# FOCUS ON EUROPEAN ECONOMIC INTEGRATION

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# Contents

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Applicants will be notified of the jury's decision by end-November.

# Studies

# The refinancing of CESEE banking sectors: What has changed since the global financial crisis?

*Mathias Lahnsteiner[1]*

*We systematically analyze the liability structure of banking sectors in Central, Eastern and Southeastern Europe (CESEE) in a cross-country perspective over a decade (2008–2018). The refinancing structures have materially transformed since the start of the global financial crisis (GFC), as witnessed by a marked decline of net foreign liabilities (NFL) in % of GDP in various countries. Turkey represents a notable exception from this general trend, as its banking sector has accumulated net foreign liabilities – to an extent comparable to the levels seen in some CESEE EU Member States before the GFC. The general NFL reduction was in some cases partly driven by a shrinking credit stock (in % of GDP or even nominally) and, in almost all cases, partly or fully driven by increasing domestic deposits. Hence, most CESEE banking sectors saw a shift in their funding structure from net foreign liabilities to domestic deposits. At the same time, the share of overnight deposits in total liabilities increased considerably in many countries. It is also noteworthy that the gaps between foreign currency loans and foreign currency deposits narrowed or even disappeared, so that foreign currency loans no longer surpass foreign currency deposits at the current stage (or only slightly so). Looking ahead, deposits will likely continue to grow (as long as the high nominal wage growth is maintained), but banks in the EU will have to adapt their funding structure to the new regulatory environment by issuing bonds that are eligible under the minimum requirement for own funds and eligible liabilities (MREL). Hence, the role of debt securities is expected to increase from a very low level.*

## Introduction and literature overview

The refinancing structure of banking sectors in Central, Eastern and Southeastern Europe (CESEE) started to increasingly draw attention of researchers and policy-makers during the boom years in the run-up to the global financial crisis (GFC). As Walko (2008) pointed out, banks in several CESEE countries strongly relied on funding from abroad to refinance brisk domestic lending activity in the years leading up to the GFC. High net foreign liabilities (calculated as the difference between foreign liabilities and foreign assets of the domestic banking sector, NFL) that arose alongside elevated loan-to-deposit ratios and funding gaps (i.e. higher loans than deposits) made some banking sectors vulnerable to negative spillovers at times of vanishing global funding availability following the collapse of Lehman Brothers.

Hence, not surprisingly, the focus of research on CESEE banking sectors funding published in the first few years after the start of the GFC was on the role of foreign funding. Looking at the period from mid-2008 to end-2009, Lahnsteiner (2011) highlighted that liability-side net capital outflows affected, above all, banking sectors that had very high NFL at the start of the GFC (i.e. in the Baltic countries,

particularly Latvia and Estonia) and banking sectors with comparatively low levels of foreign ownership (Slovenia, Ukraine and Russia).[2] Some papers have come to the conclusion that the existence of European banking networks – characterized by a high share of foreign ownership in CESEE banking sectors – stabilized cross-border flows and was a crisis-mitigating factor in the immediate period following the collapse of Lehman (see e.g. Berglöf et al., 2009, as well as Vogel and Winkler, 2011). Hameter et al. (2013) aimed to pin down this argument further by examining Austrian bank-level data, distinguishing between direct cross-border lending to affiliates and direct cross-border lending to nonaffiliates. This analysis showed that intragroup cross-border credit from Austrian banks was more stable than lending to nonaffiliated borrowers during the 2008/2009 financial crisis period. In general, the cross-border deleveraging process in CESEE proceeded gradually, and disorderly developments could be avoided.

Notwithstanding the stabilizing role of intragroup cross-border flows immediately after the collapse of Lehman, several papers have found evidence for the transmission of international shocks through multinational banks via the credit channel in the wake of the GFC. De Haas and Van Lelyveld (2014) even find that foreign bank subsidiaries curtailed credit more aggressively than domestic banks. Yet, De Haas et al. (2015) show that while both domestic and foreign banks sharply curtailed credit during the financial crisis, foreign banks that participated in the Vienna Initiative[3] were relatively stable lenders. Focusing on Poland, Pawlowska et al. (2015) conclude that intragroup links between banking institutions can serve both as an important channel for the international transmission of liquidity risk and as a stabilizing mechanism during liquidity crises. Vujic (2015) provides evidence that the internal capital markets of foreign-owned banks were a transmission channel of the euro area sovereign debt crisis shock from Western Europe to CESEE.

Impavido et al. (2013) argue that foreign funding sources were reduced in response to reduced external imbalances, a reduced ability to tap international savings, banking groups' own strategies, initiatives by some regulators and against the background of uncertainties surrounding the future of the banking union project. Regulatory initiatives include the Austrian supervisory guidance on strengthening the sustainability of the business models of large internationally active Austrian banks adopted in 2012 ("Sustainability Package"). As one of its pillars the loan-to-local stable funding ratio (LLSFR) was introduced as a monitoring tool with the aim to achieve a more balanced refinancing structure for exposed foreign subsidiaries.[4] Accordingly, the Austrian supervisory authorities have been monitoring the stock and flow LLSFRs of Austria's largest banks' foreign subsidiaries (see OeNB, 2019).

[2] In most CESEE EU Member States the share of foreign-owned assets in total banking sector assets was still relatively high in 2018, with more than 80% in the Czech Republic, Slovakia, Lithuania and Croatia, between 60% and 80% in Estonia, Latvia, Bulgaria and Romania, and between 40% and 60% in Hungary, Poland and Slovenia. The share came down noticeably in Estonia (from 99% in 2008), Romania (from 88% in 2008) and Poland (from 73% in 2008), while it increased in Slovenia (from 28% in 2008). In Russia, Ukraine and Turkey, foreign-owned banks have played a less important role with the respective shares ranging from about 10% to 30%. For more information on ownership trends (also with respect to state-owned banks) in banking sectors worldwide, see Cull et al. (2017).

[3] Under the Vienna Initiative, parent banks committed themselves to maintain their exposures and recapitalize their subsidiaries in CESEE.

[4] For further details, refer to https://www.oenb.at/en/financial-market/financial-stability/sustainability-of-large-austrian-banks-business-models.html.

In this paper, we systematically present aggregated balance sheet data of CESEE banking sectors (including private and public banks) in a cross-country perspective. By updating part of the analysis provided in Lahnsteiner (2011), we look at the ten-year period from 2008 to 2018. Against the background of deleveraging marked by declining NFL, the following questions arise: In how far did the decline in NFL go hand in hand with shrinking balance sheets? And in how far were NFL replaced by other refinancing instruments? It turns out that indeed both factors were at work, with varying contributions across countries and with domestic deposits emerging as the main replacement item. Consequently, this paper also aims to provide a starting point for scrutinizing deposit increases and thereby represents a shift in the strand of literature on bank funding analyses from foreign funding to domestic funding. Questions that will be addressed include: Which sectors drove the increase in deposits? Which role do overnight deposits and foreign currency deposits play?

While Lahnsteiner (2011) was based on a country sample comprising Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, Slovakia and Slovenia, the Baltic countries as well as Ukraine and Russia, this study also includes Turkey.[5] Turkey represents an interesting case, as the banking sector's funding structure in recent years developed similarly to other CESEE countries ahead of the GFC.

This paper is structured as follows: Section 1 discusses changes in the refinancing structure with a special focus on the development of net foreign liabilities within five-year subperiods as well as the emergence of deposit surpluses. Section 2 then provides more detailed information on deposit increases broken down by sectors and the increasing role of overnight deposits. Section 3 looks at deposit euroization and examines whether remaining foreign currency (FX) loans are matched by FX deposits. Section 4 concludes.

## 1 How have net foreign liabilities and funding gaps developed?
### 1.1 Funding by means of net foreign liabilities has almost vanished

As shown in charts 1a and 1b, the banking sectors of all countries except the Czech Republic recorded positive net foreign liabilities (NFL) at end-2008. A cross-country comparison at the beginning of our observation period shows that the NFL position was very small in Russia and Turkey, considerable in Poland, Slovakia and Croatia, high in Hungary, Slovenia, Bulgaria and Romania, and very high in Estonia, Latvia and Lithuania. NFL peaked at the end of 2008 in most countries under review, even though Lehman Brothers already collapsed in September 2008. It is noteworthy that most CESEE banking sectors still received additional funds (mainly within the category of other investments) from abroad in the second half and even in the final quarter of 2008.

A look at the five-year period from end-2008 until end-2013 generally confirms the finding that banking sectors with very high NFL or a low level of foreign ownership saw the most pronounced net capital outflows in the wake of the GFC[6]

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[5]  *Hence, we focus on a country sample representing the 11 CESEE EU Member States plus the 3 largest non-EU CESEE countries.*

[6]  *In Russia, the reduction of NFL already took place in the course of 2008.*

(see Lahnsteiner, 2011) and hence a reduction in the NFL position – also beyond 2009. In Ukraine, the downward adjustment proceeded fastest, as the NFL position in % of GDP more than halved already in 2010. In Estonia and Slovenia, the NFL position in % of GDP fell below half of the end-2008 level in 2011, while in Latvia and Lithuania, this was the case in 2012. In all these countries, the fast decline in the NFL position was accompanied by a reduction of the domestic private sector credit stock (i.e. claims of domestic banks vis-à-vis private nonbanks) as a percentage of GDP as well as in nominal terms.

Among the countries recording a high level of foreign ownership, Bulgaria saw the fastest decline, as NFL as a percentage of GDP fell markedly below the 2008 level already in 2011. In contrast to the countries mentioned in the above paragraph, the decline in the period from 2008 to 2013 did not go together with a decline in private sector credit but resulted from an increase in domestic deposits. In Hungary and Romania, two countries that directly benefited from the Vienna Initiative, NFL as a percentage of GDP were still above 80% of the 2008 level in 2011 in the former and above 90% in the latter country. Afterwards, however, a notable decline could be observed. In Romania, the private sector credit stock in % of GDP was only slightly below the 2008 level in 2013 and higher in nominal terms (even when adjusted for exchange rate valuation effects). In Hungary, the private sector credit stock in % of GDP as well as in nominal terms fell markedly below the 2008 level in 2012 and 2013.

Chart 1a

**Private sector credit and its refinancing**



*% of GDP*
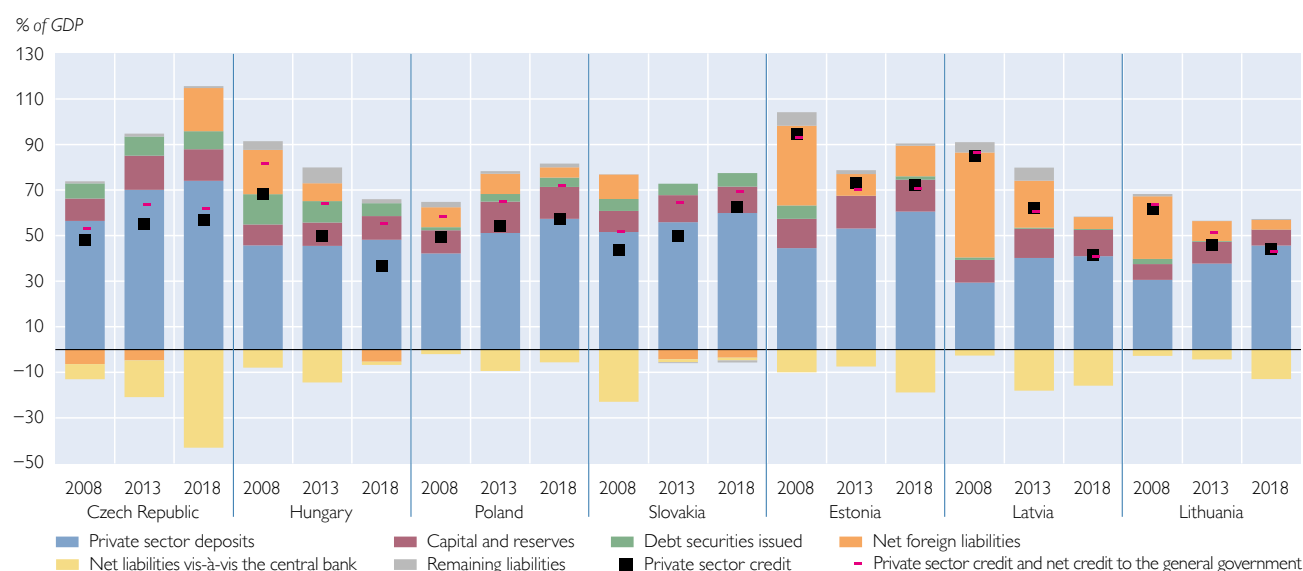
Source: Eurostat, national central banks, national statistical offices.

Chart 1b

**Private sector credit and its refinancing**

*% of GDP*



Source: Eurostat, national central banks, national statistical offices.

Legend:
- Private sector deposits
- Net liabilities vis-à-vis the central bank
- Capital and reserves
- Remaining liabilities
- Debt securities issued
- Private sector credit
- Net foreign liabilities
- Private sector credit and net credit to the general government

If we look at the first five years after 2008 together, the changes measured in percentage points of GDP were substantial in some cases: NFL declined by 25 percentage points in Estonia and Latvia, a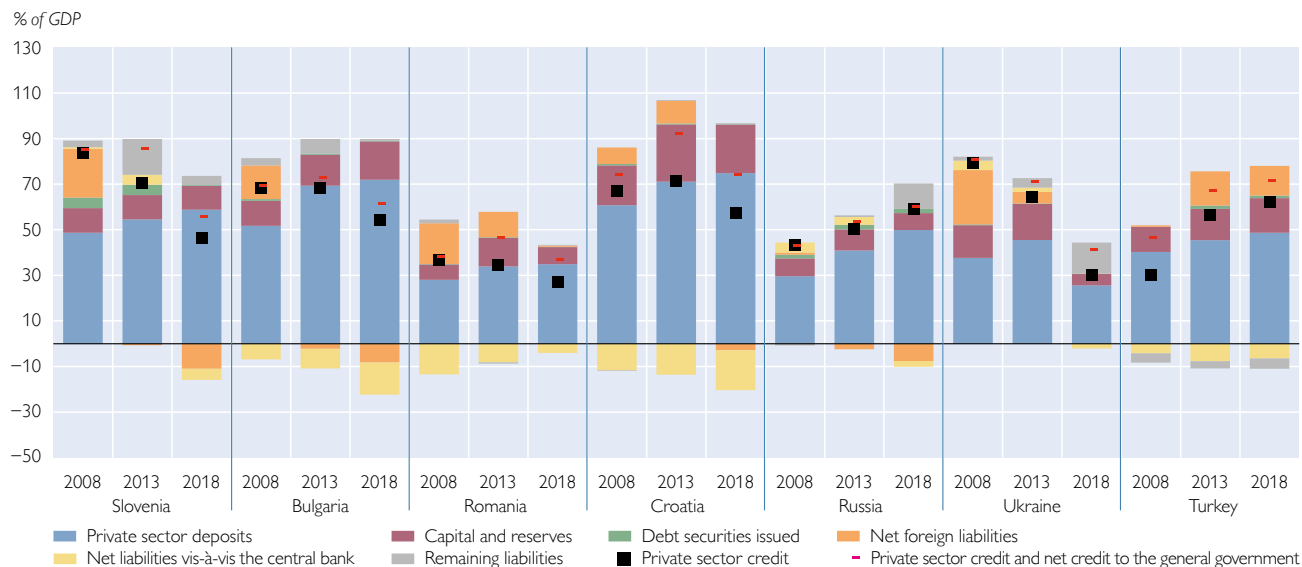bout 20 percentage points in Lithuania, Slovenia and Ukraine, and about 15 percentage points in Bulgaria. In Hungary, the decline was considerable (about 10 percentage points) and somewhat higher than in Romania. While most banking sectors recorded declines, it should be noted that the NFL position remained almost unchanged in Poland and increased markedly in Croatia, while the Czech Republic maintained its net foreign asset position in the first couple of years after 2008. Slovakia's banking sector represents a special case, as its NFL position did not reflect a funding gap in 2008 because private sector deposits exceeded private sector credit. Yet, funds deposited at the central banks ahead of euro adoption reflected mainly surplus funds received from foreign banks. The decrease in sterilization operations with Národná banka Slovenska (NBS) in 2009 was reflected on the liability side in a decline in deposits and loans received from foreign banks (NBS, 2009). Hence, after euro adoption at the beginning of 2009, the NFL position was quickly reversed into a net foreign asset position (NFA, which means that foreign assets surpass foreign liabilities). It is worth noting that the Turkish banking sector accumulated NFL to a considerable extent starting from 2010, reaching a level in 2013 that was comparable to NFL positions seen in Romania and Bulgaria back in 2008. Yet, with the notable exceptions of Turkey, Poland and Croatia, NFL positions were already markedly smaller in 2013 than in 2018. In the Czech Republic, Slovakia, Slovenia, Bulgaria and Russia, a small NFA position was recorded in 2013.

How did NFL and NFA positions develop in the five years from 2013 to 2018? In general, NFL positions declined (Poland, Latvia, Lithuania), in some cases coming down to almost balanced positions (Romania and Ukraine), or even reversed into NFA positions (Hungary and Croatia). In Turkey, NFL peaked at 16% of GDP in

2015, before declining slightly to 13% in 2018. In Estonia, the NFL position was larger in 2018 than in 2013, but still considerably below its 2008 level.

Looking at the countries that recorded an NFA position in 2013, it turns out that the NFA position slightly diminished in Slovakia between 2013 and 2018, while it rose in Slovenia, Bulgaria and Russia (partly reflecting sanctions that restrict the access of important Russian banks to international financial markets). In the Czech Republic, the NFA position developed distinctly differently, as it reversed into a large NFL position. As chart 1a shows, the buildup of NFL was accompanied by rising net assets vis-à-vis the central bank. The rise in foreign liabilities (and their maintenance at elevated levels) has to be seen in the context of the central bank's exit from the exchange rate floor in 2017 and the expected related appreciation of the Czech koruna and a growing positive interest rate differential vis-à-vis the euro area due to hikes of the Czech key policy rate since 2018. Czech banks placed the funds received from abroad (including from parent banks) mainly with the Czech central bank (see Czech National Bank, 2017 and 2019). This is again an example for an NFL position that is not related to a funding gap. In fact, private sector deposits exceeded private sector credit by 17% of GDP in the Czech Republic at end-2018, compared to 15% in 2013 and 8% in 2008.

From a policy perspective, it is also worth noting that declines in NFL were not accompanied by a rise in domestically issued debt securities in CESEE. In fact, in most countries where debt securities played a more noticeable role at the start of the GFC, the volume of debt securities issued as a percentage of GDP either remained broadly unchanged (Czech Republic, Slovakia) or declined (Hungary, Estonia and Slovenia). Only in Poland did the importance of debt securities in the funding structure increase somewhat. All in all, it seems that – particularly in the run-up to the GFC – issuing domestic bonds became dispensable for CESEE banks because of the availability of foreign funding (primarily from foreign parent banks that were able to issue debt securities themselves at more favorable terms than their CESEE subsidiaries) and later because of shrinking balance sheets as well as increasing use of the domestic deposit potential.

