in industrial production, the EU countries were hit differently by the corona pandemic.

particularly susceptible to a wave of corporate insolvencies in the wake of the Covid-19 pandemic.<sup>9</sup>

### Increased risk to banks from corona-induced wave of insolvencies

The increase in financial risk across Europe resulting from the corona crisis has also fueled debate about adequate risk protection at European level. Although the Covid-19 pandemic is in itself a global shock, EU countries have been affected to varying degrees (see Figure 1). Germany's economy has been more negatively affected than the European average. In April—during lockdown—industrial production fell by 20 percent, around five percentage points more than the EU average. After the initial easing of lockdown rules in May 2020, Germany's recovery was much weaker than that of some other major EU countries, such as Italy or France.

Despite the severe slump in the real economy, the fiscal liquidity support provided by individual governments has prevented the real economic crisis from spilling over into the financial sector, at least for the time being. In addition, the EU Commission has adopted an EU solidarity package<sup>10</sup> worth 540 billion euros and a recovery fund of 750 billion euros, also to mitigate the negative asymmetric effects of the corona shock in European countries.<sup>11</sup>

However, in many EU countries the insolvency reporting requirement has been suspended, so the risk of a wave of insolvencies, increasing loan defaults, and therefore the likelihood of the crisis spilling over into the financial sector remains acute despite all the liquidity support measures.<sup>12</sup> Initial calculations predict a six to 28 percent<sup>13</sup> increase in the number of distressed European banks<sup>14</sup> as a result of the expected insolvencies. In Germany, small and medium-sized enterprises are likely to bear the brunt of the crisis because, unlike the financial crisis of 2009, the trigger for this crisis is linked to the real economy. Accordingly, a wave of insolvencies would likely hit those banks and credit institutions with a high proportion of corporate and retail banking business. In Germany, these are often smaller and predominantly national institutions, such as savings banks and Volksbanks, which previously had reservations about the introduction of EDIS. However, the corona crisis could allay these concerns—provided there is a suitable proposal for integrating their liability association schemes into EDIS.

<sup>9</sup> Cf. Reint E. Gropp, Michael Koetter, and William McShane, "The Corona Recession and Bank Stress in Germany," *IWH Online* 4/2020, (available online).

<sup>10</sup> See Federal Ministry of Finance, *Europäische Antwort auf Corona*, (available online).

<sup>11</sup> See European Union, *A recovery plan for Europe* (2020), (available online).

<sup>12</sup> See Bundesbank, *Der Bankensektor im Zeichen der Pandemie – die Perspektive der Bundesbank* (2020). Speech at an online event organized by the German Bundesbank on May 5, 2020, "Covid-19 und die Auswirkungen auf die Banken in Deutschland", (available online).

<sup>13</sup> Gropp et al., "The Corona Recession".

<sup>14</sup> Banks are considered non-performing if they do not meet regulatory capital requirements. See European Central Bank, *Sensitivity Analysis of Liquidity Risk – Stress Test 2019. Final results* (2019), (available online).

Table

**Possible crisis regimes based on the type of deposit insurance**

		Regime 1 (national funds are sufficient)	Regime 2 (one national fund is exhausted, EDIS steps in)	Regime 3 (one national fund is exhausted, EDIS steps in)	Regime 4 (national funds exhausted in both Germany and the remaining euro area)
National deposit insurance funds	Germany	X	X		
	Remaining euro area	X		X	
European deposit insurance scheme (EDIS)			X	X	X

Source: Authors' own representation.

© DIW Berlin 2020

Against the backdrop of these increasing risks, Germany should use its EU Council Presidency to prioritize the implementation of EDIS in the second half of 2020. The most likely option appears to be a European deposit guarantee system structured as a reinsurance scheme, not least because this would allow existing national schemes to be largely retained and EDIS would act merely as an additional safety net. Corresponding proposals are to be discussed again more intensively at European level this year, also in relation to measures aimed at cushioning the blow of the corona crisis.

**Calculations based on modeled crisis scenarios**

To evaluate the macroeconomic stabilizing effects of EDIS, a two-country DSGE model was developed (see Box).<sup>15</sup> This was extended to factor in potential changes in economic circumstances (regime switching)<sup>16</sup> as well as a detailed banking sector where crisis can result in loan default and bank insolvency. One of the economies was parameterized so that it corresponds with the empirically observed facts about the German economy. The other economy represents the entire European currency area excluding Germany, i.e., from a German perspective, the rest of the euro area.

