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FOCUS ON EUROPEAN
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Stability and Security.

This publication presents economic analyses and outlooks as well as analytical studies on macroeconomic and macrofinancial issues with a regional focus on Central, Eastern and Southeastern Europe.

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Studies

How does foreign currency debt relief affect households' loan demand? Evidence from the OeNB Euro Survey in CESEE

Elisabeth Beckmann[1]

Many Central, Eastern and Southeastern European (CESEE) countries have implemented or are discussing measures to alleviate the debt burden of households with foreign currency loans, in particular Swiss franc loans, such as converting these loans at historical exchange rates. This paper presents evidence from the OeNB Euro Survey indicating whether households are aware of government efforts to help borrowers and shows that awareness of current government measures is positively and significantly correlated with expectations of future government action for debt relief. We find that expectations of debt relief have no effect on loan demand in general but positively and significantly increase demand for foreign currency loans.

Governments in various countries, especially emerging economies, have taken action for household debt relief in the past. More recently, a number of Central, Eastern and Southeastern European (CESEE) countries have adopted such measures, especially to support households with foreign currency loans. While such support schemes are beneficial for individual indebted households, the expediency of unconditional bailouts, however, remains controversial. Opponents argue that debt relief may in fact exacerbate credit rationing or induce moral hazard. Proponents highlight the welfare benefits for individuals and argue that overindebtedness distorts investment and production decisions.

Why has government action for household debt relief proliferated in the CESEE region in recent years? Household indebtedness in CESEE rose during the transition process, starting from very low initial levels of leverage. The growth of credit to households picked up substantially in the years before the financial crisis and, according to the literature, approached or in some countries even surpassed equilibrium levels. At the same time, foreign currency loans became popular in CESEE. Such loans soared during the pre-crisis years. They were mostly denominated in euro and, in a number of countries, in Swiss francs. As a result, many CESEE countries entered the crisis with a significant percentage of loans to households denominated in foreign currencies (see chart 1, which also broadly covers the country sample that we have used for our empirical analysis).

While foreign currency borrowing can be individually and socially rational under certain circumstances,[2] it also poses risks to financial stability, especially if borrowers are unhedged. Major unexpected exchange rate or interest rate moves can wreck the balance sheets of such borrowers and thus taint the asset quality of
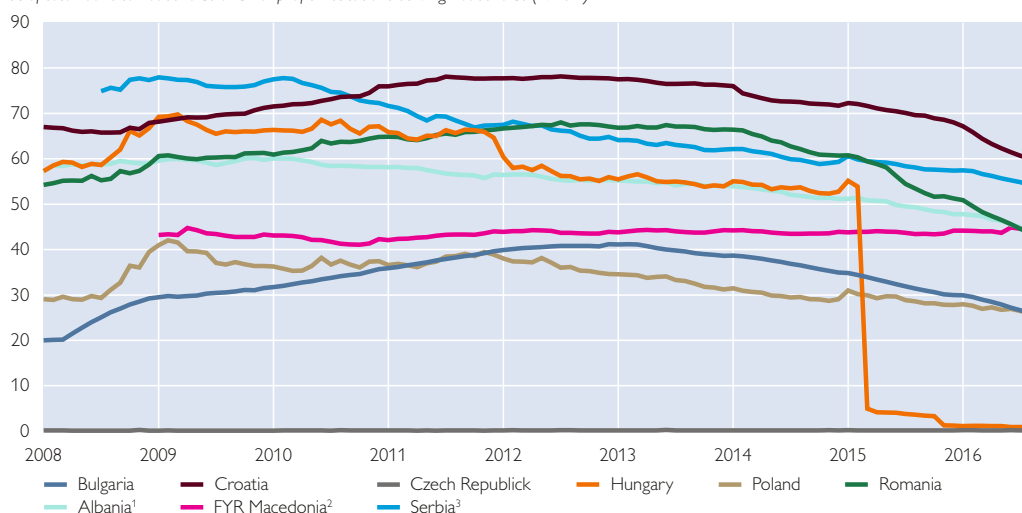

Chart 1

Development of foreign currency lending in selected CESEE countries

% of total loans to households and nonprofit institutions serving households (NPISH)

| Bulgaria | Croatia | Czech Republick | Hungary | Poland | Romania |
| Albania[1] | FYR Macedonia[2] | Serbia[3] | | | |

Source: NCBs.

[1] *Claims on households and NPISH.*

[2] *Before January 2009 excluding loans indexed to foreign currency and therefore not reported.*

[3] *Claims on households and NPISH. Before July 2008 excluding claims indexed to foreign currencies and therefore not reported.*

Note: The value for Serbia for 2008 is the average from July to December 2008. For Bosnia and Herzegovina, data are not comparable, as they do not include loans indexed to foreign currency. Therefore, the chart does not cover Bosnia and Herzegovina.

banks. This may in turn lead to aggregate refinancing problems of banks, e.g. because of sudden stops of capital inflows (Fernandéz-Arias, 2006; Levy Yeyati, 2006) and thus to banking crises.[3] Furthermore, as borrowers come under financial stress, they reduce spending, thus dampening aggregate demand. The subsequent repair of balance sheets typically has a drawn-out negative effect on the growth performance of economies.

When the crisis hit in 2008–09, the currencies of most CESEE countries remained, by and large, remarkably stable vis-à-vis the euro. However, CESEE currencies depreciated considerably against the Swiss franc, both in the initial phase of the crisis and then again after the announcement of the Swiss National Bank (SNB) on January 15, 2015, that it would no longer hold the exchange rate floor of the Swiss franc to the euro. These developments have highlighted that foreign currency loans can pose a substantial threat to unhedged borrowers who are vulnerable to currency fluctuations.

Against this backdrop, calls for government support to households with foreign currency loans in CESEE countries gained momentum during the financial crisis. It is not at all surprising that calls for support were greatest in countries with substantial volumes of Swiss franc loans to households (Hungary, Poland, Croatia, Serbia and Romania). See the box below for more information on the specific measures of authorities to alleviate the debt burden of foreign currency borrowers.

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[3] *A further risk relates to currency mismatches of banks. This risk usually is limited by regulations, i.e. by caps on net foreign currency positions of banks.*

Chart 2

Loan demand

Do you plan to take out a loan within the next year?

Do you plan to take out a foreign currency loan within the next year?

% of respondents (annual average)

% of respondents planning to take out a loan (annual average)
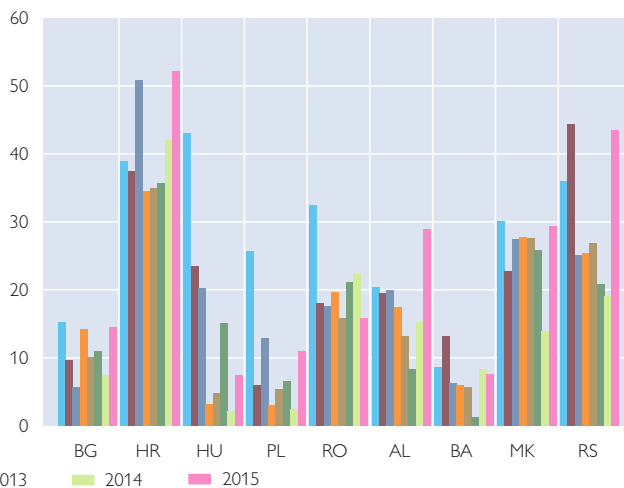
Source: OeNB Euro Survey.

Note: Abbreviations represent the two-digit ISO country code.

Alongside the conversion of foreign currency loans, the extension of new foreign currency loans to households was restricted to different degrees in most CESEE countries. In May 2015, the European Systemic Risk Board assessed the implementation of its recommendations on lending in foreign currencies issued a few years earlier (ESRB, 2015; ESRB, 2011) and concluded that with the exception of Bulgaria,[4] countries were largely or fully compliant with the recommendations. However, the ESRB also noted that the current low level of new foreign currency lending may also be due to current credit conditions in general and pointed out that "economic conditions have not yet materialized that could lead to a renewal of foreign currency lending to unhedged borrowers, which could in turn trigger new systemic vulnerabilities" (ESRB, 2015). As credit conditions in CESEE have eased in recent quarters and lending dynamics are seeing a revival, it will be interesting to watch whether these apprehensions will be substantiated and if so, to what degree. Indeed, chart 2, which is based on OeNB Euro Survey data, indicates that the percentage of households who plan to take out a foreign currency loan is growing again in all countries except Bosnia and Herzegovina.[5]

This paper presents new and unique evidence from the OeNB Euro Survey on whether households in CESEE are aware of government debt relief action. It then looks at how the awareness and expectations of borrower bailout influence loan demand. Does government action for debt relief create incentives for households

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[4] Bulgaria was assessed as only partially compliant because the Bulgarian authorities argued that domestic prudential regulation should not treat the euro as a foreign currency because the country was operating a currency board.

[5] Of course, foreign currency lending going forward will also depend on supply conditions and on the width and the effectiveness of regulatory restrictions mentioned above.

to take on riskier loans? Is foreign currency loan demand driven by bailout expectations?

In analyzing these questions, the paper contributes to two strands of research. On the one hand, it adds to a large and growing literature that analyzes the drivers and consequences of foreign currency borrowing. On the other hand, it contributes to the research studying the effect of debtor bailouts on the credit market. In contrast to other research on government bailouts, the paper does not attempt to assess the general welfare effect of such measures but focuses on the role of debt relief in influencing borrowers' expectations and inducing moral hazard. The specific government actions to alleviate the debt burden of foreign currency borrowers are distinct from other government bailouts, as the costs of the debt relief are borne mainly by creditors rather than by government itself. For simplicity, we will refer to government actions for debt relief, including the laws on foreign currency loan conversion at historical rates, as "bailouts," even though they do not represent a government bailout in the conventional sense, as the bailout costs are not borne (mainly) by government.

We find that up to one-third of households are aware of government debt relief action, and that awareness is significantly higher among (potential) borrowers. Up to 30% of respondents (Hungary) expect that the government will bail out borrowers in financial difficulties. While bailout expectations do not influence loan demand as such, they significantly increase demand for foreign currency loans.

The rest of the paper is organized as follows. Section 1 summarizes the relevant literature. A box then provides an overview of measures taken by CESEE authorities to alleviate the debt burden of households with foreign currency loans. Section 2 describes the data. Section 3 presents evidence showing which households are aware of debt relief measures. Section 4 analyzes bailout expectations and shows how these are linked to households' awareness of debt relief measures already in place. Section 5 studies how bailout expectations influence loan demand and whether these expectations induce foreign currency loan demand. The final section summarizes our findings and looks into their implications for economic policy.

1 Literature review

In the immediate aftermath of the global financial crisis, one view of foreign currency lending was that it was merely a boom phenomenon and could be fully contained by appropriate regulation. However, a large and growing body of research suggests that foreign currency borrowing should also be seen in the broader context of currency substitution and especially in the context of the persistence of currency substitution (Zettelmeyer et al., 2011). Several papers have argued that foreign currency borrowing can be rational in an environment of volatile inflation and low institutional credibility; in such settings, it is closely related to deposit euroization (Ize and Levy Yeyati, 2003; Jeanne, 2005). Macrodata-based empirical evidence has confirmed the importance of these factors for foreign currency borrowing (Luca and Petrova, 2008; Rosenberg and Tirpák, 2009). Other papers stress the role of the supply side, arguing that banks with deposits in foreign currency try to balance the currency risk of their assets and liabilities by issuing loans in foreign currency (Basso et al., 2011). Finally, the interest rate differential is of-

ten discussed as one important factor in driving foreign currency lending. However, Crespo Cuaresma et al. (2011) conclude in a meta-analysis that on average, over all (then) existing studies of determinants of foreign currency lending, the interest differential is insignificant.

The majority of microdata-based studies focus on firms. With the exception of Csajbók et al. (2010), empirical evidence on the determinants of foreign currency borrowing by households is based mainly on survey data. Beer et al. (2010) show that among Austrian households, risk-loving, older, financially better educated and wealthier households are more likely to take out foreign currency loans. Albacete and Lindner (2015) confirm that households with a foreign currency loan in Austria have a relatively high risk-bearing capacity. By contrast, Pellényi and Bilek (2009) show that foreign currency borrowers in Hungary are neither more financially literate nor wealthier or more risk-loving than local currency borrowers. Several previous papers have already employed Euro Survey data, as this dataset provides rich survey information on issues related to foreign currency borrowing by households. Beckmann et al. (2011) provide evidence that households have come to perceive foreign currency loans as riskier since the global financial crisis, but a majority of respondents in six out of nine countries nevertheless regard loans in euro as more attractive than loans in domestic currency. Fidrmuc et al. (2013) show that a lack of trust in the stability of the local currency and distrust in domestic financial institutions drive foreign currency loan demand. In addition, expectations of the future introduction of the euro in a given country play an important role. Beckmann and Stix (2015) demonstrate that knowledge about exchange rate risk reduces demand for foreign currency loans. Beckmann et al. (2015) illustrate that both demand-side and supply-side factors have an influence on foreign currency lending: Foreign currency loans are sought after by households for long-term borrowing, but banks are also more likely to grant large and long-term loans in foreign currency. Linking household survey data to bank data on global ultimate owners indicates that on average across countries, foreign-owned banks do not issue more foreign currency loans than domestically-owned banks. Banai and Vágó (2016) employ multiple imputation methods and show that existing banking relations (which may be closely connected with financial awareness and financial literacy), macroeconomic expectations (which are also linked to households' personal financial situation), and trust in the institutional system drive borrowing decisions. We provide empirical evidence to support the theoretical model put forward by Ranciere et al. (2010), who highlight that foreign currency borrowing can also be rational for unhedged borrowers if they expect a government bailout in case the local currency depreciates against the loan currency. The authors argue that governments will implement policies to guarantee that creditors are repaid if the number of borrowers in risk of default reaches a critical mass. These policies can take the form of providing financial support to borrowers, easing monetary policy or maintaining an exchange rate peg. Let us note that the same line of reasoning also applies if the authorities adopt debt relief measures for households with foreign currency loans, which are not mainly funded by the state but by the banking sector.

To the best of our knowledge, no empirical papers investigate the importance of perceived bailout guarantees for foreign currency loan demand based on microlevel data. However, Kanz (2012) examines how the nationwide debt relief program in India in 2008 affected households' economic decisions. He shows that

debt relief persistently reduces household debt but does not improve investment or productivity. Rather than allowing the household to re-enter the formal credit market, the measures let households who benefitted from debt relief increasingly rely on informal credit. Importantly, Kanz argues that this reliance is due to the impact of debt relief on borrowers' expectations and provides evidence of a link between debt relief and moral hazard: Households who benefitted from debt relief are significantly less concerned about the reputational consequences of defaulting on a bank loan. They are, however, concerned that defaulters will have greater difficulties accessing formal credit in the future.

Box 1

Overview of support measures for foreign currency borrowers[1]

As shown in chart 1 above, Hungary was one of the countries where foreign currency lending to households was particularly widespread in 2009–10 (up to 70% of all loans to households). Moreover, Swiss franc (CHF) loans predominated, accounting for a share of approximately 86% of all foreign currency loans to households at the end of 2014 (ESRB, 2015). Against this background and as interest rates rose while the forint softened due to the repercussions of the financial crisis, Hungary was the first country where the authorities took measures to alleviate the financial situation of households that had taken out such loans.[2] Starting in the fall of 2011, the Hungarian authorities implemented an early repayment possibility at preferential exchange rates and conversion schemes of foreign currency loans of households into local currency loans in several steps.[3] These measures initially focused on mortgage loans but were extended to other household loan categories at later stages (see e.g. Schreiner et al., 2011, and Schreiner et al., 2013). As a result, by the spring of 2015, foreign currency loans to households had fallen to about 5% of total loans to households. A conversion of almost all remaining foreign currency loans to households (car loans, consumer loans) followed and was implemented in late 2015. All these measures were motivated mainly by the need to rein in macrofinancial vulnerabilities and to restore the effectiveness of monetary policy transmission, but also by political and social policy considerations (especially with respect to owner-occupied housing financed by foreign currency loans). In addition, an exchange rate cap system was in place between late 2011 and late 2014 under which household debtors of foreign currency mortgage loans could apply for loan servicing at preferential exchange rates. Banks had to shoulder a substantial part of the financial burden associated with these measures, in particular in the earlier stages.[4]

Foreign currency loans later became the subject of public debate also in other CESEE countries, especially in countries with substantial shares of CHF loans to households, in particular after the Swiss National Bank dropped the exchange rate floor of the Swiss franc to the euro (EUR) in January 2015; also, there were increasing calls for providing support to foreign currency debtors. While Hungary converted foreign currency loans denominated in all foreign currencies (mostly CHF and EUR), developments in other countries focused mostly or exclusively on CHF loans. For the sake of brevity, we have focused on key aspects of government support measures to household foreign currency borrowers in other CESEE countries.

[1] *Compiled by Peter Backé based on contributions by Elisabeth Beckmann, Mariya Hake, Mathias Lahnsteiner, Thomas Reininger and Zoltan Walko (all Oesterreichische Nationalbank, Foreign Research Division).*

[2] *Beckmann et al. (2012) present evidence that in contrast to households in other countries, more than 80% of households in Hungary who report difficulties with loan repayments name higher installments as the reason.*

[3] *Conversion took place roughly at market exchange rates but following a substantial reduction in households' foreign currency loan stock, as banks were mandated to pay back past interest rate increases and exchange rate margins to the extent that they were deemed unjustified.*

[4] *These measures were accompanied by having a state-owned asset management company purchase houses and apartments of households in loan arrears from banks and re-renting these houses and apartments to the former owners. Moreover, already in June 2010, the authorities had issued a moratorium on collateral foreclosures and evictions, which was replaced by a system of quarterly foreclosure quotas between Q4 2011 and end-2015 (since the beginning of 2016, foreclosures have been possible again without limitation, apart from an eviction moratorium during the winter months).*

In Poland, with the issue of CHF loans moving center stage in early 2015, the authorities recommended that banks lower interest rates on CHF loans quickly in line with market developments. The ministry of the economy called on banks to give household debtors with CHF loans the possibility to convert their loans into złoty loans, to grant temporary repayment breaks on mortgage loans and to cap installments at their end-2014 level. Thus, in practice, the issue of foreign currency loans has been addressed on a voluntary basis at the individual client-bank level rather than by the adoption of a law that would have lent generalized support to CHF-indebted households.[5] Nevertheless, the CHF loan issue continued to feature prominently in the political debate, especially during the presidential campaign in the spring of 2015. In January 2016, the newly elected president presented plans for a comprehensive law on CHF loan conversion at historical exchange rates, but withdrew these plans after criticism, also from the central bank in late summer 2016. Instead, the president put forward two legislative proposals: First, capital requirements for foreign currency loans should be raised to encourage banks to convert such loans into złoty loans (no draft law published yet). Second, foreign exchange spread amounts considered to be unfairly charged by banks in connection with foreign currency loans should be reimbursed to the debtors (draft law being dealt with in parliament).

In Bosnia and Herzegovina, CHF loans have been a political topic mainly in one of the two entities, namely the Republika Srpska. A proposal for CHF loan conversion had been under discussion for some time; a draft law was prepared, but the issue was then dropped in Q1 2016 in the course of the negotiation of an Extended Fund Facility program with the IMF. Instead, as advised by the IMF, the matter of CHF loans is now being resolved at the individual client-bank level.

In Serbia, the central bank required banks to offer modalities for loan repayment to households indebted in CHF-indexed loans in February 2015.[6] The menu of options ranges from the conversion of CHF-indexed loans into EUR-indexed loans to retaining the existing indexation while lowering the interest rate burden and extending the duration of the loans (and thereby lowering monthly installments). There were increasing calls from the public, in particular in late 2015, for the adoption of a law that would allow all customers with CHF loans to repay their mortgages in EUR at lower exchange rates. So far, however, special repayment schemes based on law have only been introduced for borrowers facing particular financial difficulties. Reportedly, only a very small number of borrowers have so far claimed a conversion of their CHF loans under these legal provisions. Rather, a number of households have apparently taken up the conversion options offered by banks in line with the aforementioned central bank decision, given that the share of CHF-indexed loans in total loans to households fell from almost 16% in early 2015 to about 11% in late 2016. Recently, a court ruling invalidating a CHF mortgage contract has cast some doubt on the legal validity of such loans in general. Further court rulings, also at higher levels, will presumably address these doubts going forward.

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[5] *In mid-2015, the former government submitted a draft law which would have led to an ex tunc conversion of a part of household foreign currency mortgages into złoty loans (depending on own use of the apartment, apartment size and the loan-to-value ratio) and involving difference payments to the borrowers and partial burden-sharing between banks and clients. However, this draft law was never passed.*

[6] *Indexation of loans to foreign currencies is a widespread phenomenon in Serbia (and some other successor states of former Yugoslavia). Rather than issuing outright CHF loans to households in Serbia, banks extended loans indexed to the Swiss franc.*

In Croatia, in early 2015 the authorities fixed, for one year, the CHF exchange rate to the kuna for household CHF loan debtors at the level prevailing right before the Swiss National Bank abolished the exchange rate floor. Subsequently, in September 2015, a law was adopted stipulating the conversion of household loans denominated in CHF into EUR (rather than into kuna) loans.[7] Under the law, the banking sector must bear the conversion costs of an estimated EUR 1 billion. Several banks are contesting this provision in court, however. In fact, similar conversion measures have been taken or are under discussion in most countries covered by this analysis.[8] As a result of these measures, the share of foreign currency lending in the overall stock of household loans fell noticeably, as chart 1 shows.

In Romania, the debate on CHF loan conversion had been simmering since 2015, ultimately leading to the adoption by parliament of a law on converting CHF-denominated loans to individuals ("consumers") into leu-denominated loans at historical exchange rates in October 2016. However, at the time of writing (mid-December 2016), this law had not yet been promulgated by the president of Romania. Shortly after approval by parliament, government challenged the law at the constitutional court. A ruling is expected for early 2017. Moreover, a debt discharge law for household mortgage borrowers has been in force since May 2016. While the law pertains to all mortgage loans independent of the currency of denomination, almost two-thirds of all mortgage loans of households were denominated in foreign currency when the law was initially passed (in November 2015) so that de facto, the walk-away option the law provides for is available for households that are indebted mainly in foreign currencies.

Among the countries covered in the subsequent empirical part of this study, Bulgaria, the former Yugoslav Republic of (FYR) Macedonia and Albania have not undertaken any foreign currency loan conversion measures, nor has conversion been a key topic in the public debate in these countries. Again, this is not surprising, since CHF loans to households in these countries are practically nonexistent and since all the three countries have kept their national currencies' exchange rate to the euro very stable, be it under a currency board arrangement (Bulgaria), under a pegged regime (FYR Macedonia) or under a flexible exchange rate regime with very low actual exchange rate fluctuation (Albania).

[7] *Swiss franc loans were not converted into kuna loans due to possible adverse effects on the foreign exchange reserves of the Croatian National Bank and the asset-liability management of banks given the high share of deposits denominated in euro.*

[8] *Fischer and Yesin (2016) argue, however, that CHF loan conversion only marginally reduces aggregate systemic risk.*

2 Data

Our analysis is based on the fall 2015 wave of the OeNB Euro Survey of households, which included a set of questions dedicated to the perception and expectation of borrower bailout. These questions and descriptive results are presented in detail in sections 3 and 4. The survey covers nine CESEE countries: five EU Member States (Bulgaria, Croatia, Hungary, Poland and Romania) and four (potential) candidate countries (Albania, Bosnia and Herzegovina, FYR Macedonia and Serbia).[6] In each country, a representative sample of 1,000 respondents is polled via multistage stratified random sampling. Respondents are interviewed face-to-face at their residence. For the purpose of this analysis, we exclude respondents below the age of 19, as they are unlikely to take economically significant borrowing decisions. This provides us with a total number of 8,937 observations. However, depending

[6] *The Euro Survey is also conducted in the Czech Republic, which is excluded from the present analysis because foreign currency lending to households is of no importance there (as shown in chart 1). Therefore, the central questions for this analysis were not included in the Czech questionnaire.*

on the survey question used, the number of observations for some of the presented results can be rather low. For example, only around 10% of respondents plan to take out a loan within the next 12 months.

In general, the survey collects a rich set of information on the financial decisions of households as well as their economic expectations. With regard to borrowing, the survey questions include information about the existence of loans and plans to take out loans and the currency denomination of existing and planned loans. Regarding the currency denomination, the questionnaire accounts for the widespread use of loans indexed to foreign currency in the Western Balkans. The subsequent analysis defines these loans as foreign currency loans, since economically, they are equivalent to loans denominated in foreign currency. The survey focuses on individuals rather than households, but the questionnaire accounts for the fact that loans are typically taken out by households by asking whether the respective loan is held alone or together with a partner. Table A1 presents definitions for all variables in the subsequent analysis. Table A2 presents descriptive statistics by country.

As the survey does not inquire about the amounts of outstanding loans, it is not trivial to benchmark results with external data sources. However, previous research based on the Euro Survey has shown that survey results on loans, deposits and savings fit well with data from monetary statistics and other household surveys (Brown and Stix, 2015; Beckmann et al., 2011). For more information on the OeNB Euro Survey and related publications, see https://www.oenb.at/en/Monetary-Policy/Surveys/OeNB-Euro-Survey.html.

3 Awareness of government debt relief

The central questions for this analysis were designed to understand the impact of government bailouts on foreign currency loan demand. To gauge awareness of such actions, respondents were asked "Are you aware of any government policies in [your country] to help borrowers who are in trouble with their loan?" Chart 3 plots the responses to these questions and shows big differences across countries. Awareness of government debt relief actions is highest in Croatia, where government measures to convert Swiss franc loans into euro loans at historical exchange rates were implemented one month before the survey was conducted in fall 2015 and received substantial media attention both nationally and internationally. Awareness is similarly high in Hungary (the most important bailout measure was implemented in early 2015), followed by Poland and Serbia, where discussions on foreign currency loan conversions also received substantial media attention and played a major role in election campaigns. In countries where awareness is low, measures had been more or less under discussion but no explicit bailout measures had been adopted (or were close to adoption) by the fall of 2015. In Romania, awareness is also low, which is, however, likely to be related to the timing of the survey in fall 2015: Romanian parliament approved the "giving-in-payment law" in April 2016 and the law on Swiss franc loan conversion in October 2016.

The percentage of respondents who benefitted from government action for debt relief is highest in Hungary. The majority of beneficiaries in Hungary are borrowers who took out a loan in Swiss francs (53%) before 2008. Furthermore, 41% of these beneficiaries indicate they have been in loan arrears over the past 12 months and 20% state they suffered a significant reduction of their income over

Chart 3

Perception of government bailout

% of respondents
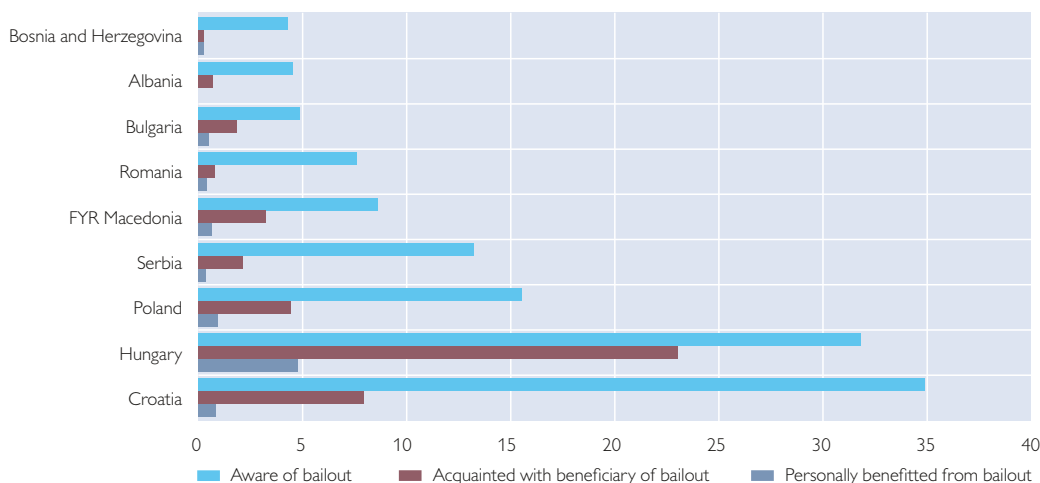
Source: OeNB Euro Survey.

Note: Results are based on the following question posed to all respondents: "Are you aware of any government policies in [your country] to help borrowers who are in trouble with their loan? a) No. b) Yes, but I do not know anyone personally who benefitted from this policy. c) Yes, I know somebody who benefitted from this policy. d) Yes, I myself benefitted from this policy. e) Don't know. f) No answer."

the past 12 months. These percentages are based on a very small number of observations (55) and are, therefore, not necessarily representative. But they do indicate that these borrowers might otherwise have defaulted on their loans.

To provide a first indication of how bailouts affect household financial decisions, we analyzed the variation in awareness among individuals. Chart 4 plots average marginal effects of a probit regression where the dependent variable is a dummy variable that takes the value one if respondents are aware of government bailouts, know somebody who has benefitted from one, or have personally benefitted from one. The estimation controls for further sociodemographic characteristics as well as country fixed effects so that the marginal effects illustrate the within-country variation among individuals. The chart shows that bailout awareness is not correlated with income; however, there is some indication that it is correlated with wealth. In addition, the highly educated and financially literate are more likely to be aware of bailout measures. Finally, as expected, borrowers are also more likely to be aware of such government actions. Interestingly, however, respondents who are currently planning to take out a loan in fact have a higher likelihood of being aware of bailout measures (7 percentage points) than those who already have a loan (3 percentage points). In the next section we look at how awareness of debt relief affects expectations of bailout in the future.