### 1.2 From funding gaps to deposit surpluses

Deposit surpluses have become a quite common feature among CESEE banking sectors. Funding gaps narrowed or deposit surpluses emerged, as the private sector credit stock shrank (in % of GDP or even nominally) and private sector deposit volumes increased. In nominal terms, private sector credit volumes did not decline in all countries and not over the whole observation period but, at end-2018, the private sector credit-to-GDP ratio was below the level seen at end-2008 in 9 out of 14 countries (Hungary, Estonia, Latvia, Lithuania, Slovenia, Bulgaria, Romania, Croatia and Ukraine). In nominal terms (and adjusted for exchange rate valuation effects), out of these nine countries, only Estonia, Bulgaria and Romania featured a higher private sector credit stock at end-2018 compared to end-2008. It is worth noting that private sector credit stocks were influenced by policy measures with regard to foreign currency loans (see box 1 in Beckmann, 2017), sales of nonper-forming loans to nonbank investors and write-offs in several CESEE countries. The transfer of assets from banks to an asset management company in the wake of a banking crisis explains part of the steep decline in Slovenia. After declines in the first couple of years and episodes of creditless economic recoveries, the nominal

private sector credit stocks started to rise in most cases in the period from 2015 to 2017, but so far this recovery has only led to a deceleration of the decline or a stabilization of private sector credit-to-GDP ratios.

The importance of changes in private sector credit and private sector deposits in driving funding gaps or deposit surpluses varied widely by countries. In Hungary, the private sector credit stock was lower by about 30 percentage points of GDP in 2018 compared to 2008, while deposits were only 2 percentage points higher. In Slovenia, the credit contraction was slightly deeper, but deposit volumes increased by about 10 percentage points. In Estonia, Latvia, Lithuania and Romania, the decline of credit in % of GDP was also higher than the increase in deposits, though the difference in the contribution of the two components was much smaller in Lithuania than in the former two countries. In Ukraine, the funding gap narrowed over the ten-year period, as the decline in the private sector credit stock in % of GDP surpassed the decrease in the private sector deposit volume in % of GDP. In several countries the narrowing of funding gaps and emergence of deposit surpluses reflected strong to very strong private sector deleveraging and to some extent increasing deposit volumes.

In Bulgaria and Croatia, however, the increase in deposit volumes surpassed the decline in credit volumes over the observation period. As a result, the deposit surplus in these two countries stood at about 17% of GDP at end-2018, reaching the highest level in the region – together with the Czech Republic.

Turning to countries that saw their credit-to-GDP ratios rise over the observation period, it is worth noting that deposits grew more strongly than credit in the Czech Republic, thus widening the deposit surplus. In Poland, a similar development led to the closure of the funding gap at the end of the observation period. In Slovakia, however, the increase in private sector deposit volumes could not keep pace with the rise in the private sector credit-to-GDP ratio, leading to a moderate funding gap. In Turkey, a considerable funding gap emerged due to a strong increase in the private sector credit-to-GDP ratio and a much lower increase in the private sector deposit volume. In Russia, the banking sector still shows a funding gap, which, however, declined over the observation period, as the private sector deposit volume in % of GDP grew more strongly than the private sector credit stock.

The emergence or persistence of private sector deposit surpluses (or domestic private sector credit shortfalls) in several countries (Czech Republic, Hungary, Lithuania, Slovenia, Bulgaria, Romania and Croatia) deserves some more attention. First, it should be noted that deposit surpluses become smaller (in the Czech Republic, Slovenia and Bulgaria) or disappear (in Hungary, Romania and Croatia) if we take into account net credit to the general government (see charts 1a and 1b). Nevertheless, it is noteworthy that private sector deposits have become large enough to cover not only private sector credit but also net credit to general government in full or in part in some countries. Moreover, even after taking into account the government sector, deposit surpluses appear particularly sizable in the Czech Republic and Bulgaria. As these deposit surpluses in domestic banking sectors coexist with external debt of the private sector, room has opened up for the private sector (in particular enterprises) to substitute external debt with domestic banking sector credit. In fact, the total deposit surplus (including net credit to the general government) made up about 80% of private sector external debt (amounting to 15% of GDP) in the Czech Republic at end-2018 and 50% of private sector external debt (amounting to 22% of GDP) in Bulgaria.

While in the Czech Republic the private sector credit level (including direct cross-border credit) was assessed to lie below the level justified by fundamentals in Comunale et al. (2018), the opposite was the case in Bulgaria (as well as in Croatia). While from a funding perspective, private sector credit does not appear excessive in Bulgaria, as it is predominantly domestically financed, it turns out to be overshooting (in particular when including direct cross-border credit) when put into context with macroeconomic and financial fundamentals (see Comunale et al., 2018). In a CESEE comparison, private sector deposits look very large in Bulgaria, as it is the country with the lowest GDP per capita among the CESEE EU Member States.

## 2 A closer look at deposits

A simple look at deposit developments by sector (chart 2) reveals that the increase in private sector deposits from 2008 through 2018 was driven by the household sector in most countries (private sector deposit levels are shown in charts 1a and 1b). Household sector deposits increased by more than 10 percentage points of GDP in the Czech Republic, Poland, Bulgaria, Croatia and Russia. Also, in Latvia, Lithuania, Slovenia and Romania, the contribution of the household sector to the increase in private sector deposits exceeded that of enterprises. In Estonia, household sector deposits grew swiftly as well, but their rise was marginally below the increase in deposits accounted for by enterprises. Only in Turkey and Hungary, did the enterprise sector accumulate more deposits than the household sector, with household deposits even shrinking as a percentage of GDP in Hungary. Ukraine is the only country in which deposits of both households and enterprises in % of GDP turned out to be lower in 2018 than in 2008. In this case, the erosion of private sector deposits is related to the strong impact of the GFC and the deep recession and confidence loss in 2014–2015, as described in Barisitz and Lahnsteiner (2009 and 2017).

Alongside considerably rising deposits in most CESEE countries, the role of overnight deposits increased in a low interest rate environment. Hence, the maturity structure saw a shift to very short-term liabilities, or to be more precise, funds that customers can withdraw without prior notice on a daily basis. As examined in Kerbl et al. (2019) for the Austrian banking sector, this does not only have implications for liquidity risks, but also for interest rate risks.

Chart 2

**Change in private sector deposits, 2008−2018**

*Percentage points of GDP*
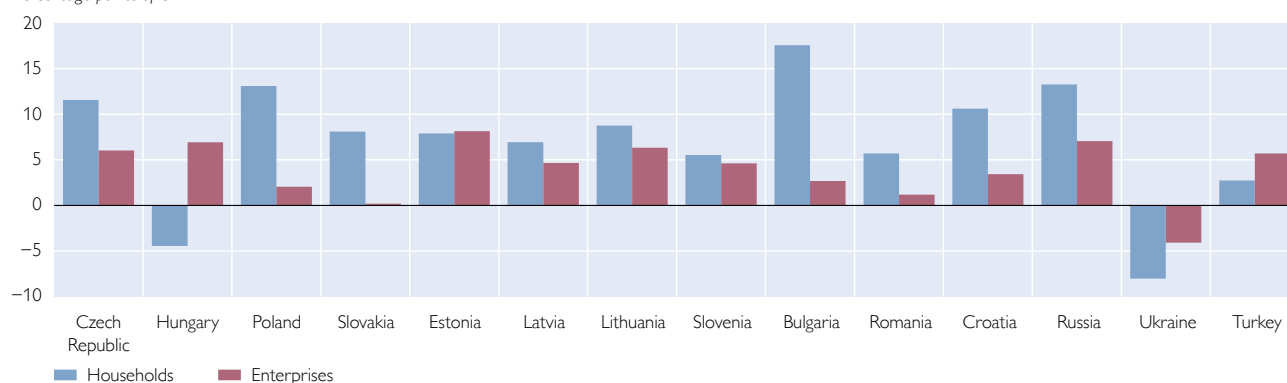


Source: Eurostat, national central banks, national statistical offices.

Chart 3a

## Overnight deposits of the private sector

%



■ Share of overnight deposits in total private sector deposits　　■ Share of overnight deposits in total private sector liabilities
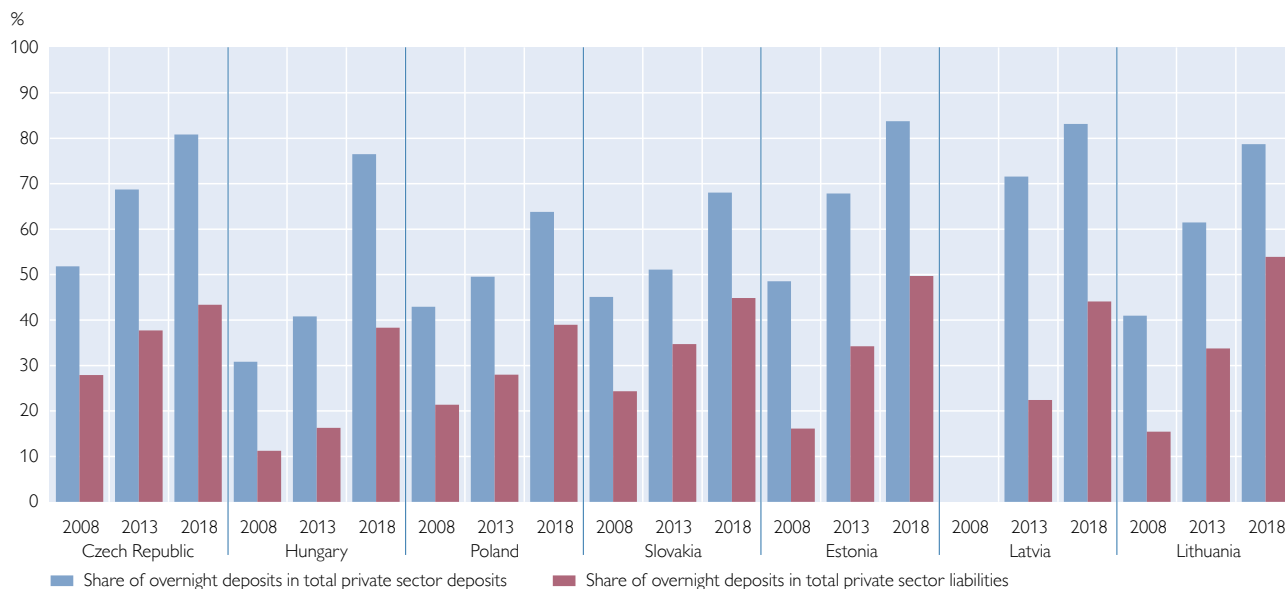
*Source: Eurostat, national central banks, national statistical offices.*

Chart 3b

## Overnight deposits of the private sector

%



■ Share of overnight deposits in total private sector deposits　　■ Share of overnight deposits in total private sector liabilities
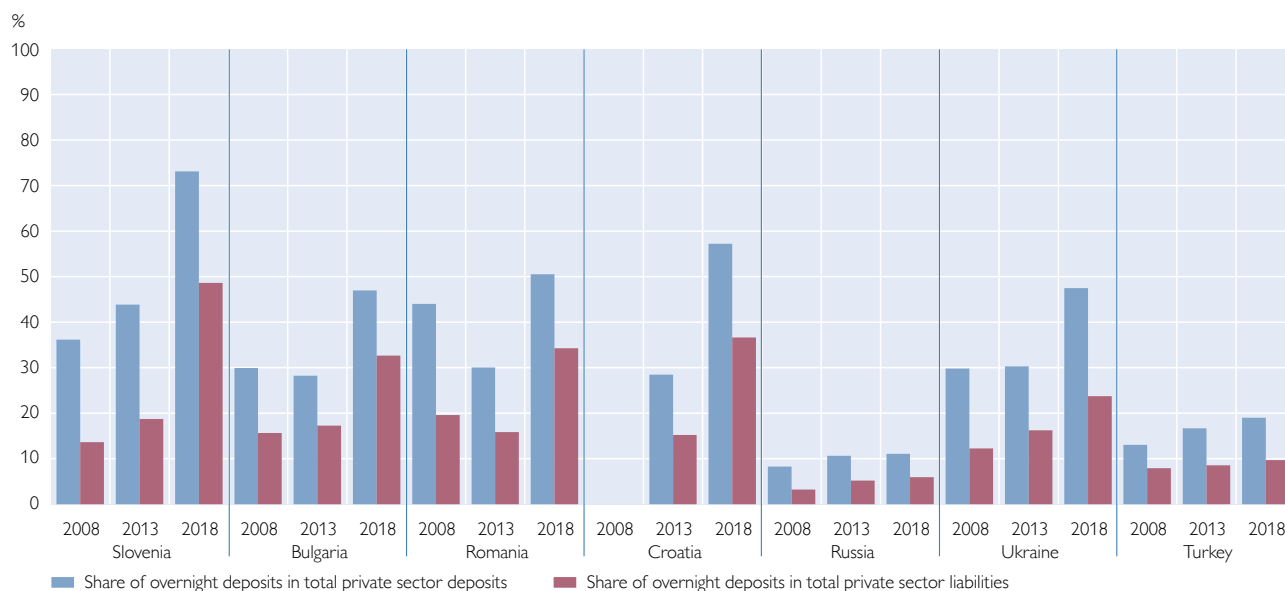
*Source: ECB, national central banks.*

*Note: In the case of Turkey, the chart shows private sector deposits of deposit money banks (representing around 90% of the banking sector in terms of total liabilities), including foreign currency deposits of the official sector.*

As depicted in charts 3a and 3b, overnight deposits by the private sector gained importance in all countries under review. This item reached levels of 70% to slightly more than 80% of total private sector deposits in the Czech Republic, Hungary, Estonia, Latvia, Lithuania and Slovenia in 2018, and hence went up markedly over a decade. In relation to total liabilities, the highest figures (40% to about 50%) were recorded in the Czech Republic, Slovakia, Estonia, Latvia, Lithuania and Slovenia. Hence, the issue of overnight deposits is most relevant in CESEE euro area countries as well as in the Czech Republic and Hungary. In Poland, both ratios came close to the highest values in the CESEE region. Also Bulgaria, Romania, Croatia and Ukraine (despite very high interest rates in the latter country) saw a remarkably increasing share of overnight deposits in total private sector deposits and total liabilities. Overnight deposits have remained noticeably less relevant in Russia and Turkey.

## 3 How has the gap between foreign currency loans and deposits evolved?

As shown in charts 4a and 4b, foreign currency loans surpassed the level of foreign currency deposits by a wide margin in several countries at the start of the GFC (by more than 20% of GDP in Hungary, Estonia, Latvia, Lithuania and Ukraine; to a smaller extent in some other countries). Foreign liabilities played an important role in reducing currency mismatches on banks' balance sheets. Hence, in addition to indirect credit risk stemming from foreign currency loans to unhedged borrowers, banks faced rollover risks emanating from foreign liabilities and FX swap transactions (for a brief summary of the role of FX swaps in Hungary in 2008 and 2009, see Lahnsteiner, 2011).

In Estonia, Latvia and Lithuania, the adoption of the euro brought about an end to this imbalance as the large stock of euro loans became domestic currency loans. This was also the case in Slovakia, where this issue had been much less relevant. In Hungary, measures to scale back FX loans (including the conversion of FX loans to households in 2015), a switch to lending in domestic currency and quite stable private sector foreign currency deposits resulted in a balanced position between foreign currency loans and foreign currency deposits in the private sector by the end of our observation period. In Croatia, the conversion of Swiss franc-denominated household loans into euro-denominated loans at historical exchange rates at end-2015 also led to a decline in the share of foreign currency loans in total loans (Beckmann, 2017). Starting already in 2014, a foreign currency deposit overhang arose in Croatia that reached more than 10% of GDP at end-2018, also reflecting very high and broadly stable deposit euroization there (see Dumicic et al., 2018, for more information about euroization in Croatia, as well as Brown and Stix, 2015, who provide an analysis of the causes of euroization in Eastern Europe). A considerable foreign currency deposit overhang also emerged in Bulgaria, a country featuring a high level of deposit euroization. Positive gaps between foreign currency loans and foreign currency deposits were closed or even reversed in some other countries as well, through a combination of measures to restrict foreign currency lending, a recovery of domestic currency lending and relatively stable foreign currency deposits. Interestingly, foreign currency loans were on the rise in Turkey, but as foreign currency deposits almost kept pace, a foreign currency deposit overhang in 2008 transformed into a balanced position in the period leading up to 2018.

## 4 Concluding remarks

The transformation of most CESEE banking sectors' funding structures certainly constitutes an improvement in macrofinancial stability terms and bodes well for a sustainable lending recovery. Banks have become less dependent on foreign funding, as domestic deposits have become more important. The accumulation of NFL likely contributed to overly high credit growth in several CESEE countries ahead of the GFC. Hence, an important takeaway from this episode is that supervisory authorities should continue keeping an eye on loan-to-deposit ratios and a possible resurgence of NFL. At the same time further research is needed to understand in how far domestically refinanced credit stocks can be seen as excessive. Comparatively high credit levels and high deposit levels in Bulgaria speak in favor of applying a wide range of methods when assessing credit developments.

Turkey seems to have repeated some of the mistakes CESEE EU Member States made ahead of the GFC. Its economy recorded a current account deficit with a fragile financing structure (low FDI coverage) and its banking sector accumulated large amounts of NFL before slipping into a crisis recently. Yet, circumstances are quite different from those in CESEE EU Member States before the GFC. On the one hand, less stable wholesale funding (as opposed to parent bank funding) plays a much more important role in Turkey now than in the CESEE EU Member States back in 2008. On the other hand, global liquidity conditions are currently clearly more favorable than during the GFC, which reduces rollover risks and could facilitate a gradual adjustment of the refinancing structure in the absence of further shocks. As regards domestic funding, overnight deposits have remained of low relevance in Turkey unlike in the CESEE EU Member States.

A higher share of domestic deposits on the liability side reduces rollover risks at times of global liquidity squeezes and limits the scope for crisis transmission via the credit channel during international economic and financial crises. However, domestic crisis situations in the real economy or confidence crises now have an increased potential to spill over to the banking sector and its credit granting capacities directly through a run on deposits. The high share of overnight deposits creates the possibility of quick and large-scale deposit shifts from one bank to another, but also for system-wide withdrawals. Risks can be mitigated through accumulation of liquid assets and access to liquidity support by central banks.

The fact that foreign currency loans no longer (or only slightly) exceed foreign currency deposits is certainly welcome from a financial stability perspective. Yet, FX deposit overhangs in Bulgaria and Croatia raise the question in how far lending in local currency is restrained by the liability structure of the banking sector. Against the background of high deposit euroization, it is not surprising that exactly these two countries aspire to adopt the euro over the medium term, as this step would largely eliminate this imbalance on banks' balance sheets.