A moment-matching algorithm<sup>17</sup> is used to parameterize the key elasticities and parameters of the supply and demand behavior of businesses, banks, households, and the government; in this way, the model captures the main empirical cyclical and structural findings for the German economy and the rest of the euro area.

To realistically capture the proposal by the Federal Ministry of Finance in the model, a European deposit insurance scheme is introduced alongside the national deposit guarantee scheme,

where the European scheme only comes into effect when the resources in the respective national fund have been exhausted. Accordingly, up to four (crisis) regimes can occur in which only certain deposit insurance schemes become active (see Table): As long as the national deposit guarantee schemes in both economic regions have sufficient resources, EDIS remains inactive (Regime 1). Major financial crises where certain banks become distressed can, however, cause difficulties for the national deposit guarantee schemes, both in Germany (Regime 2) and in the remaining euro area countries (Regime 3) or even in both regions at the same time (Regime 4). In the second, third, and fourth crisis regimes, EDIS comes into effect as a reinsurance scheme, guaranteeing investors protection for their deposits. One benefit of DSGE modeling is that the expectation formation of market participants is factored in, meaning the probability of occurrence of a regime and the expected economic consequences of the regime switching are factored into the decisions. This means it is possible to compare the trade-off between the potentially adverse effects of increased risk appetite on the part of banks resulting from the additional EDIS protection (moral hazard), on the one hand, and the positive effects of additional EDIS protection on lending and on economic activity, on the other, even if there is no actual EDIS pay-out (Regime 1).

For the empirical moment-matching process, macroeconomic and fiscal policy time series from the European Central Bank (ECB) are used for Germany and the rest of the euro area (see Box). Microeconomic data are also added to the bank-specific time series.

Based on calculated loan default probabilities, this shows, for example, that in the years 2004 to 2019 the average bank insolvency risk in the German banking system was far lower than the euro area average (see Figure 2).

The model also captures empirical findings on the capital structure of German banks which have, on average, a higher share of German capital investors (home bias). The model thus factors in bank- and finance-specific differences in Germany and the rest of the euro area. National deposit guarantee schemes and EDIS are calibrated in the model on the basis of the respective volumes and the coverage of the insured deposits are based on empirical facts or current figures cited in the proposal by the European Commission and the Federal Ministry of Finance.

<sup>15</sup> See Clemens, Gebauer and König (2020) for a detailed model description. The model is based, on the one hand, on preliminary studies from the existing DSGE model infrastructure at DIW Berlin. See among others Marius Clemens, Stefan Gebauer and Malte Rieth, "Early Exit from ECB Bond Purchase Program Could Reduce GDP Growth and Inflation," *DIW Economic Bulletin*, no. 49 (2017): 1136–1143 (available online); Marius Clemens and Mathias Klein, "A stabilization fund can make the euro area more crisis-proof," *DIW Weekly Report*, no. 22/23 (2018): 485–492 (available online).

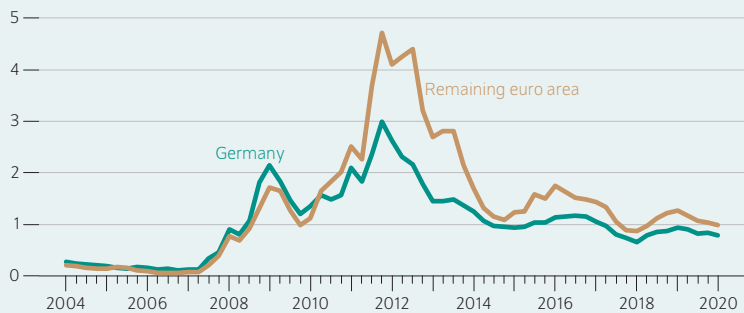
<sup>16</sup> A change of regime occurs as soon as one of the national deposit guarantee systems can no longer pay out. To model several such scenarios using the same model, the regimes must first be defined. These are explained in more detail later in the text.

<sup>17</sup> For information on moment-matching algorithms, also see Caterina Mendicino, Kalin Nikolov, Javier Suarez, and Dominik Supera, "Optimal Dynamic Capital Requirements," *Journal of Money, Credit and Banking* 50, no. 6 (2018): 1271–1297.