Chart 4

Differences in awareness of government bailout among individuals

Marginal effects and 95% confidence interval
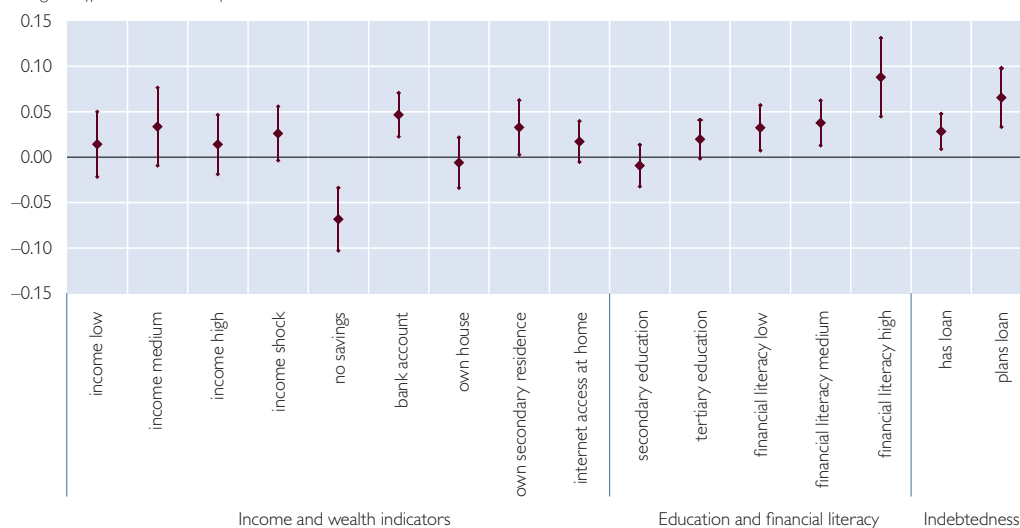
Source: Author's calculations.

4 Who expects government action for debt relief?

Our measure of bailout expectations is based on the following two questions:

— "What do you expect are the chances that the government in [your country] will help borrowers who are in trouble with their loan? Please indicate your answer on a scale from 0 (absolutely no chance) to 100 (absolutely certain)."

— "Do you think the government in [your country] is more likely to help local currency or foreign currency borrowers or is there no difference?

a) The government is likely to help both local currency and foreign currency borrowers.

b) The government is more likely to help foreign currency borrowers.

c) The government is more likely to help local currency borrowers.

d) It is not likely that the government will help either foreign currency or local currency borrowers."

Chart 5 shows that the majority of respondents do not expect government intervention. However, in five out of nine countries, at least every tenth respondent thinks there is a more than 50% chance the government will intervene on behalf of borrowers. There is a strong variation between countries – ranging from 3% (Albania) to 30% (Hungary) – of respondents who consider government bailout likely. In Hungary, Croatia and Poland, expected government action on behalf of borrowers is linked to the currency denomination of loans (right panel, chart 5). This suggests that debt relief that is already in effect influences expectations.

We test this assumption more formally in table 1, showing average marginal effects from probit estimations where the dependent variables are, first, a dummy variable "expect bailout" based on question 1 above that takes the value one if respondents think that the chance government will intervene on behalf of borrowers is more than 50% and, second, three dummy variables based on question 2 above that take the value one if respondents consider bailout (1) of foreign currency

Chart 5

Expectations of government bailout

What are the chances that the government will help borrowers who are in trouble with their loan?

% of respondents

Less than 25%
50–75%
25–50%
More than 75 %
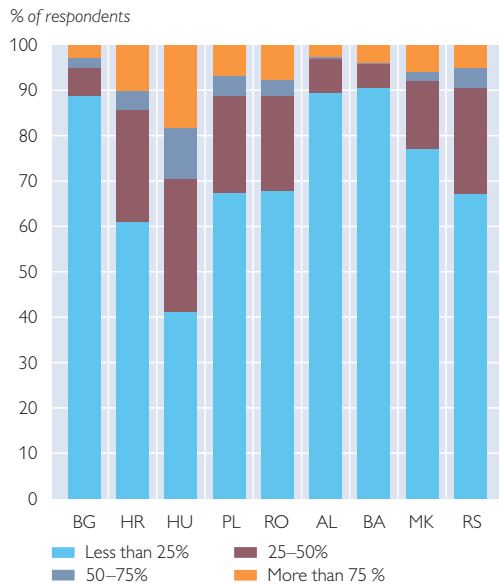
Is the government more likely to help local currency or foreign currency borrowers?

% of respondents

Foreign currency borrowers
Local currency borrowers
Both equally
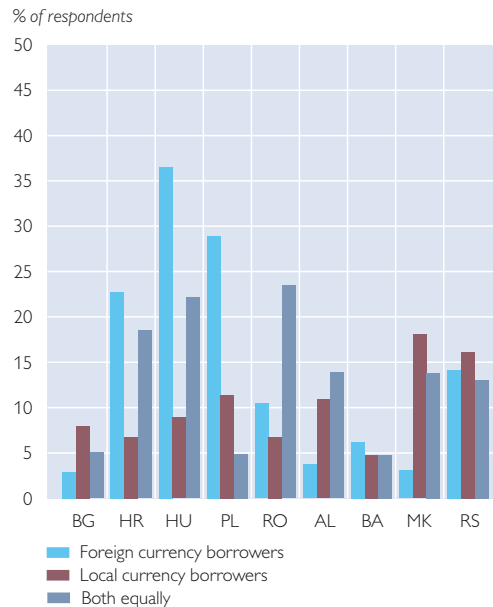
Source: OeNB Euro Survey, fall 2015.

Note: Abbreviations represent the two-digit ISO country code.

borrowers more likely, (2) local currency borrowers more likely (3), both equally likely. Specifically, we model the probability that the respondent expects government assistance for borrowers as:

$$P\left(Exp = 1\right) = \Phi_{Exp}\left(\mathbf{X}_{Exp}\boldsymbol{\beta}_{Exp} + u_{Exp}\right)$$

This analysis does not attempt to fully explain the mechanism of how expectations are formed; rather, it indicates which factors are important and how bailout expectations, awareness and experience are correlated.

Results show that awareness of, or experiences with, debt relief action by the government are positively and significantly correlated with bailout expectations. Respondents who are aware of debt relief measures are 5 percentage points more likely to expect future government bailout. However, expectations can only to some extent be explained by publicly available information. Respondents who know somebody who benefitted from debt relief measures or personally benefitted are 8 percentage points more likely to expect future government bailout. Thus, personal experience has a stronger influence on expectations than information does. As expected, given the targeted efforts to alleviate the debt burden of foreign currency borrowers, the correlation between experience and expectation is higher for the expectation of foreign currency debt relief efforts. The table further shows that debt relief is associated with trust in the government and the general economic situation but not with trust in the central bank. The insignificant coefficient on trust in the central bank might imply that contrary to the theo-

Table 1

Who expects government bailout?

Dependent variable	Expect bailout	Foreign currency borrower bailout more likely	Local currency borrower bailout more likely	Foreign currency and local currency borrower bailout equally likely
	Average marginal effect			
Aware of bailout	0.053***	0.070***	0.057***	0.062***
	(0.018)	(0.010)	(0.013)	(0.015)
Knows beneficiary of bailout or benefitted personally from bailout	0.075***	0.087***	0.063	0.069*
	(0.023)	(0.021)	(0.040)	(0.036)
Trusts government	0.050***	0.025**	0.02	0.041***
	(0.010)	(0.011)	(0.013)	(0.009)
Trusts central bank	0.008	0.004	0.013	0.002
	(0.013)	(0.018)	(0.012)	(0.012)
Expects economic situation to get better	0.030***	0.024***	0.034***	0.030*
	(0.007)	(0.009)	(0.009)	(0.015)
Expects local curency depreciation	−0.016*	−0.019	0.012	0.001
	(0.008)	(0.025)	(0.011)	(0.013)
Financial loss during transition	0.034**	−0.021	0.033**	0.006
	(0.017)	(0.016)	(0.016)	(0.015)
Trusts domestically owned banks	0.029*	−0.031*	0.009	0.059***
	(0.016)	(0.018)	(0.014)	(0.016)
Trusts foreign-owned banks	−0.027***	0.008	0.014	−0.044***
	(0.005)	(0.013)	(0.012)	(0.015)
Exchange rate literate	−0.032	−0.019*	−0.027**	0.007
	(0.022)	(0.010)	(0.012)	(0.021)
Inflation literate	−0.016*	−0.008	−0.02	−0.031*
	(0.008)	(0.017)	(0.014)	(0.019)
Interest rate literate	−0.009	−0.016	−0.011	−0.01
	(0.009)	(0.016)	(0.010)	(0.010)
Country fixed effects	Yes	Yes	Yes	Yes
Sociodemographic controls	Yes	Yes	Yes	Yes
Log-L	−1,599.3	−2,053.6	−1,775	−2,049.2
Pseudo-R²	0.14	0.17	0.07	0.1
Number of observations	5,538	5,789	5,789	5,789
P(DepVar=1)	0.1	0.15	0.1	0.13

Source: Author's calculations.

*Note: Estimates obtained from probit models. Robust standard errors (in parentheses) are adjusted for clustering at the country level. *, ** and *** denote significance at the 1%, 5% and 10% level, respectively. P(DepVar=1) denotes the unconditional probability of the respective dependent variable.*

retical model by Ranciere et al. (2010), central bank intervention to maintain exchange rate pegs or tightly managed floats is not linked to foreign currency loans in the perception of households.

5 How does debt relief affect loan demand?

To determine whether bailouts create incentives for households to take on riskier loans and specifically whether expectations of government bailouts drive foreign currency loan demand, we have to address several problems. First, we want to study the effect of expectations on foreign currency loan demand and therefore cannot use information on existing loans, as decisions about the loan currency were made in the past. However, we do observe current expectations of future government intervention. Furthermore, previous research has shown that the supply side is one important factor for the prevalence of foreign currency loans (Brown, Kirschenmann and Ongena, 2014, and Beckmann et al., 2015). There-

fore, we would not be able to identify the effect of expectations on demand. To address these problems, we follow Fidrmuc et al. (2013) and Beckmann and Stix (2015) and use information on planned loans.

5.1 Empirical strategy

We estimate a sample selection model following Heckman (1979) where the selection equation models the probability that a respondent plans to take out a loan,

$$P(L=1)=\phi_L(X_L\beta_L+u_L),$$

(1)

while the outcome equation is a probit model of the demand for foreign currency loans:

$$P(F=1\,|\,L=1)=\phi_F(X_F\beta_F+u_F)$$

(2)

Error terms are normally distributed, $u_L\sim N(0,1)$, $u_F\sim N(0,1)$, and are correlated, $corr(u_L,u_F)=\rho$.

Following Fidrmuc et al. (2013), we use the following characteristics of respondents for identification, arguing that these variables are correlated with the decision to take out a loan but not with the decision about the currency denomination of the loan: labor market status (student, retired and unemployed), information on whether households have a current account or savings deposits as well as expectations about the economic situation. In addition, we employ information on whether the respondent or another member of the household was laid off from their job during the preceding 12 months.

In both the selection and outcome equation, we control for a rich set of behavioral as well as sociodemographic characteristics that have been shown to influence loan demand and to determine foreign currency loan demand. Again, we follow Fidrmuc et al. (2013) in our specification, and we control for foreign currency income and expectations about exchange rate developments. Furthermore, we include a variable measuring foreign currency saving preferences, which also captures trust in monetary and institutional stability. Following Beckmann and Stix (2015), we further control for understanding exchange rate risk. In addition, data availability allows us to control for behavioral characteristics that – as e.g. McCarthy (2011) shows – influence the financial decisions of households: We include measures of time preference, self-control and of whether or not respondents are well organized in making financial decisions. Differences in regulation and exchange rate regimes across countries as well as interest rate differentials are controlled for by including country fixed effects. Guiso et al. (2013) show that the perceived probability of facing legal consequences for default does not differ much between recourse and nonrecourse states in the U.S.A. Therefore, in addition to including country fixed effects to control for differences in credit market regulation across countries, we include a measure of individual expectations about the likelihood that borrowers in default will be pursued by creditors and will face legal consequences.

We check thoroughly for the robustness of our results *inter alia* by accounting (1) for the large differences between the countries included in our sample, (2) for

supply effects, and (3) for the specific loan currency of the planned foreign currency loan.

Table 2

Determinants of loan demand

Dependent variable	Plans to take out a loan						
	Baseline	1	2	3	4	5	6
Average marginal effect							
Risk averse	−0.041**	−0.042**	−0.042**	−0.039**	−0.039**	−0.035	−0.039*
	(0.017)	(0.019)	(0.019)	(0.017)	(0.019)	(0.021)	(0.020)
Self-control: impulsive	0.003	0.001	−0.002	0.004	−0.001	−0.007	−0.006
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.010)	(0.009)
Time preference: present	0.004	−0.002	0.002	0.005	0.006	0.003	0.005
	(0.009)	(0.010)	(0.010)	(0.009)	(0.009)	(0.010)	(0.010)
Financial management: organized	−0.021**	−0.022**	−0.027**	−0.020**	−0.021**	−0.020*	−0.024**
	(0.010)	(0.010)	(0.011)	(0.010)	(0.010)	(0.011)	(0.011)
Current account / savings deposits	0.024**	0.023**	0.020*	0.023**	0.019	0.018	0.017
	(0.011)	(0.012)	(0.011)	(0.010)	(0.012)	(0.012)	(0.012)
Expects economic situation to get better	0.013*	0.013	0.015*	0.013*	0.018**	0.015*	0.017**
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.009)	(0.009)
Unemployed	−0.043***	−0.054***	−0.054***	−0.042***	−0.045***	−0.055***	−0.055***
	(0.011)	(0.012)	(0.012)	(0.011)	(0.012)	(0.014)	(0.013)
Student	−0.115***	−0.108***	−0.105***	−0.116***	−0.125***	−0.113***	−0.117***
	(0.027)	(0.028)	(0.029)	(0.027)	(0.030)	(0.034)	(0.031)
Retired	−0.040**	−0.01	−0.018	−0.039**	−0.039*	−0.01	−0.02
	(0.020)	(0.020)	(0.019)	(0.019)	(0.022)	(0.021)	(0.021)
Not laid off from job in past 12 months	−0.035***	−0.027**	−0.030***	−0.035***	−0.027**	−0.022*	−0.024**
	(0.010)	(0.011)	(0.011)	(0.010)	(0.011)	(0.012)	(0.012)
Expects legal consequences		0				0	
		(0.000)				(0.000)	
Expects bailout			0			0	0
			(0.000)			(0.000)	(0.000)
Aware of bailout				0.028***		0.028**	
				(0.011)		(0.012)	
Knows beneficiary of bailout or benefitted personally from bailout				0.033**		0.029	
				(0.015)		(0.018)	
Foreign currency borrower bailout more likely					0.014	0.009	0.02
					(0.011)	(0.014)	(0.013)
Local currency borrower bailout more likely					0.016	0.016	0.024*
					(0.012)	(0.013)	(0.012)
Foreign currency and local currency borrower bailout equally likely					−0.003	−0.008	−0.003
					(0.012)	(0.014)	(0.014)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Further controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Log-L	−1,513.5	−1,277.6	−1,286.6	−1,508.2	−1,330.6	−1,099.4	−1,168.9
N(selection equation)	5,441	4,669	4,610	5,441	4,767	3,986	4,190
N(outcome equation)	418	354	353	418	369	308	322
P(plan loan=1)	0.21	0.21	0.22	0.21	0.21	0.22	0.22
Rho	0.15	0.19	0.4	0.16	0.16	0.55	0.35
P-value	0.75	0.73	0.43	0.75	0.8	0.6	0.56

Source: Author's calculations.

Note: Selection equations of the Heckman sample selection probit models. Coefficients reflect average marginal effects. The dependent variable is a dummy variable that takes the value one if a respondent plans to take out a loan within the next 12 months. P(plan loan=1) denotes the sample probability. Rho denotes the correlation between the selection and the outcome equation, p-value denotes the significance of rho. Robust standard errors (in parentheses) are adjusted for clustering at the country level. *, ** and *** denote significance at the 1%, 5% and 10% level, respectively.

5.2 Loan demand

Table 2 presents results of the selection equation. In line with Fidrmuc et al. (2013), we find that labor market status and existing banking relationships as well as expectations about the economic performance of the country influence

Table 3

Determinants of foreign currency loan demand

Dependent variable	Plans to take out a foreign currency loan						
	Baseline	1	2	3	4	5	6
Average marginal effect							
Exchange rate literate	−0.01	−0.018	−0.041	−0.011	−0.004	−0.023	−0.026
	(0.036)	(0.038)	(0.040)	(0.036)	(0.038)	(0.041)	(0.042)
Expects local currency depreciation	−0.03	−0.026	−0.021	−0.031	−0.035	−0.031	−0.034
	(0.038)	(0.037)	(0.042)	(0.038)	(0.038)	(0.038)	(0.042)
Foreign currency denomination preferences	0.102***	0.116***	0.118***	0.102***	0.115***	0.130***	0.120***
	(0.036)	(0.036)	(0.039)	(0.036)	(0.037)	(0.037)	(0.039)
Network savings weak	−0.089*	−0.097*	−0.105*	−0.089*	−0.068	−0.094*	−0.079
	(0.051)	(0.051)	(0.054)	(0.051)	(0.051)	(0.053)	(0.054)
Income in euro	0.095	0.036	0.092	0.094	0.073	0.057	0.07
	(0.081)	(0.092)	(0.095)	(0.081)	(0.092)	(0.102)	(0.102)
Risk averse	0.104	0.129*	0.083	0.104	0.126	0.153*	0.092
	(0.073)	(0.073)	(0.078)	(0.073)	(0.080)	(0.084)	(0.083)
Self-control: impulsive	−0.016	−0.013	0.002	−0.017	−0.024	−0.01	−0.004
	(0.041)	(0.039)	(0.046)	(0.041)	(0.046)	(0.044)	(0.050)
Time preference: present	0.081**	0.082**	0.079*	0.081**	0.067*	0.070*	0.067
	(0.038)	(0.040)	(0.043)	(0.038)	(0.039)	(0.040)	(0.043)
Financial management: organized	−0.071	−0.071	−0.075	−0.071	−0.084*	−0.084*	−0.081*
	(0.044)	(0.045)	(0.046)	(0.044)	(0.044)	(0.046)	(0.047)
Expects legal consequences		0				−0.001	
		(0.001)				(0.001)	
Expects bailout			0.002***			0.002**	0.002**
			(0.001)			(0.001)	(0.001)
Aware of bailout				0.005		0.004	
				(0.041)		(0.050)	
Knows beneficiary of bailout or benefitted personally from bailout				−0.014		−0.076	
				(0.076)		(0.081)	
Foreign currency borrower bailout more likely					0.066	−0.017	0.021
					(0.055)	(0.069)	(0.067)
Local currency borrower bailout more likely					0.016	−0.014	−0.017
					(0.051)	(0.058)	(0.058)
Foreign currency and local currency borrower bailout equally likely					0.011	−0.055	−0.042
					(0.054)	(0.061)	(0.065)
Country-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Further controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Log-L	−1,513.5	−1,277.6	−1,286.6	−1,508.2	−1,330.6	−1,099.4	−1,168.9
N(Selection equation)	5,441	4,669	4,610	5,441	4,767	3,986	4,190
N(Outcome equation)	418	354	353	418	369	308	322
P(DepVar=1)	0.21	0.21	0.22	0.21	0.21	0.22	0.22
Rho	0.15	0.19	0.4	0.16	0.16	0.55	0.35
P-value	0.75	0.73	0.43	0.75	0.8	0.6	0.56

Source: Author's calculations.

Note: Outcome equations of the Heckman sample selection probit models where the selection refers to respondents who plan a loan (table 2). Coefficients reflect average marginal effects. The dependent variable is a dummy variable that takes the value one if a respondent plans to take out a foreign currency loan within the next 12 months. P(plan loan=1) denotes the sample probability. Rho denotes the correlation between the selection and the outcome equation, p-value denotes the significance of rho. Robust standard errors (in parentheses) are adjusted for clustering at the country level. *, ** and *** denote significance at the 1%, 5% and 10% level, respectively.

loan demand (see table 2, baseline). We also find that risk aversion and the ability to organize financial matters reduces loan demand. Expectations about the legal consequences of default do not significantly influence loan demand, nor do expectations about government debt relief. However, awareness of current government action for debt relief or experience with such measures is positively and significantly correlated with plans to take out a loan. The awareness effect is robust to including all controls jointly. Respondents who are aware of current government action for debt relief are 3 percentage points more likely to plan to take out a loan.
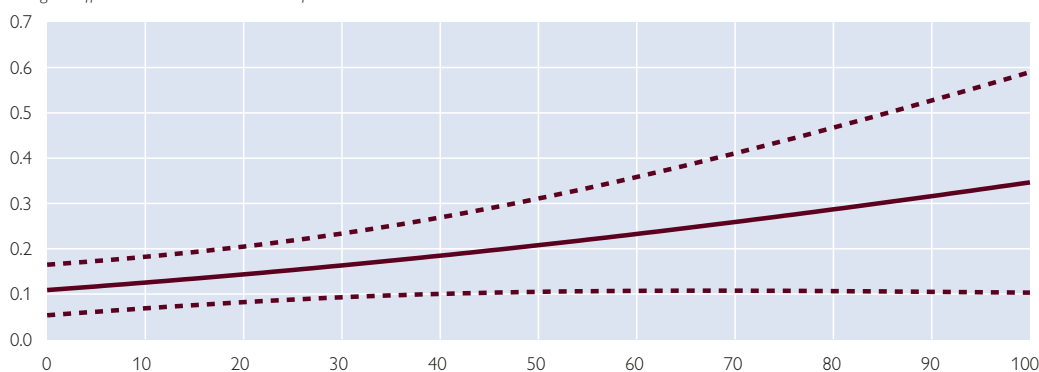
5.3 Foreign currency loan demand

The role of expectations of government debt relief changes significantly when looking at the choice of loan currency. Again, we confirm the results of previous research on the determinants of foreign currency loan demand. In particular, we find that preferences for foreign currency deposits strongly and significantly drive foreign currency loan demand (see table 3, baseline). Expectations about the legal consequences of default do not impact the choice of loan currency. However, expectations of bailout positively and significantly influence foreign currency loan demand. Somewhat surprisingly, experience with current bailout measures does not influence loan demand. This is, however, likely to be related to the fact that beneficiaries of government actions already have a loan and are not planning to take out a further loan. We look at this issue in robustness analyses. Awareness of current bailout measures does not influence foreign currency loan demand either. This is not surprising, as future borrowers will not benefit from current "bailouts" and therefore only expectations rather than knowledge influence plans to take out a loan. Column 5 in table 3 confirms that the positive and significant impact of expectations of debt relief is robust to including measures of awareness of current debt relief measures.

The average marginal effect of bailout expectations presented in table 3 only allows the conclusion that there is a significant positive impact on foreign currency loan demand. To illustrate the magnitude of this impact, chart 6 plots how foreign currency loan demand varies depending on the expected likelihood of govern-

Chart 6

Foreign currency loan demand increases with the perceived probability of government bailout

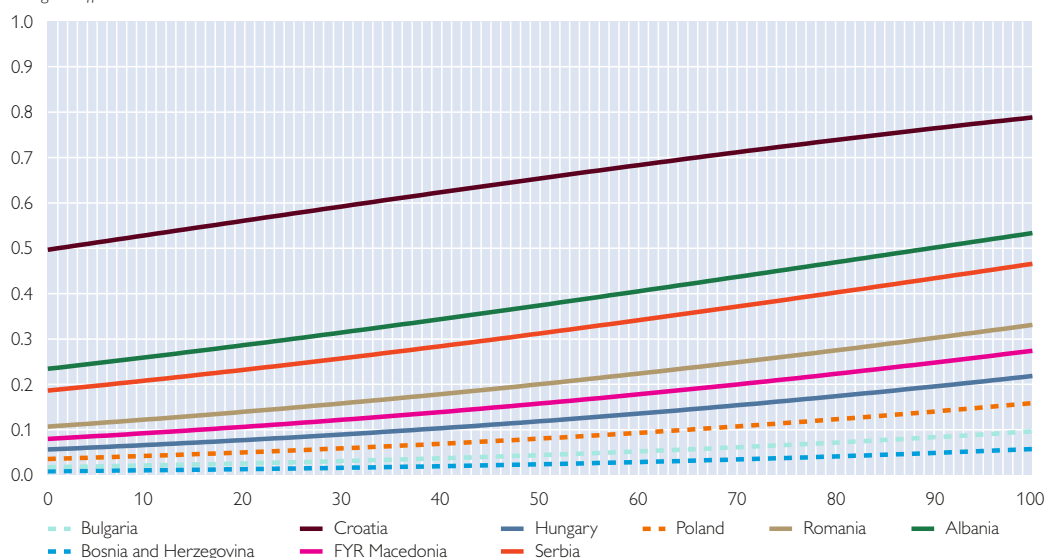*Marginal effect at means and at 95% confidence interval*

Source: Author's calculation.

Chart 7

Differences between countries: the impact of the perceived probability of government bailout on foreign currency loan demand

Marginal effect at means

Source: Author's calculation.

Note: Dotted lines indicate that the marginal effects are insignificant. Solid lines indicate significance at a minimum of 10%.

ment bailout (ranging from 0 "absolutely no chance" to 100 "absolutely certain"). Chart 6 illustrates that respondents who are "absolutely certain" the government will intervene are 20 percentage points more likely to plan to take out a foreign currency loan than respondents who think there is "absolutely no chance" that the government will take action to help borrowers experiencing trouble with their loan.

As explained in the box, the examined countries have very different bailout policies. Consequently, the effect of expectations of bailout on foreign currency loan demand is likely to vary between countries. As we have only a low number of observations, we cannot repeat the estimations for individual countries. Instead, we calculate the marginal effect at the means for the respective likelihood of a future bailout for each country individually. Chart 7 confirms that there are indeed significant differences between countries. The effect of bailout expectations on foreign currency loan demand is strongest in Croatia and insignificant in Bulgaria and in Bosnia and Herzegovina. The latter result is not surprising, as both countries operate a currency board and as the authorities consider euro loans nonforeign currency loans (as explained for Bulgaria in footnote 4).

5.4 Robustness analysis

As regulations and government action on foreign currency loans vary significantly between countries, we need to ensure that our results are not driven by a particular country. In table 4 we repeat estimations, dropping one country at a time from the estimations. For all of the nine specifications, we find a positive and significant effect of expectations of government help on foreign currency loan demand.

Table 4

Robustness analysis: are results driven by individual countries?

Dependent variable	Plans to take out a foreign currency loan								
Sample excluding:	Bulgaria	Croatia	Hungary	Poland	Romania	Albania	Bosnia and Herze-govina	FYR Macedonia	Serbia
Average marginal effects									
Expects bailout	0.002*	0.002**	0.002*	0.002*	0.002**	0.002*	0.002**	0.002**	0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Expects foreign currency borrower bailout	0.043	0.048	−0.028	0.024	−0.02	0.013	0.03	−0.01	0.078
	(0.070)	(0.060)	(0.074)	(0.079)	(0.074)	(0.065)	(0.073)	(0.077)	(0.064)
Expects local currency borrower bailout	−0.003	0.005	−0.067	−0.017	−0.01	−0.025	−0.025	−0.024	−0.012
	(0.058)	(0.053)	(0.059)	(0.062)	(0.063)	(0.061)	(0.064)	(0.070)	(0.057)
Expects foreign curency and local currency borrower bailout	−0.015	−0.018	−0.027	−0.09	−0.102	−0.013	−0.046	−0.027	−0.058
	(0.067)	(0.061)	(0.069)	(0.072)	(0.065)	(0.063)	(0.074)	(0.079)	(0.062)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Further controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Log-L	−1,083.9	−1,065	−1,015.8	−1,048.1	−1,041.4	−1,018.3	−1,054.1	−986.9	−995.2
Total observations	3,846	3,728	3,636	3,851	3,823	3,532	3,691	3,647	3,766
Uncensored observations	301	299	283	282	286	287	293	272	273
P(DepVar=1)	0.23	0.19	0.24	0.24	0.23	0.21	0.24	0.24	0.19
Rho	0.32	−0.04	0.58	0.49	0.53	0.23	0.38	0.63	−0.47
P-value	0.58	0.96	0.44	0.45	0.46	0.72	0.53	0.3	0.49

Source: Author's calculation.

As table 1 shows, expectations are correlated with actual bailout experience and trust in the government. Excluding respondents who already have a loan does not change our results. Furthermore, including a measure of trust in the government does not change the positive and significant impact of bailout expectations on loan demand either. We also allow for the effect of unobserved dependencies between respondents by repeating the estimations with standard errors clustered at the level of the primary sampling unit.

Our dependent variable "loan plans" is an established measure in the literature (Fidrmuc et al., 2013) that reflects only the demand side of the ultimate outcome of a loan contract. However, it may still be the case that borrowers anticipate supply effects in their loan planning. We repeat all our estimations including four separate measures of loan supply based on the results of previous research that shows that banks' funding structures and information asymmetries may affect the currency denomination of loans (Brown, Kirschenmann and Ongena, 2014; Brown, Ongena and Yesin, 2014): the distance to the nearest bank, the distance to the nearest foreign bank as well as a Herfindahl index of bank concentration and foreign bank ownership concentration.[7] None of these measures have a significant impact on loan demand or foreign currency loan demand. Furthermore, including

[7] *For a detailed description of the bank branch dataset from which these measures are derived, see Beckmann, Reiter and Stix (2017).*

these controls for supply effects does not affect the size and significance of bailout expectations on foreign currency loan demand.

Box 1 shows that most bailout measures primarily relate to Swiss franc loans. Therefore, it is questionable whether the observed effect of bailout expectations on the demand for loans relates to foreign currency loans more generally or only to Swiss franc loans. The question on loan planning includes the specific currency of the loan the respondent is planning to take out. We repeat estimations excluding any respondents who plan to take out a Swiss franc loan. The effect of bailout expectations on plans to take out a euro loan remains positive and significant. Respondents who are "absolutely certain" the government will intervene are 16 percentage points more likely to plan to take out a euro loan than respondents who think there is "absolutely no chance" that the government will take action to help borrowers experiencing trouble with their loan. Thus, the estimated effect focusing on euro loans only is 4 percentage points smaller than the estimated effect taking into account all foreign currency loans (as in chart 6).