As long as nominal wage growth remains high in most CESEE countries, household deposits are likely to rise further. At the same time, banks that follow a multiple point of entry approach under the regulatory framework introduced by the Bank Recovery and Resolution Directive (BRRD) will have to adjust their funding structure by issuing bonds that are eligible under the minimum requirement for own funds and eligible liabilities (MREL), i.e. debt that is available for bail-in, in the next few years. This might prove challenging given the still very limited role of capital market-based bank funding. Capital markets in CESEE countries are shallow

Chart 4a

## Private sector loans and deposits by currency

*% of GDP*



Foreign currency loans    Local currency loans    Foreign currency deposits    Local currency deposits
■ Domestic private sector foreign currency funding gap

*Source: Eurostat, national central banks, national statistical offices.*
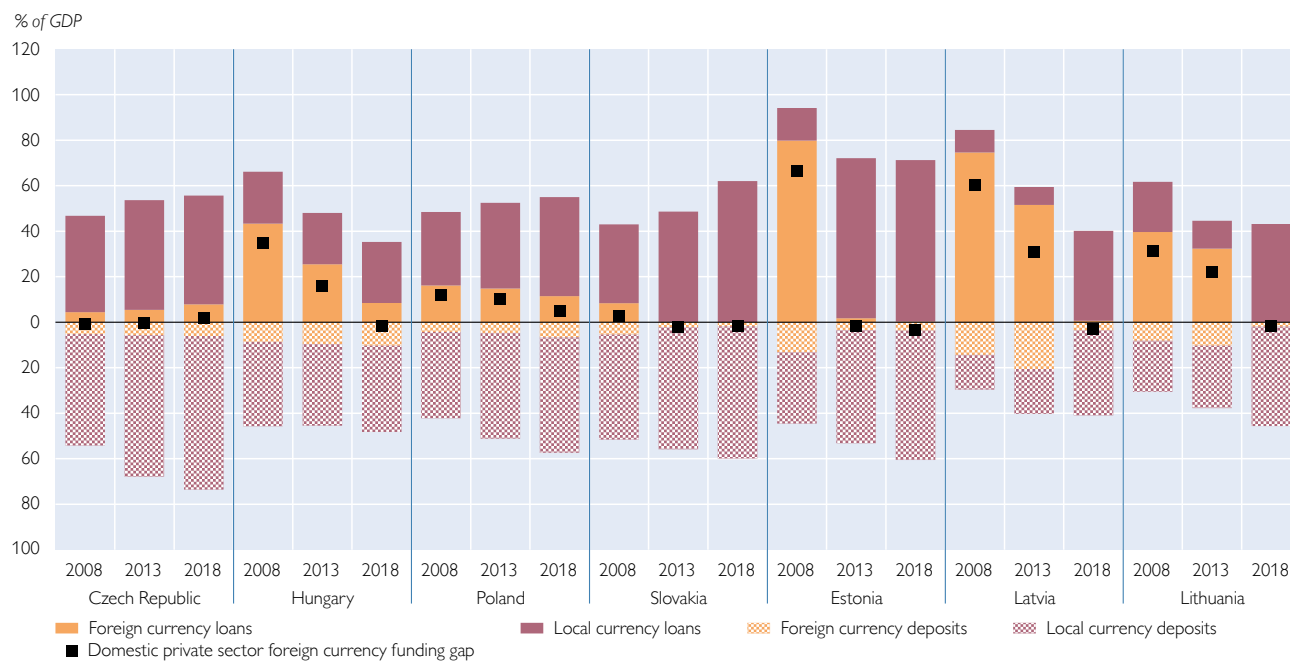
Chart 4b

## Private sector loans and deposits by currency

*% of GDP*



Foreign currency loans    Local currency loans    Foreign currency deposits    Local currency deposits
■ Domestic private sector foreign currency funding gap

*Source: Eurostat, national central banks, national statistical offices.*
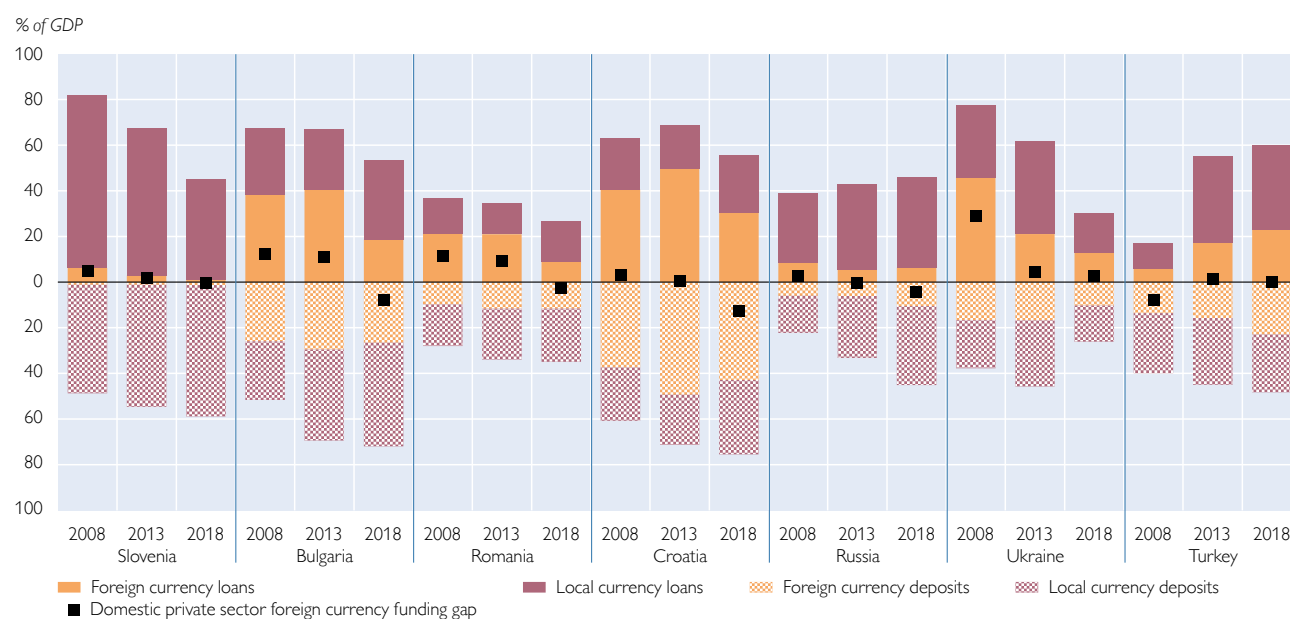
(see Jäger-Gyovai, 2014) and the domestic institutional investor base is limited, particularly after the second pension pillar has been weakened or dismantled in some countries. Moreover, it is questionable how strong foreign demand for such debt instruments will be. As pointed out by Bhatia et al. (2019), European capital markets can be characterized as small, fragmented and split along national lines. Against this background, the proposal, as discussed by the Vienna Initiative Working Group on IFI financial products supporting investment in CESEE (2019), to encourage international financial institutions (IFIs) to invest in such debt instruments and act as a door opener makes sense.

To summarize: The refinancing structures of banking sectors in CESEE have undergone a material transformation since the start of the GFC. In many regards, these changes can be seen as an improvement in terms of resilience, but there are still several issues that deserve close attention by supervisors and policymakers. These include keeping a close eye on liquidity risks and maturity mismatches, given the rise in overnight deposits, and preventing an excessive rebuilding of NFL in the future. Moreover, in CESEE EU Member States, the adaption of funding structures to the new regulatory environment should be supported by reducing barriers to more European capital market integration (in the spirit of the capital markets union) with the aim to avoid a negative impact on bank lending.

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# China's New Silk Road: a stocktaking update and economic review (2017–2019)[1]

*Stephan Barisitz*[2]

*This study is an update of an initial overview by Barisitz and Radzyner (2017a) in the present journal. The Belt and Road Initiative (BRI) corresponds to an enormous international infrastructure investment program focusing on Asia, Africa and Europe. BRI projects are predominantly credit-based and financed by Chinese sources. So far, about USD 450 billion have been spent or earmarked. While not without setbacks and substantial risks, many BRI projects appear to have progressed since 2017. The present project-oriented update attempts to fill a void and shed some light on a number of key undertakings in the above three global regions. Against the backdrop of the evolving U.S.-China trade conflict, the BRI may ultimately provide China with an alternative geo-economic perspective.*

In the past two years, China boldly moved forward with its Belt and Road Initiative (BRI, officially proclaimed in 2013 and incorporated into the constitution of the People's Republic of China in 2017 – here regarded as synonymous with the other frequently used term New Silk Road). Hence the motivation to update the initial snapshot provided by Barisitz and Radzyner (2017a) for the 2017–2019 period. To recap, the BRI is a *quasi-global development program* of infrastructure investments, modernizing and/or expanding a Eurasian overland trading network ("Silk Road Economic Belt" – SREB) and a complementary seaborne network, which is already handling the bulk of east-west trade traffic (the "21st Century Maritime Silk Road" – MSR).[3]

On top of ongoing efforts, China embraced numerous digital projects in the past two years. In June 2018, China announced an initiative to establish a *Digital Silk Road (DSR)*, with the aim of assisting participating countries in developing digital infrastructure (including quantum computing, nano technology, artificial intelligence, big data, enhanced cloud storage). Another official goal is to enhance internet security. With the domestic payments market becoming progressively saturated, Chinese e-commerce firms also aim at disseminating their expertise internationally. Outbound fintech investments as of end-September 2018 were mostly aligned with Asian regional IT hubs in Hong Kong, Singapore, Thailand, Indonesia, Malaysia and Pakistan. In mid-November 2018, the Monetary Authority of Singapore signed a cooperation agreement with the People's Bank of China (PBOC), which calls for fintech cooperation between Singapore and China. Beyond Asia, the initial DSR projects target a number of African countries, including Ethiopia, Kenya, Tanzania, Zambia, and Nigeria.

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[1] *This study was completed in late January 2020 when the coronavirus was spreading, also raising concerns about the potential impact of the virus on the Belt and Road initiative. At the time of writing it was, however, too early to add a conclusive analysis of such effects.*

[2] *Oesterreichische Nationalbank, Foreign Research Division, stephan.barisitz@oenb.at. The author is grateful to two anonymous referees as well as to Peter Backé and Julia Wörz (both OeNB) for their helpful remarks and valuable suggestions. Opinions expressed by the authors of studies do not necessarily reflect the official viewpoint of the OeNB or the Eurosystem.*

[3] *Precursors to these networks were the traditional (overland) Silk Road and the (maritime) Spice Route that both existed for many centuries (Barisitz, 2017).*

Moreover, China is building or improving around 100 undersea communications cables (out of some 300 such cables worldwide). Undersea cables carry about nine-tenths of all international data. One outstanding project is the Pakistan East Africa Cable Express, or PEACE, which will become the shortest fiber-optic high-speed internet connection between Asia and Africa (Hillman, 2019a). The cable begins in Gwadar, a Chinese-operated port on Pakistan's Arabian Sea coast (see subsection 6.2) and runs to ports in Egypt, Djibouti, Somalia, Kenya, South Africa, the Seychelles and France.[4]

Other major events in the past two years include the establishment, in July 2018, of two *Chinese international arbitration courts* authorized to handle BRI-related disputes. One court – based in Xian, the traditional "capital" and point of departure of the old Silk Road – will deal with cases involving the overland "Belt." The other court – domiciled in the southern coastal city of Shenzhen (adjacent to Hong Kong) – will address the maritime "Road" cases. Moreover, in January 2019, the Chinese Council for the Promotion of International Trade signed an agreement with the Singapore International Mediation Center to establish a panel of international mediators for BRI disputes. The panel, to be based in the city state, will comprise dispute resolution professionals from the two countries as well as other BRI host countries.

In what follows, section 1 will bring readers up to date on the pattern and volume of BRI funding, including an overview of the major institutions supporting the BRI. This is followed by a discussion of some (changing) motivations and driving factors (section 2), and challenges and risks (section 3). Section 4 addresses possibly competing programs and plans of other powers. Section 5 explains how overland trans-Eurasian connectivity has been gaining some modest ground in competition with maritime networks in recent years. This leads us to the core section of the article (section 6), a survey of major (new and existing) BRI projects, including an assessment of whether there has been further progress (toward project completion), or possibly lack thereof, over the last two years. Section 7 looks at additional BRI-related data, discusses the issue of host country debt distress and refers to some BRI impact studies. Section 8 wraps up the article.

## 1 Current pattern and volume of Belt and Road funding

BRI projects are typically financed with *loans from Chinese financial institutions*. These loans are usually tied credits covering 85% of project finance for 20 years at up to 5% p.a. interest, with payment deferred for the first five years.[5] The most competitive rates, between 2% and 3% p.a., are provided by China's policy banks (see below; OECD, 2018, pp. 18–19, 21; Raiffeisen Research, 2019, p. 4) for loans with maturities of more than 25 years, including ultra-long maturities. BRI loans are typically given to the host country without (explicit) political conditions. As a rule, however, there is the (de facto) economic condition to commission Chinese enterprises, often the state-owned giants of construction, railroad and maritime transportation which have emerged in the past two decades. Local enterprises may be chosen as subcontractors. In some cases, BRI loans may be repaid with raw material deliveries to China. These practices are often viewed as "checkbook

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[4] *The owner of the PEACE cable, Huawei Marine Networks, is a joint venture between Huawei and Global Marine Systems, a British company. The project is expected to be completed in 2021.*

[5] *The remaining 15% of project finance is typically expected to be raised by the local partner.*

diplomacy" or "construction site diplomacy." Only a small share of BRI projects are financed through Chinese equity participations.

At end-July 2019, Beijing had reportedly signed 195 cooperation agreements under the Belt and Road Initiative with 136 countries and 30 international organizations. This includes a Memorandum of Understanding (MoU) signed with Italy in late March, so far the only G7 country to have done so (China Daily, 2019, p. 2). Apart from Italy, 12 other EU countries have joined the BRI by signing MoUs, namely Bulgaria, Croatia, Czechia, Greece, Hungary, Latvia, Luxembourg, Malta, Poland, Portugal, Romania and Slovakia. As is evident from table 1, salient bodies backing the BRI boast generous financial "fire power."

Table 1

### Major institutions and funds supporting the Belt and Road Initiative

**International development banks (in which China plays a leading role):**

| | |
|---|---|
| Asian Infrastructure Investment Bank (AIIB; operational since January 2016; members include Austria and Italy)[1] | USD 100 billion (authorized capital); USD 7.4 billion disbursed by mid-2019 |
| New Development Bank (NDB; supporting above all BRIC countries; fully operational since February 2016) | USD 25–50 billion (may be earmarked for BRI projects); USD 10.2 billion disbursed by end-October 2019 |

**Silk Road Fund and Chinese policy banks:**

| | |
|---|---|
| Silk Road Fund (SRF; operational since spring 2015) | USD 55 billion (funded i.a. by China Eximbank and CBD) |
| Export-Import Bank of China (China Eximbank) | USD 150 billion (reportedly already disbursed for BRI, more earmarked) |
| China Development Bank (CDB) | USD 190 billion (reportedly already disbursed for BRI, more earmarked)[2] |

**China's and the world's largest commercial bank:**

| | |
|---|---|
| Industrial and Commercial Bank of China (ICBC, state-owned) | USD 80 billion (so far disbursed for BRI)[3] |

**Special regional initiatives:**

| | |
|---|---|
| ''17+1 forum'' of intensified cooperation with 12 CESEE EU and 5 non-EU members (European Commission and Austria are observers, Greece joined in April 2019):[4] | |
| China-CEEC Investment Cooperation Fund (project finance for energy, infrastructure, high-tech manufacturing, consumer goods sectors) | up to EUR 10 billion (financed mostly by China Eximbank and ICBC) |
| China-CEEC Interbank Association (established in November 2017 between CDB and 14 CESEE development finance institutions to boost financial support for projects in lagging CESEE regions) | up to EUR 2 billion (credit frame provided by CDB) |
| China-Russia Renminbi Investment Fund | USD 10 billion |
| China-Russia Research and Technology Innovation Fund (focused on artificial intelligence, new materials, space technologies) | USD 1 billion (from Russia Direct Investment Fund and China Investment Corporation) |
| Strategic partnership between China and the Eurasian Economic Union (EAEU) (joint statement of Russia and China, May 2015; nonpreferential agreement on trade and economic cooperation between China and the EAEU, May 2018) | USD 10 billion (CDB credit line to Vneshekonombank (Russia) for common infrastructure and other projects provided) |
| BRI financial support for Africa (announced at Africa-China summit in Beijing, September 2018) | USD 60 billion (of which ¾ loans, ¼ grants and interest-free loans) |
| China-ASEAN Investment Cooperation Fund | up to USD 10 billion |

*Source: Author's compilation.*

[1] *The AIIB is the first multilateral bank in which emerging markets possess the majority of capital shares.*

[2] *China Eximbank and the CDB are the most powerful institutions of development finance globally. Their aggregated international credit volume exceeds that of the five Western-led multilateral development banks combined (World Bank, Asian Development Bank, European Bank for Reconstruction and Development, European Investment Bank, Inter-American Development Bank).*

[3] *In September 2018, the ICBC established a branch in Vienna with a view to promoting economic cooperation in CESEE with the provision of cross-border financial services.*

[4] *The 17+1 forum comprises: Albania, Bosnia-Herzegovina, Bulgaria, Croatia, Czechia, Estonia, Greece, Hungary, Latvia, Lithuania, Montenegro, North Macedonia, Poland, Romania, Serbia, Slovakia, Slovenia, and China.*

Not all of the funds enumerated in table 1 are currently effectively available; some have already been disbursed (as mentioned above), some still have to be raised – and there are additional funds (notably from China's policy banks) that may be appropriated for BRI projects. The China Banking and Insurance Regulatory Commission considers Chinese credit institutions to have invested around USD 200 billion in 2,600 BRI projects until the end of 2017. Estimates from the China Global Investment Tracker (Heritage Foundation, Washington DC) suggest that spending on about 3,100 projects between 2014 and 2017 totals USD 340 billion (Wilson, 2019, p. 77). If we add 2012 and 2013, we may arrive at some USD 400 billion. Raiffeisen Research concludes that BRI projects account for about 52% of all of China's contracted investment and construction projects (outside the country) since 2014. This share appears to have increased significantly most recently (Raiffeisen Research, 2019, p. 3).

In April 2019, China's foreign minister Wang Yi stated that BRI projects had created about 300,000 jobs in the countries concerned; and according to central bank president Yi Gang, China had provided about USD 440 billion of loans (credit lines, including amounts not yet called up) for BRI projects; Chinese direct investment in BRI countries reportedly exceeded USD 90 billion (Prantner, 2019). If we add up these two figures and allow for a generous margin of prudence, given that not all Chinese investment in BRI-participating countries is BRI investment, we may arrive at a sum total of Chinese BRI spending (including earmarked funds) of around USD 450 billion. According to Chinese experts, up to USD 750 billion of the country's international reserves (at end-June 2019: USD 3.12 trillion) would, if necessary, be available to finance BRI projects, given the rather low returns that these reserves, mostly invested in U.S. government bonds, currently yield (Wang, 2016). Until 2030, China apparently plans to put around USD 1,200 billion into BRI infrastructure projects (Huchet, 2019, pp. 56, 58).

## 2 Update on motivations and driving factors

Apart from *upgrading international transportation links* and thereby *cutting trade costs*, one of the major goals of the BRI is to redirect Chinese surplus savings and re-utilize otherwise possibly idle domestic productive capacities and technical know-how (e.g. advanced high-speed rail expertise, container port construction know-how, e-commerce payment systems), given that China's markets in these domains have already become or are becoming saturated.[6] This effectively allows China to extend its hitherto *export-led growth strategy* (Boisseau du Rocher and Dubois de Prisque, 2019, p. 65).

The *development of peripheral provinces*, e.g. Xinjiang (northwestern China) and Yunnan (southwestern China), from where initial parts of the BRI extend to Central Asia, Russia or Southeast Asia, can also reduce domestic regional inequalities and unemployment, and thus rein in migratory pressure toward coastal regions (and potential social instability connected to these tensions) (Frankopan, 2018, pp. 80–81).[7] A related goal is to establish *regional value chains* in China's neighborhood: namely

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[6] For instance, with a length of 25,000 km, the Chinese high-speed rail network accounts for about two-thirds of the length of all high-speed rail tracks worldwide. Also, China is home to seven of the ten largest construction companies of the globe (Hillman, 2019b, p. 2).

[7] However, unless this goes along with programs enabling the ethnic minorities of these provinces to better participate in this development, there is the danger that the BRI might not alleviate some disparities and related ethnic tensions.

in Southeast and South Asia (Vietnam, Malaysia, Singapore, Indonesia, Bangladesh),
West and Central Asia (Pakistan, Kazakhstan, Mongolia), and Russia (regions in south
Siberia and along the Volga), which may require extensive infrastructure investments
as a precondition (Urban, 2018, p. 21; Naisbitt et al., 2019, p. 185; Kynge, 2019).