Figure 2

### Expected default rates In percent



Sources: Datastream; authors' own calculations, based on weighted average of credit default swap (CDS) spreads.

© DIW Berlin 2020

The risk of bank insolvencies has recently mostly been lower in Germany than in the rest of the euro area.

### EDIS similar to government backstop in terms of stabilizing effects but without the added disadvantage of increased public debt

The corona-induced stress effects on financial markets are simulated separately, with an exogenous bank risk shock—triggered by the loan default and loss of deposits in the wake of a wave of insolvency—setting the dynamic model in motion.<sup>18</sup> Here, it is assumed that the shocks to the banking system resulting from the corona crisis will stretch over the period of a year and, at the peak, around two percent of German bank deposits will no longer be serviced, i.e., an annual average of around six percent.<sup>19</sup> According to the latest studies, the share of distressed banks can be expected to increase from less than one to between six and 24 percent,<sup>20</sup> depending on the corona-induced economic scenarios (V, U or L-shaped). The estimated annual growth is thus at the lower end of the scale, but can be justified with the assumption that not all distressed banks will be unable to service their liabilities.

Such would be the extent of this crisis that by the end of the fourth quarter, the funds in the national deposit scheme would be exhausted, which would trigger a shift to the second regime in Germany (Table 1). Using counterfactual analysis, the results are depicted as impulse response functions (see Figure 3). If the resources in the national funds have been exhausted two possible scenarios can occur. In scenario A, the lost deposits are reinsured by the German government.

In scenario B, a European deposit reinsurance scheme comes into effect. Thus, in both scenarios either the national government or EDIS covers the insurance pay-outs as soon as the national deposit protection fund has been exhausted. As a point of reference, an additional scenario C was simulated. Here, the depositors are not bailed out. Irrespective of the scenario, following the payout, the banks have to replenish the national or European deposit fund by means of insurance contributions.

A bank risk shock in Germany that causes an increase in default risk of two percentage points at the peak of the quarter will exhaust the funds in a national deposit guarantee scheme, causing a regime switch (from regime 1 to regime 2). As a result, the gross domestic product (GDP) will fall by around 0.4 percent unless the losses are cushioned for depositors (scenario C). If the losses are compensated for by the German government (scenario A), the decrease in GDP will be less pronounced and there will be less of a drop in lending than if there were no bailout. The flip side of this, however, is an almost two percent increase in the debt-to-GDP ratio as opposed to a decrease under EDIS and without institutional reinsurance. In comparison to government bailout, EDIS (scenario B) has a slightly more pronounced stabilizing effect: the decrease in private consumption in the EDIS scenario is 0.1 percentage points or 20 percent lower, for example. The decrease in corporate loans is also a good ten percent lower. In the EDIS scenario, however, the decrease in GDP is 0.03 percentage points lower, which is equivalent to an approximately five percent higher drop.

The results thus show that both deposit bailout scenarios have their advantages and disadvantages. In scenario B, the financial burden on banks from having to contribute to two insurance schemes is either greater or stretches over a longer period. As a result, the financial system recovers at a slower pace, even though the drop in corporate loans was less pronounced to begin with. Banks ultimately pass the higher regulatory costs on to businesses in the form of higher loan interest rates, depressing real economic activity. In scenario A, on the other hand, the public debt-to-GDP ratio increases because the state is covering the cost of cushioning the losses. As shown in the model, a high share of banks invest primarily in domestic government bonds (home bias), which can lead to solvency problems in the bank sector, increasing the risk of a sovereign-bank doom loop.

As the results for scenario C show, the preferred option, however, is always to bail out depositors, whether through the government or EDIS. Without reinsurance, the decrease in private consumption would be some 25 percent greater than under EDIS and almost nine percent greater than in a scenario where the government compensates for the losses made on deposits. The drop in lending is even more pronounced than it would be under EDIS or with a government bailout, at as much as some 41 or 27 percent, respectively. Compared to a scenario with EDIS or with government reinsurance, the relative differences in GDP, for their part, are some 14 percent and 22 percent, respectively.

<sup>18</sup> Here, in order to focus on stabilizing effects in the event of a banking shock risk, the model disregards all other corona-induced shocks resulting from supply and demand side problems, for example.

<sup>19</sup> Similarly high values were seen for the rest of the euro area throughout the 2009 financial crisis, also see Figure 2 of this report.

<sup>20</sup> Gropp et al., "The Corona Recession".