6 Summary and conclusions

We present evidence that recent measures to provide debt relief for borrowers in CESEE increase expectations of future government interventions. We then show that expectations of government bailout do not influence loan demand as such but increase demand for foreign currency loans. These results are robust to controlling for knowledge of exchange rate risk and expectations about exchange rate developments and are not driven by individual countries. In addition, we provide evidence that demand for foreign currency loans is growing again. Taken together, these finding suggest that policies targeted at relieving the debt burden of foreign currency borrowers may in the medium to long term lead to an increase rather than a decrease of foreign currency borrowers – if regulation prohibiting the issuance of new foreign currency loans to households is not in place. At the same time, however, it is likely that banks will lower the supply of foreign currency loans, as they have to shoulder the cost of the bailout; it is also likely that the interest rate on such loans will therefore increase. To prevent household demand for foreign currency loans from rising as a consequence of earlier debt relief actions, a ban on issuing new foreign currency loans should complement any policy measures geared at relieving the debt burden of households indebted in foreign currency.

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Annex

Table A1

Definition of variables

Variable name	Definition
Aware of bailout, knows beneficiary of bailout or benefitted personally from bailout	Dummy variables based on the question "Are you aware of any government policies in [your country] to help borrowers who are in trouble with their loan? [multiple answers] a) No; b) Yes, but I do not know anyone personally who benefitted from this policy; c) Yes, I know somebody who benefitted from this policy; d) Yes, I myself benefitted from this policy." Answer b) coded as "aware of bailout" equal one, otherwise zero. Answers c) and d) are coded as "knows beneficiary or benefitted personally from bailout" equal one, otherwise zero.
Current account / savings deposits	Dummy variable that takes the value one if the respondent has a deposit or a transaction account, otherwise zero.
Expects economic situation to get better	Derived from question "Over the next five years, the economic situation of my country will improve." Respondents could agree on a scale from 1 (strongly agree) to 6 (strongly disagree). Dummy variable, answers from 1 to 3 are defined as one.
Expects local currency depreciation	Dummy variable derived from the question "How do you think will the exchange rate of the local currency develop over the next five years?" coded as one if respondent answers "The local currency will lose value against the euro," otherwise zero.
Expects bailout	Based on the question "What do you expect are the chances that the government in [your country] will help borrowers who are in trouble with their loan? Please indicate your answer on a scale from 0 (absolutely no chance) to 100 (absolutely certain)."
Expects legal consequences	Based on the question „when people default on their loan, in some countries the lender repossesses the house or the equivalent value of the good bought with the loan. On a scale from 0 to 100, where 0 equals 'absolutely no chance' and 100 equals 'absolutely certain' what do you expect are the chances that the lenders in [your country] will go after people who default on their loans?"
Foreign currency borrower bailout more likely, local currency borrower bailout more likely, foreign currency and local currency borrower bailout equally likely	Dummy variables derived from the question "Do you think the government in [your country] is more likely to help local or foreign currency borrowers or is there no difference? a) The government is likely to help both local and foreign currency borrowers; b) The government is more likely to help foreign currency borrowers; c) The government is more likely to help local currency borrowers; d) It is not likely that the government will help either foreign or local currency borrowers."
Foreign currency deposit preferences	Dummy variable derived from the question "Suppose you had about two times an average monthly salary to deposit in a savings account. Would you choose to deposit this amount in local currency, euro, U.S. dollars, Swiss francs, or other foreign currency?" Answer category "local currency" is coded as zero, all foreign currencies are coded as one.
Financial loss during transition	Dummy variable based on question "Think back in time to periods of economic turbulences that happened prior to 2008, e.g. very high inflation, banking crisis or restricted access to savings deposits. At that time, did you personally incur a financial loss due to such events?" Answers "No, I had no savings then" and "No, I did not incur a financial loss" coded as zero, "Yes" coded as one.
Financial management: organized	Dummy variable derived from the question "please indicate your level of agreement on a scale from 1 (strongly agree) to 6 (strongly disagree) with the following statement: I am very organized when it comes to managing my money day-to-day." Respondents answering 1-3 are coded as one, otherwise zero.
Income in euro	Dummy variable; one if the respondent regularly receives income in euro.
Interest rate literate	Dummy variable derived from the question "Suppose you had 100 [local currency] in a savings account and the interest rate was 2% per year. Disregarding any bank fees, how much do you think you would have in the account after 5 years if you left the money to grow?" Answer "more than 102" coded as 1, answers "exactly 102," "less than 102" and "don't know" coded as zero. "No answer" observations are excluded.
Labor market status: unemployed, student	Dummy variable coded as one if respondent belongs to selected occupational category.
Network savings weak	Dummy variable derived from question "In my country, it is very common to hold foreign currency deposits." Respondents could agree on a scale from 1 (strongly agree) to 6 (strongly disagree). Answers "strongly disagree" and "disagree" are defined as one, answers "somewhat disagree" to "strongly agree" are defined as zero. "Don't know" and "no answer" are excluded.
Not laid off from job in past 12 months	Dummy variable based on the question "Over the last 12 months, have you or a member of your household been laid off from a job or lost your job? [multiple answers] a) Yes, I was laid off or lost my job; b) Yes, one other member of my household was laid off or lost his/her job; c) Yes, two or more members of my household were laid off or lost their job; d) No."
Plans to take out a foreign currency loan	Dummy variable derived from the question "Do you plan to take out a loan within the next year and if so in what currency?" Answer "Yes, in local currency" are coded as zero, answers "Yes, in euro," "Yes, in Swiss francs" and "Yes, in other foreign currency" are coded as one. Answers "No," "Don't know" and "No answer" are coded as missing.
Plans to take out a loan	Dummy variable derived from the question "Do you plan to take out a loan within the next year and if so in what currency?" Answer "No" is coded as zero, answers "Yes, in local currency," "Yes, in euro," "Yes, in Swiss francs" and "Yes, in other foreign currency" are coded as one. Answers "Don't know" and "No answer" are coded as missing.

Definition of variables

Variable name	Definition
Risk averse	Dummy variable derived from the question "In managing your financial investments, would you say you have a preference for investments that offer: a) VERY HIGH returns, but with A HIGH risk of losing part of the capital; b) A GOOD return, but also a FAIR degree of protection for the investment capital; c) A FAIR return, with a GOOD degree of protection for the invested capital; d) LOW returns, WITH NO RISK of losing the invested capital." Respondents answering c or d are coded as one, otherwise zero.
Self-control: impulsive	Dummy variable derived from the question "please indicate your level of agreement on a scale from 1 (strongly agree) to 6 (strongly disagree) with the following statement: I am impulsive and tend to buy things even when I cannot really afford them" Respondents answering 1-3 are coded as one, otherwise zero.
Time preference: present	Dummy variable derived from the question "please indicate your level of agreement on a scale from 1 (strongly agree) to 6 (strongly disagree) with the following statement: I tend to live for today and let tomorrow take care of itself." Respondents answering 1-3 are coded as one, otherwise zero.
Trust: trust in government, trust in central bank, trust in domestically owned banks, trust in foreign-owned banks	Based on question "I would like to ask you a question about how much trust you have in certain institutions. For each of the following institutions, please tell me if you tend to trust it or tend not to trust it. 1 means 'I trust completely,' 2 means 'I trust somewhat,' 3 means 'I neither trust nor distrust,' 4 means 'I somewhat distrust' and 5 means 'I do not trust at all.' a) the government; b) the central bank; c) domestically owned banks; d) foreign owned banks." Dummy variable coded as one if respondents somewhat or completely trust, zero otherwise.
Exchange rate literate	Dummy variable derived from the question "Suppose that you have taken a loan in euro. Then the exchange rate of the [local currency] depreciates against the euro. How does this change the amount of local currency you need to make your loan installments? a) increases; b) stays exactly the same; c) decreases." Answer „increases" coded as one, answers „decreases," "stays the same" and "don't know" coded as zero. "No answer" observations are excluded.

Source: Author's compilation based on OeNB Euro Survey.

Descriptive statistics

	Min/Max	BG	HR	HU	PL	RO	AL	BA	MK	RS	All countries
Aware of bailout	0/1	0.07 (0.26)	0.42 (0.49)	0.36 (0.48)	0.19 (0.39)	0.09 (0.29)	0.05 (0.22)	0.04 (0.21)	0.11 (0.31)	0.18 (0.38)	0.17 (0.37)
Current account / savings deposits	0/1	0.52 (0.50)	0.94 (0.23)	0.78 (0.42)	0.79 (0.41)	0.40 (0.49)	0.52 (0.50)	0.65 (0.48)	0.80 (0.40)	0.69 (0.46)	0.67 (0.47)
Expects economic situation to get better	0/1	0.37 (0.48)	0.55 (0.50)	0.48 (0.50)	0.46 (0.50)	0.42 (0.49)	0.44 (0.50)	0.39 (0.49)	0.51 (0.50)	0.57 (0.49)	0.47 (0.50)
Expects local currency depreciation	0/1	0.15 (0.36)	0.33 (0.47)	0.47 (0.50)	0.26 (0.44)	0.50 (0.50)	0.47 (0.50)	0.17 (0.37)	0.24 (0.43)	0.37 (0.48)	0.33 (0.47)
Expects bailout	0/100	8.43 (20.19)	26.81 (29.64)	39.84 (32.54)	23.82 (27.18)	22.25 (27.23)	8.76 (20.87)	7.67 (20.99)	15.38 (26.45)	21.04 (25.83)	19.06 (27.83)
Expects foreign currency and local currnecy bailout	0/1	0.04 (0.20)	0.21 (0.40)	0.25 (0.43)	0.05 (0.21)	0.25 (0.43)	0.11 (0.32)	0.05 (0.21)	0.15 (0.35)	0.14 (0.34)	0.14 (0.35)
Expects foreign currency bailout	0/1	0.02 (0.15)	0.23 (0.42)	0.39 (0.49)	0.29 (0.45)	0.11 (0.31)	0.03 (0.18)	0.06 (0.23)	0.02 (0.15)	0.14 (0.35)	0.14 (0.35)
Expects local currency bailout	0/1	0.09 (0.28)	0.06 (0.24)	0.08 (0.27)	0.10 (0.30)	0.07 (0.26)	0.13 (0.34)	0.05 (0.22)	0.18 (0.38)	0.18 (0.38)	0.10 (0.30)
Expects legal consequences	0/100	84.02 (29.90)	88.25 (21.12)	79.21 (27.13)	78.42 (27.82)	73.45 (28.72)	68.74 (38.28)	79.36 (32.80)	78.53 (34.14)	65.01 (35.51)	77.25 (31.90)
Foreign currency deposit preference	0/1	0.42 (0.49)	0.61 (0.49)	0.47 (0.50)	0.23 (0.42)	0.32 (0.46)	0.33 (0.47)	0.55 (0.50)	0.55 (0.50)	0.75 (0.43)	0.47 (0.50)
Financial management: organized	0/1	0.89 (0.31)	0.78 (0.42)	0.82 (0.39)	0.76 (0.43)	0.82 (0.38)	0.86 (0.35)	0.86 (0.35)	0.89 (0.31)	0.80 (0.40)	0.83 (0.37)
Income in euro	0/1	0.01 (0.12)	0.02 (0.14)	0.02 (0.14)	0.01 (0.10)	0.02 (0.14)	0.03 (0.18)	0.03 (0.17)	0.03 (0.16)	0.04 (0.20)	0.02 (0.15)
Knows beneficiary of bailout or benefitted personally from bailout	0/1	0.02 (0.15)	0.10 (0.29)	0.28 (0.45)	0.05 (0.23)	0.02 (0.13)	0.01 (0.12)	0.00 (0.06)	0.04 (0.21)	0.03 (0.16)	0.06 (0.24)
Network savings weak	0/1	0.20 (0.40)	0.08 (0.27)	0.40 (0.49)	0.35 (0.48)	0.27 (0.45)	0.14 (0.35)	0.20 (0.40)	0.12 (0.32)	0.17 (0.38)	0.21 (0.41)
Not laid off from job in past 12 months	0/1	0.87 (0.34)	0.90 (0.30)	0.93 (0.25)	0.89 (0.31)	0.96 (0.20)	0.80 (0.40)	0.94 (0.24)	0.90 (0.30)	0.84 (0.37)	0.89 (0.31)
Plans to take out a loan	0/1	0.06 (0.24)	0.05 (0.21)	0.06 (0.23)	0.12 (0.32)	0.09 (0.28)	0.05 (0.21)	0.06 (0.24)	0.10 (0.30)	0.08 (0.27)	0.07 (0.26)
Plans to take out a foreign currency loan	0/1	0.13 (0.34)	0.49 (0.51)	0.11 (0.31)	0.11 (0.32)	0.15 (0.36)	0.29 (0.46)	0.07 (0.26)	0.27 (0.45)	0.42 (0.50)	0.21 (0.41)
Risk averse	0/1	0.98 (0.15)	0.97 (0.17)	0.99 (0.09)	0.98 (0.13)	0.97 (0.17)	0.96 (0.20)	0.98 (0.15)	0.96 (0.20)	0.93 (0.26)	0.97 (0.17)
Self-control: impulsive	0/1	0.16 (0.37)	0.19 (0.39)	0.14 (0.35)	0.32 (0.47)	0.25 (0.44)	0.25 (0.43)	0.21 (0.41)	0.27 (0.45)	0.30 (0.46)	0.23 (0.42)
Student	0/1	0.04 (0.20)	0.06 (0.24)	0.02 (0.13)	0.03 (0.17)	0.02 (0.14)	0.08 (0.28)	0.05 (0.22)	0.05 (0.22)	0.07 (0.26)	0.05 (0.21)
Time preference: present	0/1	0.20 (0.40)	0.27 (0.45)	0.23 (0.42)	0.40 (0.49)	0.28 (0.45)	0.26 (0.44)	0.44 (0.50)	0.23 (0.42)	0.44 (0.50)	0.30 (0.46)
Unemployed	0/1	0.09 (0.29)	0.21 (0.40)	0.05 (0.22)	0.10 (0.30)	0.12 (0.32)	0.22 (0.42)	0.42 (0.49)	0.33 (0.47)	0.25 (0.43)	0.20 (0.40)
Exchange rate literate	0/1	0.57 (0.50)	0.70 (0.46)	0.67 (0.47)	0.64 (0.48)	0.58 (0.49)	0.52 (0.50)	0.44 (0.50)	0.57 (0.50)	0.60 (0.49)	0.59 (0.49)

Source: OeNB Euro Survey.

Note: Entries refer to sample means. Entries in parentheses refer to standard deviations. Abbreviations represent the two-digit ISO country code.

How do resource-driven economies cope with the oil price slump? A comparative survey of ten major oil-exporting countries

The oil price slump of about 50% since 2014 has had a detrimental effect on oil-exporting emerging market economies (EMEs), potentially threatening to trigger social unrest in countries that had benefited from the oil price boom for more than a decade. We provide a first descriptive account of the policy reactions of central banks and governments of eight important oil-exporting EMEs and compare them with those of two oil-exporting advanced economies, allowing us to distinguish three patterns: One group of countries has so far successfully defended its exchange rate peg to the U.S. dollar, the reference invoicing currency (Saudi Arabia and the United Arab Emirates). A second group gave up resistance to mounting market pressures and carried out step devaluations or switched to a floating exchange rate (Russia, Kazakhstan, Azerbaijan, Nigeria and Angola). A third group of countries continued to let their currencies float (Mexico, Canada and Norway), with the stable long-term relationship between the exchange rate and commodity export prices qualifying these currencies as "commodity currencies." We conclude that EMEs featuring peg-like regimes and saddled with limited structural diversification, modest fiscal and external buffers as well as weak institutional conditions for capital controls are unlikely to be able to uphold their exchange rate choices if they suffer a major and sustained adverse terms-of-trade shock, and should opt for flexibility sooner rather than later. While declining oil prices may imply a degree of passive diversification, a proactive long-term strategy to develop a more diversified economic structure in good times could at least partly reduce the need for buffers.

Stephan Barisitz,
Andreas
Breitenfellner[1]

Notwithstanding their importance in the global economy, oil prices are fairly volatile. The oil price slump of 2014–16 was very strong and has persisted so far.[2] Without looking at spikes, the average Brent oil price (in U.S. dollars) almost halved in the first half of 2015 compared to the same period of 2014 and then shrank again by about one-quarter in the first nine months of 2016 against the respective period of 2015. This article takes stock of the impact of the oil price shock about two years into the weak oil price environment and assesses how resource-rich economies have reacted to this unexpected and sustained deterioration of their terms of trade. Particularly, we want to know whether these reactions follow distinct patterns dependent on structural features of the respective economies.

The powerful oil price slump sharply reduced oil exporters' revenues (in U.S. dollars), given low elasticity of demand for oil, and thus negatively affected a typical oil-exporting country's trade, current and capital account balances; it also caused a large terms-of-trade shock. Oil-related fiscal revenues, which usually constitute an important part of such a nation's budget, plummeted. Exporting companies' and state revenue losses and their negative knock-on effects on domestic demand

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Chart 1

Crude oil price and exchange rate movements

Crude oil prices

USD per barrel

Legend: Brent, WTI, Dubai, Urals
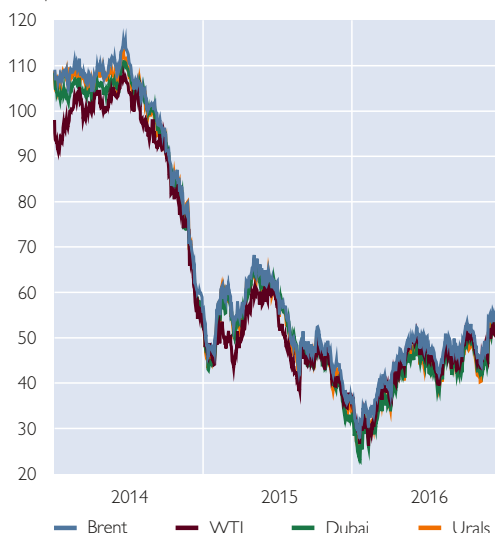
Exchange rates against the U.S. dollar

Index: June 30, 2014=100

Legend: UAE dirham, Canadian dollar, Mexican peso, Kazakhstan tenge, Azerbaijan new manat, Saudi riyal, Norwegian krone, Angolan kwanza, Nigerian naira, Russian ruble
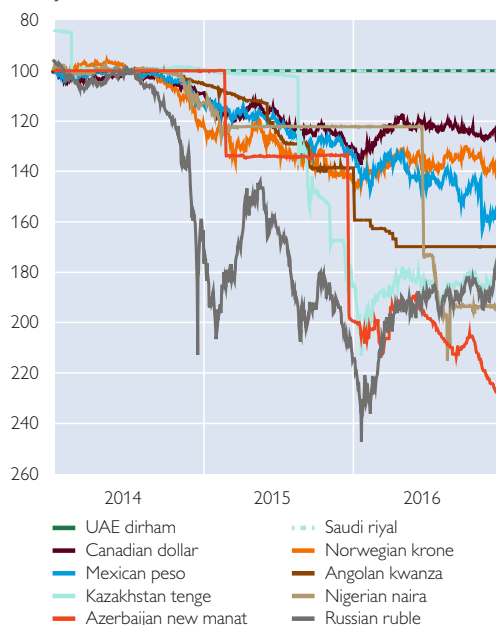
Source: Thomson Reuters.

may well weaken overall economic growth, which may in turn impinge on the quality of bank loans and on banks' profitability.

An oil-exporting country's weakening external and fiscal positions could possibly lead to twin (current account and budget) deficits, which is very likely to put pressure on the country's currency. The extent of this pressure depends on a variety of factors: whether current account and budget balances are already in deficit before the oil price plunge, how large the country's external debt is, how high its international reserves are, whether the country possesses oil stabilization funds (OSFs) or sovereign wealth funds (SWFs), how large these OSFs or SWFs are, to what degree the country's financial system is dollarized, and whether the authorities can, or actually do, apply or tighten exchange controls effectively, at least for a certain time. Finally, the elasticity of the oil supply-side reaction of the relevant economy also weighs in: While low oil prices decrease incentives to extract resources, countries that depend heavily on oil revenues or that pursue strategies to gain market shares may even feel compelled to raise output despite falling oil prices. This supply-side reaction may of course be influenced by the prospect of re-establishing an effective international oil supply cartel.

The value added of this study lies in the systematic and detailed comparison of experiences of ten important but diverse resource-driven economies. To our knowledge, such an examination is unprecedented because it is based on updated information and analytical reflection. Accordingly, we look at how these economies use external, monetary, fiscal, financial, and structural policies to adjust to the oil price slump.

The article is structured as follows: In section 1, we provide an overview of the principal dimensions and considerations of the adjustment process. Section 2 provides

the rationale for our choice of examined countries. Section 3 empirically describes and compares the impact of the oil price slump and the crisis-response policy reactions of the examined countries.[3] We summarize our findings and draw some preliminary analytical conclusions in section 3.

1 General considerations and key dimensions of the adjustment process

Faced with deteriorating terms of trade, oil-exporting countries have three sets of options for an exchange rate regime response:

If the oil-exporting country decides to *uphold a fixed or stable exchange rate*, typically pegged to the U.S. dollar (given that oil and other raw materials are mostly invoiced in this currency), plummeting oil revenues will likely cause a strong deterioration of the current account[4] and may also lead to capital outflows (triggered by weaker economic prospects for the country and scaled-down oil industry investment plans).[5] Loan portfolios of the oil sector obviously become vulnerable to an oil price decline. Leaving aside capital controls, if current and financial accounts deteriorate substantially, possibly alongside eroding confidence, the central bank will need to intervene in the foreign exchange market and thus draw down international reserves, which will shrink in nominal terms and as a ratio to GDP. An increase of the key interest rate, while procyclical, could also help stem outflows.

The longer the oil price remains at a relatively low level, the more international reserves and OSFs may erode.[6] This erosion may contribute to intermittent market instability and a loss of confidence, with some market players possibly tempted to test the peg arrangement. Exchange rate pegs may not be suitable if the reserve buffer is not sufficiently large. In a situation of medium or longer-term loss of oil-related budget proceeds, procyclical fiscal consolidation appears all but unavoidable to preserve budgetary sustainability, rein in current account shortfalls, avoid an undue expansion of external debt, and support exchange rate pegs (Sommer et al., 2016, p. 29). This consolidation would arguably be best achieved through spending cuts because oil-exporting countries' budgetary expenditures had in many cases increased significantly during the period of high oil prices; if necessary, an effort could also be made to increase non-oil revenues. By reining in domestic demand, fiscal consolidation could cushion the loss of international reserves. The oil price shock, combined with budget austerity (fiscal drag), will probably slow down growth, which can have a negative impact on banking activity. Banks' balance sheets may also suffer to the extent that the quality of oil sector

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[3] *For a comparative analysis of the crisis-response policies of Russia, Ukraine, Kazakhstan and Belarus during the previous oil price shock (2008/09), see Barisitz et al. (2010).*

[4] *The current account will deteriorate because oil-related revenues decline while the price of imports expressed in local currency remains unchanged (given the fixed exchange rate). Thus, the fixed exchange rate prevents any price-related contractionary effects on imports.*

[5] *Of course, the government can react to the balance of payment problems and take up debt abroad to smooth the impact of the oil price shock, which would correspond to policy-induced capital inflows in reaction to the crisis-triggered external deterioration and likely private capital outflows.*

[6] *The amount of erosion also depends on the nominal flexibility of wages and prices over time and thus on the extent to which downward rigidities are effective in an economy, which, in turn, typically depends on structural and institutional characteristics. The majority of economies, whether oil exporting or not, feature relatively high downward rigidities and a slow pass-through, which suggests that in most cases, a strategy of internal devaluation (based on the above-mentioned nominal flexibility) is unlikely to promise rapid adaptation.*

loans deteriorates. Where applicable, austerity could be avoided or postponed by divesting (some) government holdings of corporate assets, which suggests that privatization receipts could serve as a temporary source for financing increased fiscal shortfalls.

A totally different response would be to opt for fiscal stimulus to counteract the negative impact of the oil price slump on the business cycle. Such a stimulus could be financed by drawing on SWF assets. However, assuming an extended oil price slump, this strategy would appear risky and feasible at best in the short term, unless the country in question possessed very large buffers. In any case, a fiscal stimulus would likely imply the deterioration of external and fiscal positions and accelerated drawdowns of public assets and reserves. Ultimately, asset depletion would force the fiscal authorities either to take recourse to (further) accumulation of debt or, if fiscal space is lacking, to change course and pursue procyclical (unpopular) policies.

Over the longer term, the buildup of other export-oriented branches (apart from the oil sector) would appear key to reducing the economy's vulnerability to oil price changes and would help diversify the economy. Substantial investments in other branches (e.g. agriculture, manufacturing, tourism) of course take time and would need to be financed, e.g. by the country's SWF, if one is available. Luckily, the cost competitiveness of such export-oriented branches improves as real depreciation triggered by lower crude oil prices causes Dutch disease phenomena to evaporate. To support new export-oriented branches, business conditions would need to be rendered as favorable as possible to attract strategic investors. Improving the quality of institutions and of governance can go quite a way to help diversify the economy.

In contrast, opting for a *flexibilization of the exchange* rate and allowing the currency to slide may have some advantages for oil-exporting countries, but it is also risky and has side effects. It would be important or at least very helpful for robust monetary policy frameworks and sufficiently developed foreign exchange markets to be in place to mitigate potential risks (Danforth et al., 2016, p. 4). A solid framework would facilitate a sound move to inflation targeting or targeting of monetary aggregates. While an inadequately managed liberalization of the exchange rate could destabilize markets and in the worst case set in motion an inflation-depreciation spiral, a step devaluation (or pegging to a new stable rate) could generate expectations and market pressures in favor of further devaluations (Horton et al., 2016, p. 14). In both cases capital flight may ensue. In this transitional situation, boosting interest rates may be (temporarily) helpful to stabilize expectations. In any case, the pass-through from devaluation-triggered rising import prices (see below) produces an inflationary spurt that requires the monetary authority's particular attention to forestall second-round inflationary effects.

Disregarding short-term stability issues, the result of a devaluation or depreciation is that the value of oil exports (mostly invoiced in U.S. dollars) increases if measured in domestic currency.[7] The value of non-oil exports (e.g. manufactured goods)

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[7] *The result of the combined effect of the oil price drop and the exchange rate slide on the domestic currency value of oil exports can, of course, cause the domestic price of oil to stay unchanged or go either up or down. Therefore, depending on the amount of depreciation or devaluation and on the size of the oil price reduction, the profitability of oil producers and exporters may even rise.*

may remain unchanged in the devalued domestic currency, but will fall if expressed in foreign currency, which boosts these goods' competitiveness. While the U.S. dollar value of imports is not affected, their domestic currency price increases, which makes them less affordable in the oil-exporting country and reduces demand for imports there. The value of remittances transferred by guest workers in the oil-exporting country to their home countries shrinks unless these home countries also devalue against the U.S. dollar.

Thus, the impact of the oil price decline on the current account is cushioned by the decline of the domestic currency's external value. While over time, the depreciation preserves or enhances competitiveness, this is not typically a smooth process.[8] A successful devaluation may be conducive to export diversification or import substitution strategies, although the improvement of price competitiveness as such is not sufficient to bring about aimed-for structural adjustment. Also, even a large depreciation is likely to exert only a limited effect on the competitiveness of an oil-exporting country and its capacity to balance its external accounts if the share of its non-oil and non-resource sectors (whose competitiveness would benefit from the depreciation) in GDP is very low. Moreover, such exporting or import-competing industries may be reliant on imported inputs.

Monetary authorities that opt for a flexible exchange rate do not (systematically) support the domestic currency by intervening in the foreign exchange markets, thus providing much-needed protection for the country's international reserves (Sommer et al., 2016, p. 13). International reserves, expressed as a ratio to GDP, may even increase in the event of a devaluation, but this also goes for external debt.

Moreover, a devaluation can cushion the fiscal impact of an oil price decline: While oil-related budget revenues, if expressed in U.S. dollars, decrease, this decrease is (partly) offset by the exchange rate adjustment (Esters et al., p. 6). OSFs (largely consisting of foreign exchange-denominated assets) suffer from dwindling or drying-up transfers, but, if measured in domestic currency, receive a devaluation-triggered boost. To judge the entire budgetary impact, one also needs to look at how expenditure dynamics react to the devaluation: The fiscal impact of the oil price decline can be more easily absorbed if expenditures are not, or barely, raised in the face of the depreciation-triggered higher inflation. Ultimately, devaluation may not suffice to rectify the fiscal position: Additional consolidation measures will probably be necessary, which may also help rein in inflation.

Not only weaker economic conditions, but also devaluation may have a negative impact on bank balance sheets and lending in economies that are strongly dollarized (i.e. that have high shares of foreign exchange-denominated deposits and loans in total deposits and loans). Apart from entailing possible currency mismatches, the domestic currency's loss of value automatically increases the share of foreign exchange-denominated credits in the total credit volume. An increased debt burden (expressed in domestic currency) renders debt service more difficult for unhedged foreign currency borrowers. This, in turn, may raise the nonperforming loan (NPL) ratio, which increases financial risks, reduces incentives for credit

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[8] *Initially, the J-curve effect slightly increases the external disequilibrium further before it contracts. The exchange rate pass-through to inflation may be small or large, and it also needs to work its way through the price system. Finally, monetary policy needs to prevent second-round effects.*

institutions to expand lending, and negatively impacts on banks' profitability. In some cases, high dollarization can be an important argument in favor of stabilizing the exchange rate (Horton et al., 2016, p. 2).