Simply put, the efforts to "set up the New Silk Road" appear to be sequenced
in three steps: First, energy and transportation infrastructures are built up to create
a material basis for local economic expansion (technical foundations). Second, joint
industrial parks or special economic zones (SEZs) are established as areas for
storing/processing/upgrading raw materials, inputs, components, or other products
(preferably following the "Shenzhen model,"[8] of export-oriented industrial modern-
ization). Third, these productive clusters are linked up along economic corridors into
China-centered industrial supply chains (value chain creation with China preferably
controlling key applied technologies).

The BRI can contribute to *internationalizing the Chinese renminbi-yuan*. Here China
meets parallel Russian interests in reducing reliance on the U.S. dollar in interna-
tional transactions: The aim is to base trade relations and joint investment projects
increasingly on local currencies. Thus, in 2017 Russia reportedly paid 15% of its
imports from China in renminbi-yuan (up from 9% in 2014).[9] According to another
source, the two countries managed to reduce the share of the U.S. dollar in their
bilateral trade payments to about 40% until mid-2019, with the share of the euro
rising to almost 40% (Die Presse, 2019). China and Russia also aim to put in place
until 2020 a payment clearing system between the Industrial and Commercial
Bank of China and the Russian VTB Bank to decrease dependence on the S.W.I.F.T.
international payment system, which is under the sway of the U.S. government.[10]
Reports suggest that India and others may also be exploring a jointly run alternative
to S.W.I.F.T. (The Economist 2020, p. 70).

By mid-2019, 35 countries participating in the Belt and Road Initiative had
signed currency swap agreements (which enable direct exchange of one currency
for the other, avoiding use of the U.S. dollar as an intermediary currency) with
China. Eight BRI partner countries opened renminbi-yuan clearing centers or
clearing networks to facilitate currency swaps (Hungary, Kazakhstan, Qatar, Saudi
Arabia, Sri Lanka, Malaysia, Thailand, Singapore) (Naisbitt et al., 2019, p. 188;
The Economist 2020, p. 69). In the course of 2018, Russia tripled the renminbi share
of its international currency reserves to almost 15% – ten times the average for
global central banks (Feng et al., 2019, pp. 6–7). The use of the U.S. dollar in trade
transactions among EAEU member states (Russia, Armenia, Belarus, Kazakhstan,
Kyrgyzia) is estimated to have declined to about 30% in 2018.

An initiative going in a similar direction is the creation at end-March 2018 of the
*Shanghai International Energy Exchange (INE)*, focusing i.a. on oil futures trading in
renminbi-yuan. The total market share of oil contracts concluded in renminbi-yuan

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[8]  *Shenzhen (a town neighboring Hong Kong) became Communist China's first special economic zone, where from 1980,
under the leadership of chairman Deng Xiaoping, experiments were made with capitalism. Under strict government
control, these experiments were extended step by step and proved very successful in turning a small coastal settlement
into a modern competitive industrial metropolis of over 10 million inhabitants.*

[9]  *In turn, China in 2017 paid 9% of its imports from Russia in rubles (up from 2% in 2014).*

[10]  *When imposing extraterritorial sanctions on Iran, the U.S. administration in late 2018 compelled S.W.I.F.T., the
global cross-border financial messaging network headquartered in Brussels, to exclude Iranian banks, thus making
it very difficult for these banks to carry out international transactions.*

grew from 8% to 13% since the U.S.A. abandoned the Iranian Nuclear Treaty. By late 2018, the Shanghai Exchange's futures benchmark was among the three top benchmarks, following West Texas Intermediate and Brent. However, at least for the time being, any resounding success of renminibi-yuan oil futures is still hampered by as yet limited international participation and by continuing Chinese capital controls.

Against the backdrop of the trade conflict between China and the U.S.A., the Belt and Road Initiative may ultimately provide an *alternative geo-economic perspective* for China. More generally, various institutions connected to the BRI, like the AIIB or the SRF (Silk Road Fund), but also organizations in the wider circle (like the Shanghai Cooperation Organization and the BRIC group of countries, which includes India) appear to be conducive to a policy aimed at building a counterweight to Western-dominated global institutions (IMF, World Bank, Asian Development Bank, etc.).

Apart from the key objective of addressing *strategic resource supply and security issues* (tackling the "Malacca dilemma," see Barisitz and Radzyner, 2017a, p. 13), BRI efforts typically also contribute to enhancing Chinese *soft power* in various parts of Eurasia, and to creating something like a "circle of friends" (Adarov, 2018, p. 10). Given the long-term and strategic nature of many BRI ventures (after all, a large number are public infrastructure projects, thus going beyond the logic of pure private market considerations), one should emphasize that not all BRI investments are necessarily oriented toward short- or medium-term profitability.

A specific advantage of the BRI system is that not all economic corridors are predetermined by topography (see Barisitz and Radzyner, 2017a, pp. 14–15 and section 6 below), spurring *some regional competition* among countries and locations for BRI infrastructural projects, which is likely to dampen project costs for Chinese investors and (modestly) enhance their geopolitical clout.[11]

## 3 Update on challenges and risks

Countries participating in cross-border infrastructural projects (e.g. in the field of transportation) may feature *differing regulatory regimes*. If these regimes are not harmonized or otherwise aligned with each other, connectivity will continue to be hampered, and modernized infrastructure possibly used inefficiently (example: Brest/Malaszewicze transshipment center at the Belarusian/Polish border, see section 6.2).

*Frequent Chinese dominance in projects* (from overall finance, via contractors[12] to Chinese workers, equipment and even materials supplied) and possibly limited regard for local conditions may give rise to concern. Instances of popular resistance to Chinese investors have been recorded in some Central Asian countries, like Kazakhstan (where plans to let Chinese – and other foreign corporations – rent agricultural land for up to 25 years met with popular unrest in 2016, eventually prompting president Nazarbaev to withdraw the bill), Kyrgyzia or Uzbekistan (irritations due to alleged preferential placing of orders, or favored treatment of

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[11] *Analogous conditions may also apply to Chinese jurisdictions competing for points of departure of Trans-Eurasian railroads (see below).*

[12] *According to the Center for Strategic and International Studies (CSIS), of 2,200 BRI projects up to end-2017 examined, 89% went to Chinese firms, 8% to local, and only 3% to foreign non-Chinese firms. At the same time, of all contract partners participating in Eurasian projects financed by the World Bank, the Asian Development Bank and other Western-led multilateral development banks, "only" 29% were Chinese, 41% were local, and 30% foreign non-Chinese enterprises (CSIS, 2018, p. 2).*

Chinese employees) (Hoering, 2018, p. 56). The apparent disadvantaging of local workers also gave rise to complaints in Kenya, Pakistan and Thailand. In Myanmar, the planned construction of a big dam and attendant relocation of indigenous peasant populations triggered instability. While the ruling establishments or elites in partner countries often tend to welcome the inflow of Chinese investment money, they sometimes find themselves obliged to impose some restrictions under public pressure (Sommer, 2019, p. 350).

Chinese credit offers may often lack transparency and *not provide for competitive tenders* (given the typical preference for Chinese enterprises). This is why in some cases such offers have run into difficulties with the European Commission in CESEE EU member countries (Adarov et al., 2018, pp. 54—55; see also section 7). At the same time, Chinese banks may require sovereign guarantees for projects they finance, thus partly shifting risks to recipient states. Given the economic size of some infrastructural projects, Chinese BRI loans may risk pushing smaller countries into a "*debt trap*" or saddling them with unsustainable liabilities. This in turn may trigger the reproach that Beijing conducts a "debt trap diplomacy." This issue will be discussed in greater detail in sections 6 and 7.

Given the political importance of the BRI, China obviously pursues a long-term Silk Road strategy and thus obviously stands ready to take higher risks than multilateral development banks. Whether that "pays off" (not just in a narrow commercial sense) may only be judged *in the long run*. That said, most recently Chinese decision makers appear to have become somewhat more concerned about debt sustainability issues.

## 4 Possibly competing or complementary programs of other powers

Apart from the *U.S. "New Silk Road Initiative"* (NSRI, since 2011, including the TAPI gas pipeline and CASA hydropower schemes; see Barisitz and Radzyner, 2017a, pp. 17—19, and map 2), Washington has strived to remain engaged in relations with Central Asian countries. In October 2018, Congress passed a law streamlining existing agencies[13] to create the *U.S. International Development Finance Corporation (DFC)*, a federal body authorized to invest up to USD 60 billion in private development projects in Asia and Africa. Specifically, loans, loan guarantees and insurance are to be provided to U.S. companies that invest or operate in developing nations. The official goal is to create an alternative to "state-directed investments by authoritarian governments," which appears as a clear reference to China's BRI. The DFC became operational in January 2020. In terms of spending power, the DFC can hardly be seen as a counterweight to the capital Beijing can mobilize; to some degree it might actually be a complement, because it focuses on private sector-dominated capital formation, while BRI projects typically constitute public infrastructure undertakings.

In 2015, *Japan* launched an initiative called *"Partnership for Quality Infrastructure — Investment for Asia's Future,"* raising approximately USD 110 billion for Asia over a five-year period (2015—2020) by tapping into Official Development Assistance (ODA) and collaborating with the Asian Development Bank. In 2016, the available funding volume was increased to USD 200 billion. Dedicated projects include the

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[13] *Including the Overseas Private Investment Corporation (OPIC) and the U.S. Agency for International Development (USAID).*

Mombasa port development project in Kenya, the Matarbari port and power station in Bangladesh, and the digital grid project in Tansania (Maçaes, 2018, p. 138).

The *Intercontinental North-South Transport Corridor (INSTC)*, initiated by *India, Iran and Russia* in 2002, was re-activated after the lifting of the international Iran sanctions in 2015, although the unilateral re-instatement and tightening of extra-territorial U.S. sanctions in 2018/2019 creates new challenges. Under INSTC, multi-modal transportation (by ship, rail and/or road) is planned from India (Mumbai) via the Arabian Sea, the Gulf of Oman, Iran (Tehran), Azerbaijan or Central Asia, to Russia (Moscow, St. Petersburg), and possibly on to Europe (see map 2). Thus, trade connections from India to Russia and Europe could be shortened by 3,000–4,000 km, although multimodality would of course somewhat reduce cost savings. In 2016, India concluded an agreement with Iran to modernize Chabahar port (including a container terminal and an industrial zone), which is Iran's only oceanic harbor (Arabian Sea). Chabahar port was opened in October 2017 and Indian firms and banks have also participated in constructing the port's linkup with the Iranian railroad network (Granger, 2018, p. 59).

In September 2018, the European Commission issued a document entitled "Connecting Europe and Asia: Building Blocs for an EU Strategy," which provides for a blueprint for interacting with economies in Asia in the spirit of seeking a level playing field and creating rules-based and sustainable connectivity, drawing inspiration from the EU internal markets. In January 2019, the European Commission announced its intention to facilitate infrastructure projects in countries of the EU Eastern Partnership (Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine) together with the World Bank. Their indicative Action Plan earmarked EUR 13 billion up to 2030 for almost 100 projects under the umbrella of the Trans-European Transport Networks (TEN-T). These projects should involve about 4,800 km of roads and railroads (including neighborhood countries), six ports and eleven logistics centers. Yet it remains unclear how these undertakings are to be linked up with ongoing BRI connectivity projects in CESEE.[14]

In September 2019, the *EU* and *Japan* signed a "Partnership on sustainable connectivity and quality infrastructure" agreement aimed at coordinating transportation, energy and digital projects in developing countries amid concerns of China's dominance in infrastructure funding in Eurasia and Africa. The agreement calls for transparent procurement practices, a level playing field, nondiscriminatory investment, debt sustainability, and high standards of rules-based economic, fiscal, financial, social and environmental sustainability – an allusion to some of the criticisms facing the BRI (RWR Belt and Road Monitor, 2019b). That said, it is not yet clear how much additional financial support the partnership agreement is proposing.

## 5 Overland trans-Eurasian connectivity continues to gain some modest ground

Given that long-haul maritime container transportation is substantially cheaper than transcontinental rail or road conveyance, the bulk of long-distance BRI trade (between around 60% in value terms and 90% in weight terms) is likely to remain seaborne. However, according to expert estimates (Schramm and Zhang, 2018, pp. 779–780; Hillman, 2018), rail transportation has been gaining some ground

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[14] *For more details on and an evaluation of the EU Connectivity Strategy, see Pepe (2019), pp. 10–11.*

in recent years: From 2006 to 2017, the transit time for container ship deliveries from China to Europe reportedly increased from 28 to 33 days (due to efforts to cut fuel costs and stipulations to use cleaner fuels), while in the same period, transit time on trains was more than halved from 37 to 16 days, and transit time on airplanes remained unchanged at about 5 days (in all cases including customs and administrative procedures). From 2006 to 2017, ship transit costs between China and Europe declined from USD 2,500 to USD 2,000 per 20 foot-container, train transit costs shrank from USD 7,000 to USD 6,000, whereas flight transit costs increased from USD 24,500 to USD 32,500 (possibly also linked to fuel costs). Still, in overall terms, rail transportation gains are relatively modest: In value terms, the share of rail in China-Europe trade grew from 0.5% in 2006 to 2.1% in 2016,[15] while the respective shares of maritime and air conveyance remained at around two-thirds and one-fifth.

Eurasian rail connectivity has been improving because of political stabilization and economic reforms in transit countries in recent decades, which have contributed to some structural catching-up. Some integration measures linking Eurasian landlocked economies in recent years, including the establishment of the Eurasian Economic Union (EAEU) and the harmonization of border/customs procedures among key countries between China and Europe (namely Russia, Kazakhstan, Belarus) also helped.[16] Railway companies from China, Mongolia, Russia, Belarus, Poland and Germany have recently signed an agreement on deeper cooperation in China-Europe rail service. Given that extensive parts of Eurasian east-west rail connections are electrified, they appear to have been under less pressure from fuel price rises in recent years than other modes of transportation. Electrified rail transportation is arguably also more environmentally friendly, producing a smaller $CO_2$ footprint than, e.g., shipping.

Another factor that has supported the upswing of trans-Eurasian rail transport are Chinese subsidies of around USD 2,000 to USD 3,000 per transported container (covering about 30% to 50% of freight costs). These freight subsidies are mostly paid by rivaling provincial authorities, and in some cases also municipalities, with the goal of drawing BRI traffic and investment into their respective jurisdictions.[17] The freight subsides may or may not be phased out over the next two to five years. In 2012–2017, they are estimated to have totaled around USD 1 billion.[18]

[15] In these five years, the freight turnover of trans-Eurasian rail connectivity is estimated to have grown (from low levels) at least 50% per year (on average).

[16] Thus, the Eurasian Economic Union allows cargo to pass just two customs posts on the shortest and physically easiest route from Xinjiang to the EU's doorstep in Poland, Finland or the Baltic states (Feng et al., 2019, p. 8). The use of electronic customs declarations and of joint consignment notes also facilitates transit (Troche, 2019). China-EU cargo turnover carried through the EAEU reportedly increased from 6,000 TEUs (twenty-foot equivalent units) in 2011 to 50,000 TEUs in 2016 for cargo flowing from the EU to China, and from 7,000 TEUs (2011) to 97,000 TEUs (2016) for containers flowing in the opposite direction (Rovenskaya, 2018). The sum total of cargo turnover in both directions through the EAEU expanded another 80% in 2017 (over 2016) to 262,000 TEUs (Vinokurov, 2019, p. 4).

[17] According to Andreas Breinbauer, Director of the Logistics and Transportation Department of the University of Applied Sciences Vienna (BFI), another underlying rationale for the freight subsidies may be that faster cargo rail connections render Alibaba's and Tencent's disadvantage of trailing Amazon in terms of sophisticated distribution logistics in Europe insignificant, as the faster connections bring European consumers more swiftly in touch with the Chinese e-commerce system (Kastner, 2019).

[18] While not constituting a major BRI investment project, the re-equipping and re-opening in May 2018 of a major rail link between China and Iran (via Kazakhstan and Turkmenistan) advanced trans-Eurasian connectivity further: Compared to the maritime route, the rail link (while more expensive) cuts transportation time between the centers of both countries by more than half to 15 days.

Map 1

**Eurasian freight routes**
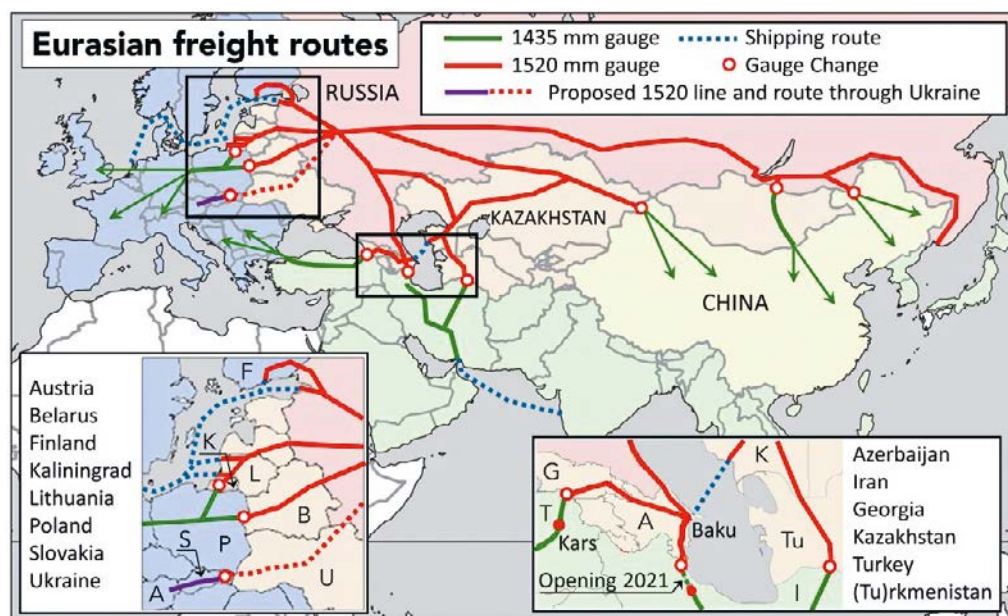


*Source: Rail Engineer.*

A final point related to structural change in China: After moving production further inland to regions with lower wage levels than the developed coastal areas, e.g. to the province of Sichuan (Chongqing, Chengdu), Chinese and foreign corporations (e.g. Foxconn/Apple, Hewlett Packard, Acer) started to ship their goods directly by rail to Europe, instead of shipping them first over 1,500 km back east to China's coastal ports before reloading them onto ships and transporting them thousands of kilometers south (Strait of Malacca), then west. In the opposite direction, German car companies have sent components overland to their joint-venture assembly factories in northeast China (VW/Audi in Changchun and BMW in Shenyang). Thus, a profitable niche or middle option for long-haul Trans-Eurasian rail conveyance of high value-added products (computers, smartphones, smart home appliances, printers, logistics automation devices, other high-tech equipment, car parts, high-end fashion garments, pharmaceuticals etc.) and/or time-sensitive goods (like certain flowers, wine, whiskey, top cheese or chocolate) seems to have emerged.[19] These product and component flows may also contribute to emerging *Eurasian value chains*, e.g. in automobiles and electronics (Pomfret, 2019, pp. 2–3). One of the rail connections filling this niche is the Trans-Eurasia Express, whose freight turnover has multiplied since 2012, if from low levels (see next section).[20]

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[19] The Kazakh and Chinese authorities aim to raise the share of east-west rail transportation to about 5% to 10% of the market in the medium to long term (Sommer, 2019, p. 238; Marchand, 2019, p. 19). Yet, the possible removal of Chinese subsidies may dampen the hitherto brisk growth of rail conveyance.