Box

## Regime-switching DSGE model with bank sector and deposit insurance systems

In the present study, we rely on an open-economy, two-country model with a euro area banking sector and a European banking sector with national deposit insurances and a European deposit insurance scheme (EDIS).<sup>1</sup> One advantage of DSGE models is that many shocks can be identified structurally. As a result, any endogeneity problems that arise can be solved thus allowing us to disentangle the causes and consequences of economic developments. The decisions of economic agents are micro-founded and expectations are consistently modeled, in order that announcements effects can be quantified. In addition, considering endogenous regime switching not only allows us to generate nonlinearities, e.g. borrowing constraints, effective lower bounds on nominal interest rates, or national deposit insurance funds being exhausted, but it also allows us to include the probabilities of specific events in the decision-making process and expectations of economic agents.

The model considers the economic behavior of individual households, firms, international investors, banks, and the governments of two regions defined as the economy of Germany and the economies in the rest of the euro area. Individual households demand domestically produced as well as imported goods and supply labor to firms. They save their wealth in form of deposits at national banks. Banks act as intermediaries, store household savings, and provide credit to firms and governments that borrow to consume or invest. Banks pay out profits as returns to international investors who own banks in both regions. Banks are regulated by national authorities and have to comply with capital regulations. Also, due to additional regulation on the loan market, entrepreneurs have to fulfill an externally set loan-to-value (LTV) ratio when requesting funds from banks. They can only borrow up to a certain amount of their collateral value at hand, which corresponds to the stock of physical capital they own.

In response to idiosyncratic return shocks, some banks cannot repay obligations and default. Individually uninsured bank debt is priced to the expected aggregate bank default risk. Depositors face monitoring costs (state verification costs) when recovering

defaulting banks' assets. Ultimately, risk in the banking sector is contained through regulation and deposit insurance. In order to analyze the macroeconomic effects of EDIS, we have implemented endogenous regime switching when national insurance funds are exhausted, against which EDIS would potentially provide reinsurance.

The model is calibrated by applying a moment-matching algorithm that minimizes the distance between empirically observed statistics for Germany and rest of the euro area and the equivalent model variables (see Table).

Table

### Comparison of the model values with empirically observable quantities

Germany		Model	Data
Bank equity home bias	In percent of total equity	80.50	80.50
National insurance fund target rate	In percent of insured outstanding deposits	0.80	0.80
Share of insured deposits	In percent of total deposits	49.70	49.70
Government consumption	In percent of GDP	21.10	21.10
Business investment	In percent of GDP	22.20	22.20
Bank default rate	In percent of total banks	1.26	1.07
Return on equity	Percentage points	10.71	6.39
Price-to-book ratio	Percentage points	1.03	0.82
NFC loans	In percent of GDP	1.07	1.44
NFC loan rate spread	Percentage points	1.78	2.99
Remaining euro area		Model	Data
Bank equity home bias	In percent of total equity	58.00	58.00
National insurance fund target rate	In percent of insured outstanding deposits	0.80	0.80
Share of insured deposits	In percent of total deposits	51.20	5.20
Government consumption	In percent of GDP	22.50	22.50
Business investment	In percent of GDP	22.80	22.80
Bank default rate	In percent of total banks	1.92	1.40
Return on equity	Percentage points	8.15	4.55
Price-to-book ratio	Percentage points	1.30	1.30
NFC loans	In percent of GDP	1.43	2.02
NFC loan rate spread	Percentage points	1.40	2.61

Source: Authors' own calculations.

© DIW Berlin 2020

<sup>1</sup> See Gerali et al. (2010) and Mendicino et al. (2018). The model extends the basis of DIW Berlin's DSGE mode such that the macroeconomic consequences of bank-specific shocks can be analyzed and estimated consistently even if economic conditions change (regime switching).