Finally, if the oil-exporting country already manages a *flexible exchange rate regime,* it faces less pressing adjustment needs, at least in the short run, because its currency would tend to fluctuate in line with the dollar price of oil, classifying such a country's currency as a commodity currency. Thus, in domestic currency terms, the reduction of oil revenues would be mitigated. Similarly, the economy as a whole should become more competitive, which would principally allow other sectors' export gains to compensate for the losses in oil revenue. Still, given the imperfection of the pass-through from oil prices to the exchange rate (and limited amounts of reserves or funds), some fiscal adjustment may be needed to avoid external and internal imbalances from arising in the form of twin deficits (current account and public households). And, as is the case with exchange rate peggers – albeit to a lesser extent – these fiscal policies would have to be procyclical, resulting in sluggish growth. However, the improved competiveness of other exporting and import-competing industries through the improved nominal and real effective exchange rate will finally help revive economic activity gradually. Over time, the economy will become more diversified and thus more resilient.

2 Countries under examination

Workman (2016) provides a list of the countries that exported the highest U.S. dollar value of crude oil in 2015:

	Country	USD billion	% of global crude oil exports
1.	Saudi Arabia	133.3	17.0
2.	Russia	86.2	11.0
3.	Iraq	52.2	6.6
4.	United Arab Emirates	51.2	6.5
5.	Canada	50.2	6.4
6.	Nigeria	38.0	4.8
7.	Kuwait	34.1	4.3
8.	Angola	32.6	4.1
9.	Venezuela	27.8	3.5
10.	Kazakhstan	26.2	3.3
11.	Norway	25.7	3.3
12.	Iran	20.5	2.6
13.	Mexico	18.8	2.4
14.	Oman	17.4	2.2
15.	United Kingdom	16.0	2.0
16.	Azerbaijan	13.0	1.7

From the above list, we excluded countries that are net oil importers (U.K.), countries with fewer than 5 million inhabitants (Kuwait: 4.2 million, Oman: 4.5 million), civil war countries (Iraq), countries that have been the subject of extensive oil investment-related and oil export-related sanctions (Iran), and countries with excessive delays in the completion of IMF Article IV consultations and whose data may therefore be insufficient or difficult to compare (Venezuela: no Article IV consultation since 2004).

We thus examine and compare crisis-response policies in the following ten countries:[9]

Middle East:	Saudi Arabia, United Arab Emirates (U.A.E.)
CIS:	Russia, Kazakhstan, Azerbaijan
Africa:	Nigeria, Angola
Latin America:	Mexico
Advanced economies:	Canada, Norway

3 Crisis-response policies: a comparative survey

In this section, we will briefly describe and compare the ten selected countries' actual policy reactions to the oil price slump. Here we distinguish five fields: exchange rate and monetary policy (which is our principal focus), financial and banking policy, fiscal policy, structural and institutional policies, and (if applicable) recourse to external finance/assistance.[10] IMF staff reports for Article IV consultations (or comparable surveillance exercises) served as a general source of information on these policy reactions and measures. As outlined above, exchange rate strategies can be principally divided into three types: first, retaining an existing exchange rate peg; second, repegging or performing step devaluations and/or making the exchange rate regime more flexible; third, keeping an existing exchange rate float. Step devaluations and movements toward floating exchange rates are considered together because in most cases, repegging does not lead to a new stable state: Typically, it invites new (downward) market pressure on the exchange rate. To defend a repegged exchange rate and limit the erosion of foreign currency reserves, countries might opt to introduce capital controls. Yet, pressures can become so strong that the repegged rate is abandoned and the currency is floated.

3.1 Retaining a peg

Among our observed countries, Saudi Arabia and the United Arab Emirates (U.A.E.) have chosen to stick to their fixed exchange rates. Both have managed conventional pegs to the U.S. dollar for decades (Saudi Arabia since 1986, the U.A.E. since 1997). While both countries featured average annual economic growth rates of 4% to 5% in the years before the oil price started to slide in the second half of 2014, in 2015 and 2016 respective rates declined to 2% to 3% (table 1). Both countries also enjoyed very high twin (current account and budget) surpluses in the years prior to the crisis, but then Saudi Arabia became saddled with high twin deficits and the U.A.E. recorded budget shortfalls while maintaining low current account surpluses (for the time being). Even if financing burgeoning deficits and defending exchange rate pegs has reduced the two players' international reserves and oil stabilization or similar funds substantially (in the U.A.E. only from 2015), these resources remain generous.[11] Shortfalls have partly been financed by boosting external debt.

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[9] *Detailed tables with key economic data on the examined countries can be made available by the authors upon request.*

[10] *A detailed outline (in the form of a comparative table) of the examined countries' policy reactions to the oil price plunge can be made available by the authors upon request.*

[11] *As a case in point, the combined net foreign assets and government deposits with the Saudi Arabian central bank declined from USD 1,119 billion (150% of Saudi Arabian GDP) in 2013 to an (estimated) USD 797 billion (123% of GDP) in 2016.*

Both countries initially countered the oil price plunge-triggered economic weakening by implementing fiscal stimuli (in 2014 and early 2015), but soon spending was reined in again and fiscal consolidation policies gained the upper hand. For instance, capital expenditures were sharply curtailed. Notwithstanding this policy reversal, budget balances turned red, as mentioned above, and wage arrears ballooned (Schmid, 2016). The countries therefore took further austerity measures, e.g. introducing a 5% value added tax, cutting benefits for state employees, and trimming salaries of cabinet ministers and members of parliament by 15% to 20%. In an attempt to reduce market pressure on the Saudi Arabian riyal, in the first half of 2016 the Saudi Arabian Monetary Authority (SAMA), the country's central bank, banned credit institutions from selling options on riyal forwards and outlawed the use of derivatives to speculate against the riyal. To support banks, the Saudi Arabian authorities in January 2016 established a deposit insurance fund, and in September announced the injection of 20 billion riyals (USD 5.3 billion) into credit institutions in the form of time deposits. In a further attempt to boost liquidity, SAMA introduced various repo agreements.

To diversify growth away from overdependence on oil, both countries have set out broad structural reform initiatives, called "Vision 2030" (Saudi Arabia), and "Vision 2021" (U.A.E.). The Saudi Arabian authorities are also moving ahead with privatization plans, which even include the proposed sale of a stake in Saudi Aramco, the largest oil-producing company in the world (Gehlen, 2016). Moreover, both countries have taken recourse to external borrowing: In the first international debt issuance since 1991, Saudi Arabia in April 2016 agreed to a USD 10 billion five-year loan from a group of U.S., European and Asian banks. In the same month, the U.A.E. issued a USD 5 billion Eurobond.

3.2 Performing step devaluations or making exchange rate regimes more flexible

In reaction to the oil price slide as from 2014, five of the countries studied here – Russia, Kazakhstan, Azerbaijan, Nigeria and Angola – initially repegged their currencies or widened existing exchange rate corridors around central parities within the framework of managed exchange rate regimes. Four of these countries eventually opted to float their currencies, with Azerbaijan opting for a managed float. The fifth country, Angola, still tightly manages the kwanza, its legal tender. While Russia witnessed average pre-crisis (2012 to 2014) economic growth of 2% a year, Kazakhstan and Azerbaijan featured rates of around 4%, and Nigeria and Angola boasted even higher rates of (officially recorded) growth of 5% to 6% a year, as table 1 shows. All five countries fell into recession or economic stagnation in 2015/16. Russia's GDP fell most strongly (2015: –3.7%), but Russia's recession may have bottomed out in late 2016. The remaining countries saw their growth rates decline but remain positive in 2015 and then dip into negative territory (Kazakhstan, Azerbaijan, Nigeria) or stagnate (Angola) in 2016 (The Economist, 2016).

Unlike the two Arab countries that have maintained their pegs, the countries that devalued their currency or made their exchange rates more flexible have experienced higher inflation, at least temporarily. The devaluations had an imme-diate balance sheet impact on external debt, which in most cases rose by about 10 percentage points of GDP (table 1). The dollarization ratio of banks' deposits and

loans also grew automatically. Coupled with the economic slowdown or recession, the higher dollarization ratio contributed to driving up NPL ratios in most of the countries. On the other hand, the CIS countries Russia and Azerbaijan and the two African countries have not seen their current accounts worsen. Fiscal balances have been more difficult to get under control, even if budgets have by no means suffered from devaluations. Increased competitiveness or other benefits of repeggings or adjustments of exchange rate regimes have allowed international reserves to recover or at least not erode further. In Russia and Kazakhstan, international reserves have even attained pre-crisis levels. OSFs and SWFs have reacted in a largely similar manner, with the exception of Russia's budgetary Reserve Fund, which is expected to become exhausted at end-2017 (based on an oil price of USD 40 per barrel). The country's National Wealth Fund still has assets of about 6% of annual GDP.

3.2.1 The CIS 3 (Russia, Kazakhstan, Azerbaijan)

Russia was the first of the five repegging or exchange rate corridor-widening countries to move to a more flexible exchange rate regime, and it did so swiftly.[12] Following a few steps of further widening the ruble's exchange rate corridor, the Central Bank of Russia (CBR) floated the Russian currency on November 10, 2014, and introduced an inflation targeting regime, adopting the overnight repo rate as key interest rate.[13] In mid-December 2014, the CBR raised its key rate by 6.5 percentage points to 17% to stave off financial stability risks and to respond to the worsening inflation outlook. The CBR also expanded its liquidity facilities for commercial banks. At the turn of 2014 to 2015, the government adopted an anti-crisis plan, introducing a Capital Support Program for banks (about 2% of GDP) financed by the federal budget through the sale of bonds (Obligatsii federalnogo zaima – OFZs) (Barisitz, 2015, p. 77). From end-January 2015, the monetary authority unwound the December 2014 emergency key rate hike, reducing this rate step by step to 10% in September 2016. From the floating of the ruble to end-September 2016, the Russian currency depreciated by about 40% against the U.S. dollar. CPI inflation, after swelling to 15.3% at end-June 2015, receded to 5.8% at end-November 2016.

After carrying out a step devaluation of 18% in 2014, the National Bank of Kazakhstan (NBK, the Kazakh central bank) in July 2015 widened the trading band for its currency, the tenge, and on August 20 of that year introduced a floating exchange rate regime (see table 2), which initially triggered a plunge of the tenge. Subsequently, the overnight repo rate was introduced as the key interest rate, and

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[12] *Nevertheless, the exchange rate decision could have been taken earlier, given that the Russian debate on moving to a flexible exchange rate and inflation target had already started years before (on the initiative of the IMF). The final decision occurred on top of already mounting market pressures and proved more costly than if it had been taken a few months before*

[13] *From September 2014, Western sanctions linked to the Ukrainian crisis have restricted Russian firms' and banks' access to Western capital markets. Russia's countersanctions – an agricultural embargo imposed on sanctioning countries – have contributed to fueling Russian inflation in the short term and to stimulating domestic farming production in the medium term. According to expert assessments, the impact of the sanctions and countersanctions on the Russian economy has been minor, compared to that of the oil price collapse (Gurvich and Prilepskiy, 2015, p. 384; see also IMF, 2016, p. 4–5).*

an inflation targeting regime was announced (similar to the setup in Russia).[14] Overall, from mid-2014 to end-August 2016, the Kazakh currency lost about half of its external value against the U.S. dollar. To stem rising inflation (January 2016: 14.4% year on year) and financial sector instability, the NBK raised the key rate to 17% in early February 2016; moreover, administrative controls were imposed on food prices. Rate cuts from May to November 2016 (to 12.0%) followed to support the ailing economy, and inflation has been receding to stand at 8.7% year on year at end-November.

After repegging the Azerbaijani currency's exchange rate in February 2015, the Central Bank of Azerbaijan (CBA) carried out another step devaluation of the manat in December 2015 (both devaluations totaled 58% against the U.S. dollar) and adopted a managed floating exchange rate regime.[15] Thus, although the manat's exchange rate has become more flexible, foreign currency market interventions have continued to be frequent. The inflation rate rose from a very low level to 7.7% at end-2015. In the second half of 2015, the government established a bad bank, a special-purpose vehicle to collect and manage the NPLs of the largest state-owned banks. In an effort to avert a currency and banking crisis (given rising deposit outflows and swelling bad loans),[16] the CBA raised the key rate to 5% in early 2016 and imposed capital controls, including a surcharge of 20% on specific foreign exchange purchases. Although the monetary authority granted credit institutions regulatory forbearance (e.g. with respect to restructuring loans), the licenses of eight undercapitalized banks were revoked in February 2016. An action plan was drafted to restructure the remaining ailing banks. The legislature also approved a law to fully insure household bank deposits. Meanwhile, to stem continuing depreciation cum inflation pressures, the CBA's policy rate was hiked step by step to 15% in September 2016.

In the fiscal sphere, the Russian government has not delivered a stimulus, but carried out budgetary consolidation measures; still, deficits expanded and were largely covered by the Reserve Fund, which added to liquidity provision for the economy. The Kazakh authorities opted for a three-to-five-year economic support package in 2014 ("Nurly Zhol," Bright Path), involving public investment programs (envisaging total spending of USD 19 billion) supported by multilateral development banks. In 2015, this substantial effort was, however, cut back and partly replaced by fiscal consolidation measures (Madani and Sarsenov, 2016, p. 9). In the turbulent year of 2016, the Azerbaijani government made an effort to provide a small fiscal stimulus focusing on wage and pension increases and raising targeted social assistance.

The Russian authorities plan to privatize stakes in some important raw material-extracting enterprises and banks (including the country's biggest oil

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[14] See also Dąbrowski (2015, p. 10). The decline of the tenge was also influenced by China's economic slowdown and by Russia's recession, which weakened external demand. Furthermore, the preceding float and sharp depreciation of the ruble increased the competitiveness of Russian consumer goods in Kazakh markets in the framework of the Eurasian Economic Union (both Russia and Kazakhstan are members).

[15] Apart from plummeting oil prices, the growth slowdown in Russia and other neighboring countries as well as currency movements had contributed to heightened pressure on the manat.

[16] The deposit outflows were due to weak confidence in the (depreciating) domestic currency, and the bad loans stemmed from some high concentrations of lending to the embattled oil sector and to unhedged foreign currency borrowers.

company, Rosneft, and its second-biggest bank, Vneshtorgbank), largely to support budget finance. As of December 2016, 11% of the diamond extractor Alrosa had been privatized for USD 815 million, and a 19.5% stake of the oil producer Rosneft had been sold to a consortium of Glencore and the Qatar Oil Fund for USD 11.0 billion. On two occasions, in May and September 2016, Russia also tapped the Eurobond market, borrowing a total of USD 3 billion. The Kazakh authorities announced in November 2015 that they planned to partially privatize up to 70 Kazakh companies (including the big oil and gas extractor KazMunayGas) in the 2016 to 2020 period. The government of Azerbaijan has launched the "2020 Development Strategy" with the goal of re-establishing sustainable growth, diversifying the economy toward agriculture and tourism, and improving the business climate. The Transcaucasian country has also made a request for financial assistance to the IMF (Häring et al., 2016, p. 1).

3.2.2 The African two (Nigeria, Angola)

Both Nigeria and Angola manage multiple exchange rate systems and dispose of various other administrative constraints on access to foreign exchange. With the oil price plunge, both countries experienced a dramatic decline in economic growth. Despite two step devaluations (in November 2014 and in February 2015 by a total of 30% against the U.S. dollar) and the above-mentioned exchange controls, the Nigerian authorities were not successful in stemming the decline in foreign exchange reserves, prompting them to impose additional restrictions (on commercial banks' currency trading) in early 2016.[17] Meanwhile, banks' loan portfolios suffered among other things from the oil price decline, as they are concentrated in the hydrocarbon sector. With pressure on the naira, the national currency, continuing, the authorities finally decided to float the naira (table 2) on June 20, 2016, while maintaining capital controls. Subsequently, the currency plummeted. To support the currency and to combat quickly rising inflation, the Central Bank of Nigeria (CBN) raised its policy rate from 12% to 14% one month after floating the currency. In August 2016, the CBN moved to suspend the activities of nine banks that did not meet their prudential ratios in terms of liquidity, bad loans or capital. As of November 2016, despite a 50% slide of the naira since its float in June, extensive foreign currency shortages continued to keep the gap between official and unofficial exchange rates wide. CPI inflation (year on year) reached 18.3% in October 2016.

Angola devalued the kwanza twice in 2015 (in June and September, by a total of 31% against the U.S. dollar), supported the currency with its international reserves, and added an additional exchange restriction (a priority list for certain economic sectors for access to foreign exchange). However, the Angolan foreign exchange market remained in disequilibrium, with spreads between official and parallel rates widening substantially, prompting the Banco Nacional de Angola (BNA) to resort to another step devaluation (of 15%) in January 2016. Despite restrictions, inflation doubled to 14% at end-2015 and then almost tripled to 40% in October 2016 (year on year). With the economic slowdown and the weakening

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[17] *In recent years, Nigeria's oil industry has suffered not only from the oil price decline, but also from continued militant and terrorist attacks on infrastructure, particularly pipelines. These attacks have added to economic stress and have contributed to depressing the country's crude oil production (Klare, 2016, p. 12; Tétart, 2016, p. 17).*

Table 1

Key macroeconomic and financial data: pre-crisis (2012–14) v. crisis period (2015–16)[1]

	GDP growth		CPI inflation		Gross international reserves		Budget balance	
	%		Year-end, %		Year-end, % of GDP		% of GDP	
	Pre-crisis	Crisis	Pre-crisis	Crisis	Pre-crisis	Crisis	Pre-crisis	Crisis
Angola	5.6	1.5	8.1	31.2	25.1	23.0	−0.8	−5.2
Azerbaijan	3.6	−0.7	1.6	10.3	18.3	4.7	1.8	−8.4
Canada	2.1	1.5	1.4	1.3	4.0	5.1[5]	−2.1	−2.3
Kazakhstan	4.8	0.2	6.1	11.2	13.0	15.3[5]	−2.5	−2.1
Mexico	2.5	2.3	4.0	2.8	14.5	15.4[5]	−4.0	−3.6
Nigeria	5.3	0.5	9.3	14.1	7.9	4.9	−1.1	−4.0
Norway	2.0	1.3	1.6	2.5	11.5	15.1[5]	10.8	4.3
Russia	1.8	−2.2	8.2	9.2	22.3	28.6	−0.6	−3.7
Saudi Arabia	3.9	2.4	3.0	3.1	93.5	89.2	4.8	−14.5
United Arab Emirates	5.0	3.2	1.4	3.9	16.5	25.4[5]	8.8	−3.0

	Current account balance		External debt		Dollarization		NPL ratio	
	% of GDP		Year-end, % of GDP		FX share in total loans, %		%	
	Pre-crisis	Crisis	Pre-crisis	Crisis	Pre-crisis	Crisis	Pre-crisis	Crisis
Angola[2]	5.3	−7.0	22.7	38.3[5]	42.6	35.4[5]	9.4	18.2[6]
Azerbaijan[3]	17.4	0.2	14.6	29.4	17.3	59.3	4.9	17.3[5]
Canada	−3.0	−3.5	85.5	111.4	28.2	33.4[5]	0.6	0.5[5]
Kazakhstan	1.2	−3.0	70.2	94.7	27.7	..	28.3	..
Mexico	−2.0	−2.8	30.9	34.3[6]	11.4	13.3[5]	2.9	2.9[6]
Nigeria	2.8	−2.0	1.6	2.6	22.8[7]	..	3.1	2.5[6]
Norway	11.5	7.3	..	155.5[5]	..	..	1.6	1.1[5]
Russia	2.6	3.3	31.2	38.6	14.5	23.6[5]	6.2	9.0
Saudi Arabia	16.8	−7.4	0.0	1.6	10.7	8.9[5]	1.4	1.2[5]
United Arab Emirates[4]	16.6	2.2	43.9	60.2	18.9	21.4	6.2[7]	5.3

Source: IMF and authors' calculations.

[1] While regarding 2014 (as a whole) as a pre-crisis year and 2015 as a crisis year is certainly imprecise because the oil price slump already started in the fall of 2014 and accelerated in December 2014, this simplified distinction between pre-crisis and crisis periods is applied for statistical reasons. The 2016 data that were used to calculate the average values for the 2015–16 crisis period either reflect the latest available figures or the latest IMF forecasts for 2016. All other figures are based on annual averages.
[2] External debt: external public debt; dollarization: share of FX deposits in total deposits, %.
[3] Dollarization: share of FX deposits in broad money, %.
[4] Dollarization: share of FX deposits in total deposits, %.
[5] 2015.
[6] Mid-2015.
[7] 2013–14.

of the kwanza, financial soundness indicators have deteriorated and the BNA has requested undercapitalized banks to submit recapitalization plans.

In the fiscal sphere, Nigeria first tightened the budgetary stance in 2015 in reaction to the oil price shock, then made an effort to provide a small fiscal stimulus in 2016. Angola appears to have followed a consolidation strategy. As to structural policy, the Angolan government approved a new Private Investment Law, which aims at trimming bureaucracy and making fiscal incentives more easily accessible to investors. Both Nigeria and Angola have lodged requests with international financial institutions for financial support.

3.3 Sustaining a float

Three of the observed countries – one middle-income country (Mexico) and two high-income countries (Canada and Norway) – kept the exchange rate of their currencies freely floating while targeting inflation. This regime preservation, however, implied a significant depreciation of their currencies vis-à-vis the U.S. dollar (between roughly one-fifth and two-fifths) prompted inter alia by the fall in oil prices.[18] Yet unlike the group of CIS and African countries, they experienced a more gradual depreciation.

Mexico's domestic economy was relatively well protected from the oil price shock, with GDP growth even increasing slightly to 2.5% in 2015. Private consumption drove the economic expansion. External imbalances rose, however, with the current account deficit coming to just below 3.0% of GDP, while FDI was solid but portfolio inflows were weak. In Canada and Norway, the oil price shock exerted a stronger effect on the real economy, with GDP growth below potential, which itself possibly even declined, slowing to 1.2% and 1.6%, respectively, in 2015 (compare table 1).

While Mexico's GDP growth was least affected, its currency depreciation was most accentuated among the three countries, despite massive dollar sale interventions and key interest rate hikes by the central bank (Banco de México). The most actively traded emerging market currency of the world, the Mexican peso has been the worst-performing freely traded currency of Latin America, losing 45% against the U.S. dollar between mid-2014 and October 2016. Its depreciation, however, also mirrors the start of the U.S. Federal Reserve's exit from its ultra-loose monetary policy, as well as the U.S. presidential elections of 2016 that signal a possible reversal of trade liberalization. Between September 2015 and November 2016, the central bank hiked its key target fund rate in five steps from 3% to 5.25%.

Furthermore, the Foreign Exchange Commission (composed of central bank and finance ministry officials) activated two intervention schemes to preserve "the orderly functioning of the local exchange market." The Banco de México conducted minimum-price auctions, triggering daily sales of USD 200 million or USD 400 million from December 2014 to February 2016 whenever the peso weakened by 1% and 1.5%, respectively, and additional daily U.S. dollar auctions of up to USD 200 million without a minimum price from March to November 2015. In mid-February 2016, the rules-based FX interventions program was suspended in light of the decline of the roughly USD 200 billion stock of foreign exchange reserves by about USD 20 billion since the approval of the intervention arrangement. Since then, the Banco de México has conducted discretionary market interventions with a visible impact on the peso's exchange rate.

In May 2016, the IMF extended its Flexible Credit Line to Mexico for another two years and augmented it to USD 88 billion (from USD 67 billion). This unconditional crisis prevention tool of last resort is granted to reinforce reserves against the background of rising external risks despite strong macroeconomic policies.

Inflation has generally been under control in floating countries, reflecting a moderate pass-through of the exchange rate changes. In Mexico, headline inflation

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[18] *The existence of an inverse correlation and bidirectional causality between the value of the U.S. dollar and the price of crude oil has been well established at least since the early 2000s (Breitenfellner and Crespo Cuaresma, 2008; Fratzscher et al., 2014; Wątorek et al., 2016).*

even decelerated to below the target of 3% and bottomed out at a historical low of 2.1% in November 2015. Canada also witnessed a decline of annual CPI inflation from 1.9% to 1.1% between 2014 and 2015, despite a two-step cut of the monetary policy rate in 2015 that was, however, partly reversed at end-2016. Inflationary pressures due to the pass-through from a weaker Canadian dollar have been overcompensated by lower energy prices and slack in the economy. Only Norway saw its consumer price inflation surging above its flexible 2.5% target to a peak of 4.4% in July 2016, pointing to a possibly nonlinear exchange rate pass-through, as the Norwegian krone had depreciated by more than 30% over the preceding three years (early 2013 to early 2016). The depreciation was reinforced by the loss of the currency's attractiveness as a safe haven when the crisis in the euro area abated. Since the oil price started to plummet in the fall of 2014, Norges Bank, the central bank, has reduced its key policy rate in several steps from 1.5% to 0.5%. Although these steps were in line with the international monetary policy trend, they contributed to the depreciation of the krone exchange rate and to dampening the economic downturn. In Canada, currency depreciation happened more gradually, with little pass-through to inflation.

With regard to financial stability risks, Mexico has a sound financial system without solvency problems and a supervision framework that has been compliant with Basel III capital and liquidity rules since 2015. The regulation of financial groups and foreign bank subsidiaries has been enhanced. Canadian authorities have tightened macroprudential measures to contain vulnerabilities in the housing sector, which has proved effective (so far). Financial stability concerns are greater in Norway, where the housing boom was hardly interrupted by the global financial crisis and where household debt reached 220% of disposable income in 2014. Debt levels and residential real estate overvaluation make Norwegian debtors vulnerable to interest rate increases and income loss risks. Accordingly, Norwegian regulators have strengthened the supervisory framework by increasing capital requirements in anticipation of EU capital regulations, introducing additional capital buffers, as well as by raising mortgage lending risk weights and standards.

Significantly, fiscal policies went in opposite directions in advanced economies and in EMEs with free-float regimes. While Canada and Norway provided fiscal stimuli either through deficit spending or by tapping buffers, Mexico reacted with fiscal consolidation. Mexico displayed deteriorating gross public and external debt-to-GDP ratios (to about 54% and 34%, respectively, in 2015) to levels gradually approaching those of the Mexican peso crisis ("Tequila Crisis") of 1994/95. These surging debt levels partly resulted from a piecemeal decline in oil extraction in the wake of the depletion of old sources and underinvestment in new sources. Under the pressure of looming downgrades by rating agencies (Standard & Poor's and Moody's), the Mexican government in February 2016 announced budget cuts in the order of 0.7% of GDP, mainly consisting of cuts in spending for the state-owned oil company Petróleos Mexicanos (PEMEX). The budgets for 2016 and 2017 aim for primary surpluses of 0.3% and 0.4% of GDP, respectively. In contrast, Norway faced the fall in oil prices with large buffers that have provided self-insurance and that have delinked budgets from commodity prices.

In terms of structural reforms, Mexican President Enrique Peña Nieto introduced legislation in August 2014 that abolished the current energy monopoly PEMEX has held since 1938, seeking to reverse the decline in Mexico's oil production

Table 2

Overview of oil exporters' exchange rate policies and systems: 2012–16

Country	Exchange rate arrangement	Exchange system
Angola	2012–13: tightly **managed exchange rate**	includes **multiple exchange rate practices** (under Art. VIII, IMF Articles of Agreement) as well as restrictions on access to foreign exchange for invisible transactions, limits on unrequited transfers to foreign-based individuals and other constraints
	2014: from Sept.: managed crawl-like arrangement (controlled depreciation against the U.S. dollar)	2015: new exchange measures introduced, including a priority list for certain economic sectors for access to U.S. dollars at the official exchange rate
	2015: June, Sept.: devaluations resulting in 31% weakening of the kwanza for the year (discontinuation of crawl)	
	2016: Jan. 5: devaluation of the kwanza by 15% (bringing official exchange rate closer to black market rate); still managed exchange rate	
Azerbaijan	2012–14: stabilized managed exchange rate regime (since 2011)	free of restrictions on current and capital account transactions, except for restrictions maintained for security reasons (these have been notified to the IMF); early 2016: imposition of **capital controls** (see above)
	2015: early in the year: 20% step devaluation against the U.S. dollar	
	Dec. 21, 2015: another (32%) devaluation against the U.S. dollar and adoption of a **managed floating** exchange rate regime (gradual movement of exchange rate vis-à-vis the U.S. dollar allowed based on supply and demand factors; monetary authority stands ready to smooth out excess volatility in the market)	
Canada	2012–16: **free-floating** exchange rate regime (since 1970; already between 1950 and 1962)	**free of restrictions** on current account transactions
Kazakhstan	2012–13: managed crawl-like exchange rate arrangement (tenge has been consistently tracking a trend against the U.S. dollar within a 2% margin)	**free of restrictions** on current account transactions
	2014: Feb.: following an 18% step devaluation, the tenge stabilized within a trading band around KZT 185/USD (=transition from crawl-like to stabilized managed exchange rate arrangement)	
	2015: Aug. 20: adoption of a **floating** exchange rate regime (central bank intervenes "to fight speculative moods" and aims at gradual withdrawal from foreign currency market)	
Mexico	2012–16: **free-floating** exchange rate regime (since 2011), but interventions to smooth exchange rate fluctuations	**free of restrictions** on current account transactions
Nigeria	2012–14: managed exchange rate arrangement (exchange rate band vis-à-vis the U.S. dollar)	includes **multiple currency practices** (under Art. VIII, IMF Articles of Agreement) as well as restrictions on access to foreign currency for payments for various types of imports and for non-priority transactions as determined by the central bank, as well as other constraints
	2015: from March: exchange rate pegged to the U.S. dollar (at NGN 198/USD within a 2% band)	
	2016: June 20: adoption of a **floating** exchange rate regime	
Norway	2012–16: **free-floating** exchange rate regime (since 2011), but interventions to smooth exchange rate fluctuations	**free of restrictions** on current account transactions
Russia	2012–13: managed exchange rate arrangement (with corridor related to bi-currency basket of U.S. dollar and euro)	**free of restrictions** on current and capital account transactions
	2014: Nov. 10: **floating** exchange rate regime adopted (interventions occur only if financial market stability is threatened)	
Saudi Arabia	2012–16: **conventional peg** to the U.S. dollar (since 1986)	free of restrictions on current account transactions, except for **security-related restrictions**
United Arab Emirates	2012–16: **conventional peg** to the U.S. dollar (since 1997)	free of restrictions on current and capital account transactions, except for restrictions maintained for **security reasons** (these have been notified to the IMF)

Source: IMF Article IV staff reports (2014 to 2016) for Angola, Azerbaijan, Canada, Kazakhstan, Nigeria, Norway, Russia, Saudi Arabia, and the United Arab Emirates; IMF Country Report No. 14/323: Mexico. Arrangement under the Flexible Credit Line and Cancellation of the Current Arrangement; authors' compilations.

and to open up the sector to private investment. While this policy might contribute to increasing economic productivity, it will certainly not reduce Mexico's dependence on oil. In the event, PEMEX reported record losses in 2015 (more than 50% higher than in 2014) caused by the fall in crude oil prices and higher taxes, prompting Moody's to cut PEMEX's credit rating.