[20] It is currently uncertain to what degree U.S. and foreign corporations may be persuaded to move some production lines out of China to circumvent the high tariffs levied by the U.S. from 2018/2019 on many imports from China. The implied costs of moving (including possible disadvantages on the Chinese market) could be substantial.

## 6 Some major BRI projects by geographic area: further progress or lack thereof

This section provides an update on a number of key Belt and Road projects discussed in Barisitz and Radzyner (2017a) and some new ones that have emerged since mid-2017.[21]

### 6.1 Eastern Europe and Central Asia

*Russia: High-speed rail link Moscow-Kazan*: Total project costs are estimated at USD 21 billion (including investment commitments of Siemens and Deutsche Bahn, the so-called "German Initiative"). About one-third of this amount is pledged by the China Development Bank (CDB) and other Chinese financial institutions. In January 2019, the first section of the rail link from Moscow to Nizhny Novgorod (covering about half the total distance) was approved for construction by the Russian government; hence, about USD 3 billion will reportedly be drawn from the budget for the project.

The rail connection Moscow-Kazan is part of trans-Eurasian rail trajectories, including the Trans-Siberian (to Vladivostok or via Ulan-Bator/Mongolia to Beijing) and the *Trans-Eurasia Express* (TEE, from Duisport (the Duisburg Port)[22]/Germany via Moscow, Astana/Kazakhstan, Urumqi to Chongqing). Both the Trans-Siberian and the Trans-Eurasia Express have been overhauled in recent years. Modernization investments have been undertaken by the competent state railroad corporations (e.g. Russia's RZD, Kazakhstan's KTZ) and co-financed from the budgets of participating countries. The Trans-Eurasia Express directly extends into the North Sea-Baltic Corridor (of the EU Trans-European Transport Network/TEN-T). The TEE also benefits from the United Transport and Logistics Company – Eurasian Rail Alliance (UTLC ERA), established in 2014, a joint venture of the Russian, Belarusian and Kazakh railways to create an efficient rail transit service between China and Europe.

The TEE has been running since 2012, and until 2017 the number of shipped containers is estimated to have risen on average by 75% p.a. From 2012 to 2018, the number of trains from China to the EU is estimated to have more than doubled annually and to have exceeded 6,300 in 2018. In April 2018, the first direct freight train arrived in Vienna from China (Chengdu); the goal is 1–2 arriving per day (Sommer, 2019, p. 237). While the TEE's freight turnover has thus developed dynamically, lingering problems relate to border clearance, regulatory issues, and Russian countersanctions to the EU. The border clearance problems are particularly acute at the Belarusian-Polish border at Brest/Malaszewicze (about 95% of trains running from China to Europe pass through this change-of-gauge station at the EU/EAEU border, a key chokepoint, where there is substantial potential for efficiency increases).[23] Regulatory requirements differ e.g. with regard to customs procedures, length of container trains, electrification, axle load, standardization of shipping documents

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[21] *Like in Barisitz and Radzyner (2017a), the projects included here require investment of at least USD 100 million, are at least 10% financed from Chinese sources, and typically relate to the transportation, communication (including digital) or energy sectors. Other sectors have been included if the respective projects are specifically labeled as Belt and Road projects.*

[22] *Duisport is the world's largest inland (river) port.*

[23] *Trains may reportedly be held up for a day or two at Malaszewicze. Notably, transshipment facilities are regarded as insufficient (World Bank (ed.), 2019, p. 32). Under current conditions, capacity utilization at the Brest/ Malaszewicze border crossing appears to have exceeded its limits. Bottlenecks and waits have been somewhat attenuated by the opening-up of alternate routes, e.g. via Kaliningrad since 2017 (van Leijen, 2018, p. 2; see also Beifert et al., 2018, pp. 2, 25–26).*

Table 2

## Major Belt and Road projects, construction funding and potential risks

| | Host country of investment | Sector/type of investment | Construction period (planned) | Total project costs (USD billion) | China's share of investment or financial support (USD billion) | Particular risks/ occurences |
|---|---|---|---|---|---|---|
| **Region/project** | | | | | | |
| **Eastern Europe and Central Asia** | | | | | | |
| Moscow-Kazan high-speed rail link[1] | Russia | high-speed rail | 2018–2022 | 21.0 | 6.5 (CDB a.o.) | project delays |
| Yamal LNG project | Russia | energy supply (gas) | 2015–2021 | 27.0 | 12.0 (Eximbank, CDB) | – |
| Arctic LNG II | Russia | energy supply (gas) | 2017–2023 | 25.0 | 20% (CNPC, CNOOC), CDB | – |
| Power of Siberia (Sila Sibiri) gas pipeline | Russia | energy supply (gas) | 2015–2019 | 17.5 | 2.0 (CDB) | – |
| Great Stone (China-Belarus) industrial park | Belarus | SEZ (manufacturing) | 2012–2018 | 1.1 | 0.28 (Eximbank and CDB) | – |
| Khorgos Gateway (special economic zone) | China, Kazakhstan | railroad, SEZ | 2014–2018 | 6.5 | 3.2 (COSCO, Lianyungang) | – |
| Kazakh border checkpoints modernization | Kazakhstan | border infrastructure | from 2019 | 0.3 (Eximbank) | | – |
| West Europe-West China expressway | China, Kazakhstan, Russia | motorway | 2009–2020 | 7.0 | 3.0 (Kazakhstan: SRF) | – |
| Angren-Pap railroad link | Uzbekistan | railroad | 2013–2016 | 1.9 | 0.46 (China Railway Tunnels Group) | – |
| **South and Southeast Asia** | | | | | | |
| Gwadar deep-sea harbor and airport | Pakistan | seaport, airport | 2015–2017 | 1.9 (total, incl. China Overseas Ports Holding et al.) | | social tensions |
| Karachi-Peshawar rail link modernization | Pakistan | railroad | 2017–2022 | 6.2 (total, incl. CREC) | | indebtedness, project downsizing |
| Karakorum highway reconstruction | Pakistan, China | motorway | 2012–2020 | 2.5 (total, incl. Eximbank, CDB) | | – |
| Colombo Port City and Hambantota Port | Sri Lanka | seaport, motorway, SEZ | from 2014 | 3.0 (total, CCCC et al.) | at least 1 billion Eximbank | indebtedness, debt-lease swap |
| Kyaukpyu deep-sea port | Myanmar | seaport | from 2017 | 1.3 (total, incl. CITIC) | | indebtedness, project downsizing |
| Kunming-Vientiane High-Speed Rail Link | China, Laos | high-speed rail | 2016-2021 | 4.0 (CRIG) | | indebtedness |
| East Coast Rail Link (ECRL) | Malaysia | railroad | 2017–2021 | 13.5 (total, incl. CCCC) | | indebtedness, project downsizing |
| Jakarta-Bandung bullet train | Indonesia | high-speed rail | 2016–2021 | 5.5 | 4.1 (CDB, CREC) | project delays |
| New Clark City industrial park | Philippines | SEZ (manufacturing) | from 2019 | 2.0 (total, incl. China Gezhouba Group) | | – |

*Source: Various international press articles, Silk Road Fund, Asian Infrastructure Investment Bank.*

[1] *Part of planned high-speed rail link Berlin-Moscow-Beijing (see memo items below).*

*Abbreviations and legend: CCCC = China Communications Construction Corporation; CCECC = China Civil Engineering Construction Corporation; CDB = China Development Bank; CITIC = China International Trust and Investment Corporation; CMEC = China Machinery Engineering Corporation; CMPG = China Merchants Port Group Holdings Company; CNOOC = China National Offshore Oil Corporation; CNPC = China National Petroleum Corporation; COSCO = China Ocean Shipping Company; CRBC = China Road and Bridge Corporation; CREC = China Railway Engineering Corporation; CRIG = China Railways International Group; CSCEC = China State Construction and Engineering Corporation; DIFTZ = Djibouti International Free Trade Zone; Eximbank = The China Export-Import Bank; SEZ = special economic zone; SRF = Silk Road Fund.*

and technical regulations. Russia's countersanctions against the EU (food import and transit bans) have rendered overland deliveries of coveted European luxury food to China more difficult or expensive (because these deliveries need to circumvent Russian territory), contributing to the fact that about one-quarter of containers return empty to China on the rail route.

## Major Belt and Road projects, construction funding and potential risks

| Region/project | Host country of investment | Sector/type of investment | Construction period (planned) | Total project costs (USD billion) | China's share of investment or financial support (USD billion) | Particular risks/ occurences |
|---|---|---|---|---|---|---|
| **Middle East and East Africa** | | | | | | |
| Khalifa Port | U.A.E. | seaport | 2018–2019 | 0.83 (total, incl. COSCO et al.) | | – |
| Mombasa-Nairobi express railway | Kenya | railroad | 2013–2017 | 3.2 | 2.9 (Eximbank) | – |
| Doraleh container terminal, DIFTZ | Djibouti | seaport, SEZ | from 2018 | 3.0 (CMPG, CSCEC et al.) | | indebtedness, international litigation |
| Addis-Ababa-Djibouti railway | Ethiopia, Djibouti | railroad | 2012–2018 | 4.0 (CRIG, CCECC) | 3.2 (Eximbank, CDB, ICBC) | indebtedness |
| **Central and Southeastern Europe** | | | | | | |
| Port of Piraeus (acquisition and modernization) | Greece | seaport | from 2016 | 0.81 (COSCO) | | – |
| Tuzla coal-fired power station expansion | Bosnia-Herzegovina | energy supply (coal) | 2019–2023 | 0.9 | 0.68 (Eximbank) | environmental problems |
| Varna Port modernization | Bulgaria | seaport | from 2019 | 0.14 (incl. CMEC) | | – |
| Belgrade-Budapest high-speed rail link | Serbia, Hungary | high-speed rail | 2015–2024 | 5.1 (CREC, CCCC, Eximbank) | | partial project suspension |
| Bar-Boljare-Belgrade motorway | Serbia, Montenegro | motorway | from 2015 | 1.1 (Montenegro, CRBC, CCCC) | 0.94 (Eximbank) | project size, indebtedness |
| **Memorandum items:** | | | | | | |
| Breitspur Trans-Siberian railroad link to Austria (broad-gauge track extension Košice-Vienna/Bratislava) | Slovakia, Austria | railroad | 2023–2033 | 6.5 (total, financial commitments to be determined) | | project delays |
| High-speed rail link Berlin-Moscow-Beijing (Evrazia) | Belarus, Russia, Kazakhstan, China | high-speed rail | 2018–2030 | 130 (total, financial commitments to be determined) | | project delays |

*Source: Various international press articles, Silk Road Fund, Asian Infrastructure Investment Bank.*

*¹ Part of planned high-speed rail link Berlin-Moscow-Beijing (see memo items below).*

*Abbreviations and legend: CCCC = China Communications Construction Corporation; CCECC = China Civil Engineering Construction Corporation; CDB = China Development Bank; CITIC = China International Trust and Investment Corporation; CMEC = China Machinery Engineering Corporation; CMPG = China Merchants Port Group Holdings Company; CNOOC = China National Offshore Oil Corporation; CNPC = China National Petroleum Corporation; COSCO = China Ocean Shipping Company; CRBC = China Road and Bridge Corporation; CREC = China Railway Engineering Corporation; CRIG = China Railways International Group; CSCEC = China State Construction and Engineering Corporation; DIFTZ = Djibouti International Free Trade Zone; Eximbank = The China Export-Import Bank; SEZ = special economic zone; SRF = Silk Road Fund.*

Launched in late 2013, the *Yamal LNG (Liquified Natural Gas) Project* (situated on Yamal peninsula in the West Siberian Arctic) is the financially most important BRI project in Russia and the largest BRI project in the energy sector globally (Hoering, 2018, p. 57). It constitutes an integrated undertaking, including the construction of an LNG plant (comprising natural gas extraction, production and liquefaction) as well as extensive transportation facilities including a deep-water port and an airport. The country's number-two gas producer, Novatek, owns 50.1% of the venture, the French company Total accounts for 20%, the China National Petroleum Corporation (CNPC) possesses 20%, and the SRF 9.9%. Out of USD 27 billion of planned total investment, USD 12 billion are financed by Chinese institutions; the lion's share of the Chinese loans comes from China Eximbank, a smaller share from the CDB. Yamal LNG took up export operations in 2017, shipping liquified natural gas from the newly constructed deep-sea port of Sabetta via the Northeast Passage to European as well as Asian markets. In August 2018, five Chinese LNG ships, led by Russian ice breakers, made the Polar Silk Road journey

(see also below) from Yamal to China in less than 50% of the time it would have taken via Gibraltar and the Suez Canal.[24]

In 2017, Russia launched a second large LNG project in the Arctic, *Arctic LNG II*, on Gydan peninsula (a few dozen kilometers east of the Yamal location). Project costs for Arctic LNG II are estimated at USD 25 billion. Novatek is again the majority owner; in late 2017, the country's largest private natural gas producer signed a memorandum of understanding with CDB for project implementation. In May 2018, Total purchased a 10% stake in Arctic LNG II from Novatek. In June 2019, the petroleum groups CNPC and China National Offshore Oil Corporation/CNOOC signed purchase deals, also acquiring 10% stakes (for USD 2.5 billion each). In August, the Japan Arctic LNG Consortium (Mitsui & Co. and Japan Oil, Gas and Metals Corp/JOGMEC) agreed to buy another 10% stake. Construction work started in spring 2019, and the final contract was reportedly sealed in early September 2019. Arctic LNG II gas deliveries are expected to start in 2023.[25]

*Northeast Passage and "Polar Silk Road"*: Climate change and melting polar ice caps are likely to gradually increase the commercial viability of Arctic shipping between Europe and China. In July 2017, during a visit of the Chinese president to Russia, the two countries agreed to cooperate in developing the Northeast Passage (in Russia called Northern Sea Route, running along Eurasia's north coast from the North Cape via the Bering Strait to East Asia), and China "incorporated" this maritime route into the BRI: with a length of about 15,100 km, the Northeast Passage is 20% to 30% shorter than the conventional east-west sea route via the Strait of Malacca and the Suez Canal (19,700 km), and is pirate-free, while probably not ice-free all year round until 2040 (Russland Aktuell, 2019; Struye de Swielande and Orinx (eds.) 2019, pp. 230–231). Traffic made up 20 million tons in 2018, is expected to reach 26 million tons in 2019 and to quadruple by 2024 (Henry and Pomeroy, 2019, p. 32).

Already in 2015, China and Russia had decided to strengthen their partnership in satellite navigation, particularly between the GLONASS and BEIDOU systems, through improving compatibility and interoperability, enhancing system functions, and exchanging data for monitoring and evaluation. A China-Mongolia-Russia cross-border terrestrial cable system has been completed. COSCO (the China Ocean Shipping Corporation, the world's third-largest container shipping company) has become the first operator to regularly cross the Northeast Passage (albeit at long intervals so far). Planned polar BRI investments include the development of an Arctic deep-water port in Arkhangelsk and a new railroad (called Belkomur) to transport natural resources from the Urals to Arkhangelsk. China Eximbank has committed to providing loans to support these projects.

*Sila Sibiri (Power of Siberia) Gas Pipeline*, running from East Siberia and the Far East to Heilongjiang/Manchuria, built by Gazprom and the CNPC for a total cost of USD 17.5 billion and benefiting from a CDB credit of USD 2 billion, is slated to supply gas worth about USD 350 billion over 30 years to China.[26] Power of Siberia became operational in December 2019. Once in full gear (planned for 2024), the

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[24] *By mid-2018, Yamal LNG already accounted for 3.5% of global LNG output. With the U.S.-China trade conflict escalating and China raising its 10% punitive tariff on imports of U.S. LNG to 25% in June 2019, market prospects for Russian LNG in China have brightened. Major construction work relating to the Yamal project reportedly also lifted Russia's GDP growth rate in 2018 above the 2% threshold (to 2.3%).*

[25] *By 2025, the combined production capacity of the two giant Arctic ventures may reach 11% to 12% of global LNG output.*

[26] *The Sila Sibiri agreement may thus constitute the largest gas contract in history.*

pipeline is expected to have an export capacity of 38 billion m$^3$ of gas to China, which corresponds to about one-quarter of Gazprom's total sales to Western Europe (Vercueil, 2019, pp. 68, 70).

*Alibaba-Mail.ru joint venture, Huawei Pay service, 5G wireless networks in Russia:* In September 2018, the Chinese e-commerce giant Alibaba set up a joint venture with the Russian Direct Investment Fund (RDIF, the state private equity fund), the mobile operator Megafon, and the internet corporation Mail.ru. About USD 100 million is being contributed to this project by Alibaba, around USD 280 million by the Russian side. Thus, by partnering with Russia's leading consumer internet platform (with about 100 million users), AliExpress aims to move into, help digitize and transform the retail value chain in Russia, while Russian firms, including SMEs, apparently have a chance to access more than 600 million consumers using Alibaba's platforms, in China, Southeast Asia, India, Turkey, and Europe. In December 2018, Huawei (the world's largest producer of mobile phone equipment) launched its mobile payment and digital wallet service in Russia, Huawei Pay, in partnership with Union Pay (China). Russia is the first country outside China to be able to use Huawei Pay. In June 2019, Russia's mobile network MTS signed an agreement with Huawei to develop 5G technologies and pilot-launch networks in Moscow. Another large Russian mobile provider, Beeline, has also launched a cooperation with Huawei.

*Belarus: Great Stone (China-Belarus) Industrial Park*, a special economic zone (SEZ, 91 km$^2$), was formally established in 2012 in Smolevichy, near Minsk International Airport and the Moscow-Berlin section of the Trans-Eurasia Express. Great Stone is 60% owned by Chinese enterprises (Sinomach, China Merchants Group, et al.), 40% owned by Belarusian public institutions, except for a 1% share of Duisport. About USD 110 million from CDB and USD 170 million from China Eximbank were made available for construction work on the project, which was launched in 2015. Duisport is building a rail link to the industrial park and a logistics terminal. The park features light-touch business regulations and reduced tax rates (a preferential tax regime until 2062). As of August 2018, about 36 resident companies covering i.a. telecoms, mechanical engineering, motor manufacturing, metallurgy, cellulose, and coming from China (including Huawei, ZTE, China Merchants Group), Belarus, Russia, the U.S.A., Germany, Israel and other countries had invested ca. USD 350 million. In December 2018, Sinotrans, the largest Chinese logistics supplier, set up its Eurasian headquarters in the industrial park. Sinotrans is expected to play a role in a BRI logistics platform that China is developing with the Belarusian, Russian, Kazakh and Lithuanian Railways. By end-February 2019, the number of companies had increased to 43, and total investment (amount of contractual agreements) is estimated to have expanded to around USD 1.1 billion (Henry and Pomeroy, 2019, p. 13).

*Kazakhstan: Khorgos Gateway* is a dry port or transshipment center for trains and, partly, trucks at the Kazakh-Chinese border near Almaty. Reloading is necessary because of the switch from the Chinese standard gauge to the Russian broad-gauge railroad at the former Soviet-Chinese frontier. Khorgos Gateway is also part of a cross-border special economic zone (SEZ) and industrial park (featuring tax and other incentives). A total of USD 6.5 billion has been invested in the dry port and SEZ (covering about 4.5 km$^2$). In March 2018, Dubai Ports acquired 51% of Khorgos Gateway, and the Chinese shipping company COSCO together with the port of Lianyungang (Yellow Sea) purchased the remaining 49%. In 2017, four to five

trains were reloaded (and cleared by customs) per day in Khorgos. The operating
authorities aim to triple the number of reloaded trains and more than triple the
number of transshipped containers[27] per day until 2020.