## Short-term costs of EDIS introduction

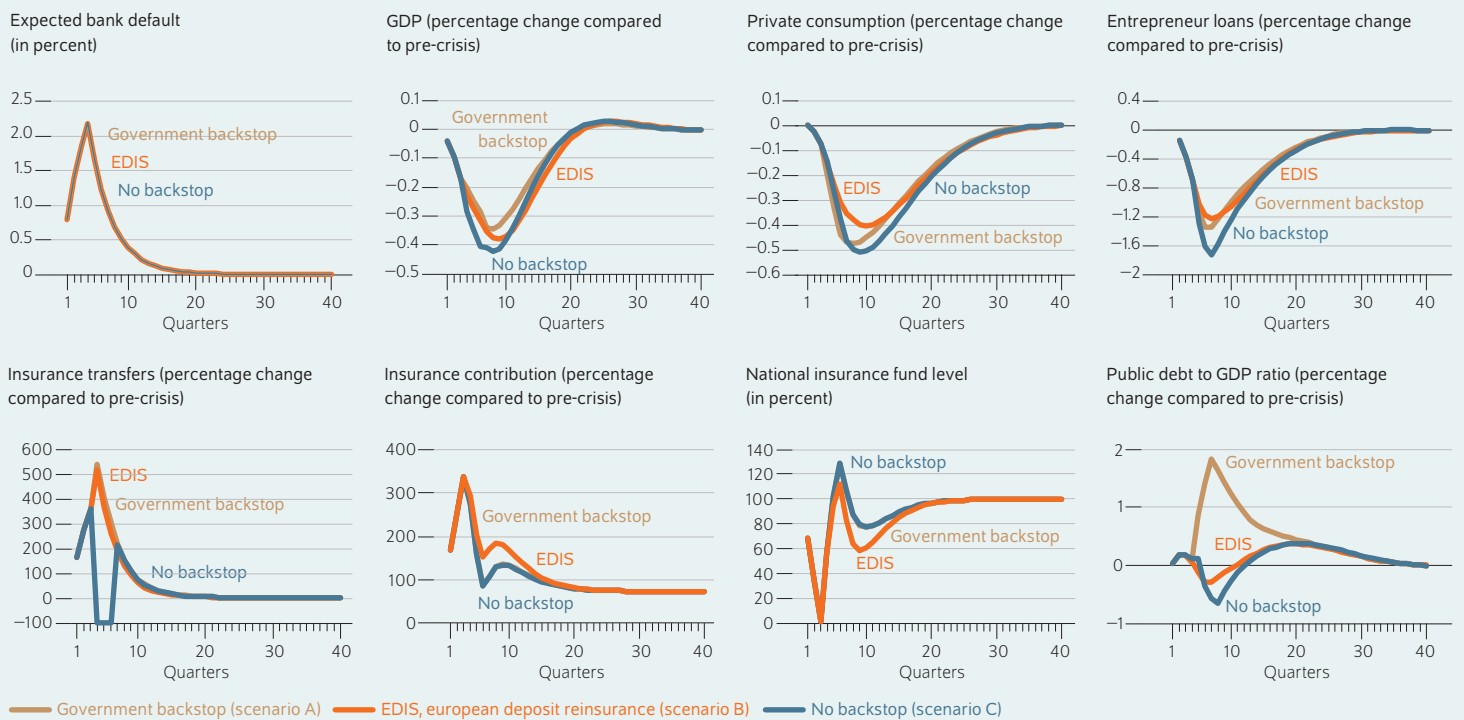
The previous simulations show that EDIS can stabilize the financial sector during a crisis in the banking sector. The question, however, is what the introduction of EDIS will cost, and whether bank contributions to the European deposit insurance scheme should be made deductible from contributions to the national scheme. To gauge this the introduction of EDIS over a number of years is simulated. Much

like the previous planning horizon, it is assumed that the deposit insurance scheme is built up over a period of three and a half years. In this time, the banks in the euro area pay into EDIS, although nothing can be paid out until the fund is entirely full. A distinction is also made between bank contributions to EDIS that bring about a corresponding reduction in payments into national systems and those that do not. The model will be used to simulate the temporary economic effects of EDIS introduction (see Figure 4).



Figure 3

### Effects of a banking crisis scenario in Germany that exhausts national deposit insurance after four quarters



Source: Authors' own calculations.

© DIW Berlin 2020

The economic costs of a banking crisis are lowest with EDIS, for example in view of the decline in consumption and lending.

The introduction of EDIS initially impacts bank balance sheets, decreasing lending and ultimately causing GDP and private consumption to fall temporarily by an annual average of 0.05 percent. A comparison of the impacts of the two cases—with and without payment deductibility—shows that where payments are deductible, the negative effects on the financial market and the real economy, while initially less pronounced, on the whole last longer. The latter observation can be attributed to the fact that payments into the national scheme, which are lower in the initial quarters owing to the deductibility, have to be compensated for in the later quarters. The aggregate burdens for the banking system are similarly high in both cases. The only thing policymakers can determine the length of the time horizon in which the introduction costs for EDIS will apply.