4 Assessment and concluding remarks

The sharp fall in oil prices since 2014 has led major oil exporters (defined here as countries that exported the highest U.S. dollar value of crude oil in 2015) to react in one of three ways. The first group of countries upheld their currency pegs, typically to the U.S. dollar (Saudi Arabia, U.A.E.). This group chose to retain its pegs to keep inflationary pressures low and to shield the financial sector (up to a certain degree) from turbulences while accepting continuing pressures on the current account, on international reserves and on budget revenue. The second group of countries chose to let their currencies depreciate by repegging their currency (typically on repeated occasions, Angola) or, more often, by making their exchange rate regimes more flexible (Russia, Kazakhstan, Azerbaijan, Nigeria). Finally, the third group of countries kept their floating exchange rates (Mexico, Canada, Norway) and let their currencies depreciate. In the majority of countries, these policy decisions were taken to counteract economic pressures (swiftly dwindling international reserves, expanding external and budget disequilibria, and insufficiently effective capital controls). Because they were caught off guard, a number of countries' institutions (monetary policy, foreign exchange and financial market frameworks) were not well prepared to operate successfully in the new macrofinancial environment. The need to react to unforeseen circumstances may, in turn, have compounded the degree of instability and economic turbulence that followed the exchange rate regime switch.

However, as policymakers gain experience, these governance problems should become smaller and the increased economic flexibility generated by the more flexible exchange rate regime should play a greater role. Certainly, devaluation tended to push up inflation, and balance sheet effects increased dollarization and credit risk in the financial sector as well as the ratio of external debt to GDP.[19] Weak confidence in the depreciated domestic currency and economic stress for banks may have contributed to banking sector turbulences and crises. On the other hand, while inflation is already receding in some countries, depreciation has rendered non-oil exports and import-competing production cheaper (expressed in foreign currency) and thus more competitive. The negative impact of the oil price plunge on current account balances is easing or can be expected to ease, and international reserves (which are also higher as a ratio to GDP than before depreciation) are eroding less than they would without depreciation and in some cases are already recovering. Meanwhile, the fiscal impact of the oil price decline is being cushioned somewhat by the devaluation.

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[19] *Interestingly, an already existing high or moderate level of dollarization prior to the oil price plunge does not appear to have tipped the scales in favor of or against devaluation in our observed countries. As explained above, the deterioration of external and fiscal balances, alongside the erosion of buffers, seems to have played a more important triggering role.*

Overall, about two years after the initial strong oil price slide of 2014, the countries that have sustained their currency pegs look economically and politically more stable so far (Saudi Arabia, U.A.E.) than the countries that have abandoned their (original) pegs or that have floated their currencies. The possible exception is Russia, which carried out its monetary regime change earlier (in November 2014) than any of the other countries examined that moved to flexible exchange rates. The greater observed financial stability of countries that retained their fixed exchange rates is certainly partly due to their still large, if eroding, buffers and, more recently, to their readiness to resort to procyclical fiscal policies.

Looking ahead and, like most forecasters, assuming that oil prices will tend to remain low and stabilize or rise only slightly, the players that floated their currencies may have "digested" the often turbulent impact of this change in two to three years and in any case are likely to have accumulated some experience with flexible exchange rates. Countries that have retained their pegs will probably continue to be exposed to pressure on their external balances and currencies as well as to further erosion of their international reserves. How long these countries can succeed in sustaining such continued exposure in the above oil price scenario may depend on how much crisis-triggered fiscal consolidation they are willing to implement, and, of course, on the size of their remaining external and fiscal buffers.

The impact of the oil shock on the exchange rates of countries that had floating exchange rate regimes and inflation-targeting monetary policies prior to the oil price plunge and that have upheld these regimes and policies, like Canada, Norway and, to a lesser extent, the emerging market economy Mexico, was comparatively modest; financial market turbulences were fairly limited, and inflation pass-through was low. These countries' policy reactions differed depending on their fiscal space, monetary credibility, and the occurrence of additional shocks. While Canada and Norway loosened their monetary and fiscal policies, providing macroeconomic stimuli, Mexico aimed at warding off financial stability concerns and carried out procyclical interest rate hikes, fiscal consolidation and foreign exchange market interventions. Despite all their differences, these policies seem to have been similarly effective in stabilizing the local economies. However, these three countries have fairly diversified economic structures and are less dependent on hydrocarbon extraction and exports than the emerging and developing countries discussed above (Dąbrowsky, 2015). Actually, it appears that this structural diversity not only makes economies less vulnerable to sectoral shocks but also equips them better to float their exchange rates.

That said, the choice of a commodity exporter's currency regime should not be a short-run decision, but rather the result of a long-term development strategy requiring a sequence of adequate reforms in economic governance as well as product and factor markets. To the extent that a negative commodity price shock implies an abrupt decline of resource dependence, this process might be involuntarily accelerated and require a faster than planned regime shift toward more flexible foreign exchange rates. Another lesson that can be drawn is that the sustainable conduct of prudent budgetary policies pays off in difficult times, even if it is hard to determine how large adequate fiscal buffers would have to be (Danforth et al., 2016). Any reserve fund size could eventually be tested; however, using these funds buys time for crisis adjustment measures to show results. If such funds are large enough, they not only help buy time but also give countries greater leeway to

Table 3

Some relevant country traits and oil crisis-linked policy choices in a nutshell

Country	Develop-ment status	Degree of structural diversity (see table A1)	Size of external/ fiscal buffers (see table A2)	Policy response to oil price plunge	
				Exchange rate regime	Macroeconomic stance
Angola	Emerging	Low	Medium	Re-pegging to U.S. dollar (with exchange controls)	Tight
Azerbaijan	Emerging	Low	Medium	Flexibilization: move to managed floating	Mixed
Canada	Advanced	High	Low	Free floating	Stimulus
Kazakhstan	Emerging	Low	Medium	Flexibilization: move to floating	First stimulus, then tightening
Mexico	Emerging	High	Low	Floating	Tight
Nigeria	Emerging	Low	Low	Flexibilization: move to floating (with exchange controls)	Mixed
Norway	Advanced	Medium	High	Floating	Stimulus
Russia	Emerging	Medium	Medium	Flexibilization: move to floating	Tight
Saudi Arabia	Emerging	Low	High	Peg to U.S. dollar	First stimulus, then tightening
United Arab Emirates	Emerging	Medium	High	Peg to U.S. dollar	First stimulus, then tightening

Source: Authors' compilations.

strategically influence commodity prices (within a cartel). Finally, at least those countries under observation that kept their exchange rates floating (freely) command a well-stocked toolbox of e.g. monetary, currency, fiscal, macroprudential and structural policy measures to react to commodity price shocks. Many of the policy choices hinge on being able to judge whether a shock is temporary or permanent. For instance, temporary shocks require fiscal expansion while permanent shocks require the opposite, fiscal tightening. Because they assumed the oil price shock was temporary, countries like Saudi Arabia, the U.A.E. and Kazakhstan tried to spend first and retrenched later when the price did not recover as expected. The trial-and-error experience of our small sample of countries confirms the truism that effective crisis management is both an art and a science.

Table 3 provides a concluding snapshot of some relevant characteristics and policy choices of the ten observed oil-exporting countries faced with a substantial and sustained oil price decline since 2014. The following findings catch the eye: Advanced economies tend to display medium to high degrees of structural diversity, whereas most of the EMEs feature low degrees of structural diversity. As a rule, an advanced and highly diversified economy like Canada does not need large external or fiscal buffers. If an EME with a low to medium degree of diversity intends to keep its fixed exchange rate regime (without repegging), it is well advised to have high external or fiscal buffers at its disposal (like Saudi Arabia and the U.A.E.), ideally complemented by the capacity to apply capital controls as a last resort. In other words, EMEs with peg-like regimes, limited diversification, small to medium-sized buffers as well as weak institutional conditions for capital controls will probably not be able to uphold their exchange rate choices[20] if they have to cope with a large and extended deterioration of the terms of trade. They

[20] *In most cases, such EMEs will probably not be able to defend their exchange rate regime even if they perform painful internal devaluations, including sizeable cuts in wages or salaries.*

should opt for more flexibility sooner rather than later, like Russia did. Taking up additional debt to help defend a fixed exchange rate may be an option only if a country continues to enjoy market confidence. Otherwise, borrowing may turn out to be an onerous and possibly futile exercise. Clearly, to some extent external and fiscal buffers are just as useful as structural diversification. Yet, even a modest buffer might prove helpful for an oil-exporting economy. A long-term strategic aim could be to reduce the need for buffers by promoting diversification, which, if successful, could also contribute to moving an economy up the rungs of the development status ladder. Although the declining weight of oil revenues in GDP implied by the oil price slump provides for some passive diversification, a more active strategy is preferable in times when oil prices are high. Creating external buffers is an important part of this strategy, as it may help take Dutch disease-like price pressures from the domestic market. Reining in such effects is a necessary but certainly not sufficient condition for developing an economy that is less dependent on oil.

At the time of writing, an apparently credible attempt of OPEC, Russia and other oil producers to cut oil extraction by some 1.2 million barrels a day relieved some pressure on major oil-exporting countries to adjust. Subsequently, the price of Brent crude rose by around 15% to substantially above USD 50 per barrel in late 2016. While further price increases cannot be excluded, they may tend to be limited because shale oil producers, particularly in the U.S.A., can react elastically to oil price increases by simply reopening fracking wells shut down when prices fell below their break-even point. In the medium run, however, the oil price is also influenced by the massive reduction of investment in new pumping capacities in parallel to the oil price slump since 2014. Conversely, uncertainties about global demand developments make oil producers inherently vulnerable. In sum, a temporary oil price stabilization should not divert attention from the long-run need to diversify resource-dependent economies.

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Annex

Table A1

Share of oil and gas in the economy

Country	Share in GDP (2011)	Share in total merchandise exports (2014)	Share in total budget revenues (2014)	Average share	Assessed degree of structural diversity[1]
	%				
Angola	47	97	69	71	Low
Azerbaijan	45	93	70	69	Low
Canada	9	11	31	17	High
Kazakhstan	31	77	49	52	Low
Mexico	9	11	31	17	High
Nigeria	14	91	62	56	Low
Norway	20[2]	47	27	31	Medium
Russia	18	70	31	40	Medium
Saudi Arabia	59	85	87	77	Low
United Arab Emirates	24	43	66	44	Medium

Source: Authors' compilations and calculations.

[1] If the average share of oil- and gas-related revenues in the above-mentioned three indicators (GDP, merchandise exports, budget revenues) is relatively high, then the assessed degree of structural diversity is relatively low and vice versa. Assessment: low: >50%, medium: >20% and <50%, high: <20%.

[2] 2014.

Table A2

Size of aggregated external and fiscal buffers[1]

Country	External buffers	Fiscal buffers	Sum	Assessment of size[2]
	% of GDP (end-2014)			
Angola	21.5	3.9	25.4	Medium
Azerbaijan	18.6	49.3	67.9	Medium
Canada	4.2	0.8	5.0	Low
Kazakhstan	14.2	35.6	49.8	Medium
Mexico	15.2	0.1	15.3	Low
Nigeria	6.0	0.8	6.8	Low
Norway	13.4	254.6	268.0	High
Russia	19.0	8.2	27.2	Medium
Saudi Arabia	96.1	50.0	146.1	High
United Arab Emirates	19.5	211.2	230.7	High

Source: Authors' compilations and calculations.

[1] External buffers: international reserves; fiscal buffers: budgetary stabilization and/or sovereign wealth funds.

[2] Assessment: low: <20%, medium: >20% and <80%, high: >80%.

How would a fiscal shock in Germany affect other European countries? Evidence from a Bayesian GVAR model with sign restrictions

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In this paper we analyze the international effects of a fiscal policy shock in Germany on other European countries. To that end we use a flexible version of a Bayesian global vector autoregression (GVAR) model and a dataset with broad country coverage comprising a wide range of macroeconomic and financial variables. Our results suggest a comparatively strong response in a majority of European economies to such a shock. In particular, we provide evidence that a deficit-financed expansionary government spending shock in Germany generates long-lasting positive cross-border output spillovers. In the case of the euro area periphery and Central, Eastern and Southeastern (CESEE) economies, these effects may be transmitted via the financial channel since financial variables such as equity prices and private sector credit significantly increase in response to the assumed fiscal shock in Germany. Upward effects on consumer prices, by contrast, are limited to core euro area countries. When looking at the effects of an expansionary tax cut shock instead of those of a spending-driven fiscal shock, we identify cross-border output spillovers of a similar magnitude but with a lower degree of persistence; in the case of CESEE economies, these results are also characterized by more estimation uncertainty. Finally, we also provide evidence for considerable cross-country heterogeneity in fiscal spillovers; for instance within CESEE, output responses to a fiscal shock in Germany are strongest in Croatia, Hungary and Slovenia.

The main intention of this paper is studying the transmission of fiscal shocks generated in key euro area countries to other euro area countries as well as countries located in Central, Eastern and Southeastern Europe (CESEE). Given the room for maneuver available for decentralized, discretionary fiscal policy actions in the euro area (despite some coordination of fiscal policies), we are not going to simulate a coordinated euro area-wide fiscal shock (as, for instance, Hebous and Zimmermann, 2013) but, instead, we will focus on Germany as it is the only country among the largest euro area members that is perceived as having some fiscal space at the moment (in line with the IMF, 2014, which does not see leeway for fiscal easing in other large euro area countries such as France, Italy or Spain). Given the size of the German economy and its pivotal role in Europe in terms of trade, FDI, cross-border banking and supply chains, we presume that any considerable discretionary fiscal expansion or contraction generated in Germany would have a non-negligible impact not only on other euro area countries but also on CESEE countries located outside the euro area.

Several policy papers have recently commented that Germany could use the budgetary room of maneuver available under its fiscal rules, arising from buoyant government revenues among other factors, to finance additional public investment and growth-friendly structural reforms (IMF, 2016; OECD, 2016). Other European countries could potentially benefit from such a fiscal expansion in Germany if cross-country output spillovers were considerably positive. In our paper we do not want to give a recommendation whether Germany should eventually implement a fiscal stimulus or not. Still, considering the hypothetical situation of a fiscal shock in a large euro area economy with fiscal space, we are interested in studying the related cross-border spillovers using a flexible modeling approach that allows us to incorporate bilateral economic links and to take into account feedback loops in addition to spillover effects. More specifically, this paper presents a global vector autoregression (GVAR) model we have designed to cover nearly 30 countries worldwide over the period 1995–2015; based on this model, we study the impact of a fiscal shock generated in Germany on key macroeconomic variables in Germany itself and related spillovers to the other economies considered. As for the fiscal shock, we are going to distinguish two different policy scenarios: on the one hand, a deficit-financed expansionary government spending shock and, on the other hand, a deficit-financed expansionary tax cut shock. In the presentation of cross-border spillovers we will focus on cross-regional differences between euro area core countries, euro area periphery countries and CESEE economies. In addition, cross-country differences in the spillovers to CESEE economies are examined in detail.

The structure of this paper is as follows: Section 1 puts our approach into the context of the existing literature on international fiscal policy spillovers in Europe. In section 2, we introduce the key characteristics of our Bayesian GVAR model, including shock identification assumptions. Section 3 discusses the preparation of the data series. In section 4, we use impulse response analysis to investigate the impact of fiscal easing on a variety of macrofinancial variables at national and international level; section 5 concludes.

1 What do we know about the extent of international fiscal spillovers in Europe?

Up to the 2008 global financial crisis (GFC) there had been only rare empirical attempts to examine the transmission of a foreign fiscal shock to domestic macroeconomic variables in Europe (e.g., Beetsma et al., 2006). However, after the GFC, particularly at the peak of the European sovereign debt crisis of 2010–2012, the literature on cross-country fiscal spillovers in Europe began to grow rapidly.

Among the literature contributions that have come closest to addressing our research question are papers that have already examined fiscal policy spillovers from Germany to other euro area and/or CESEE economies. Existing simulations based on structural multi-country models suggest that cross-border spillovers of a fiscal shock generated in Germany are indeed non-negligible, but their extent varies across the chosen methodological frameworks and assumptions. For instance, the ECB (2014) provides evidence for comparatively small cross-border output spillovers within the euro area stemming from a fiscal consolidation shock generated in Germany: three years after the shock, totaling 1% of GDP, the cumulative negative spillover effect on the GDP of other euro area countries

reaches a maximum of 0.06% (namely for small euro area economies). Notably, if the shock were generated in another large euro area economy, the resulting spillovers would be smaller than in the case of Germany as the shock-originating country. Simulations based on a New Keynesian DSGE model by the European Commission (in 't Veld, 2013) point to more sizable spillover effects: a two-year increase in government investment in Germany totaling 1% of GDP increases real GDP in other euro area countries by between 0.2% and 0.3%. In a more recent paper, in 't Veld (2016) shows that an investment-based fiscal stimulus in euro area countries with current account surpluses would cause significantly positive GDP spillovers to the rest of the euro area; here, the type of monetary policy response is apparently decisive: spillovers are the largest when nominal interest rates are constrained at the zero interest rate floor. Blanchard et al. (2015), moreover, show that, if policy rates remain low for a prolonged period in the euro area, a fiscal expansion in euro area core economies would have a large and positive impact on GDP in euro area periphery countries. In a similar vein, Elekdag and Muir (2014) show that accommodative monetary policy would strengthen the expansionary impact of higher German public investment, both at the national level and in the rest of the euro area. Simulation results of the Deutsche Bundesbank (2016) also indicate that a deficit-financed expansion of public investment in Germany would stimulate output in other European economies, with larger spillovers for small euro area core and CESEE countries than for euro area periphery countries.[2]

Spillovers from a fiscal shock in Germany to CESEE countries have rarely been addressed so far. Besides the mentioned paper of the Deutsche Bundesbank (2016), to the best of our knowledge, only two more papers have done so: Crespo Cuaresma et al. (2011) study the transmission of a fiscal policy shock generated in Germany to key macroeconomic variables in five CESEE economies. They estimate an open-economy structural vector autoregressive model identified by imposing restrictions on contemporaneous responses. They find that an easing of the German fiscal balance yields positive output effects in Hungary and Poland, but negative ones in the Czech Republic, Slovakia and Slovenia (the latter apparently due to a stronger weight of the negative interest rate channel in comparison to the potentially positive trade and exchange rate channels). Elekdag and Muir (2013) use a DSGE framework to simulate fiscal spillovers from Germany to other euro area countries and four CESEE economies (Czech Republic, Hungary, Poland and Slovakia). According to their results, a debt-financed two-year increase in government consumption yields rather small, though positive, cross-border output spillovers. Notably, these spillovers have increased over time (as a reflection of strengthening trade linkages) and are larger for CESEE than for euro area economies.

In our paper, we add value to this CESEE-specific literature by employing a global VAR model for mainly two reasons. First, it allows us to incorporate bilateral economic links to study the worldwide propagation of a fiscal shock generated in Germany and to take into account related spillbacks and second-round effects. Modeling feedback loops in addition to spillovers seems essential since CESEE

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[2] *Nevertheless, this report is quite critical with regard to the implementation of a short-term fiscal stimulus in Germany, as such a stimulus would have a procyclical impact in the current situation of GDP growing close to its potential.*

economies are not only strongly integrated with the euro area but also share strong economic ties among themselves (see also Fadejeva et al., 2017, who recently demonstrated the importance of second-round effects for CESEE regarding the propagation of international shocks). Second, the GVAR framework offers a compact representation of the world economy with a minimum of assumptions, while still offering the possibility for structural and economic analysis. This is in contrast to the structural multi-country models mentioned before, as these typically come along with a wide set of assumptions for which it is often not clear whether they equally hold for all countries considered.

So far, there are only a few papers that have already used a GVAR model to study fiscal cross-border spillovers in Europe. Caporale and Girardi (2013) investigate the response of long-term government bond yields in a given euro area country following a shock to the public debt-to-GDP ratio in another euro area member country. Their analysis is based on a sample of eleven euro area members over the period 1999–2010. They find that increasing public debt in Germany and France alleviates sovereign borrowing costs in the other euro area countries (via positive liquidity effects), while the opposite holds if government debt rises in euro area periphery countries (as in this case, apparently, country risk considerations are more important than liquidity effects). Similarly, Nickel and Vansteenkiste (2013) study the spillover of a government consumption shock to financial variables in the four largest euro area economies plus Sweden, the U.K., Japan and the U.S.A. over the period 1980–2008. In contrast to Caporale and Girardi (2013), they show that a fiscal expansion generated in Germany (or the U.S.A.) raises government bond yields elsewhere. Hebous and Zimmermann (2013) compare the output effects of national versus coordinated euro area-wide fiscal shocks (stemming from the budget balance or government investment spending) for twelve euro area economies in the years 1979–2009. According to their results, a euro area-wide fiscal shock has a larger impact on output than a national shock of similar size, pointing to the importance of coordinated fiscal measures within the euro area. A similar case for improved fiscal policy coordination at the level of the European Union (EU) is made by Ricci-Risquete and Ramajo-Hernández (2015), who distinguish between government spending and government revenue shocks. In a recent paper, Dragomirescu-Gaina and Philippas (2015) investigate the issue of fiscal policy discretion versus international fiscal policy coordination based on a sample of twelve EU countries for the period 1978–2013; they show that private international capital flows make domestic fiscal policies more responsive to foreign shocks.

With this study, we add to the existing fiscal GVAR literature in four ways: First, by means of sign restrictions we use a coherent identification strategy to pin down two different variants of deficit-driven fiscal shocks proposed in the literature (e.g., see Canova and Pappa, 2011, and Mountford and Uhlig, 2009). Second, we use a Bayesian version of the GVAR framework that features modern shrinkage priors and stochastic volatility, two features that are of great importance for modeling macro-time series (see, e.g., Huber and Feldkircher, 2017). Third, while the GVAR literature cited above mostly focuses on spillovers among selected EU Member States, our dataset is much broader, including countries from the CESEE region but also other major emerging and advanced economies such as the BRICs and the G-8 (offering a better representation of the world economy). Fourth, in

comparison to the existing literature our dataset provides an extensive coverage of macroeconomic and financial variables, addressing a range of potential transmission channels. All data are up to date until end-2015, ensuring that most recent trends are accurately reflected in our analysis.

2 Econometric framework

In this section, we will summarize the key features of our model. After presenting the structure of our GVAR model in fairly general terms we will describe the prior specification adopted and the way structural fiscal shocks have been identified.

2.1 Bayesian GVAR with stochastic volatility

Our model is based on the GVAR model put forth in Pesaran et al. (2004). The GVAR builds on a sequence of *N+1* country-specific submodels that are combined to yield a global large-scale VAR model with parametric restrictions governed by a set of trade weights. We assume that for country *i, a k_i*-dimensional vector of macroeconomic time series x_{it} follows a *VARX(p, q)* process,

$$\Phi_i\left(L_p\right)x_{it} = \Psi_i\left(L_q\right)x_{it}^* + \varepsilon_{it},\tag{1}$$

with *$\Phi_i(L_p)$, $\Psi_i(L_q)$* being conformable lag polynomials of order *p* and *q*, respectively. The weakly exogenous variables x_{it}^* are constructed by taking weighted averages of other countries' endogenous variables and ε_{it} is a normally distributed vector white noise process with time-varying variances,

$$\varepsilon_{it} \sim N\left(0, \Sigma_{it}\right),$$
$$\Sigma_{it} = U_i H_{it} U_i'.$$

Here, we let U_i be a lower uni-triangular matrix (i.e., lower triangular with unit diagonal) and H_{it} is a diagonal matrix with typical diagonal elements $h_{ij,t}$ *(j=1,...,k_i)*. We assume that the logarithm of $h_{ij,t}$ follows

$$\log(h_{ij,t}) = \mu_{ij} + \rho_{ij}\left(\log(h_{ij,t-1}) - \mu_{ij}\right) + \eta_{ij,t},\tag{2}$$

where μ_{ij} denotes the mean of the log-volatility, ρ_{ij} the persistence parameter, and $\eta_{ij,t}$ is a white noise error with fixed variance.

It is straightforward to show that the country-specific models can be connected using a suitable weighting matrix W_i of dimension $k \times k = \sum_{i=0}^{N} k_i$ to retrieve the global VAR representation of the model,

$$\Gamma\left(L_s\right) x_t = e_t.\tag{3}$$

The lag polynomial *$\Gamma(L_s)$* is constructed as a nonlinear combination between the country-specific coefficients in equation (1) and the weights in W_i. The errors e_t are normally distributed with a full *k×k* variance-covariance matrix Σ_t. For more details on the derivations, see Huber (2016).

The country-specific models in equation (1) are heavily parameterized. In light of the limited length of our sample we thus adopt a Bayesian approach to shrink

the parameter space toward a simpler model specification. By pursuing a two-step procedure (first estimating single country models and then combining them in a second step) the GVAR framework already exhibits a form of data reduction. Nevertheless, introducing another layer of discipline on the coefficients by using Bayesian shrinkage methods further improves the estimation of GVARs. This has been shown in Crespo Cuaresma et al. (2016) and Dovern et al. (2016); the latter also emphasize the importance of allowing residual variance to vary over time (i.e., stochastic volatility).

The prior framework adopted is closely related to the specification stipulated in Huber and Feldkircher (2017). Specifically, we impose a global-local shrinkage prior in the spirit of Griffin and Brown (2010) on the autoregressive coefficients of equation (1) and the covariance parameters in H_{it}. This prior setup implies that each coefficient (i.e., autoregressive coefficient and covariance parameters) β_{ij} is a priori normally distributed with zero mean and a variance that depends on a global shrinkage parameter λ_i and a local scaling parameter τ_{ij},

$$\beta_{ij} \mid \tau_{ij} \sim N\left(0, \frac{2}{\lambda_i} \tau_{ij}\right), \quad \tau_{ij} \sim Gamma(\vartheta_i, \vartheta_i), \quad \lambda_i \sim Gamma(a_i, b_i),$$

with ϑ_i being a scalar hyperparameter that controls the excess kurtosis of the corresponding marginal prior and a_i, b_i controlling the overall degree of shrinkage on all coefficients. This prior specification provides a large degree of flexibility, allowing for non-zero regression coefficients in the presence of heavy global shrinkage induced by large values of λ_i. Regarding stochastic volatility, we use a Gamma(1/2,1/2) prior on the innovation variances of the log-volatilities, which translates into a standard normally distributed prior on the (signed) square root of the variance and thus allows for shrinkage toward zero. Hence, if the actual process was homoscedastic, our Bayesian setup would shrink actual variation in the log-volatilities toward zero (or equivalently push the full history of the log-volatilities toward the long-run unconditional mean) whereas if stochastic volatility was more appropriate we would allow for movements in the underlying latent processes.

Typically, Bayesian analysis relies on relatively few hyperparameters that determine the weight associated with the prior information introduced. In the present framework, which we borrow from Huber and Feldkircher (2017), we integrate out uncertainty with respect to the choice of the hyperparameters by imposing yet another layer of hierarchy and specifying a set of uninformative priors on these hyperparameters. This allows us to make the analysis more robust in this respect and to infer suitable hyperparameters for the broad range of countries included in the study. The corresponding MCMC algorithm iterates between sampling from well-known full conditional posterior distributions for all autoregressive coefficients and covariance parameters. The only exceptions are the full history of the log-volatilities, which are simulated by means of the algorithm outlined in Kastner and Frühwirth-Schnatter (2014). The algorithm has to be carried out N+1 times in parallel, rendering the estimation problem tractable.

2.2 Identification of structural fiscal shocks

In our GVAR model, we identify a fiscal policy shock via restrictions that are imposed on the signs of the impulse response functions. Sign restrictions have been frequently used to identify fiscal shocks in structural, single-country VAR settings (e.g., Caldara and Kamps, 2008; Candelon and Lieb, 2013; Canova and Pappa, 2011; Dungey and Fry, 2009; Mountford and Uhlig, 2009). Faccini et al. (2016) use sign restrictions to identify a government spending shock and impose them onto a regime-change factor model for the U.S.A. and its main trading partners to study the dynamic response of foreign output to unanticipated government purchases in the U.S.A. However, the few papers that study fiscal shocks in the context of a global VAR model have so far not drawn upon sign restrictions but have relied on narrative identification (Favero et al., 2011) or used generalized impulse response functions (GIRFs) as an alternative to structural identification (Caporale and Girardi, 2013; Dragomirescu-Gaina and Philippas, 2015; Hebous and Zimmermann, 2013; Nickel and Vansteenkiste, 2013; Ricci-Risquete and Ramajo-Hernández, 2015). GIRFs, however, fail to attach an economic interpretation to the origins of the shock.