*Modernization of Kazakh non-EAEU border checkpoints:* In 2019, China Eximbank
granted a credit of USD 295 million (preferential interest rate: 2%, maturity: 20 years,
grace period: 5 years) to Kazakhstan to modernize ten border terminals in order to
improve efficiency of cross-border flows along BRI corridors. The terminals are situated
on the country's non-EAEU borders with China and Uzbekistan and include a check-
point for rail conveyance (Dostyk) and nine checkpoints for road transportation.
The credit agreement, ratified by the government in May 2019, i.a. provides for
the installation of Chinese security equipment as well as software to streamline
border clearance times for trucks from an average of 60 minutes to 25 minutes and
to multiply the terminals' transmitting capabilities (Ostwirtschaftsreport, 2019a).

*SRF stake in Astana International Exchange:* In June 2018, SRF acquired a stake
of undisclosed size in the Astana International Exchange, a core element of the
Astana International Financial Center (AIFC) founded in 2015 by former President
Nazarbaev. The AIFC is to serve as a financial hub subject to a special legal status
based on the standards of English law. A mercantile exchange is planned in addition
to stock and bond trading. The financial center i.a. aims to facilitate financing of
investment projects in Central Asia, including infrastructural ventures. The AIFC was
set up with the help of the Shanghai Stock Exchange, SRF, Nasdaq, and Goldman Sachs.
The stock exchange will offer the opportunity to trade in different currencies,
such as Kazakh tenge, U.S. dollars, Russian rubles, and Chinese renminbi-yuan. It
took up operations in July 2018 and seeks to become the regional financial Belt and
Road hub for Central Asia and the EAEU. As of 2019, 235 enterprises and banks from
26 countries were reportedly working with the AIFC. These included the CDB,
the China Construction Bank (CCB), the China International Capital Corporation
(Hong Kong) and others.

*Uzbekistan: Angren-Pap railroad link:* This constitutes a strategic rail connection
between the densely populated Ferghana basin (Eastern Uzbekistan) and the rest
of the country. In order to achieve this direct rail link between the Ferghana and
Tashkent (Uzbek capital) regions, a tunnel had to be driven through the rugged
Qurama (Kuraminsky) mountain range. The 123 km long electric line creates a swifter
alternative to the Soviet-era line that cuts across Tajikistan's Sughd region, saving
Uzbekistan a reported USD 25 million in transit fees it pays to the neighboring
country every year. The total cost of the project was USD 1.9 billion; the lion's share
was funded by the Uzbekistani government. In 2013, the China Railway Tunnel Group
signed a construction contract worth USD 455 million; in 2014 China Eximbank
provided a loan of USD 350 million, and in 2015 the World Bank contributed a loan
of USD 195 million. The line includes the Qamchiq tunnel (19.2 km), the longest
tunnel in Central Asia. Completed in February 2016, the line (including the tunnel)
was built in less than three years (100 days ahead of schedule). Previously, direct
travel between the two regions by mountain roads could reportedly take three to
four days (and was sometimes unfeasible in winter), now the journey takes two to
three hours. The Angren-Pap line opened in June 2016 and was inaugurated on-site

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[27] *In 2017 about 100,000 TEUs (twenty-foot equivalent unit) containers were transshipped through Khorgos.*

by the two heads-of-state, Karimov and Xi. Cargo and passenger traffic have since been higher than expected.

### 6.2 South and Southeast Asia

*Pakistan: Deep water port of Gwadar* and China-Pakistan Economic Corridor (CPEC)[28]: Modernized by Chinese enterprises (for about USD 1.6 billion) and leased in 2016 to the China Overseas Ports Holding Company for 43 years, Gwadar constitutes a component of a key alternate energy supply route to China (along the above corridor, aimed at reducing Beijing's dependence on energy deliveries through the strategic chokepoint of the Malacca Strait). A special economic zone (SEZ, of 925 ha), formed after the Chinese model of SEZs (e.g. Shenzhen), was attached to the port. In March 2019, the China Civil Aviation Airport Construction Group broke ground to build a new international airport at Gwadar (a USD 230 million project), to be financed with a Chinese grant. Gwadar, a former fishing village, in recent years mushroomed into a de facto city of about 100,000 – mostly temporary – inhabitants, though not without social tensions and strife (see Barisitz and Radzyner, 2017a, p. 22).

*Karachi-Peshawar rail link modernization:* The project, started in 2017 and slated to be finished in 2022 or 2023, is intended to rehabilitate and upgrade the main railroad line connecting Karachi, Lahore and Peshawar, a line dating back to British colonial times. Planned improvements are to double the existing rail track and to almost double the speed of transportation to 120–140 km/h. Total cost was initially assessed at USD 8.2 billion, making the rail link the single largest CPEC project. The main contractors are the China Railway Engineering Corporation (CREC), Pakistan Railways and the Pakistan Ministry of Communications.

Meanwhile, rising macroeconomic disequilibria, an overvalued currency and relatively modest and shrinking foreign exchange reserves prompted the authorities in Islamabad to request financial assistance from the IMF in late 2018, in order to stave off a balance-of-payments crisis. While expanding Chinese debt related to imports and loans for BRI projects certainly contributed to the difficulties, the poor competitiveness of Pakistan's export sector and a dismally functioning tax system probably take the greatest blame. In any case, in the five years to end-2017, Pakistan's external debt doubled to about 70% of GDP. In October 2018, the newly elected government in Islamabad decided to cut the financial size of the Karachi-Peshawar rail project by USD 2 billion to USD 6.2 billion.[29] In early 2019, China and Pakistan's allies in the Middle East (Saudi Arabia and the United Arab Emirates)[30] offered financial assistance of USD 9 billion to help stabilize the Pakistani currency and economy. The IMF followed suit in May 2019 with a loan of USD 6 billion to support macroeconomic and structural reforms. Meanwhile, CPEC project management was tightened by the appointment in December 2019 of a senior Pakistani military official with a view to streamlining decision-making on large CPEC investments.

*Sri Lanka: Colombo Port City and Hambantota Port* (total estimated costs of BRI projects of up to USD 5 billion): Multiple investments in a new advanced container

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[28] *CPEC constitutes a "flagship program" of the entire BRI, and over USD 15 billion are reportedly already tied up in relevant projects (Mardell and Eder, 2018, p. 4).*

[29] *The Pakistani authorities have also expressed their wish to further adjust the cost to USD 4.2 billion.*

[30] *Both countries participate in the Belt and Road Initiative.*

terminal and other infrastructure have been undertaken in Colombo, Sri Lanka's capital, where land has been reclaimed from the Indian Ocean. In May 2018, China Eximbank approved a USD 1 billion loan earmarked for the first phase of a USD 2 billion highway linking Colombo to the centrally located city of Kandy. In Hambantota Port (in the south of the island) a deep-water harbor, and adjacent to it, a special economic zone (industrial park) as well as an airport were built (for a total of around USD 1.5 billion).[31]

The deep-water port, however, is so far underused, and the airport is (almost) unused. Due to high and rising external indebtedness (reaching about USD 32 billion or 75% of GDP), Sri Lanka was prompted in December 2017 to grant China a 99-year lease (commercial and administrative management by China Merchants Port Holdings corporation/CMPH) of Port Hambantota – in exchange for a reduction of bilateral obligations by about USD 1.1 billion (debt-lease swap). While this is the most frequently cited example of a "debt trap" linked to the BRI, one should add that Chinese claims make up only about 15% of Sri Lanka's total external debt (and about 60% of the loans from China feature lower than market interest rates). Most of the debt is owed to multilateral institutions or consists of sovereign bonds at commercial interest rates (Moramudali, 2019). In January 2019, Sri Lanka accepted a USD 300 million Chinese loan, which may be increased to USD 1 billion over the next three years, in order to refinance some existing debt obligations.[32]

*Myanmar: The deep-water port Kyaukpyu* (in the Bay of Bengal) was leased in 2015 to a Chinese consortium for 50 years; this port plus oil and gas pipelines to Kunming make up a second alternate route (apart from CPEC) circumventing the Malacca Strait and therefore geopolitically useful for China. However, while the pipelines are already functioning, the Burmese government in spring 2018 suspended the planned Chinese-financed large-scale expansion of the deep-water harbor and of the surrounding special economic zone (which together – effectively including a newly built town – would have cost up to USD 7 billion). The authorities considered the Kyaukpyu project to be oversized in relation to Myanmar's national needs and were also concerned about the possible debt burden and increased dependence on China. After a pause and negotiations that yielded some concessions from the Chinese side, in November 2018, Myanmar's Ministry of Planning and Finance and China's International Trust and Investment Corporation signed a renegotiated framework agreement to develop the first phase of the deep sea port extension with an estimated investment value of USD 1.3 billion – substantially less than originally planned, e.g. including two berths instead of ten (World Bank (ed.), 2019, p. 140).

*Laos: High-speed train link Kunming (Yunnan)-Vientiane (Laos):* This connection (about 700 km long) between southern China and its small, relatively poor, landlocked neighbor Laos (the only landlocked country of the region), which also borders on Thailand, is being built by the China Railways International Group (CREC). The actual BRI project focuses on the section on Laotian territory (420 km) linking Boten (near China's border), Luang Prabang and Vientiane (the capital of Laos, at the Thai border). The cost of the project is estimated at USD 6.7 billion, or around 40% of

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[31] The construction of Hambantota port appears to be part of a long-standing official development plan of Sri Lanka. An economic review of the project by a Danish company in 2006 arrived at positive conclusions (Böge, 2019).

[32] According to finance minister Wickramaratne, the country had little choice since "It's extremely difficult to tap international markets due to tight conditions and ratings downgrades." (Belt & Road News, 2019).

the country's GDP; 60% of the project cost is reportedly financed by a Chinese credit at a 3% interest rate, 40% from the Laotian state budget (of which about two-thirds are refinanced by another Chinese loan, reducing the initial share of costs to be borne by Laos to about 12%). However, the project contributed to lifting Laos' public debt to 65% of GDP, which, according to the ADB, could leave the country overburdened with debt (Asian Development Bank, 2019, p. 279).

Construction started in late 2016, reached 45% completion in early 2019 and is expected to shorten the trip between Kunming and Vientiane – currently taking a couple of days by road – to a couple of hours by 2021, thus greatly cutting cargo and tourist transportation time, while reducing costs by about two-thirds. Ultimately, the goal is to prolong the high-speed rail link via Bangkok and Kuala Lumpur (Malaysia) to Singapore, yet the corresponding agreements are still outstanding. The modernization of the Kunming-Singapore rail link is principally also supported by the southeast Asian nations, which have dubbed it ASEAN Rail Corridor.

*Malaysia:* The *East Coast Rail Link* (ECRL, planned length: 690 km) project is to start at Port Klang near Malaysia's capital Kuala Lumpur, and cross the Malacca peninsula to Kuantan on the east coast, from where it would move north parallel to the coast up to the Thai border (South China Sea). While the groundbreaking ceremony with the main contractor, China Communications Construction Corporation (CCCC), took place in August 2017, the project was quite controversial from the outset due to its alleged high costs (above USD 20 billion, including some related energy projects), corruption allegations, and fears of sliding into a "debt trap." The newly elected Malaysian prime minister suspended the project in June 2018 and, on a visit to Beijing two months later, even reportedly accused his hosts of "neocolonialism." However, the two sides eventually reached an agreement to resume construction in May 2019, with the prime minister declaring "full support" for BRI (Lo, 2019). The breakthrough was facilitated by the Chinese partner's willingness to cut the cost of the project by about one-third, to USD 13.5 billion.

*Indonesia: Jakarta-Bandung bullet train:* In October 2015, a project to build the first high-speed railroad connection in Indonesia was awarded to a joint venture of the China Railways International Group (CREC) and a consortium of Indonesian and Chinese state-owned companies. The project cost for the trajectory (150 km) linking Jakarta (the capital) with the metropolis of Bandung on the island of Java was gauged at USD 5.5 billion. The CDB committed to fund 75% thereof with a concessionary loan equipped with a 10-year grace period, with the remaining 25% to be provided by an Indonesian-Chinese equity consortium. Construction was originally planned to be finished in 2019, but has run into issues over land acquisition, project licensing and other paperwork, triggering substantial delays. By end-2018, the CDB had reportedly disbursed USD 1.1 billion. By end-March 2019, 15% of construction and 95% of land acquisition had reportedly been completed. The project is now scheduled to be completed by mid-2021.

*Philippines: New Clark City Industrial Park:* During his visit to the Philippines in mid-November 2018, President Xi Jinping signed a USD 2 billion framework agreement for China Gezhouba Group (a construction and engineering company) to redevelop 500 ha of the former Clark Air base (of the U.S. Air Force), north of Manila, into a mixed-use industrial park catering to technology and manufacturing companies from China. The industrial park is to be part of the Clark Special Economic Zone, established in 2016. President Duterte has described the undertaking

as part of the authorities' USD 180 billion "Build, Build, Build" national infrastructure rejuvenation plan. Construction of the industrial park was expected to start in late 2019.

## 6.3 Middle East and East Africa

*Abu Dhabi (United Arab Emirates): Khalifa Port:* In early 2018, Abu Dhabi Ports and COSCO (the China Ocean Shipping Corporation) broke ground for the construction of a new container terminal at Khalifa Port (cost: about USD 500 million) that should double the port's capacity. A new agreement between the two partners was also signed for the development of a container freight station (cost: USD 130 million), which is expected to be the largest of the region. In 2016, Abu Dhabi Ports had already signed a 35-year concession agreement with COSCO to operate the new terminal, which was inaugurated in December 2018. But further COSCO investments of USD 200 million to enlarge the terminal have been announced for the next three to five years, as more Chinese companies set up in the emirate. COSCO has reportedly established Abu Dhabi as a regional hub for the shipping company's global network of 36 ports in the framework of China's BRI.

*Kenya: Mombasa-Nairobi Express Railway:* The modernization of this rail trajectory, linking East Africa's largest seaport to the Kenyan capital, was finished slightly ahead of schedule in mid-2017 and below budget (USD 3.2 billion rather than USD 3.6 billion). The principal contractor was the China Road and Bridge Corporation (CRBC), and construction costs were 90% financed by China Eximbank, with 10% coming from the Kenyan state budget.[33] In contrast to some other BRI projects, a relatively large number of domestic workers (about 25,000 Kenyans) were employed. Trains have been running on the express railroad (475 km) since June 2017 (freight traffic since January 2018). Operations are managed by the China Communications Construction Company (CCCC) for the first five years. Transportation costs from Mombasa to Nairobi have reportedly fallen by about one-third, the passenger uptake has exceeded expectations. In September 2018, a contract on building a Chinese credit-financed (USD 400 million) oil terminal in Mombasa harbor was signed.

In December 2018, a report of the Auditor general of Kenya attracted attention. It suggested that a default scenario for the railroad might allow China Eximbank to take control of Mombasa Port as collateral, which would give rise to concern since it recalls a possible "debt trap scenario" (see the case of Hambantota port, Sri Lanka). This report was subsequently dismissed by the Kenyan and Chinese authorities. In April 2019, the Kenya National Highways authority signed a USD 495 million agreement with the CRBC to build an expressway in the capital under a public-private partnership.[34]

*Djibouti/Ethiopia: Doraleh container terminal, Djibouti infrastructure:* China has invested and continues to invest in infrastructure (including roads, ports, hospitals, schools, pipelines) in Djibouti, a very small country (23,000 km², ca. 0.9 million

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[33] Yet the order was apparently placed without tender, and suspicions of corruption were an issue.

[34] In late April 2019, in a potential Kenyan move to diversify away from what may be a growing dependency on Chinese infrastructure investment and financing, the authorities signed a USD 3 billion deal for the American engineering firm Bechtel to build a motorway linking Nairobi with Mombasa. The U.S. Export-Import Bank and the Overseas Private Investment Corporation (OPIC) agreed to provide financial support for the project (RWR Belt and Road Monitor, 2019, pp. 2–3).

Map 2

**Some major New Silk Road projects: a spatial overview**



Legend:

- •–•–• (High-speed) railroad link
- ═══ Highway or expressway
- ─── Oil or gas pipeline
- ✗✗✗✗✗ Electricity transmission or distribution system
- ▬▬ Major sea lanes (container shipping, MSR)
- ••••• Northeast Passage and other sea lanes to be developed
- ─── PEACE (Pakistan East Africa Cable Express, undersea communications cable system)
- ◉ Deep-sea ports (newly constructed/modernized)
- (US), (I), (J) Project supported by the U.S.A., by India, by Japan

- ▬ ▬ North-South Transport Corridor (supported by India, Iran and Russia)
- ▬ ▬ TRACECA (Transport Corridor Europe-Caucasus-Asia, supported by EU)
- N.S. Kyrgyzstan North-South Highway
- P.-H. Trans-Pamir Highway (Tajikistan)
- A. Angren (Uzbekistan)
- AFG. Afghanistan
- B. Bangladesh
- C. Cambodia
- K. Kyrgyzstan
- L. Laos
- T. Tajikistan
- TKM. Turkmenistan
- UZB. Uzbekistan
- ▨ United Kingdom: in process of exiting the EU (referendum: June 2016, notification: March 2017, withdrawal: January 2020)

*Source: Map created by Stephan Barisitz, technical design by Florian Partl.*

inhabitants) strategically situated on the maritime trade artery (15% to 20% of world trade) between the Indian Ocean and the Suez Canal/Europe. The Djibouti International Free Trade Zone (DIFTZ), launched in July 2018, is a 60%/40% venture between the Djibouti authorities and three Chinese companies (mainly China Merchants Port Holdings/CMPH). The DIFTZ is largely being financed by China (USD 3.0 billion) and spans 48 km²; the zone enables users to operate without

paying property, income, dividend or value-added taxes. The core of DIFTZ is the Doraleh container terminal, one of whose fifteen berths is reserved for the Chinese Navy, which has a base on the western edge of the port (China's only foreign military base).[35] The terminal also has direct access to the Chinese-managed Addis Ababa-Djibouti Railway, which provides landlocked Ethiopia with railroad access to the sea. Most recently, under the auspices of CMPH, two Chinese engineering enterprises established multi-cargo facilities linked to the terminal to handle cars, livestock, steel and other goods. Industrial clusters are to focus on trade and logistics, export processing, business and financial support services, as well as duty-free manufacturing.

Meanwhile, however, Djibouti has become embroiled in a lawsuit at the London Court of International Arbitration with the predecessor of the Chinese investors in Doraleh, DP World (the Dubai-based state-owned port operator), whose 30-year concession was prematurely terminated by the Djibouti authorities due to the latter's apparent dissatisfaction with the "inefficient" way the port had been previously run. In any case, Djibouti's external public debt-to-GDP ratio grew substantially from 2014 (49%) to 2018 (71%). The lion's share of this debt is owed to China.

After the *Addis Ababa-Djibouti Railway's* inauguration in late 2016, testing continued throughout 2017, and commercial operations were finally taken up in January 2018.[36] Of the total construction cost of over USD 4 billion, credits of USD 3 billion had been secured from China Eximbank, with USD 2.4 billion going to the Ethiopian section, and the balance spent in Djibouti. The CDB and ICBC provided additional funding. However, as of the inauguration, accompanying infrastructure had apparently been all but neglected, so that access roads, spur lines, branch lines and storage facilities had to be built or completed from 2017. Altogether about 20,000 Ethiopians and 5,000 Djiboutans were hired for construction work. Saddled with a public debt-to-GDP ratio of 62% at end-2018, Ethiopia may be at risk of debt distress, against the backdrop of recurrent political instability. In September 2018, the payback period for the China Eximbank loan was prolonged from 10 to 30 years.