### Conclusion: Corona shock makes completion of banking union all the more urgent

The corona shock has caused a massive slowdown in economic activity in EU member states. Governments have already responded with short-notice liquidity support—also to stop the effects spilling over into the financial markets. The build-up of insolvency applications alone, however, means that by fall we can expect to see a clear increase in corporate insolvency. Spillover into the financial sector cannot be ruled

out either. Particularly these circumstances, there is a need to push for European financial markets to be integrated and the banking union to be completed. The final, highly controversial pillar is the introduction of a European deposit insurance scheme. This weekly report examines what stabilizing effects a European deposit insurance scheme (EDIS) financed by bank contributions can have in the case of a corona-induced increase in bank default risk. Ultimately, a reinsurance scheme such as this will not be triggered until existing national reinsurance funds have been used up. While many EU member states continue to reject the idea of fully integrating national deposit insurance systems into a European deposit insurance scheme, existing national systems would by and large not cease to exist under an integrated scheme such as this. It is evident that, unlike an alternative protection mechanism where bank deposits are collateralized by the respective state, as soon as the national deposit guarantee fund has been exhausted, we see less of a drop in consumption and lending, although GDP does fall at a slightly stronger rate owing to increasing borrowing costs and a decline in investment. Clear differences can be seen in the public debt-to-GDP ratio, in particular, which increases more strongly in the case of government reinsurance. A European deposit insurance scheme should therefore have as much of a stabilizing effect on real economic activity of depositors as on the financial system. A system like this is also likely

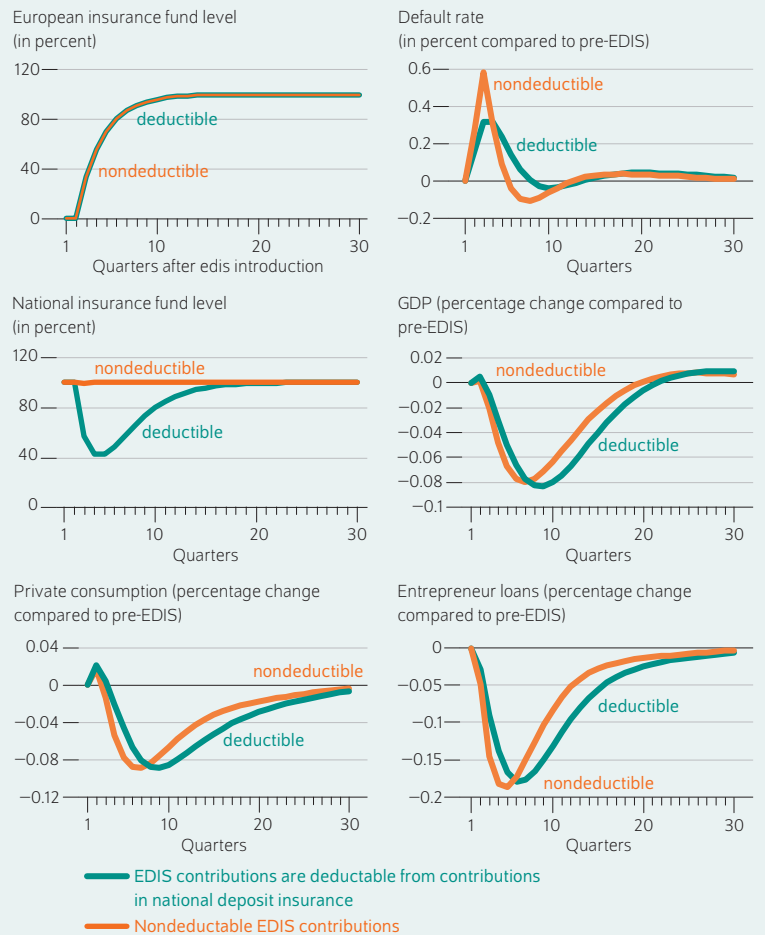
to help prevent a further increase in the public debt-to-GDP ratio in the event that national deposit guarantee funds are exhausted. This can be especially important in times of crisis when necessary crisis measures leave governments with very little if any leeway in their fiscal policy.