Following Dees et al. (2007) and Feldkircher and Huber (2016), we apply structural shock identification locally to the country of shock origin, i.e., Germany, and the resulting spillovers are then studied for the whole system. Table 1 summarizes the applied sign restrictions. Note that restrictions are imposed on impact only. This represents a very weak approach to identification, ensuring that results are strongly data-driven as opposed to being overly shaped by assumptions[3]. As we are interested in fiscal shocks generated both on the spending and on the revenue side of the government budget, we distinguish between different policy scenarios. In our baseline results we apply the identification scheme of Canova and Pappa (2011) and use sign restrictions to identify a deficit-financed expansionary government spending shock (FP_1, top panel of table 1). Spending-driven fiscal easing (i.e., an increase in both government spending *(gspend)* and the inversely defined budget balance *(gdef)*) translates into an increase in output *(y)*, inflation *(Dp)* and the short-term interest rate *(stir)*. As an alternative, we rely on Mountford and Uhlig (2009) and identify a deficit-financed expansionary tax cut (FP_2, bottom panel of table 1). This revenue-driven fiscal easing (i.e., a reduction in government revenues *(grev)* and an increase in *gdef*) is associated with the same responses of the other variables mentioned before. Along with each of these two different types of fiscal shocks, we further identify a monetary policy (MP) shock and an aggregate supply (AS) shock. Identifying additional shocks – and thus including more restrictions – should yield a stronger identification for the shock under consideration (Fry and Pagan, 2011; Paustian, 2007). Note that our sign restrictions are defined in a way that ensures the mutual exclusiveness of the three different shocks. When we resort to FP_2, we also impose a negative response of government revenues to a contractionary aggregate supply shock (mimicking Mountford and Uhlig, 2009). Finally, to cope with the issue of non-unique rotation matrices, we search for an orthonormal rotation matrix that fulfills the described sign restrictions using the algorithm outlined in Rubio-Ramírez et al. (2010) and

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[3] *Fry and Pagan (2011) show that adding on sign restrictions for longer lags in the impulse responses does not necessarily provide stronger identifying information.*

choose the matrix that yields impulse responses that are closest to the median response (as proposed by Fry and Pagan, 2011).

Table 1

Applied sign restrictions

Shock type/ endogenous variables		y	Dp	stir	rer	gspend	grev	gdef = (gspend − grev)/y
FP_1	Deficit-financed expansionary government spending shock	>0	>0	>0		>0		>0
MP	Monetary policy shock	<0	<0	>0				
AS	Aggregate supply shock	<0	>0	>0	>0		<0	
FP_2	Deficit-financed expansionary tax cut shock	>0	>0	>0			<0	>0
MP	Monetary policy shock	<0	<0	>0				
AS	Aggregate supply shock	<0	>0	>0	>0		<0	

Source: Authors' calculations.

Note: These constraints for the signs of the impulse response functions are imposed in the German country model on impact only. Shaded blue areas mark the equations in the system to which the shocks are applied.

3 Data

We use quarterly data spanning the period from Q1 1995 to Q4 2015 and a broad country set. The countries covered are eleven euro area countries (Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal and Spain), ten CESEE economies (Bulgaria, the Czech Republic, Croatia, Hungary, Poland, Romania, Russia, Slovakia, Slovenia[4] and Turkey), and large advanced and emerging international economies (the U.S.A., Canada, Great Britain and Japan, on the one hand, and Brazil, China, India and Mexico, on the other hand). For each country we have collected standard macroeconomic data on variables, such as real GDP *(y)*, consumer price inflation *(Dp)*, short and long-term interest rates *(stir, ltir)*, real exchange rates vis-à-vis the U.S. dollar *(rer)* and real equity prices *(eq)*, both deflated by consumer prices, and the stock of total private sector credit *(tc)*. Following Fadejeva et al. (2017) we adjust data on total credit for foreign exchange rate movements for countries whose credit markets are characterized by large shares of foreign currency-denominated credit (i.e., all the ten CESEE countries mentioned before). With the exception of long-term interest rates, data are available with wide country coverage. Since local capital markets in emerging countries (e.g., in the CESEE region) are still developing, data on government yields are hardly available for these economies.

For the purposes of modeling the fiscal shock, the German model deviates from the rest of the sample in terms of variable inclusion. More specifically, we add government spending *(gspend)*, the overall budget balance *(gdef)* and – in a robustness exercise – government revenues *(grev)* for Germany. There is a broad discussion in the literature whether different types of public expenditures and revenues have a different impact on economic output. This discussion is based on,

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[4] *The grouping of countries is for illustration purposes only. Since we focus on spillovers to CESEE economies we have included Slovakia and Slovenia in the group of CESEE countries. Overall results for euro area countries are unaffected by this choice due to the two countries' comparably small economic significance in terms of purchasing power parities.*

inter alia, endogenous growth theory that distinguishes between "productive" and "non-productive" public spending as well as "distortionary" and "non-distortionary" taxation and assigns a different long-run growth impact to these categories (see, e.g., Devarajan et al., 1996). To address these composition arguments, we use a narrow definition of government spending and taxation (in line with Perotti, 2004). We argue that public spending on goods and services has different effects than transfers: Only the former directly affects the use of resources by the private sector. Hence, our narrowly defined variable for government purchases of goods and services *(gspend)* consists of government consumption (compensation of public employees plus intermediate consumption) plus government investment (government gross fixed capital formation), while transfers (social benefits, social transfers in kind, subsidies) are subtracted from total government revenues to yield our variable for net taxes *(grev)*. The inclusion of net taxes should capture the net impact on the private sector and is supported by the view that in the short and medium run fiscal policy operates mostly via the demand channel. The variable describing the overall government budget balance, *gdef,* is defined as *gspend* minus *grev* and expressed as a percentage of GDP. An increase in *gdef* can therefore be interpreted as fiscal easing.

The fiscal data we use are Eurostat data (quarterly non-financial accounts for general government). We work with quarterly ESA 1995 instead of ESA 2010 data because, for Germany, the latter are only available starting with 2002. Fiscal variables enter in real terms (nominal figures have been deflated by using the HICP) and in seasonally adjusted terms (based on the Tramo-Seats procedure). We do not explicitly exclude data outliers, such as a revenue peak caused by the sale of UMTS licenses in Germany in 2000; however, level variables are in logarithmic form and this should dampen the impact of data outliers.

Last, we use trade weights to capture cross-country linkages and to construct the weakly exogenous variables x_{it}^* through which spillovers are transmitted. More specifically, we use average annual bilateral export and import flows of goods and services from the IMF's DOTS data base. Since we use a shrinkage prior on the coefficients we can include a broad set of foreign variables in each country model. More specifically, the set of foreign variables comprises all macroeconomic variables used in the model *(y*, Dp*, stir*, ltir*, rer*, eq*, tc*)* and the focal variable, Germany's government budget balance-to-GDP ratio *(gdef*)*. This implies that we allow for a large range of potential transmission channels and let the data determine which of these channels are empirically relevant.

4 Results

In this section, we first discuss the domestic effects for Germany and then, in a second step, analyze cross-country spillovers from fiscal easing in Germany (both spending- and revenue-driven). All of the results presented below are based on 5,000 posterior draws after a burn-in phase of 5,000 draws and a thinning interval[5] of 0.2. This leaves us with 1,000 posterior draws for inference. For each of these draws we look for 4 rotation matrices that fulfill the restrictions outlined in

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[5] *In large-dimensional models, often a thinning interval is used to limit requirements regarding computer storage and computational speed proves convenient. In our case we "thin" the valid 5,000 posterior draws to obtain 1,000 final draws. These are then used to calculate impulse responses.*

table 1 and choose the matrix that yields the impulse responses that are closest to the median impulse response given the 4 matrices.

4.1 Domestic responses in Germany

Chart 1 shows the domestic effects of a deficit-financed expansionary government spending shock. Impulse response functions for an increase in the government budget balance by one standard deviation are shown. The solid line in each panel corresponds to the posterior median, the shaded area represents the 50% credible set.[6]

First, we find that there is a certain amount of inertia in the conduct of discretionary fiscal policy as fiscal easing persists for several quarters after the shock. Real GDP responds in a typical hump-shaped way; the positive output response reaches its peak on impact and only gradually dies down. By contrast, consumer prices adjust more quickly, but effects are also positive and significant in the short term. To offset the increased demand for money on the back of the expansion in output/income, short- and long-term interest rates should pick up – the latter to a smaller extent. Chart 1 shows that short-term interest rates indeed increase, in particular in the short run (on impact), after which they adjust quickly. Long-term interest rates are not significantly affected. The increase in (short-term) interest rates coupled with an increase in prices deters external competitiveness as indicated by the negative (though statistically insignificant) short-term response of the real exchange rate. Responses of equity prices and total credit (not shown) are both fraught with estimation uncertainty. In general, however, the fiscal expansion triggers an increase in total credit and equity prices.[7]

Last, as a crude plausibility check of the validity of the fiscal shock, we show the structural error in the right bottom panel of chart 1. Positive (negative) spikes indicate periods of fiscal easing (tightening) in Germany. Several of them coincide with well-known episodes of discretionary fiscal stimulus measures[8], most clearly the fiscal stimulus package implemented right after the global financial crisis of 2008.[9]

To add further confidence to our results we have benchmarked the implied fiscal multiplier against empirical estimates for Germany recently presented in the relevant literature. To this end we have run a robustness exercise, directly

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[6] The credible set is the Bayesian equivalent to a frequentist confidence interval and differs slightly in interpretation. In our case, it guarantees that 50% of possible values of the impulse response function fall into the region spanned by the credible set (assumption: random parameters, fixed bounds of the credible set). A 50% frequentist confidence interval, by contrast, would guarantee that 50% of possible confidence intervals contain the impulse response function (assumption: fixed parameter, random bounds of the confidence interval). Note that in small-scale vector autoregressions, such as one-country applications, more stringent intervals such as 68% or 95% are typically used. In multi-country applications and in the context of spillover analysis it is not uncommon to use the more generous 50% interval, though (see, e.g., the IMF's 2015 spillover report retrieved at www.imf.org/external/np/pp/eng/2015/060815.pdf and the reference to Almansour et al., 2015, therein).

[7] In a robustness exercise, we have also estimated the GVAR model in such a way that the German budget balance does not directly enter into the other country models, excluding one potential spillover channel. Domestic responses for Germany are qualitatively very similar to those presented here.

[8] Recall that Germany was subject to an excessive deficit procedure (according to Art. 126 of the Treaty on the Functioning of the European Union) during the periods 2002–2007 and 2009–2012.

[9] According to the European Commission (2009), the cumulative 2009–2010 net effect of the German fiscal stimulus package is estimated to amount to 1.9% of GDP as recorded in 2008 (with revenue-decreasing effects outweighing expenditure-increasing ones, and about 70% of the stimulus occurring in 2009 and the rest in 2010).

Chart 1

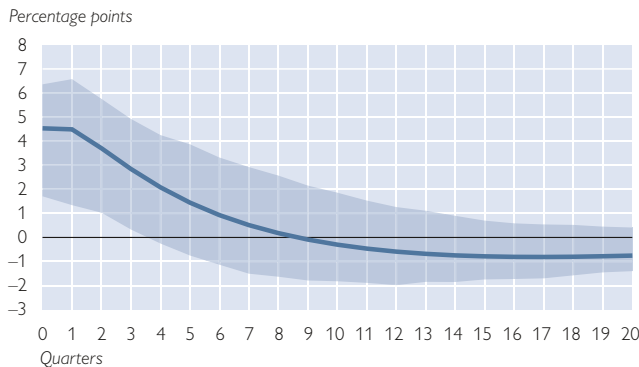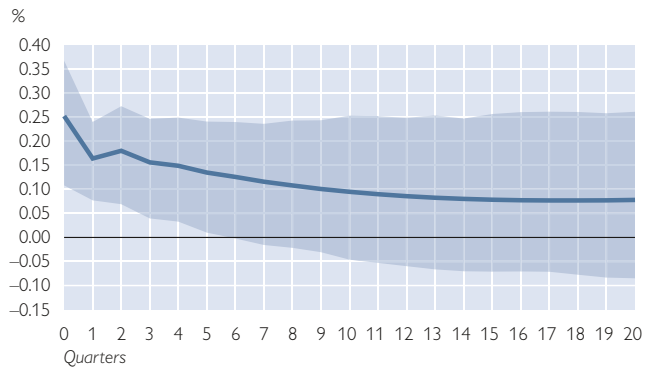## Deficit-financed government spending shock in Germany: domestic responses and structural error
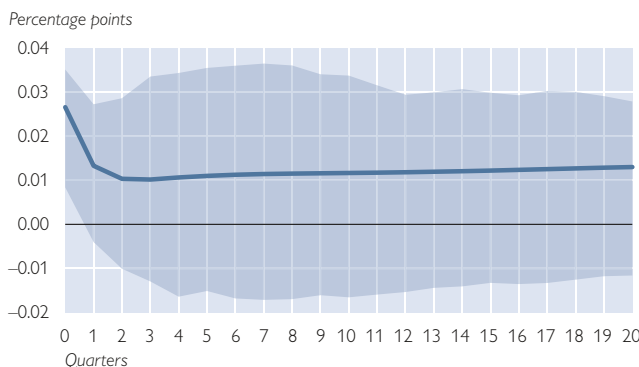
Real GDP

%
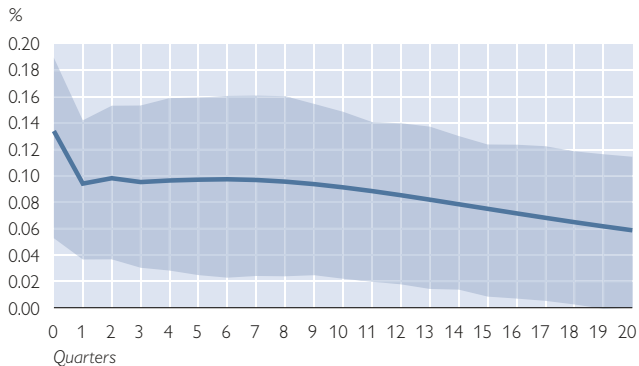
Consumer prices
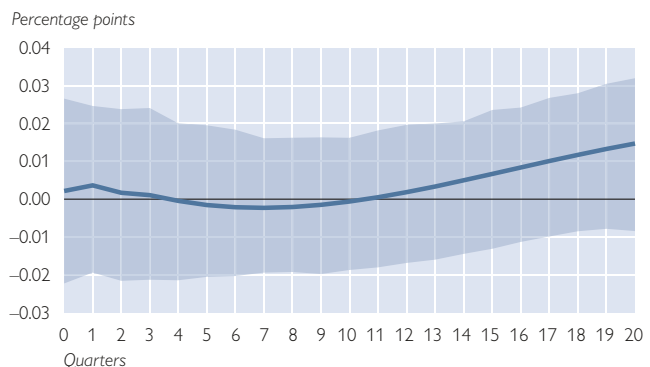
%

Budget balance

Percentage points
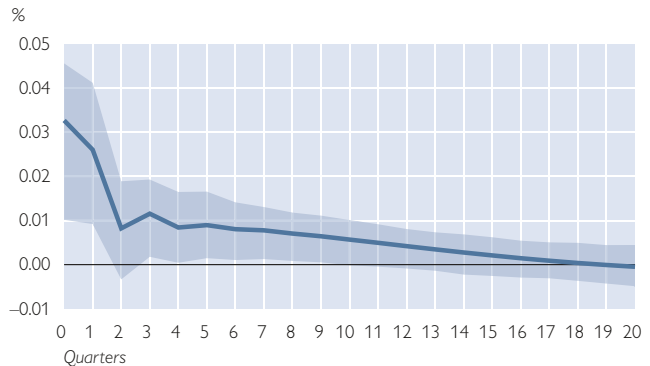
Government spending

%

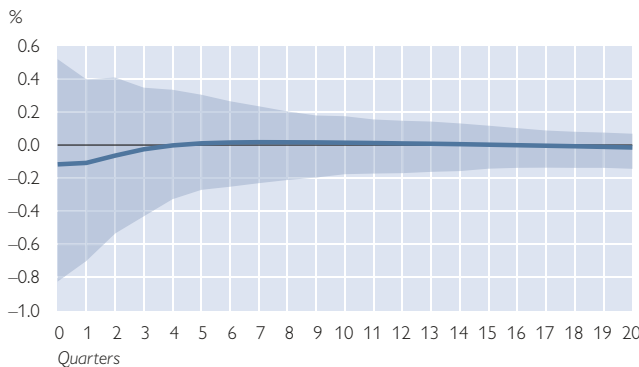**Short-term interest rates**

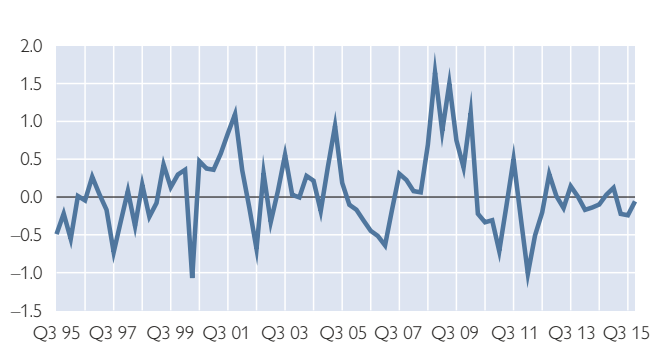Percentage points

Long-term interest rates

Percentage points

Real exchange rate against the U.S. dollar

%

Structural error

Source: Authors' calculations.

Note: Responses to an increase in Germany's government budget deficit (% of GDP) by one standard deviation. The shaded area in each panel corresponds to the 50% credible set; the median is represented by a solid blue line. A real exchange rate increase implies a gain in competitiveness against the U.S. dollar. The bottom panel on the right-hand side shows the posterior median of the structural error.

shocking government spending (by one standard deviation) instead of the fiscal deficit variable. The resulting impact multiplier is about ½ and thus well in the range of German multipliers reported in Berg (2014), who uses a time-varying vector autoregressive approach. Note also that a multiplier smaller than unity is not uncommon in an open economy model, since part of the additionally generated demand boosts demand abroad through imports.

4.2 Cross-border spillovers

So far, we have established that a spending-driven fiscal expansion boosts real GDP in Germany. Naturally, a part of the generated demand should spill over to neighboring countries through the trade and the financial channels. We capture spillovers via the first channel by including the real exchange rate and effects that are transmitted through the financial channel by incorporating interest rates, equity prices and private sector credit developments. In the context of fiscal spillovers, there might be a third channel at work, i.e., the "sovereign-risk channel" – a notion that reflects the idea that after a fiscal expansion confidence in the sustainability of a country's fiscal policy deteriorates, which in the longer term might dampen positive effects on output. Following ECB (2014), our empirical analysis does not model confidence effects other than the direct impact on long-term financing conditions. Depending on economic interlinkages, spillovers might differ considerably. To get a first overall impression of the international effects of a fiscal expansion in Germany we provide regional results for euro area core countries bar Germany (Austria, Belgium, Finland, France and the Netherlands), euro area periphery countries (Greece, Ireland, Italy, Portugal and Spain) and the group of 10 CESEE economies mentioned earlier. Regional aggregates are based on purchasing power parities. Distinguishing between effects in euro area core and periphery countries might be instructive in terms of better understanding cross-country differences in spillovers to CESEE economies. Consequently, charts 2 and 3 show spillovers within the euro area on the left-hand side (in blue for core and in orange for periphery countries) and spillovers to CESEE countries on the right-hand side.

Output spillovers from the German fiscal expansion to all three regions are positive and rather persistent. More specifically, responses in euro area core countries are significantly positive throughout the forecast horizon, while responses for CESEE economies and euro area periphery states are fraught with some estimation uncertainty in the short run (up to six quarters). This suggests that the 0.14% impact increase in German output needs time to affect international output in euro area periphery and CESEE economies. Indeed, in the longer term the effect on output is very similar in euro area core and periphery countries (about 0.06%) and even slightly stronger in the CESEE region (about 0.08%). In all three regions, output responses peak after about 14 quarters and then start to decline slowly.

Spillovers to consumer prices show a more diverse pattern across the three regions. While prices in euro area core countries show an immediate increase after the fiscal expansion, they respond more gradually in the periphery and CESEE economies. In the latter two groups, effects are also accompanied by wide credible sets. For euro area core countries, by contrast, the German fiscal stimulus translates into a significant and persistent price increase (up to 12 quarters).

Chart 2

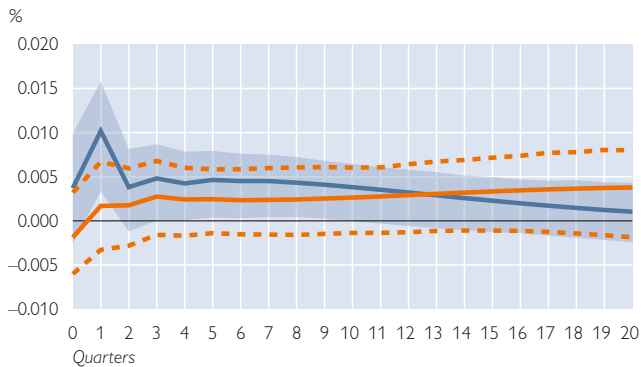## Deficit-financed government spending shock in Germany: international spillovers (part 1)
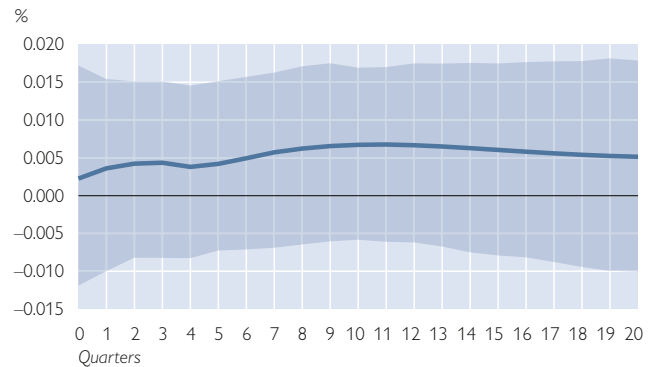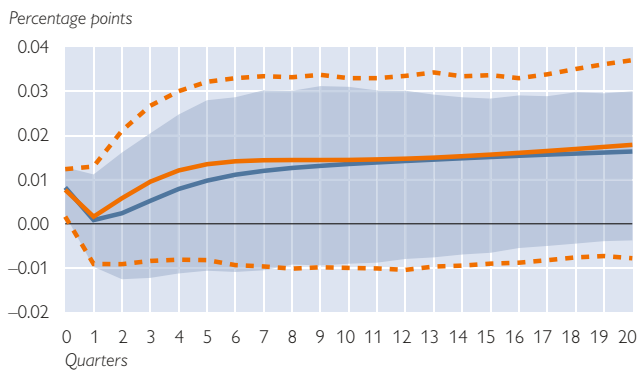
Euro area
Real GDP
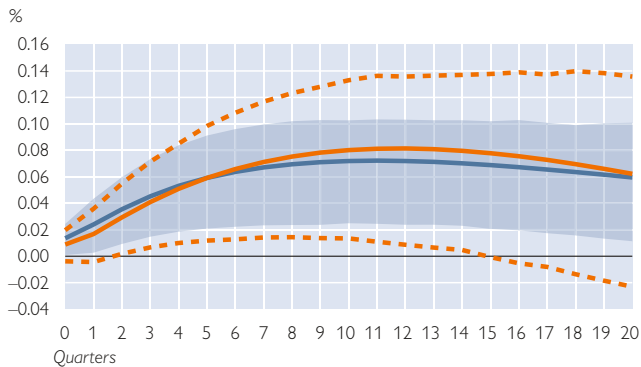
CESEE
Real GDP
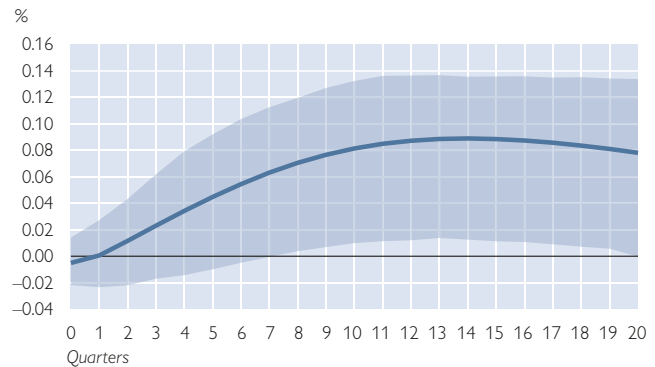
Consumer prices

Consumer prices

Short-term interest rates

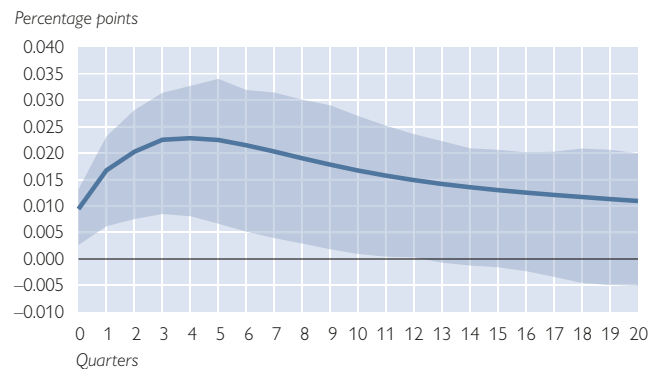**Short-term interest rates**
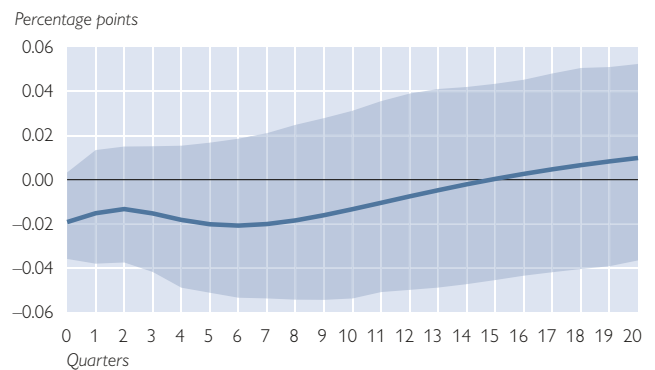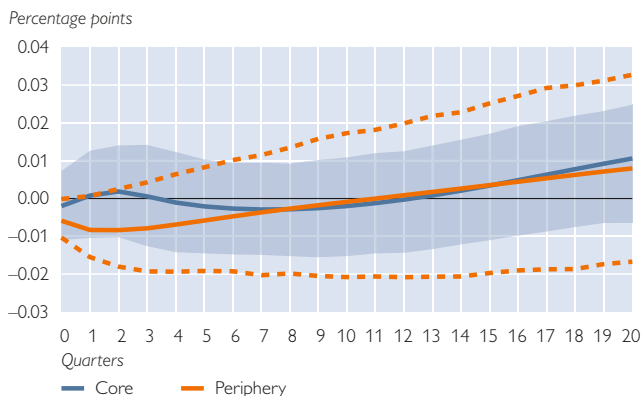
Long-term interest rates

Long-term interest rates

Legend: Core — Periphery

Source: Authors' calculations.

Note: Responses to an increase in Germany's government budget deficit (% of GDP) by one standard deviation. The solid lines represent median responses; the shaded areas and the areas between the dotted lines represent 50% credible sets; aggregation to regional figures based on purchasing power parities. Data on CESEE long-term interest rates were only available for Bulgaria.

Naturally, responses of short-term interest rates are very similar for core and periphery euro area countries. They are increased in order to absorb excess money demand stemming from the rise in economic activity (though credible sets are rather wide in this case). It could be argued that this endogenous response of monetary policy predicted from the model, while plausible from a macroeconomic point of view, does not take into account the current economic environment of ultra-low or negative interest rates. A fiscal expansion accompanied by accommodative monetary policy (i.e., no endogenous rate increase) would thus likely yield even stronger effects on output than presented here (see, e.g., in 't Veld, 2016, or Elekdag and Muir, 2014). The increase in short-term interest rates is passed on to the longer end of the yield curve but not completely. In fact, effects on long-term interest rates are modest, for both periphery and core countries. This somewhat contrasts with findings of Nickel and Vansteenkiste (2013), who report strong positive reactions of bond yields in the euro area in the wake of a German fiscal expansion. Short-term interest rates in CESEE respond negatively in the short term but not significantly so. In contrast to results for euro area countries, spillovers to Bulgarian long-term yields are significantly positive in the short run (no data available for the remaining CESEE economies).

Next, we look at the impact on real exchange rates. The increase in prices coupled with a rise in interest rates should deter external competitiveness, which is reflected in a decrease in real exchange rates against the U.S. dollar. Given the smaller reaction of prices in the euro area periphery compared to core countries, the decrease in real exchange rates is slightly stronger in the latter. Real exchange rates also appreciate in the CESEE region. However, since these economies pursue strongly different forms of exchange rate regimes, overall responses might be too crude to provide a detailed assessment. This is mirrored by wide credible sets throughout the horizon of the impulse response function.

Last, we look at spillovers to financial variables, namely real equity prices and total credit. Tobin (1969) highlights the importance of equity prices as the linkage between the real and the financial sector of the economy. From a theoretical point of view and in the context of fiscal spillovers, the impact on equity prices is ambiguous. On the one hand, a fiscal expansion might increase country-specific risk premia and hence uncertainty for investors, ultimately leading to a decrease in stock prices. On the other hand, Keynesian effects should boost consumption and growth, leading to higher equity prices (Nickel and Vansteenkiste, 2013). Which of these arguments plays the more important role remains an empirical question. Nickel and Vansteenkiste (2013) find sizable spillovers from a German fiscal expansion to stock prices in other euro area countries. Here, we generally corroborate the importance of equity prices as a transmission channel. This importance is particularly evident when we consider periphery and CESEE countries, for which we find strong, positive and significant effects on equity prices. We do also find positive effects for euro area core countries, but the credible sets are much wider. The economic expansion in Germany also drives up total credit but not significantly so. Similar to the responses of equity prices, the median effects on total credit observed for periphery and CESEE countries exceed those for euro area core countries.