### 6.4 Central and Southeastern Europe

Since the 16+1 forum (today: 17+1 forum, see above) was established in 2012, Beijing has (until end-March 2019) announced more than USD 15.4 billion worth of investments in the countries of the region, with more than 70% reportedly going to the five non-EU members (Western Balkan countries) of the forum (Hopkins and Hope, 2019).

*Greece: Port of Piraeus:* This port was purchased (majority stake of 67% for EUR 370 million plus investment commitments of another EUR 355 million) in 2016, enlarged and modernized by COSCO. Piraeus certainly offers the shortest connection from the Suez Canal to the EU mainland. The Chinese investor doubled the terminal's capacity, refurbished its deep-water facilities, and i.a. set up an oil refueling pier. COSCO has also invested in and controls the ferry terminal, berths for cruise ships, wharfs and real estate adjacent to the port (Hoering, 2018, p. 116). Total connected investments are estimated to have reached up to EUR 4 billion

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[35] Given its key location, it is not surprising that Djibouti also harbors a French, a U.S., an Italian, and a Japanese military base.

[36] The Addis Ababa-Djibouti line is the first fully electrified cross-border railroad in Africa. Total journey time between the two capitals was cut from three days to about 12 hours.

(Fardella and Prodi, 2018, p. 9). Before the Chinese corporation became involved, container flow through Piraeus Port was only 1.5 million TEUs[37] per year. By 2017 container flow had increased to 4.2 million TEUs, largely through growth of transshipment. The same year, Piraeus Port became the second-largest port in the Mediterranean Sea (after Valencia), and, after registering a flow of 5.0 million TEUs in 2018, became number one in 2019, given substantial growth differentials.[38]

According to a joint statement by the foreign ministers of Greece and China, Piraeus Port's global ranking in terms of capacity also swiftly climbed from rank 93 in 2010 to rank 36 in 2017. Another jump in the ranking was expected for 2019 with the completion of Pier III, which should once again (almost) double the port's capacity. In Belt and Road rhetoric, Piraeus is being called the new "bridge between Asia and Europe" (Boisseau du Rocher and Dubois de Prisque, 2019, p. 72). That said, with currently 16 to 18 freight trains per week reportedly leaving Piraeus in the direction of Southeastern and Central Europe, there is major potential for catching up with these lofty aspirations.

*Bosnia-Herzegovina: Expansion of coal-fired power station Tuzla* (north of Sarajewo): The project provides for the construction of a new power block, with which the state energy utility Elektroprivreda (EPBiH) intends to replace three old units. This largest energy project in Bosnia-Herzegovina since independence (1992) is estimated to cost EUR 820 million, of which EUR 615 million (three quarters) is to be financed by a China Eximbank loan (agreed upon in 2017). The rest is slated to be covered by Elektroprivreda. The legislature of the Bosniak-Croatian Federation (one of the two entities of the state of Bosnia-Herzegovina, the other is the Republika Srpska), on whose territory the power plant is situated, has provided a state guarantee for the credit. The Chinese state-owned corporations China Gezhouba and Guangdong Electric Power are slated to carry out the lion's share of the construction work. While Bosnia is not an EU member, it has joined the European Energy Community and applies its rules. The European Commission has expressed concern about the Tuzla investment and its possible negative environmental impact. Moreover, according to the Community's secretariat, the parliamentary guarantee constitutes unauthorized state aid, thus violating Community rules. Treaty violation proceedings have been launched.

*Bulgaria: Varna port modernization:* In April 2019, China Machinery Engineering Corporation (CMEC) signed a EUR 120 million contract with Logistic Center Varna to jointly upgrade infrastructure in the port of Varna, which is the larger of Bulgaria's two main Black Sea ports. As the prime contractor, CMEC will take charge of project design, equipment procurement, civil engineering, construction, commissioning and training, once the port upgrade is completed. The project apparently marks the first involvement of a Chinese contractor in port construction work on the Black Sea (apart from dredging operations in Crimea) and is expected to significantly enhance the cargo handling capacity of Bulgarian ports.

*Hungary/Serbia: High-speed rail link Belgrade-Budapest:* This connection (length: 350 km, total estimated cost: EUR 4.5 billion) is part of the planned high-speed rail trajectory linking Athens and Budapest. This trajectory also corresponds to the Orient-East Med Corridor of the EU TEN-T. The Hungarian part of the

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[37] *Modern container ships have a capacity of up to 20,000 TEUs.*

[38] *In 2019, Piraeus was the EU's fifth-largest transshipment port and the Union's largest passenger port.*

Belgrade-Budapest link, a CESEE Belt and Road flagship project, was originally due to be modernized by a Chinese-Hungarian joint venture (majority Chinese-owned) and is to be majority-financed (85%) with China Eximbank loans (term: 20 years, annual interest rate: 2.5%), with the rest coming from the Hungarian authorities. However, failure to comply with EU competition and procurement rules prompted the European Commission to intervene and call for a competitive tender in September 2017. The tender was subsequently carried out in 2018 but had to be relaunched because even the cheapest offer was well above the maximum project cost fixed by the Hungarian government.

The successful bidder of the relaunched tender, a Hungarian-Chinese consortium,[39] signed the contract in May 2019. As of December 2019, the European Commission was reportedly still checking the compatibility of the tender with EU regulations. The upgrade is set to cost around EUR 2.3 billion. Once the Commission has given its green light and the government has signed a financing agreement with China Eximbank (ca. EUR 2 billion), actual construction work can (finally) start, which is expected for 2020; completion of the project is expected in 2024. In order to accelerate logistical preparatory work, COSCO acquired a 15% stake in a cargo terminal near Budapest in late November 2019. According to recent information, Siemens may also become a partner in the rail project (Neuberger and Prager, 2019).

Preparations and work on the Serbian section have been proceeding more swiftly – without a competitive tender that would correspond to EU requirements. Most of the construction is being carried out by China Railways International (CREC) and China Communications Construction Corporation (CCCC). Total costs of the Serbian part are estimated at EUR 2.2 billion, again majority-financed by China Eximbank.[40] A smaller part of the section is built by the Russian State Railways (RZD) and financed by a Russian loan of EUR 700 million. In 2018, Chinese firms also agreed to set up a video surveillance system (Huawei) for the Serbian transportation sector and to build a beltway around Belgrade as well as an industrial park (China Road and Bridge Corporation) near the Serbian capital.

*Montenegro/Serbia: Motorway Bar-Belgrade:* This project seeks to connect the Montenegrin Adriatic port of Bar via the border town of Boljare to the Serbian capital, it is proposed as an important southwestern linkup to the LSER (Piraeus-Budapest). The Bar-Belgrade branch also constitutes a side arm of the Trans-European Corridor Orient-East Med. Other advantages would be that less developed mountainous northeastern regions of Montenegro could become more accessible and road safety could be increased. The cost for the first part of the Montenegrin section (the costliest owing to difficult terrain), connecting the capital of Podgorica with the less developed northern municipality of Kolashin,[41] comes to around EUR 1 billion. Thereof, EUR 850 million are financed by a China Eximbank loan (interest rate: 2%, repayment period: 20 years, six-year grace period), the rest is being covered by the Montenegrin authorities. Construction, led by the China Road and Bridge Corporation (CRBC), started in 2015. Domestic contractors have been allocated 30% of the work. Completion is expected until September 2020.

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[39] *This consortium consists of the firms China Tiejiuju Engineering and Construction Group and China Railway Electrification Engineering Group (together 50%) and RM International Group (Hungary, 50%).*

[40] *Approximately half of the Serbian section (namely from Belgrade to Novi Sad) is expected to be completed in the fall of 2021.*

[41] *Montenegro is a country of very modest size (even smaller than Djibouti): 13,800 km², 0.6 million inhabitants.*

The remaining parts of the Montenegrin section may together cost slightly more than the first one. According to IMF assessments, the Eximbank loan has contributed to raising public debt (including loan guarantees) in the five years to 2018 by about 12 percentage points of GDP to 79% of GDP, which endangers the country's debt sustainability (IMF, 2019, p. 5). 39% of Montenegro's total external liabilities is estimated to be owed to China. In some fiscal belt-tightening, the Montenegrin government recently increased taxes and electricity prices, and capped public sector wages to counter some cost overruns due to construction delays.

Map 2 (close-up)

**Some major New Silk Road projects: focus on Europe**



| | |
|---|---|
| (High-speed) railroad link | |
| Highway or expressway | |
| Oil or gas pipeline | |
| ✖✖✖✖✖ Electricity transmission or distribution system | |
| Major sea lanes (container shipping, MSR) | |
| ●●●●● Northeast Passage and other sea lanes to be developed | |
| PEACE (Pakistan East Africa Cable Express, undersea communications cable system) | |

| | |
|---|---|
| ◉ Deep-sea ports (newly constructed/modernized) | |
| North-South Transport Corridor (supported by India, Iran and Russia) | |
| TRACECA (Transport Corridor Europe-Caucasus-Asia, supported by EU) | |
| *TKM.* Turkmenistan | |
| *UZB.* Uzbekistan | |
| United Kingdom: in process of exiting the EU (referendum: June 2016, notification: March 2017, withdrawal: January 2020) | |

*Source: Map created by Stephan Barisitz, technical design by Florian Partl.*

At the 17+1 Forum in April 2019 in Dubrovnik, Serbia signed an MoU with CRBC for the construction of about a third of the Serbian section of the highway (the Boljare-Požega section). Total investment for this purpose is estimated at EUR 2 billion. To ensure ready access to steel necessary for building the highway as well as for projects in Belgrade (see above), the Chinese company He Steel (Asia's largest steel producer) acquired and modernized the renowned Serbian foundry Železara Smederevo. According to the ministry of transportation, construction work on the highway commenced in the summer of 2019 (Ostwirtschaftsreport, 2019b).

## 7 Comparative look at Chinese investment contracts along the New Silk Road, the issue of debt distress, possible overall economic impact

We now look at another updated data source, namely Chinese investment and construction contracts in the transportation and energy sectors along the Belt and Road (2012 to mid-2019), based on the China Global Investment Tracker, published by the Heritage Foundation (Washington DC). As already mentioned in Barisitz and Radzyner (2017a, pp. 26–27), such data can be approximated to what corresponds to BRI loans/investments. Table 2 shows that, in absolute terms, the six BRI countries in which China invests most are relatively big neighbors of China: Pakistan, Australia, Russia, Bangladesh, Malaysia and Indonesia. When China's investments are expressed as a ratio of host country GDP, it is the strategically located relatively smaller countries that stand out: Laos, Djibouti, Kyrgyzia, Uganda, Cambodia, Brunei and Montenegro.

Yet some of these latter countries (given their relatively small size, their comparatively modest income levels, and the scale of respective projects) may also carry a particular risk of debt distress, as pointed out by Hurley et al. (2018, pp. 16–19).[42] But risk of debt distress does not necessarily imply danger of a "debt trap" in the sense of China taking control of key assets in the case of default, as actually happened when Hambantota Port (Sri Lanka) was leased to a Chinese state firm for 99 years in exchange for debt reduction. In most cases of debt distress of BRI countries examined by Kratz et al. (2019, pp. 1–2), China did not end up assuming control of collateral or seizing assets, which moreover (so far) has been a very infrequent occurrence. The two sides would rather enter into debt renegotiations, often resulting in various types of debt relief, and in some cases also in the financial downsizing of projects. Chinese creditors have typically tended to adopt a pragmatic stance vis-à-vis their debtors. Moreover, small countries lacking substantial liquidity often struggle to tap international capital markets, Western banks or multilaterals for cash. This sometimes leaves these nations with no choice or almost no choice but to turn to Beijing for assistance.

In a few cases, after changes of government, some host countries *suspended particular projects* (e.g. big and rather costly undertakings) given concerns about the size or price of the projects and possibly linked corruption allegations, and the perceived danger of possibly falling into a "debt trap" or simply being exposed to massive Chinese influence. As mentioned in section 6, three relatively large countries – Malaysia, Myanmar and Pakistan – deferred or downsized some Belt and Road projects in 2018 (see also Frankopan, 2018, pp. 166–167).

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[42] *More precisely, the eight countries assessed by Hurley et al. (2018) to be at notable risk of debt distress are: the Maldives, Mongolia, Tajikistan, Laos, Djibouti, Kyrgyzia, Montenegro and Pakistan. While seven of these countries are small (less than 10 million inhabitants), Pakistan is the only (much) larger country, which however features especially close links to China, reflected in the China-Pakistan Economic Corridor (CPEC) of the Belt and Road system (see above).*

Table 3

## Chinese investment and construction contracts in transportation, energy and utilities sectors from 2012 to mid-2019[1]

| Country | Total amount | Chinese investment of host country GDP[2] |
|---|---|---|
| | USD million | % |
| **Central Asia** | | |
| Kazakhstan | 15,120 | 1.11 |
| Kyrgyz Republic | 4,190 | 8.04 |
| Mongolia | 3,320 | 3.77 |
| Turkmenistan | 3,520 | 1.22 |
| **Russia and Eastern Europe** | | |
| Montenegro | 1,120 | 3.50 |
| Russia | 26,100 | 0.22 |
| Serbia | 7,620 | 2.55 |
| **West Asia** | | |
| Iran | 11,490 | 0.37 |
| Iraq | 9,130 | 0.65 |
| Jordan | 4,630 | 1.65 |
| Saudi Arabia | 13,720 | 0.26 |
| Turkey | 8,130 | 0.12 |
| United Arab Emirates | 17,130 | 0.62 |
| **South Asia** | | |
| Bangladesh | 21,530 | 1.20 |
| India | 5,530 | 0.04 |
| Nepal | 3810 | 2.44 |
| Pakistan | 46,310 | 2.32 |
| **Southeast Asia** | | |
| Brunei | 3,970 | 3.84 |
| Cambodia | 7,560 | 5.51 |
| Indonesia | 25,190 | 0.38 |
| Laos | 17,260 | 15.81 |
| Malaysia | 21,060 | 0.91 |
| Philippines | 7,370 | 0.33 |
| Vietnam | 9,400 | 0.65 |
| **East Africa and Middle East** | | |
| Djibouti | 1,720 | 13.62 |
| Egypt | 13,570 | 0.56 |
| Ethiopia | 9200 | 1.91 |
| Kenya | 11900 | 2.43 |
| Tansania | 3,970 | 1.13 |
| Uganda | 7,830 | 3.85 |
| **Memo item (comparative Chinese investments)** | | |
| Australia | 32,080 | 0.32 |
| Canada | 29780 | 0.24 |
| Germany | 20360 | 0.07 |
| Italy | 14,880 | 0.11 |
| United States | 32,600 | 0.02 |

Source: China Global Investment Tracker (American Enterprise Institute, Heritage Foundation).

[1] This list includes only host countries in which China's (cumulative) investment exceeds USD 5 billion and/or 1% of average annual GDP.
[2] These figures were calculated by using the average annual GDP figures for 2014, 2015 and 2016 as the denominator. The contract sum totals for the period from 2012 to mid-2019 is divided by the corresponding number of years (7.5) and related to the average annual GDP figures for the 2014–2016 period.

Given the partly expensive experience made so far, the new China-IMF Capacity Development Center (CICDC) inaugurated in 2018 may play a role. This institution is aimed at training officials from China and other countries including those associated with the BRI to tackle, among other things, BRI financing issues and issues of fiscal sustainability. The objective is to share international best practices and expertise.

Overall, according to expert estimates (Herrero and Xu, 2016, pp. 8, 10), the Belt and Road Initiative could increase the global trade of the EU by up to 6%, and of Austria by up to 9%. A recent World Bank study (de Soyres et al., 2019, pp. 21–22) assesses the positive impact of infrastructure improvement on BRI-participating countries in Europe and Central Asia at around 2% of GDP. This is particularly the case if trans-Eurasian rail corridors are further modernized and regulatory requirements harmonized (overland container transportation).

## 8 Summary and conclusions

China's quasi-global infrastructure drive, the Belt and Road Initiative (BRI; or New Silk Road), has considerably evolved since 2017. Altogether, 125 countries had signed BRI-related cooperation agreements by late March 2019. This includes Italy (the only G7 country so far), which signed an MoU in March 2019, and Greece, which joined a CESEE network cooperating with China in April 2019. So far, China has spent or earmarked about USD 450 billion, including credit lines and equity investment, on BRI projects, most of which can be found in Asia, Europe and Africa. These projects are predominantly credit-based and financed from Chinese domestic sources or by multilateral institutions in which China plays a leading role. The largest providers of BRI funds,

and of development finance globally, are the policy banks China Eximbank and China Development Bank. In July 2018, two Chinese international arbitration courts were established (one in Xian, for overland trade; the other, in Shenzhen, for seaborne trade). Furthermore, based on a Chinese agreement with Singapore signed in January 2019, an international Belt and Road panel of mediators was set up in the city state.

According to data from the China Global Investment Tracker (Heritage Foundation), BRI investment (measured by Chinese investment and construction contracts in transportation and energy sectors, which may be taken as a statistical approximation of BRI project expenditures) is strongest in a) relatively large neighbors of China (like Pakistan, Russia, Kazakhstan, Bangladesh, Australia, Malaysia and Indonesia) and in b) strategically situated smaller countries (including Laos, Cambodia, Kyrgyzia, Djibouti, Kenya, Brunei and Montenegro).

The BRI has been deepening international economic integration through "nuts and bolts" connectivity, aiming to cut transportation and (digital) communication costs. Other goals are to build regional (Eurasian) value chains from China along economic corridors to neighboring countries and to help reduce economies' overwhelming dependence on the U.S. dollar in trade and finance. Against the backdrop of the evolving U.S.-China trade conflict, the Belt and Road network may, moreover, provide China with an alternative geo-economic perspective. Possibly as a response to the Chinese initiative, some rival international infrastructure development programs have been set up by Japan (2015), the United States (2018), the European Union (2019) and others, but the funds allocated to the respective programs are far too small to seriously compete with BRI finance.

Over time, east-west rail connectivity linking China and Europe has been gaining ground on competing maritime links for a number of reasons. These reasons include political stabilization and economic reforms in recent decades in countries linking China to Europe, some public rail network upgrades, the harmonization of border/customs procedures in EAEU (Eurasian Economic Union) members as key transit countries, ecological advantages, and Chinese BRI transportation subsidies. Trans-Eurasian rail conveyance turnover has thus multiplied in recent years, yet seaborne transportation still clearly dominates. There are plans, made official in 2017, to expand the maritime network with a new route, the "Polar Silk Road" along Eurasia's (largely Russia's) Arctic coast, "benefiting" from climate change (melting Polar ice caps).

With some energy megaprojects in Siberia advancing or already functioning, Russia has become one of China's most prominent BRI partners. With Huawei 5G networks, the Digital Silk Road may also be about to spread to Russia. Rising concerns about debt sustainability notwithstanding, Pakistan remains a major focus of investment and a geo-economic cornerstone of the Belt and Road Initiative. The most important European BRI partner countries (gauged by the ratio of respective Chinese investments to GDP) are situated in Central and Southeastern Europe (e.g. Serbia, Montenegro, Hungary).