That said, the introduction of EDIS results in various trade-offs for governments. It is very conceivable, for example, that the positive stabilizing effects are offset by increased risk appetite on the part of banks and a transfer of risks to the European level. The additional contributions can also increase costs for banks, putting a strain on the real economy as a result of increasing borrowing costs. It is therefore important to develop an efficient financing mechanism that minimizes the burden for banks. One way to achieve this, for example, would be for such payments to be deducted from contributions to national deposit guarantee schemes and for higher-risk banks to pay higher contributions.<sup>21</sup> Further, to justify the costs involved, it is important to ensure that EDIS functions properly from the very outset. To counter banks' increased risk appetite using EDIS, it may be necessary to steer away from financial market regulation. Macroprudential regulatory instruments such as capital buffers and liquidity requirements, for example, could be adapted and made tighter if bank balance sheets are found to show increasing risks. More extensive coordination between supervisory bodies and EDIS would be conceivable to guard against moral hazards.

<sup>21</sup> For an analysis of Polluter-Pays funding mechanisms, see, for example, Clemens, Gebauer and König (2020), or Carmassi et al. (2018): Completing the Banking Union with a European Deposit Insurance Scheme: Who is Afraid of Cross-Subsidisation? ECB Occasional Paper Series 208.

Figure 4

### Implementation costs of EDIS with deductibility of contributions and without deductibility of contributions



Source: Authors' own calculations.

© DIW Berlin 2020

If the banks can deduct their deposits into EDIS from those into the national, the negative effects of the EDIS introduction are partially smaller in the short term.

**Marius Clemens** is a research associate in the the Forecasting and Economic Policy Department at DIW Berlin | [mclemens@diw.de](mailto:mclemens@diw.de)

**Stefan Gebauer** is a research associate in the the Forecasting and Economic Policy Department at DIW Berlin | [sgebauer@diw.de](mailto:sgebauer@diw.de)

**Tobias König** is a research associate in the the Macroeconomics Department at DIW Berlin | [tkoenig@diw.de](mailto:tkoenig@diw.de)

JEL: E61, F42, F45, G22, G28

Keywords: Banking union, deposit insurance, risk-sharing

## LEGAL AND EDITORIAL DETAILS

---



DIW Berlin — Deutsches Institut für Wirtschaftsforschung e. V.

Mohrenstraße 58, 10117 Berlin

[www.diw.de](http://www.diw.de)

Phone: +49 30 897 89–0 Fax: –200

Volume 10 August 5, 2020

### Publishers

Prof. Dr. Pio Baake; Prof. Dr. Tomaso Duso; Prof. Marcel Fratzscher, Ph.D.;  
Prof. Dr. Peter Haan; Prof. Dr. Claudia Kemfert; Prof. Dr. Alexander S. Kritikos;  
Prof. Dr. Alexander Kriwoluzky; Prof. Dr. Stefan Liebig; Prof. Dr. Lukas Menkhoff;  
Dr. Claus Michelsen; Prof. Karsten Neuhoff, Ph.D.; Prof. Dr. Carsten Schröder;  
Prof. Dr. C. Katharina Spieß; Dr. Katharina Wrohlich

### Editors-in-chief

Dr. Gritje Hartmann; Dr. Wolf-Peter Schill

### Reviewer

Prof. Dr. Dorothea Schäfer

### Editorial staff

Dr. Franziska Bremus; Rebecca Buhner; Claudia Cohnen-Beck;  
Dr. Anna Hammerschmid; Petra Jasper; Sebastian Kollmann; Bastian Tittor;  
Sandra Tubik; Dr. Alexander Zerrahn

### Sale and distribution

DIW Berlin Leserservice, Postfach 74, 77649 Offenburg

[leserservice@diw.de](mailto:leserservice@diw.de)

Phone: +49 1806 14 00 50 25 (20 cents per phone call)

### Layout

Roman Wilhelm, DIW Berlin

### Cover design

© imageBROKER / Steffen Diemer

### Composition

Satz-Rechen-Zentrum Hartmann + Heenemann GmbH & Co. KG, Berlin

ISSN 2568-7697

Reprint and further distribution—including excerpts—with complete  
reference and consignment of a specimen copy to DIW Berlin's  
Customer Service ([kundenservice@diw.de](mailto:kundenservice@diw.de)) only.

Subscribe to our DIW and/or Weekly Report Newsletter at

[www.diw.de/newsletter\\_en](http://www.diw.de/newsletter_en)