Chart 3

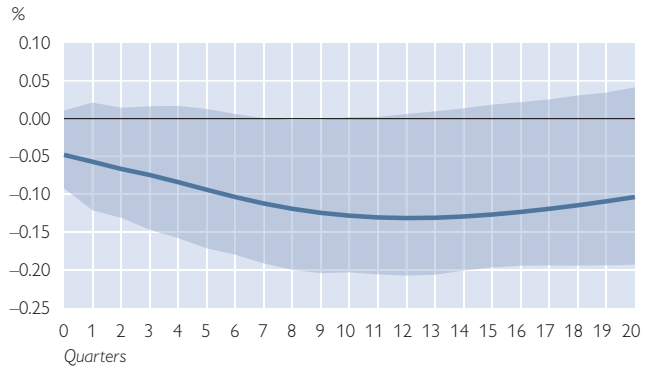## Deficit-financed government spending shock in Germany: international spillovers (part 2)
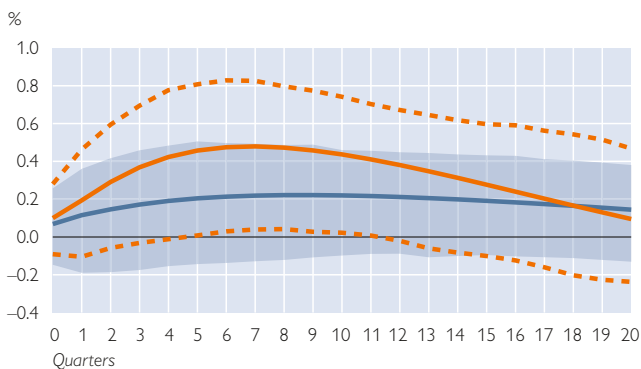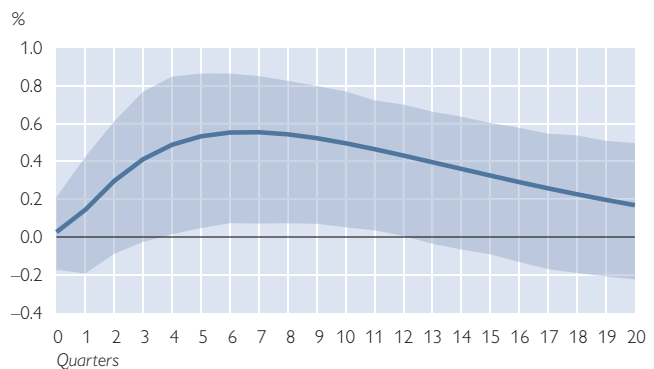
Euro area
Real exchange rate against the U.S. dollar
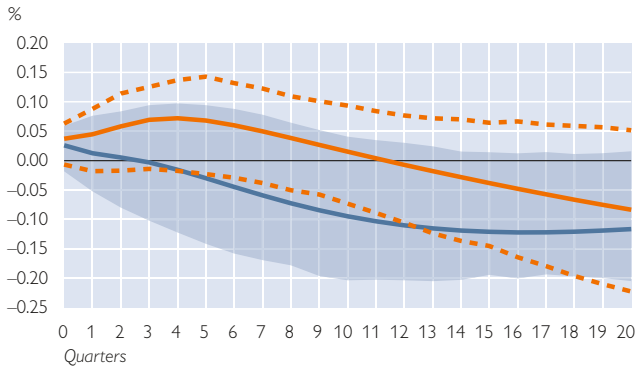
CESEE
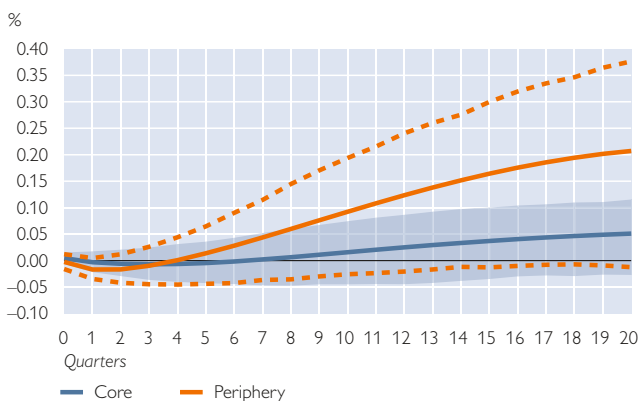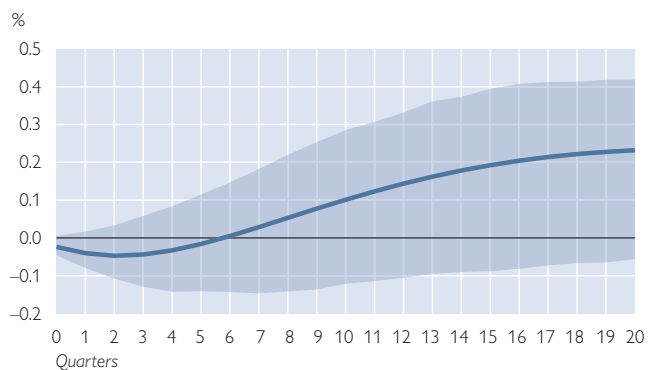**Real exchange rate against the U.S. dollar**

Real equity prices

Real equity prices

Total credit

Total credit

Core   Periphery

Source: Authors' calculations.

Note: Responses to an increase in Germany's government budget deficit (% of GDP) by one standard deviation. The solid lines represent median responses; the shaded areas and the areas between the dotted lines represent 50% credible sets; aggregation to regional figures based on purchasing power parities. A real exchange rate increase implies a gain in competitiveness against the U.S. dollar.

Summing up, we find that a spending-driven fiscal expansion[10] in Germany produces positive and significant cross-border spillovers to output. Consumer prices increase in euro area core countries, while there is no evidence of significant spillovers to inflation in CESEE and euro area periphery prices in the data. Within the euro area, short- and long-term rates tend to increase in the long run and consequently the real exchange rate appreciates. Also, the economic expansion drives up total credit and real equity prices. These effects, however, are fraught with estimation uncertainty. Real equity prices in the euro area periphery and CESEE countries show a clearer reaction. They increase rather persistently and significantly up to 12 quarters after the shock. Taken at face value, our results thus reveal that both, the trade and the financial channel seem to play a role in shock transmission, the first via an appreciation of the real exchange rate and the second via an increase in equity prices. The positive response of equity prices might indicate that wealth effects play an important additional role in providing stimulus to overall GDP growth.

4.3 Spillovers to CESEE – a mixed picture

In this section we investigate cross-country differences in the extent of spillovers to CESEE economies. For that purpose we look at posterior median peak effects of spillovers together with the accompanying 50% credible sets. These are depicted in chart 4. Note that the timing of the peak responses typically differs strongly between the country where the shock originates (i.e., Germany) and spillover-receiving countries. In the shock-originating country, peak effects typically coincide with immediate responses, while for the spillover-receiving countries they occur in the medium to long term (about 10 quarters). It is also important to stress that the size of peak effects might be explained by several factors besides direct trade linkages to the country of shock origin. For example, Fadejeva et al. (2017) assess the importance of second-round effects for particular CESEE economies. Other determinants of the size of spillovers might relate to macroeconomic vulnerabilities, the exchange rate regime or capital account restrictions (Crespo Cuaresma et al., 2016).

Peak effects of spillovers to CESEE economies are positive and significant for all countries covered. Looking at the strength of spillovers, peak effects on output are close to the domestic effects observed for Germany in Slovenia, and are even slightly stronger in Croatia and Hungary. They are also pronounced for the Czech Republic and Slovakia, on the one hand, and Russia and Turkey, on the other hand (about two-thirds of the German stimulus). While spillovers to real GDP are significantly positive, estimation uncertainty precludes a cross-country differentiation of the magnitudes of these effects. This can be seen by overlapping the credible sets for all countries. Peak effects on consumer prices are most pronounced in

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[10] *Picking up the focus on public investment put forward in the papers referenced in the introduction, we conduct a robustness exercise to decompose our narrowly defined government spending measure into its two components, i.e., government consumption and government investment. When we use government investment instead of total government spending, we get domestic responses and cross-border spillovers which are even larger, more persistent and fraught with less estimation uncertainty. For instance, median peak output responses to the public investment-driven fiscal shock are about 0.21% in Germany, about 0.14% in the examined euro area countries and a bit more than 0.15% in CESEE. When we use government consumption instead, the responses are very similar to those presented for total government spending (not surprisingly so, given that government consumption accounts for about 85% of total government spending). All these results are available from the authors upon request.*

Chart 4

Deficit-financed government spending shock in Germany: cross-country comparison of peak effects
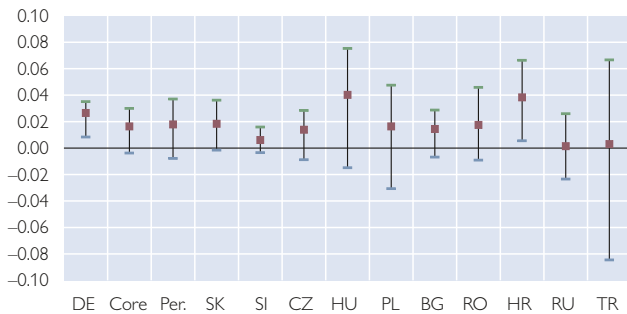
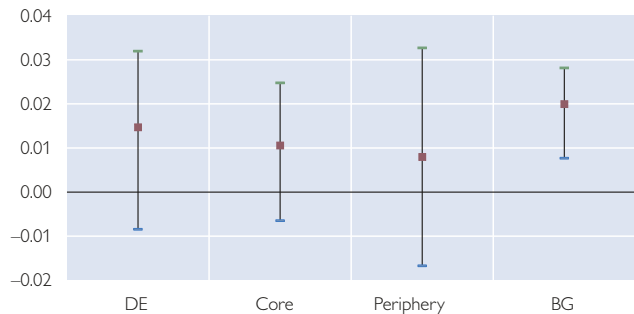**Real GDP**

Peak effects

Consumer prices

Peak effects
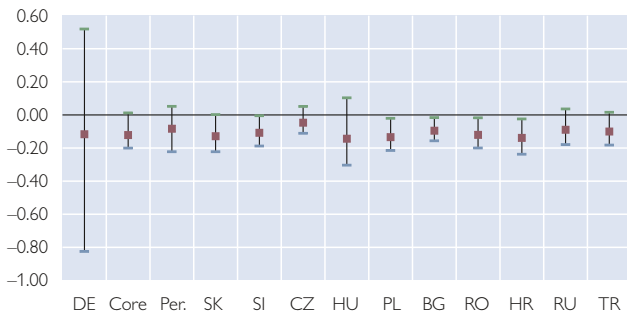

Short-term interest rates
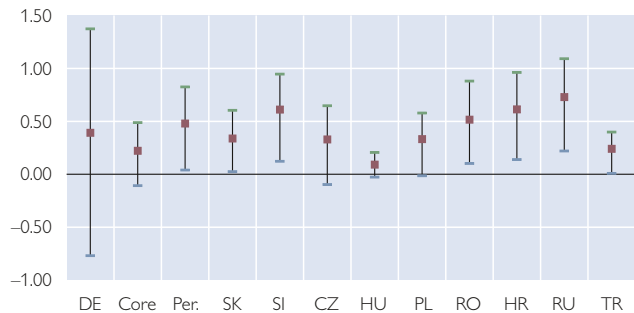
Peak effects

Long-term interest rates

Peak effects

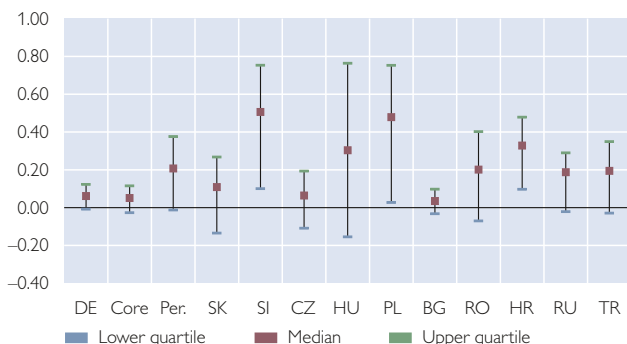**Real exchange rate against the U.S. dollar**

Peak effects

Real equity prices

Peak effects

Total credit

Peak effects

■ Lower quartile   ■ Median   ■ Upper quartile

Source: Authors' calculations.

Note: The panels show posterior median peak effects with surrounding 50% credible sets in response to an increase in Germany's government budget deficit (% of GDP) by one standard deviation. Peak effects of the real exchange rate refer to minimum effects (i.e., appreciation/loss of external competitiveness vis-à-vis the U.S. dollar).

Germany; the stimulus to prices in the other examined euro area core countries is already about three times smaller but still precisely estimated, while price rises in euro area periphery countries are estimated with a considerable margin of error. By contrast, prices in Romania and Turkey increase significantly and peak effects are even close to German domestic effects. Both countries have historically witnessed prolonged periods of high rates of inflation, which might account for the strong impact on consumer prices in these economies. Consumer prices also increase significantly in the Czech Republic and Slovenia, but to a smaller degree. With the exception of Croatia, peak effects of short-term interest rates are insignificant, while long-term interest rates in Bulgaria increase. The increase in short-term interest rates coupled with the rise in consumer prices erodes external competitiveness against the U.S. dollar in Germany, mirrored in a negative peak effect in the real exchange rate. These effects are, however, surrounded with large credible sets. Real exchange rates appreciate in the CESEE region as well, significantly so in Poland (which has already allowed its currency to adjust freely in the past), Bulgaria (response similar to the euro area given its currency board against the euro), Croatia and Romania. Real exchange rate movements are the smallest in the Czech Republic, implying a modest loss in external competitiveness only. This result might reflect the decision by the Czech National Bank (CNB) to use foreign exchange interventions to prevent a too strong appreciation of the Czech koruna against the euro.[11] Whereas the increase in aggregate demand drives up real equity prices in Germany and the euro area, peak effects are only significantly positive for the euro area periphery countries. By contrast, spillovers to CESEE economies are positive throughout the region and mostly significantly so. Significant peak effects of private sector credit are most pronounced for Poland and Slovenia, amounting to about 5 times the domestic response of credit in Germany. Larger spillovers relative to domestic credit effects have also been recently documented in Fadejeva et al. (2017), where this finding is attributed to the region's high degree of economic and financial integration with the euro area, structural features of the economies and boom-bust cycles during a large part of the time period under study.

Summing up, we find cross-country differences in the extent of spillovers from a German expansionary spending-driven fiscal shock. In terms of output, peak effects are particularly strong for Croatia, Hungary and Slovenia. For Slovenia and Croatia, strong responses to foreign shocks that originate in the euro area in general have been demonstrated in the empirical literature (see, e.g., Fadejeva et al., 2017, for Slovenia, and Krznar and Kunovac, 2010, and Feldkircher, 2015, for Croatia). As mentioned above, other macroeconomic country characteristics might account for the size of spillovers as well. The impact on inflation is strongest in countries that witnessed prolonged periods of high inflation during our sample period (e.g., Romania and Turkey). Also equity prices in CESEE show pronounced positive peak effects in response to the fiscal expansion in Germany. The same holds true for total credit, especially in Slovenia, Poland and Hungary.

[11] *More specifically, the CNB decided in autumn 2012 to use the exchange rate as a monetary policy instrument and commenced foreign exchange interventions a year later with the aim of not letting the Czech koruna appreciate well above CZK 27 per euro. For more details see: https://www.cnb.cz/en/faq/the_exchange_rate_as_monetary_policy_instrument.html#2.*

4.4 Do effects vary if the fiscal stimulus comes from a tax cut?

In this section we follow Mountford and Uhlig (2009) and identify a deficit-financed expansionary tax cut shock. As opposed to spending-driven fiscal easing, here, the fiscal stimulus comes from a reduction in net taxes rather than an increase in government spending. The restrictions applied to pin down the shock are outlined in table 1, bottom panel (restrictions on the aggregate supply and monetary policy shock remain unaltered). This fiscal shock generated on the revenue side could potentially lead to different responses in the country of shock origin, i.e., Germany, compared to the expenditure-driven shock, which ultimately might trigger different spillovers. Selected responses in Germany and spillovers to the euro area and the CESEE region are depicted in chart 5.

The top panels show domestic responses to the shock. First, the fiscal deficit increases in parallel with a decline in revenues. The effect on both fiscal variables is significant up until 4 quarters after the shock. Compared to the spending-driven fiscal shock, the impact on real GDP is similar in size but only significant up to 2 quarters after the shock. These results imply less fiscal inertia and a more temporary output impact of a revenue-driven fiscal shock, corroborating Abbas et al. (2010), who documented a longer-lasting impact of spending-driven fiscal shocks (consolidation measures in this case), or the IMF (2012), which showed that cumulated first-year fiscal multipliers are larger for an increase in government spending than for a reduction of government revenues.

The effect on the remaining variables is very similar as in the case of the spending-driven fiscal easing shock; detailed results are available from the authors upon request. The bottom panel of chart 5 shows selected international effects of the fiscal shock. Real output increases significantly in core and periphery euro area countries up until 10 quarters after the shock, while estimation uncertainty attached to overall spillovers to CESEE economies is considerable. This is in contrast to the results for the spending-driven fiscal shock, which generated longer-lasting spillovers to output in CESEE.[12]

The remaining international effects are very similar to those described in section 4.2. Notably, effects driven by both shocks are highly correlated and range from 0.92% (euro area core countries) to 0.98% (euro area periphery).

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[12] *Naturally, this result does not hold for all CESEE countries to the same extent. More specifically, output increases significantly in Croatia and Slovenia (in the long run) and Hungary (in the short run) in response to the deficit-financed expansionary tax cut shock.*
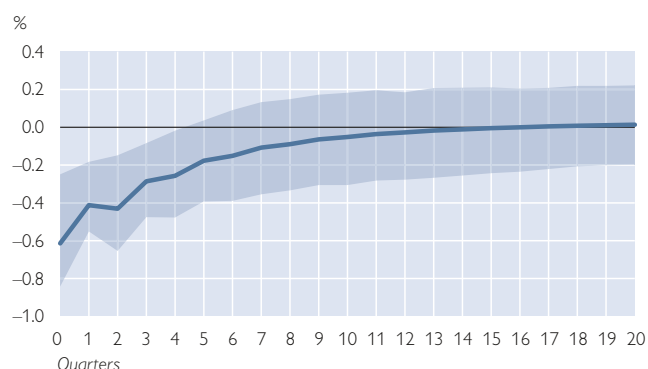
Chart 5

Deficit-financed tax cut shock in Germany: selected domestic responses and international spillovers
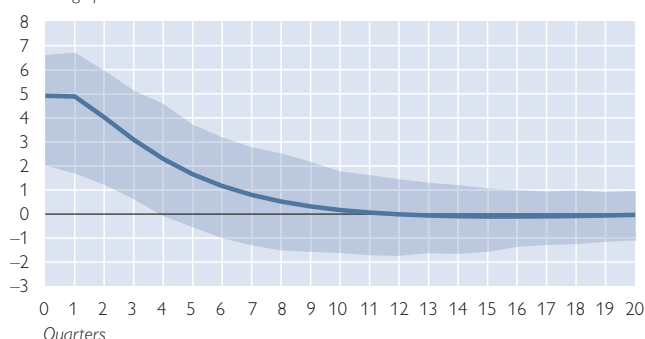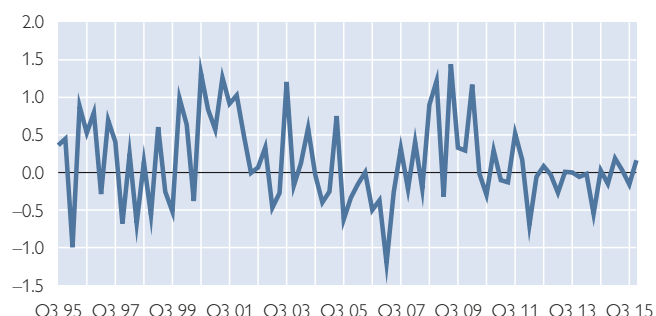
Domestic responses

Real GDP

%
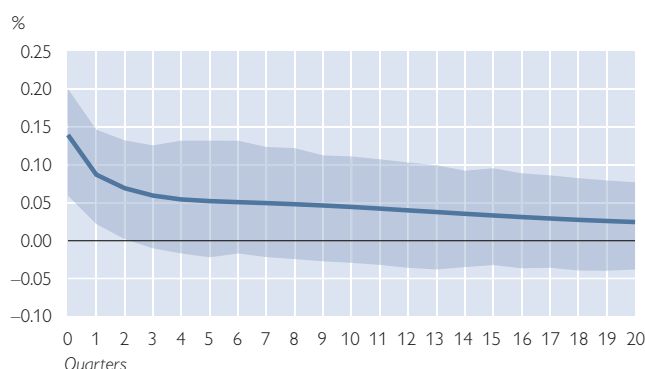
Government revenues
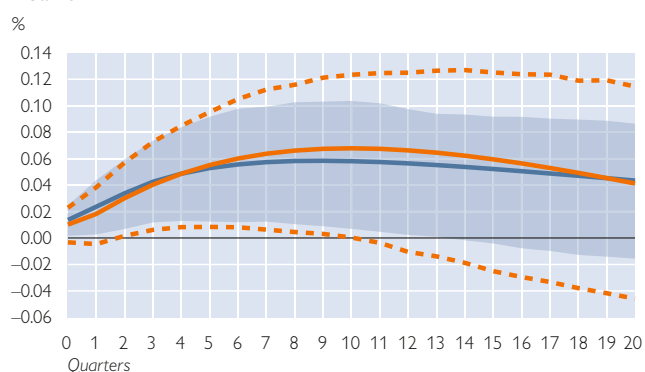
%

Budget balance

Percentage points

Structural error

Spillovers to other euro area countries

Real GDP

%

Spillovers to CESEE

Real GDP

%

Consumer prices

%

— Core   — Periphery
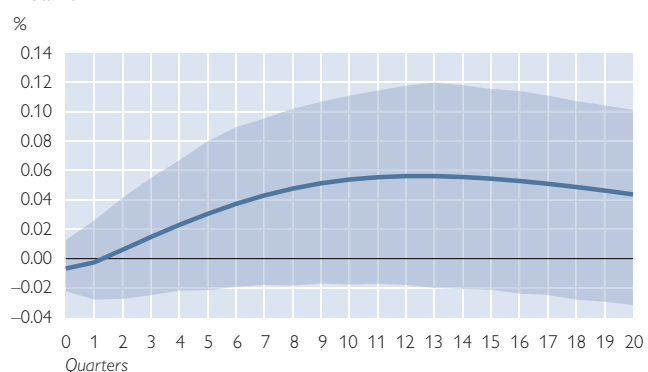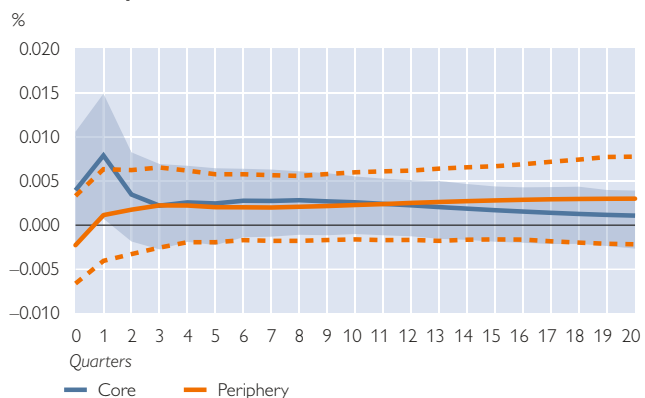
Consumer prices

%

Source: Authors' calculations.

Note: Responses to an increase in Germany's government budget deficit (% of GDP) by one standard deviation, driven by a cut of net taxes. The top four panels show selected domestic responses in Germany, the bottom four, selected responses for euro area countries and CESEE. The solid lines represent median responses; the shaded areas and the areas between the dotted lines represent 50% credible sets; aggregation to regional figures based on purchasing power parities.

5 Conclusions

Using a GVAR model with broad coverage of macrofinancial time series for 29 countries over the period 1995–2015 allows us to incorporate bilateral economic links and to explicitly take into account the second-round effects of a foreign fiscal shock. This seems to be paramount considering small open economies in Europe that not only tend to share strong trade ties within Europe, but are more generally integrated with a wide range of global trading partners. Our econometric framework is a Bayesian version of the GVAR that uses shrinkage priors on the coefficients and stochastic volatility. These features have recently been demonstrated to be of great importance for empirical macro-modeling in a VAR framework (Huber and Feldkircher, 2017).

Our main finding is that, in a majority of European economies, macroeconomic and financial variables show a comparatively strong response to a fiscal shock generated in a core economic partner country – i.e., Germany. In particular, we provide evidence for long-lasting positive cross-border *output* spillovers generated by a deficit-financed expansionary government spending shock in Germany. To be more specific, concerning the implied fiscal multiplier, a 1% increase in government spending would increase output in Germany by about 0.5%. About one-tenth of the generated stimulus is immediately transmitted to other euro area countries. In the longer term, however, the effect on output would be very similar among euro area countries (about half of the initial effect in Germany), and even slightly higher in the CESEE region (about two-thirds of the initial effect observed in Germany) – corroborating the findings of the Deutsche Bundesbank (2016) and Elekdag and Muir (2013), who also found that output in CESEE often responds more strongly to a government spending shock in Germany than output in euro area economies. Cross-border output spillovers from a deficit-financed expansionary tax cut shock are qualitatively similar to those from the spending-driven fiscal shock, but are in general more short-lived and characterized by more estimation uncertainty in the case of CESEE economies.

As regards the cross-border spillovers to other macrofinancial variables, again some notable regional differences emerge from our analysis. As a result of fiscal easing in Germany, a significant upward impact on price levels can only be observed in the short run for the euro area core countries. In the euro area periphery and CESEE economies, on the other hand, equity prices are driven up markedly and persistently, exceeding the responses of euro area core countries by a great margin. The same holds for total private sector credit, though overall responses are not statistically significant in this case. These responses of financial variables point to a prominent role of the financial channel in transmitting a foreign fiscal shock to national output in euro area periphery and CESEE economies.

While we have just highlighted differences in our results across the three examined country groups, there is also notable heterogeneity within these country groups. For instance in CESEE, spillovers to output are particularly strong in Croatia, Hungary and Slovenia; in these three countries, the peak output response is even larger than in the country of shock origin, Germany. Larger foreign than domestic effects are not uncommon in the GVAR literature, reminding us that explicitly taking into account second-round effects may reveal larger-scale responses; their consideration is thus important when studying the propagation of international shocks. A country's macrofinancial track record apparently matters

in this context: e.g., countries that have experienced prolonged periods of high inflation or pronounced credit booms in the past seem to be those whose respective price and financial variables respond more strongly to a foreign fiscal shock. A closer look at the sources of cross-country heterogeneity in fiscal spillovers is certainly an important area for future research.

In terms of policy implications, it is worth distinguishing between desired and undesired international fiscal spillovers. On the one hand, we saw that output effects from a hypothetical fiscal expansion in a key euro area country are substantially positive and long-lasting, both for the country itself and for other countries it has ties with (incorporating also spillbacks). On the other hand, we also saw that prices and financial variables respond markedly in several countries, rendering it potentially more difficult to deal with already existing macrofinancial imbalances. Also procyclicality could be a point of concern if an economy is already growing close to its potential. All in all, our results would be supportive of improving the coordination of fiscal policies in Europe. This also appears important in the current situation of monetary policy operating at the zero lower bound in most European countries.

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CESEE-related abstracts from other OeNB publications

The abstracts below alert readers to studies on CESEE topics in other OeNB publications. Please see *www.oenb.at* for the full-length versions of these studies.

The profitability of Austrian banking subsidiaries in CESEE: driving forces, current challenges and opportunities

Stefan Kavan,
Gernot Ebner,
Eleonora Endlich,
Andreas Greiner,
Manuel Gruber,
Günther Hobl,
Martin Ohms,
Vanessa Redak,
Alexandra Schober-Rhomberg,
Paul Stockert,
Daniela Widhalm,
Tina Wittenberger

This study analyzes the driving forces behind the profitability of Austrian banking subsidiaries in Central, Eastern and Southeastern Europe (CESEE) from 2003 to 2015, with a particular focus on the aftermath of the global financial crisis, which marked a turning point for their risk-return characteristics. We start off with an analysis of operating income and expense trends and delve into an analysis of credit risk costs. Then we look at large extraordinary one-off cost items before summing up with a long-term revenue bridge and an analysis of the most recent risk-return metrics. Overall, we find that the subsidiaries generated substantial profits, which have to be seen in the light of significant writedowns of their book values at the parent level. Regarding current challenges, operating profits are under pressure from falling net interest margins and fading organic growth, while remaining foreign currency loans might lead to further one-off costs, which in the past offset efficiency improvements. Credit risk also remains high in some countries, but a positive trend has emerged over the past years and provisioning levels have improved. One lesson learned in this respect is that rapid credit growth before the crisis had typically led to high nonperforming loan (NPL) ratios, which now weigh on some subsidiaries' ability to lend. Looking forward, banks continue to face a challenging environment in the CESEE region with little low-hanging fruit, as the speed of macroeconomic catching-up has slowed and low interest rates have taken hold. Therefore, Austrian banks' subsidiaries should diversify their income base, maintain their operating cost discipline and continue to strive for risk-adequately priced products in order to keep their profitability on a sustainable footing.

Published in *Financial Stability Report 32*.

Determinants of Credit Constrained Firms: Evidence from Central and Eastern Europe Region

Apostolos
Thomadakis

Based on survey data covering 6,547 firms in 10 Central and Eastern European countries we examine the impact of the banking sector environment, as well as the institutional and regulatory environment, on credit constrained firms. We find that small and foreign-owned firms are less likely to demand credit compared to audited and innovative firms. On the other hand, small, medium, publicly listed, sole proprietorship and foreign-owned firms had a higher probability of being credit constrained in 2008–2009 than in 2012–2014. The banking sector's environment analysis reveals that firms operating in more concentrated banking markets are less likely to be credit constrained. However, higher capital requirements, increased levels of loan loss reserves and a higher presence of foreign banks have a negative impact on the availability of bank credit. The evaluation of the institutional and regulatory environment in which firms operate shows that credit information sharing is negatively correlated with access to credit. Furthermore, we show that banking sector contestability can mitigate this negative effect. Finally, we find that in a better credit information sharing environment, foreign banks are more likely to provide credit.

Published as *OeNB Working Paper 207*.

Event wrap-ups and miscellaneous

Completing Economic and Monetary Union

Forum hosted by the OeNB in Vienna on November 24 and 25, 2016

Compiled by
Andreas
Breitenfellner,
Carmencita
Nader-Uher and
Teresa Messner[1]

The EMU Forum 2016 brought together academics, experts and policymakers to debate about the political economy of the euro area. The resilience of Economic and Monetary Union (EMU) hinges on its capability to reduce and distribute risks among its member countries. Aiming at long-term convergence, the deepening of EMU implies ex ante coordination and swift crisis management by strong institutions. Drawing on the Five Presidents' Report on "Completing Europe's Economic and Monetary Union,"[2] the forum explored ways to bolster the single currency by promoting economic, financial, fiscal and political union. Organized by the OeNB together with the Euro50 Group and the Vienna Institute for International Economic Studies (wiiw), the event built on last year's workshop "Toward a Genuine Economic and Monetary Union."

EMU deepening between ambition and realism (keynote speeches)

In his opening remarks, OeNB Governor *Ewald Nowotny* noted that since last year's Workshop "Toward a Genuine EMU" the circumstances have changed dramatically. Brexit has revealed a paradox: It points to weaknesses of current EU arrangements, the improvement of which would require "more Europe." But at the same time, Nowotny remarked, Brexit is strengthening those populist and Eurosceptic political forces that object to any deeper integration. He stressed that policymakers should never stop explaining that moving forward toward a more stable, prosperous and fair EMU is in the very best interest of all European citizens. Nowotny cautioned against accepting a potential growth rate as low as 1½% as a given, as this would imply accepting a situation of permanently high unemployment. This would seriously threaten social cohesion. A step in the right direction is the Investment Plan for Europe ("Juncker Plan"), which is broadly operating as scheduled. But in addition, Europe would need initiatives to foster a strong and deep European capital market. This includes the creation of European assets that can attract international investors, such as the "European Safe Bonds" proposed by Princeton economist Markus Brunnermeier.

Peter Praet, Member of the Executive Board of the ECB, stated that the shallow and bank-centric financial integration in the euro area has been impeding the shock absorption function of the financial sector, thus amplifying negative shocks during the last crisis. It is important to reduce such procyclicality of the financial sector despite the current "integration fatigue." Praet noted that the incompleteness of the banking union has been hindering the effectiveness of monetary policy, which is not well-suited to address asymmetric shocks for a heterogeneous group of countries, even less so when predominantly nationally owned banks lack the necessary liquidity. While the euro area has supranational regulatory and supervisory institutions, risk-sharing remains limited to the national level. In order to complete banking union, supervisory responsibilities and related activities need to be shared

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[1] This summary report has been compiled on the basis of notes taken by Christian Belabed, Andrea Hofer, Paul Ramskogler, Thomas Scheiber, Maria Silgoner and the three mentioned authors.

[2] Juncker, J.-C., D. Tusk, J. Dijsselbloem, M. Draghi, M. Schulz. 2015. Completing Europe's Economic and Monetary Union. Brussels, European Commission.

and streamlined across countries. A positive sign against the partial re-nationalization that occurred during the crisis would be if banks transformed subsidiaries into branches. Since the capacity to absorb shocks increases when resources and risks are pooled across countries, a system-wide approach would require a European Deposit Insurance Scheme (EDI) as well as a common fiscal backstop within the Singe Resolution Mechanism (SRM).

Klaus Regling, Managing Director of the European Stability Mechanism (ESM), emphasized that EMU has always been a political and economic project. He stressed that "the euro is worth defending." Experts and policymakers should communicate the economic benefits of a single currency: open markets, lower transaction costs, transparent prices, increased trade, productivity and growth, as well as a centralized monetary policy that balances the interests of all Member States. After the global financial crisis, EMU was successfully shielded against the sovereign debt crisis by national efforts, and many new institutions have been created: (1) the ESM as a lender of last resort to sovereigns; (2) the Single Supervisory Mechanism (SSM), the Single Resolution Board (SRB) and the Single Resolution Fund (SRF) as integral parts of banking union. Europe has become stronger and two out of three euro area citizens support the single currency. Regling mentioned the still-existing lack of risk-sharing between the euro area countries and thus strongly advocated the completion of banking union and capital markets union and the creation of a centrally managed unemployment fund. The more channels are used for risk-sharing, the more resilient EMU will become.

Outside views on EMU reform (policy panel)

The panel's chair, Michael Landesmann (wiiw), urged that, given the crucial phase EMU and EU have entered, the discussion on their future should go beyond technical aspects.

Iain Begg (European Institute, London School of Economics) stated that the EU's Achilles heel is the implementation of and compliance with the rules set on a European level. Moreover, he criticized the Excessive Imbalance Procedure's asymmetric approach to current account imbalances, as it only allows current account deficits of up to 4% of GDP but current account surpluses of up to 6%. Begg argued that the EU should focus more on solidarity instead of stability, which requires a more expansionary fiscal policy for the euro area as a whole, also on the part of large surplus countries such as Germany.

He was followed by *Hanna Gronkiewicz-Waltz*, the mayor of Warsaw, who stated that the EU was facing serious challenges ahead. According to her, however, the Polish population is currently not in favor of further integration. Ten years ago, Poland might have joined the euro area but today the mood has changed. More-over, members of the younger generation doubt they will be better off than the generations before them. Worse, they participate less in the democratic process than the older generation, which will bias election results against deeper integration for years to come.

Aneta Krstevska, chief economist of the National Bank of the Republic of Macedonia, put her focus on the economic and financial integration of the Western Balkan countries with the EU. According to public opinion surveys, the Western Balkan countries are still mostly in favor of joining the EU, considering the economic benefits of integration. The candidate countries have already established strong

economic and financial linkages to the EU, and economic circumstances are improving constantly. However, on their way to EU accession these countries still face a variety of challenges in implementing structural reforms and improving economic performance. In this regard, cooperation and support by the EU institutions remain valuable.

Ambassador *Wolfgang Petritsch*, President of the Austrian Marshall Plan Foundation and former UN High Representative for Bosnia-Herzegovina, observed that, in an unfortunate turn of events, the "Europeanization" of the Balkans evident in the 1990s has now given way to a "Balkanization" of Europe. The widespread "euroization" or unilateral adoption of the euro causes many problems. If Europe wants to become a global player it is vital to keep focused on the candidate countries of the Western Balkans.

György Surányi, former governor of Magyar Nemzeti Bank, argued that the constantly recurring breaches of the Maastricht Treaty are a sign that the rules are inadequate. Current fiscal rules, with their strong emphasis on cyclically adjusted fiscal balances, would eventually lead to the disappearance of public debt. "Do we really think that this would be desirable or possible?" he remarked. The external imbalances of Member States are not being tackled in a serious manner; the lack of effective demand in Europe calls for more activist economic policy. Pre-in Member States such as Hungary are reluctant to rush into the euro area as long as fiscal union and political union remain incomplete. Yet, only if they apply now can they effectively participate in shaping the future of EMU.

Economic union: convergence in the euro area – a pious wish? (session 1)

The session's chair, *Kurt Pribil*, Executive Director at the OeNB, illustrated the divergence tendencies in the euro area: In the first years of EMU, Germany had recorded low growth and high unemployment but recovered as a result of reforms and rising demand from emerging markets. Spain, on the other hand, had initially benefited from capital inflows causing a housing boom, but was seriously hit by the crisis as capital was repatriated (to Germany) and today is only about to reach pre-crisis GDP levels. Taken together, the first 15 years of monetary integration did not bring about the desired catching-up of poor to rich countries.

According to *Anna auf dem Brinke*, research fellow at the Jacques Delors Institute, Berlin, the track record of EMU has been mixed: Economic convergence in the run-up years toward monetary unification was followed by years of divergence that cumulated in the financial crisis. But the euro area needs cyclical convergence to reduce imbalances, and real convergence for social cohesion, she stated. This requires investment, structural reforms and stronger institutions. A promising area of reforms would be the completion of the European single market for ser- vices, the fastest growing and most employment-intensive sector. Investment in childcare, education and training has the potential for integrating outsiders into the labor market and enhancing equity and efficiency. Survey data has revealed that public support for reforms hinges on how informed the public is.

Fabian Zuleeg, Chief Executive, European Policy Centre, investigated the question whether divergence has the power to tear the EU apart. He claimed that convergence is a decisive factor for the euro area, because it has implications for the accumulation of imbalances and for long-term prospects and thus for investment, growth, jobs, the banking system and public finances. Economically, we can deal with divergence, but politically we cannot, Zuleeg stated. The Five Presidents' Report offers valuable

suggestions, but the intentions to actually implement the reforms are limited. First steps like the establishment of the European Fund for Strategic Investment (EFSI) have not been truly effective since the EFSI benefits countries that have sufficient fiscal space anyway. As an alternative, Zuleeg proposed, we should implement a golden rule for public and social investment. Developing a European fiscal capacity would be key to overcoming limitations of fiscal space. It also might help solving the political economy problem of vanishing trust.

Heiner Flassbeck, editor of Makroskop and former chief economist of UNCTAD, focused on current account imbalances within the euro area in the run-up to the crisis that were mainly caused by unequal wage developments in northern and southern Europe. He was particularly critical of German wage restraint. Since the crisis, however, this situation has changed drastically and, with the exception of France, all member countries of the euro area now have positive external balances. He criticized the asymmetrical approach in the macroeconomic imbalance procedure (MIP), which favors surpluses over deficits, implying the false assumption that economic growth could be fostered through exports alone. At the same time, restrictions imposed on fiscal policy prevent a revitalization of economic activity. In terms of accounting identities, EMU is faced with an unusual situation: all domestic sectors of the economy – households, firms and to some extent even governments have become or are becoming net savers. This has given rise to unusual situations, such as the one in Italy: a country having a current account surplus only because of a sustained period of recession resulting from contractionary fiscal policies. In Flassbeck's opinion, only the government sector can solve the problem of low economic growth, especially since monetary policy transmission via lowering interest rates is no longer working, even though the ECB is trying to convince the corporate sector to assume a debtor role again, rather than a creditor role.

Financial union: a tool for risk-sharing in EMU? (session 2)

The session's chair, *Philip Reading*, Director of the OeNB's Department for Financial Stability and the Supervision of Less Significant Institutions, addressed the importance of identifying and preventing macrofinancial risks, which requires the swift implementation of macroprudential measures and mechanisms.

Daniela Gabor, associate professor at UWE Bristol, argued that the "Lamfalussy approach" of the pre-crisis EMU era had aimed at a market-based financial system, which was more efficient than bank-based systems but also inherently instable. Already Lamfalussy had acknowledged that a liquid and transparent government debt market plays a central role in a financial union. This was illustrated by the sovereign debt crises, which brought about a fragmentation of the banking sector just as collateral for repo transactions (i.e. sovereign bonds) was being rated differently across euro area countries. With the crisis, the creation of banking union marked a shift toward federalization. Capital markets union (CMU), however, implies a new market approach toward simple, transparent and standardised (STS) securitizations. Since market-based finance is collateral-intensive, markets that circulate collateral need adequate regulation. Gabor advocated fiscal risk-sharing and an institutional framework to ensure that all euro sovereigns supply safe assets.

Nicolas Véron, senior fellow at Bruegel, Brussels, stated that one has to accept the current political preference of private over public risk-sharing as a basic working assumption; i.e. banking union and CMU are prioritized over fiscal union.

Although it is still incomplete, banking union has borne some fruit: the shared supervision is already quite powerful. To strengthen banking union, however, it is necessary to improve crisis management instruments. With regard to the diabolic loop between banks and sovereigns, he favored maintaining the fiction of credit risk-free sovereign debt in the euro area instead of introducing risk weights, but he added that the exposure of banks to government bonds needs to be limited. However, bank resolution and a euro area-wide deposit insurance scheme are still in their infancy, he argued. Véron called for a single rulebook for bank insolvency instruments and more profound crisis management instruments and resources, including a fiscal backstop.

Stephan Bruckbauer, Chief Economist of UniCredit Bank Austria, considered financial union as crucial for risk-sharing. The regulation of financial markets has effectively helped to decrease risk exposure, however, the decision-making processes lack transparency and are thus hard to understand. Despite some re-convergence of corporate interest rates, the heterogeneity of the euro area banking and financial markets remains the main challenge for financial union. In particular, Bruckbauer noted different behaviors in the housing, corporate and state sectors across member countries. Furthermore, European institutions, such as the SSM need further streamlining, and more transparency needs to be guaranteed to avoid "regulatory overkill." A European deposit insurance scheme might enhance financial integration, he added. Lastly, for a financial union to function, deeper fiscal integration is required.

Fiscal union: toward a treasury for the euro area? (session 3)

The session's chair, *Peter Mooslechner*, Executive Director at the OeNB, stated that fiscal union affects both public risk reduction and risk-sharing.

Pasquale D'Apice, European Commission, focused on comparing the EU budget and the U.S. budget, using average data for the years 2007 to 2013. However, unlike the EU, the U.S.A. rests on a fully fledged fiscal and political union. There is a direct fiscal relationship between U.S. citizens and their federal government, which covers more than half of total public spending. In the EU virtually all of the comparable expenditures are made by Member States. Cross-border EU budget flows amount to around 0.25% of the EU's GDP, i.e. only one-sixth of those recorded in the U.S. in normal times, but they have a higher redistributive power. The allocation of the EU budget is heterogeneous across countries and progressive, supporting catching-up regions.

Jürgen Matthes, Cologne Institute for Economic Research, questioned the narrative according to which the crisis brought to the fore that EMU sustainability hinges on more fiscal integration. According to him, the causes that made the sovereign debt crisis so severe were exceptional and non-repetitive. Also, significant demand-side weaknesses were only temporary and ad hoc measures are sufficient to address them (e.g. ECB policy and EFSI). Many reforms at EMU and country level have addressed the key roots of the crisis and have improved the functioning of EMU – a fact that is often underappreciated. He suggested a fiscal macroeconomic stabilization mechanism in order to improve the capacity for counter-cyclical fiscal policy, but said that this might prove unnecessary if the measures that have already been adopted are fully implemented and further necessary steps are taken.

Eulalia Rubio, Jacques Delors Institute, diagnosed major shortcomings in EMU's fiscal framework in terms of future crisis responses and fiscal stabilization measures at both the aggregate and the national level. She highlighted the need for a deeper reform in the long term, guided by criteria such as consistency, political feasibility, pragmatism and appropriate sequencing. She elaborated on potential design principles for a fiscal risk-sharing mechanism and on her reform idea of an EMU stabilization function based on the EFSI. The advantages Rubio sees in such an EFSI-based stabilization function are its significant fire power and possible allocation to high-quality projects.

Political union: a European dream? (policy panel)

The final policy panel was chaired by *Doris Ritzberger-Grünwald*, Director of the OeNB's Economic Analysis and Research Department.

Ulrike Rabmer-Koller, President of the European Association of Craft, Small and Medium-sized Enterprises (UEAPME), called for politically realistic steps instead of a fully fledged political union, such as the introduction of National Productivity Boards as recommended by the European Council. Such steps could be complemented by productivity partnerships of social partners and initiatives to close the gaps in investment and skills. Rabmer-Koller advocated more flexibility with respect to the Stability and Growth Pact in exchange for reforms, e.g. of pension systems, as well as efficient European automatic stabilizers provided that moral hazard is excluded. In her opinion, unfeasible dreams should not be used as an excuse for national governments and social partners to do nothing.

Gabriele Bischoff, President of the Workers' Group in the European Economic and Social Committee, emphasized that EMU does not only need to rest on an economic and political pillar, but also on a social pillar. She pointed out that it has been the social erosion of the middle class in Europe, in particular, that has given rise to xenophobic nationalism. She suggested focusing on reforms within the existing treaty framework, such as a golden rule for investment or a European unemployment insurance scheme. Democratic legitimacy could be built on existing political institutions such as the Macroeconomic Dialogue, the Committee of the Regions and national parliaments. Job security and higher wages could reinstall confidence that Europe can shape globalization.

Paul Lindquist, European Committee of the Regions' Commission for Economic Policy, acknowledged that EMU has achieved a lot in terms of travel cost savings, growth, jobs, social fairness and stability. Nevertheless, increasing regional disparities have to be addressed by appropriate cohesion policies. Local and regional governments can provide the necessary expertise; they account for more than half of public investment and may apply the necessary ownership for reforms. Lindquist went on to say that populism is a reaction to overpromises and underdeliveries but does not offer solutions. Politicians should tell the truth, i.e. that a well-managed EMU with a fiscal capacity could help to better absorb crises.

Heinz Zourek, former Director General for Taxation and Customs Union of the European Commission, pointed to the lack of knowledge about the meaning of political union. Establishing a euro area treasury or a finance ministry are, in his view, two different things with regard to both the expenditure and revenue side. However, on taxation he noted that every Member State is now on its own, which is contributing to the erosion of political support for EMU. Instead of scapegoating

Brussels, national politicians need to explain that joint forces facilitate solving urgent problems even without a full-fledged political union.

In his closing remarks, *Edmond Alphandéry*, Chairman of the Euro50 Group and former finance minister of France, stated that despite the blow Brexit has delivered to the European Union, the EU remains attractive to Balkan countries. The values of the EU are more important than ever: democracy, diversity and freedom. He reminded the audience of the EU's origins, quoting Robert Schuman's acclamation, "Never again war in Europe!". He also alluded to the Monnet Method and stated that whenever a problem arises at the European level one has to find a solution at the European level. Currently, this applies to security issues with conflicts in neighboring regions and risk concerning relations between Europe and the U.S.A., since the latter is threatening to fall into isolationism. Pooling defense expenditures would also help to reduce German current account surpluses. On the euro area, he noted that even if the crisis has not been solved in an ideal manner, the euro is more solid than some believe. In conclusion, he insisted on two further reform steps: a European deposit insurance scheme and sovereign bankruptcy rules.

21st Global Economy Lecture:
"How should Europe meet the duty of rescue towards the displaced and the poor?"

On November 28, 2016, the Oesterreichische Nationalbank (OeNB) hosted the 21st Global Economy Lecture[1], which was delivered by Sir Paul Collier, Professor of Economics and Public Policy at the Blavatnik School of Government, Oxford University, and a Professorial Fellow of St Antony's College. Professor Collier started his lecture by elaborating on the two aspects of a society's so-called duty of rescue: The first aspect is that it is commonly understood by societies that there is a duty to help when someone is in need. Applying this ethical consensus to displacement, this means that the *normal life of displaced people needs to be restored.* Collier defines displacement as a situation in which people have to abandon their place of living because they are facing threats from social breakdown, famine, war, etc. Displacement is not confined to those who have to cross international borders, which applies only to a small share of refugees, but also refers to people that have to leave their local environment and seek refuge elsewhere in their country. The second aspect of the duty of rescue is the common understanding that it is the duty of society to collectively *bring back hope when someone is in despair.*

In Collier's view, neither of these two objectives can be achieved by migration to far-removed destinations (i.e., in the current situation, Europe). After all, displaced persons or refugees do not migrate because they are seeking better chances, but because they are looking for safety. Refugees, in general, do not seek a "honeypot" destination but a safe haven, which is similar to their home and where normality can to some extent be restored. Often, the chosen countries, among them Iran and Pakistan, share characteristics of being relatively safe countries in disrupted regions.

Paul Collier criticized that the post-war refugee institutions – the Geneva Convention and the UNHCR – are no longer sufficient instruments for responding to the current refugee challenge. The Geneva Convention was established in the context of the cold war, offering rescue for politically persecuted individuals from their governments. Political refugees today only account for a small share. The UNHCR, on the other hand, was established to address the post-war refugee situation in Europe, offering temporary shelter and food. At present, longer-term care would need to be installed in order for refugees to be able to integrate and earn a living.

Collier claimed that Europe has failed to provide the so-called safe havens with the financial aid necessary to enable the displaced to stay near their former homes. He added that Europe could provide development aid by outsourcing some of its economic activities to those regions, which have labor but no effective employment opportunities and infrastructure. Once the situation in the refugees' home countries is safe again, the new knowledge acquired by the refugees is brought back to their origin countries, which Collier sees as vital for post-conflict recovery.

Professor Collier also criticised that Europe has failed to assess the effects of an uncontrolled influx of refugees to Europe on the conflict countries themselves. Since the costs for the exodus to Europe are extremely high, mostly well-educated

Compiled by
Teresa Messner

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[1] *The Global Economy Lecture is an annual event organized jointly by the Oesterreichische Nationalbank (OeNB) and The Vienna Institute for International Economic Studies (wiiw).*

people from wealthier families have been able to reach Europe, leading to a brain drain that will prove problematic for the recovery process once the local situation improves.

As a solution, he suggested to offer education and – more importantly – to bring economic opportunities to these (mostly African) countries. However, since the affected countries often lack what he termed "organizational capital" and because of high risks involved, modern firms whose business models rest on the principles of high productivity, scale effects and specialization, avoid these markets. Therefore, effective state subsidies would be required to provide incentives for firms to act as pioneers in these regions.

Olga Radzyner Award winners 2016

The Olga Radzyner Award is bestowed annually on young economists from Central, Eastern and Southeastern Europe (CESEE) for excellent scientific work on European economic integration. The Oesterreichische Nationalbank (OeNB) established this award in 2000 to commemorate the former head of its Foreign Research Division, Olga Radzyner, who pioneered the OeNB's CESEE-related research activities.

Compiled by
Markus Eller

In 2016, the OeNB received 20 submissions for the Olga Radzyner Award from candidates from 12 countries. In comparison to previous years, these submissions focused particularly strongly on labor market questions (e.g. labor market effects of educational reforms, female employment, determinants of labor productivity, role of demographic factors in explaining unemployment, or the link between wage inequality and international trade). On top of that, the submitted papers covered a variety of topical issues ranging from real economic to financial sector questions, among others: real convergence in Europe and the middle-income trap, reasons for lengthy economic stagnation or sluggish recovery after banking crises, macroeconomic stabilization effects of monetary and fiscal policies, impact of FDI on productivity growth, financial stability risks, drivers of euroization in Southeastern Europe or capital market developments in CESEE.

From these submissions, the jury of OeNB reviewers chose three papers for distinction with the Olga Radzyner Award because of their outstanding originality, quality and state-of-the-art analytical methods. The awards were conferred by OeNB Governor Ewald Nowotny on November 28, 2016, on the occasion of the 21st Global Economy Lecture at the OeNB. The winners are (in alphabetical order):

Ernests Bordāns (from Latvia) and *Madis Teinemaa* (from Estonia) – for their paper "Baltic tigers facing the middle-income trap?". *Bordāns* and Teinemaa are financial analysts at an investment fund in Riga and the award-winning paper is based on their joint BA thesis written at the Stockholm School of Economics in Riga. Although its title suggests that it only focuses on the Baltic countries, the paper is characterized by an impressive effort to, first, provide an assessment whether a given country (out of 152) was trapped in middle income in a specific year (1960–2014) and, second, to study which impact a variety of (more than 100) macroeconomic, financial and institutional variables have on the probability of a country being trapped in middle income, using multivariate panel logit models. The results show that qualitative public institutions, business-friendly regulation, a lower degree of income inequality, a stable macroeconomic environment, prudent fiscal policy, a higher share of tertiary education or higher technological and innovation advancement decrease a country's probability of facing a middle-income trap (MIT). Moreover, historical predictions show that MIT probabilities did significantly increase in several euro area periphery countries well before the trap actually occurred. This paper is of strong relevance for the award, as being captured in an MIT would hamper economic convergence among European countries, thus threatening further European economic integration.

Edvard Orlić (from Croatia) – for his paper "Cross-sectoral FDI spillovers and their impact on manufacturing productivity." Orlić is a lecturer at Bournemouth University and the awarded paper is part of his PhD thesis written at Staffordshire University. The paper examines the role of FDI in affecting a country's long-run productivity growth rate through intra- and inter-industry spillovers. For this purpose, firm-level data and annual input-output tables for five CESEE countries for the period 2002–2010 were investigated. On the one hand, the estimation results from a dynamic panel model point to negative intra-industry FDI spillovers: An increasing

share of foreign firms in the same manufacturing industry apparently has a negative impact on productivity, probably reflecting incentives for foreign firms to prevent the leakage of embodied knowledge and technologies to their direct domestic competitors. On the other hand, there is evidence for considerably positive inter-industry FDI spillovers: Local manufacturing firms gain productivity if their service suppliers (especially knowledge-intensive service providers) or their manufacturing customers largely consist of foreign firms. Disentangling the impact of vertical linkages according to industry source adds substantial value to existing research.

Oana Peia (from Romania) – for her paper "Banking crisis, R&D investments and slow recoveries." Peia is a PhD student at ESSEC Business School, Cergy, in France and the award-winning paper is part of her PhD thesis. This paper proposes a new channel for medium- to long-run effects of banking crises on real economic growth, namely the disproportionate discouragement of investments in innovative, growth-enhancing technologies. The theoretical part of the paper integrates a bank-run model into an endogenous growth model. Assuming that creditors are sufficiently pessimistic about the liquidity needs of the real sector following a systemic banking crisis, this model setup predicts that credit supply constraints are tightened, prompting firms to shift their investments to short-term, low-productivity ones. These theoretical predictions were tested with industry-level data for 13 OECD countries by applying difference-in-difference estimations for both panel and cross-sectional data. The respective estimation results show a strong support for a differential impact of banking crises on investments in innovation, as industries more dependent on external finance and located in more strongly bank-based economies invest disproportionately less in R&D following episodes of bank distress. A direct policy implication of these results is the necessity to support R&D spending after banking crises, e.g. by alleviating financial constraints for firms investing in innovation.

Notes

Studies published in Focus on European Economic Integration in 2016

For more information, see *www.oenb.at*.

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Periodical publications

Starting from 2016, the OeNB's periodical publications are available in electronic format only. They can be downloaded at *https://www.oenb.at/en/Publications.html.* If you would like to be notified about new issues by e-mail, please register at *https://www.oenb.at/en/Services/Newsletter.html.*

Geschäftsbericht (Nachhaltigkeitsbericht)
Annual Report (Sustainability Report)

German | annually
English | annually

This report informs readers about the Eurosystem's monetary policy and underlying economic conditions as well as about the OeNB's role in maintaining price stability and financial stability. It also provides a brief account of the key activities of the OeNB's core business areas. The OeNB's financial statements are an integral part of the report.
http://www.oenb.at/en/Publications/Oesterreichische-Nationalbank/Annual-Report.html

Inflation aktuell

German | quarterly

This publication presents the OeNB's analysis of recent inflation developments in Austria and its inflation outlook for Austria for the current and next year. In addition, it provides in-depth analyses of topical issues.
http://www.oenb.at/Publikationen/Volkswirtschaft/inflation-aktuell.html

Konjunktur aktuell

German | seven times a year

This publication provides a concise assessment of current cyclical and financial developments in the global economy, the euro area, Central, Eastern and Southeastern European countries, and in Austria. The quarterly releases (March, June, September and December) also include short analyses of economic and monetary policy issues.
http://www.oenb.at/Publikationen/Volkswirtschaft/konjunktur-aktuell.html

Monetary Policy & the Economy

English | quarterly

This publication assesses cyclical developments in Austria and presents the OeNB's regular macroeconomic forecasts for the Austrian economy. It contains economic analyses and studies with a particular relevance for central banking and summarizes findings from macroeconomic workshops and conferences organized by the OeNB.
http://www.oenb.at/en/Publications/Economics/Monetary-Policy-and-the-Economy.html

Fakten zu Österreich und seinen Banken
Facts on Austria and Its Banks

German | twice a year
English | twice a year

This publication provides a snapshot of the Austrian economy based on a range of structural data and indicators for the real economy and the banking sector. Comparative international measures enable readers to put the information into perspective.
http://www.oenb.at/en/Publications/Financial-Market/Facts-on-Austria-and-Its-Banks.html

Financial Stability Report

English | twice a year

The reports section of this publication analyzes and assesses the stability of the Austrian financial system as well as developments that are relevant for financial stability in Austria and at the international level. The special topics section provides analyses and studies on specific financial stability-related issues.
http://www.oenb.at/en/Publications/Financial-Market/Financial-Stability-Report.html

Focus on European Economic Integration

English | quarterly

This publication presents economic analyses and outlooks as well as analytical studies on macroeconomic and macro-financial issues with a regional focus on Central, Eastern and Southeastern Europe.
http://www.oenb.at/en/Publications/Economics/Focus-on-European-Economic-Integration.html

Statistiken – Daten & Analysen

German | quarterly

This publication contains analyses of the balance sheets of Austrian financial institutions, flow-of-funds statistics as well as external statistics (English summaries are provided). A set of 14 tables (also available on the OeNB's website) provides information about key financial and macroeconomic indicators.
http://www.oenb.at/Publikationen/Statistik/Statistiken---Daten-und-Analysen.html

Statistiken – Daten & Analysen: Sonderhefte
German | irregularly

Statistiken – Daten & Analysen: Special Issues
English | irregularly

In addition to the regular issues of the quarterly statistical series "Statistiken – Daten & Analysen," the OeNB publishes a number of special issues on selected statistics topics (e.g. sector accounts, foreign direct investment and trade in services).

http://www.oenb.at/en/Publications/Statistics/Special-Issues.html

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English | quarterly

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CESEE Research Update
English | quarterly

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http://www.oenb.at/en/Publications/Economics/Workshops.html

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http://www.oenb.at/en/Publications/Economics/Working-Papers.html

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English | annually

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http://www.oenb.at/en/Publications/Economics/Economics-Conference.html

Proceedings of the Conference on European Economic Integration
English | annually

The OeNB's annual Conference on European Economic Integration (CEEI) deals with current issues with a particular relevance for central banking in the context of convergence in Central, Eastern and Southeastern Europe as well as the EU enlargement and integration process. For an overview see:

http://www.oenb.at/en/Publications/Economics/Conference-on-European-Economic-Integration-CEEI.html

The proceedings have been published with Edward Elgar Publishers, Cheltenham/UK, Northampton/MA, since the CEEI 2001 (*www.e-elgar.com*).

Publications on banking supervisory issues
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http://www.oenb.at/en/Publications/Financial-Market/Publications-of-Banking-Supervision.html

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