Some aspects of BRI continue to trigger controversy: Chinese partners often dominate BRI projects not only in financial but also in logistical terms (supply of workers, equipment, materials used). In some cases, popular resistance has emerged to BRI projects, particularly outside Europe (e.g. in Central Asia). EU rules (if applicable) and possibly even national regulations (including labor, social and

environmental standards) are not necessarily respected in Belt and Road projects. One flagship undertaking, the Belgrade-Budapest high-speed rail link, was partially suspended (in late 2017) due to nonobservance of EU competition rules. There is also the danger that local corruption could be fueled by loosely controlled financial injections, and overindebted countries could slide into a "debt trap." Recently, three relatively large countries – Malaysia, Myanmar and Pakistan – deferred or downsized some rather expensive BRI projects. Smaller countries may have less leeway or negotiating power to persuade their Chinese partners to substantially revise agreed-upon projects, should these countries perceive the necessity to do so. That said, China tends to react pragmatically to incidents of debt distress and demands for re-negotiation on the part of host governments. Chinese asset seizures, as in the case of the Hambantota port (Sri Lanka) "debt-lease swap," (so far) tend to be a quite infrequent occurrence. In any case, given the dimensions and age of BRI, Chinese investors and their partners are certainly learning a great deal through trial, error and experience.

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# The sensitivity of banks' net interest margins to interest rate conditions in CESEE

*Katharina Allinger, Julia Wörz[1]*

*Since the global financial crisis, the relationship between monetary policy and banks' net interest margins (NIMs) has been investigated in many studies, not least in light of the low interest rate environment. However, to our knowledge, this is the first econometric study that explores this topic for the Central, Eastern and Southeastern European (CESEE) economies. Using bank-level data for 15 CESEE countries from 2006 to 2018, we assess the effect of the interest rate environment on banks' NIMs. Our policy rate variable takes into account both the domestic and the international interest rate environment (euro area, U.S.A. and Switzerland). To construct this variable, we use the shares of foreign and domestic currency loans in total bank loans extended to the domestic private sector as weights for the interbank rates of the different jurisdictions. Our results show that lower (weighted) interest rates lead to lower NIMs and that the effect is nonlinear, i.e. it becomes more pronounced as the level of interest rates falls. This finding is in line with the existing literature on other, more advanced economies. As net interest income (NII) is the key revenue component of banks, especially given the traditional lending and deposit-taking business model prevalent in the CESEE banking sectors, we conclude that both pressures on NIMs and the development of interest rates in the region and worldwide should be monitored closely.*

In many countries, the global financial crisis (GFC) was followed by a prolonged period of monetary easing and extremely accommodative monetary conditions. At the same time, bank profitability took a severe hit due to varying factors ranging from immediate direct consequences of the crisis on bank balance sheets (e.g. asset quality deterioration) to increased regulatory costs and a double-dip recession in Europe. Bank profitability is key for financial stability, as illustrated, for instance, by the concerns voiced by the European Banking Authority (EBA). In its regular risk assessments, the EBA has repeatedly named profitability as a key challenge for the banking sector of the European Economic Area. In the second quarter of 2019, it stated that "almost 50% of banks participating in the Risk Assessment Questionnaire suggest their current earnings do not cover their cost of equity." While both bank profitability and net interest margins in the Central, Eastern and Southeastern European (CESEE) economies continue to be above the EU average, the region is subject to historically low interest rates. Hence, it is worth paying attention to the effects low interest rates have on banking sector profitability in the region.

In this study, we only focus on one aspect of bank profitability, namely net interest margins (NIMs)[2], and therefore do not attempt to make a general statement

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about the impact the current accommodative monetary policy has on bank profitability. Instead, we take a closer look at one of the key revenue components, which in our view best reflects the sustainability of the traditional bank business model that is centered on maturity transformation and is prevalent in the CESEE region. Many studies on NIMs published since the GFC found that lower market and/or monetary policy rates have a negative effect on NIMs and that this negative effect increases as the interest rate level falls (e.g. Borio et al., 2015; Claessens et al., 2016; Egly et al., 2018). The relationship has thus been found to be concave. We are not aware of any papers studying this relationship econometrically for CESEE, which is most likely due to a lack of readily available data. With our paper, we try to fill this gap in the literature.

Methodologically, our paper loosely follows Borio et al. (2015), who study the influence of monetary policy on various components of bank profitability for 109 large international banks headquartered in 14 advanced economies for the period 1995–2012. The authors construct a measure for bank-specific monetary policy rates[3] which takes into account banks' exposure to different currencies and thus foreign monetary policy. We replicate this methodology as foreign monetary policy rates are important for most CESEE economies, given that the shares of foreign currency assets and liabilities are substantial in many countries of the region and some countries have fixed exchange rates pegged to the euro. Due to data limitations, our currency-weighted interest rate indicator is only country and not bank specific.

Our sample covers roughly 500 banks from 15 CESEE countries over the period 2006 to 2018. The countries examined in our analysis are Albania, Bosnia and Herzegovina, Bulgaria, the Czech Republic, Croatia, Hungary, Montenegro, North Macedonia, Poland, Romania, Russia, Serbia, Slovakia, Slovenia and Turkey. Despite the heterogeneity of the countries included in our sample, our results largely confirm the findings of the existing literature on other regions and countries, namely that NIMs are positively related to the level of interest rates and that the relationship is concave. We also partially confirm some findings regarding the interaction with business model characteristics but cannot find a significant effect of the term spread on NIMs.

The paper is structured as follows: section 1 provides an overview of the literature on the nexus of NIMs and the interest rate environment. Sections 2 and 3 explain the data and methodology used. Section 4 presents the results, section 5 discusses their robustness and section 6 concludes.

## 1 Literature review

Net interest income (NII) is the most important revenue component for banks. In our sample, both the average and the median share of NII in total operating income are around 70%, with limited variation across time for the full sample. In 2018, the lowest share was reported in Hungary, coming to about 50%.[4] NII is not only one of the key determinants of bank profitability, but it also most closely reflects the income that can be generated through traditional banking business centered on

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[3] *Please note that, when we refer to monetary policy rates or the interest rate environment throughout the remainder of this study, these are defined as rates on the interbank markets. Therefore, our findings only reflect effects of unconventional monetary policy on interbank rate movements.*

[4] *Across countries, the evolution of the share of NII over the sample period was heterogeneous.*

maturity transformation. NII thus also best reflects the sustainability of this business model. As pointed out by Borio et al. (2015), the relationship between monetary policy and bank profitability was rarely a focus of research before the GFC. Since then, most of the empirical literature on the matter and the related issue of interest rate risk has centered on advanced economies and/or large banks. The relationship between monetary policy rates and NIMs is rather complex and is likely to vary across countries and banks; individual countries are characterized by differences in the monetary policy transmission mechanism, banks exhibit differences in the structure of their assets and liabilities and their market power (see for instance Scheiber et al., 2016). Further, both characteristics may change over time. These multiple sources of variation may result in differences in the relationship between monetary policy rates and NIMs.

Theoretically, the relationship between short-term interest rates and NIMs is ambiguous.[5] Given that banks' business models rely on maturity transformation, with predominantly long-term and often fixed-rate assets and short-term and variable-rate liabilities, one could assume a negative relationship in the short run. In other words, a decrease in policy rates could lead to an increase in the NIM in the short term. To be precise, a decline in the short-term policy rate should immediately lower funding costs, while interest income reacts more slowly. This would imply a higher term spread and thus higher NIMs (Ennis et al., 2016; Scheiber et al., 2016). However, as Borio et al. (2015) point out, the transmission from short-term to long-term rates can be quite swift and a large portion of the effect described above is likely to disappear when annual data are used. Yet, there are several channels which can explain why most studies tend to find that NIMs fall once interest rates decline: short-term funding largely takes the form of deposits and when interest rates fall, banks could be reluctant to lower the interest paid on deposits to the extent necessary to maintain their margins in fear of losing customers. In the recent low and negative interest rate environment, lowering deposit rates may even become legally or practically impossible. This means that a large portion of banks' short-term funding cost remains fixed at the zero lower bound or mildly above, while long-term rates charged on assets continue to fall. This compression of the term spread has negative effects on banks' returns on maturity transformation (Ennis et al., 2016; Scheiber et al., 2016).

Moreover, banks tend to price their deposits at a markdown on market rates depending on their market power. If a fall in interest rates yields a lower markdown or potentially even a markup, this will lower NIMs (Borio et al., 2015; Ennis et al., 2016).

These effects may become more pronounced as interest rates fall, leading to a nonlinear relationship between NIMs and market interest rates. Such a stronger reaction of banks' NIMs to low interest rates can arise either from the income or the expenditure side: at the zero lower bound, banks face practical and legal constraints in passing on lower market rates to customers. At the same time, interest rates on loans to customers continue to decline, which compresses margins. Even when the zero lower bound has not been hit, banks can become more reluctant to

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[5] *The interested reader can consult Borio et al. (2015), who present an adapted version of the Monti-Klein model in the annex of their study to micro-found their empirical analysis. It shows how banks' NII could theoretically change with respect to interest rate and yield curve changes.*

lower deposit rates amid sinking market rates, while competitive pressures may induce them to lower loan rates, which again compresses margins.

As to the empirical literature, Busch and Memmel (2017) find for the German banking system that the relationship is initially negative and turns positive after around 1.5 years in line with the arguments above. Likewise, Alessandri and Nelson (2014) find differing short-term and long-term effects for U.K. banks, where the long-term effect is positive.

Most recent studies use annual data and find a positive relationship between market interest rates and NIMs. Molyneux et al. (2018) confirm this positive relationship, for OECD countries, also in the case of negative interest rates in the period 2012–2016. Boungou (2020) corroborates this finding for EU Member States over a similar period (2011–2017) and reports even stronger effects in countries with a negative interest rate policy.

Moreover, other studies find nonlinearity in the relationship, e.g. Kerbl and Sigmund (2016) for Austria, Busch and Memmel (2017) for Germany, and Genay and Podjasek (2014) as well as Egly et al. (2018) for the U.S.A. Borio et al. (2015) and Claessens et al. (2016) find qualitatively similar results for multi-country samples. Claessens et al. (2016) attribute the nonlinearity to a higher pass-through of short-term rates to interest income in the low interest rate environment. Banks need to pass on lower market interest rates to their customers, especially when the latter have other funding choices.

Borio and Gambacorta (2017) find empirical support for the markdown channel and conclude that, due to this channel, monetary policy easing becomes less effective in stimulating lending at low interest rate levels.

One study that stands in contrast to this literature is Scheiber et al. (2016), which examines bank profitability in Denmark, Sweden and Switzerland. The authors find that NII had not declined significantly since 2010, as interest expenditure had contracted at a faster pace than interest income. One explanation for this could be that Nordic banks are less exposed to the zero lower bound on deposit rates, given their uniquely low shares of deposits. Instead, they were able to benefit from the continued fall in funding costs for wholesale funding (Elliot et al., 2016).

Only a few studies focus on the relationship between NIMs and the interest rate environment for CESEE, and to our knowledge none uses econometric techniques to investigate this relationship. A distinct feature of the region is the heterogeneity of the countries with respect to their stage of EU or euro area integration and the related variety of monetary policy and exchange rate regimes. But these characteristics have changed not only across countries, but also over time. By the end of our observation period, two countries (Slovakia and Slovenia) had become euro area members, while others were inflation targeters (e.g. the Czech Republic, Hungary, Poland, but also Russia toward the end of the sample). In constructing our dataset and in our modeling setup, we took great care to consider all these differences and control for any effects that arise from these distinct features.

Apart from institutional differences, many of the countries in our analysis have substantial shares of foreign currency assets and/or liabilities, which are mostly denominated in euro but in some countries also in U.S. dollars or Swiss francs. This is why foreign monetary policy is even more important for CESEE banks (Égert and MacDonald, 2008). The Oesterreichische Nationalbank has published several descriptive studies on the profitability developments of Austrian banks'

subsidiaries in CESEE. Ebner et al. (2016) split the sample into a pre- and a post-GFC period (2003–2008 and 2009–2015) and document a shift in the balance sheet of Austrian banks' CESEE subsidiaries.[6] On the asset side, sovereign bonds replaced loans to the real economy. On the liability side, deposits from nonbanks replaced deposits from credit institutions. These balance sheet changes were likely to contribute to pressures on spreads, with the latter falling by 78 basis points between the pre- and the post-crisis period. The authors attribute roughly 75% of this effect to the contracting spread between the average yield on interest-earning assets (IEAs) and the average cost of interest-bearing liabilities (IBLs) and the remainder to changes in the volumes of IEAs and IBLs. For the post-GFC period, Feldkircher and Sigmund (2017) find a positive effect from competition on profitability reflected by better capitalization, higher loan loss provisions and larger markups, with the effect being stronger for Austrian banks' subsidiaries in CESEE than for their parent banks.[7] Kavan and Martin (2015) show that, in the first years after the GFC, interest rate spreads in Croatia, Hungary and Romania increased due to asset yield losses being overcompensated by cheaper funding. After 2011, the fall in funding costs bottomed out, while asset yields continued to decrease, which compressed spreads.

## 2 Data

Our sample covers bank-level data for the following 15 CESEE countries: Albania, Bosnia and Herzegovina, Bulgaria, the Czech Republic, Croatia, Hungary, Montenegro, North Macedonia, Poland, Romania, Serbia, Russia, Slovakia, Slovenia and Turkey. Chart 1 shows the evolution of interest rates in the countries with a floating exchange rate.[8] A comparison of interest rates in the CESEE EU Member States (left panel) with the rates in the euro area, the U.S.A. and in Switzerland (middle panel) shows that there is still a positive rate differential. For our analysis, the evolution over time is more relevant, however. The chart clearly illustrates the strong reduction in interest rates over time and the historically low level of interest rates evident especially from 2014 onward. The Western Balkans (right panel) show similar developments. Russia and Turkey exhibit distinct conditions; following the marked currency depreciation during 2018, interest rates in Turkey became very elevated.

As outlined below, our main explanatory variable is a composite variable that consists of a weighted average of foreign and domestic interest rates. Chart 2 depicts the evolution of our proxy for monetary policy conditions. The strong decline to historically low levels in the aftermath of the crisis and especially following the double-dip recession is again more pronounced in the CESEE EU Member States and the Western Balkans, while developments are less clear cut in Russia and Turkey.

The dataset includes all banks operating on a consolidated level that are listed for our countries of interest on the S&P Global Market Intelligence platform. We use annual data, and the sample period ranges from 2006 to 2018, even though for

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[6] *For the CESEE banking sector more generally, Lahnsteiner (2020; in this FEEI issue) confirms a material transformation of refinancing structures in CESEE banking sectors since the GFC, which is traceable to an increase in domestic deposits (and a shrinking credit stock in some cases).*

[7] *Analyzing the determinants of the NIM for Austrian banks over the period from 1998 to 2013, Gunter et al. (2013) also confirm a positive relationship between competition as measured by the Lerner index and the NIM.*

[8] *Interest rates in the countries in the sample that (unilaterally) adopted the euro closely follow the EURIBOR.*

Chart 1

## Evolution of three-month interbank rates

**CESEE EU countries**

%
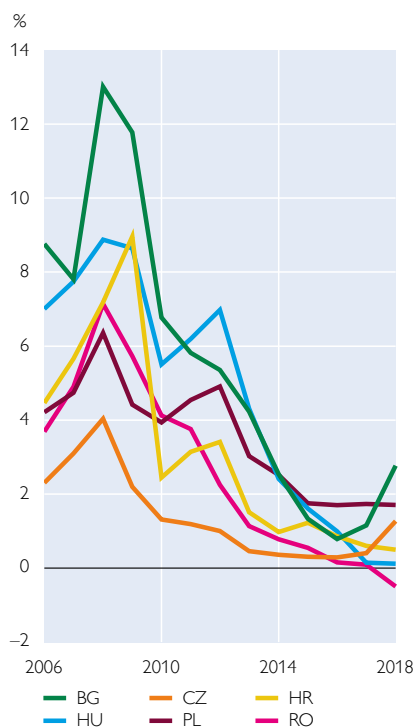


**Euro area, U.S.A., Switzerland**
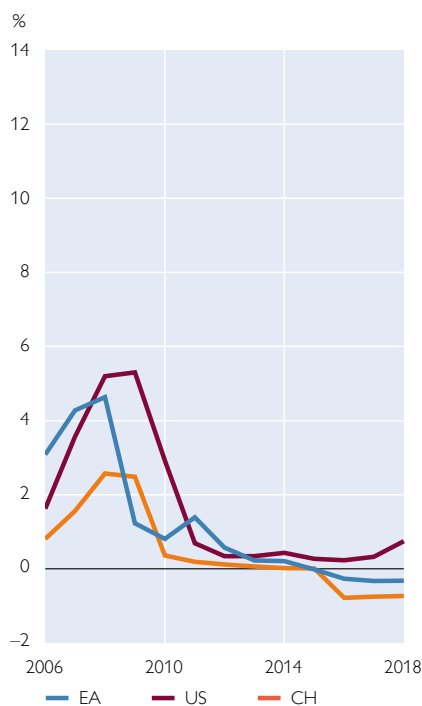
%

**Western Balkans, Russia, Turkey**

%

*Source: Authors' calculations, national central banks.*

*Note: Rates for BA, ME, SI and SK are (largely) identical to the euro area (EA) rate and are thus not displayed.*

Chart 2

## Monetary policy conditions variable by country, 2006–2018

**CESEE EU countries**

%



**Western Balkans, Russia, Turkey**

%

*Source: Authors' calculations, national central banks.*

*Note: Rates for BA, ME, SI and SK are (largely) identical to the euro area (EA) rate and are thus not displayed.*

Table 1

**Mean of net interest margins in CESEE by country, 2006–2018**

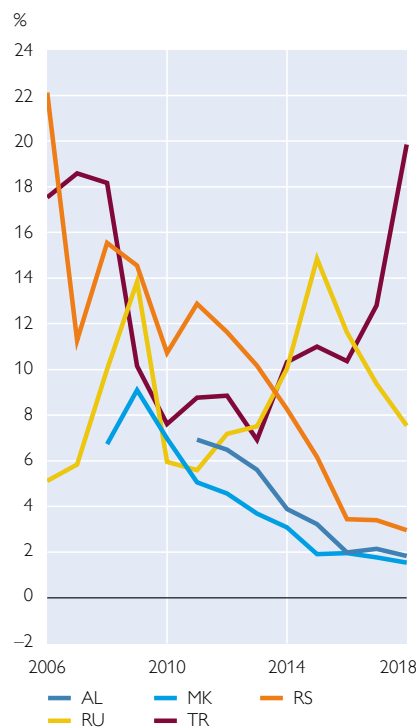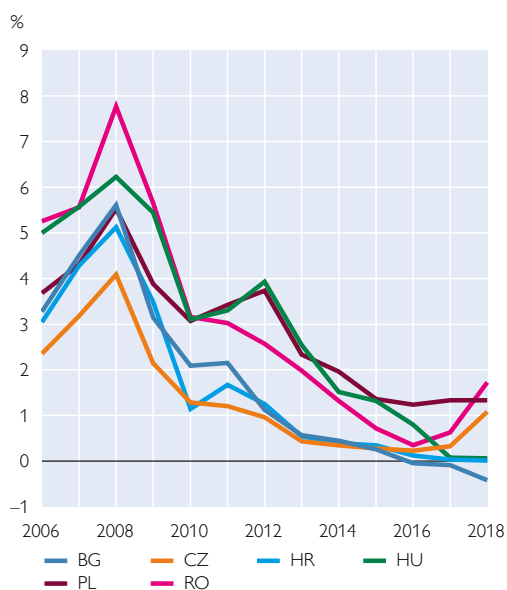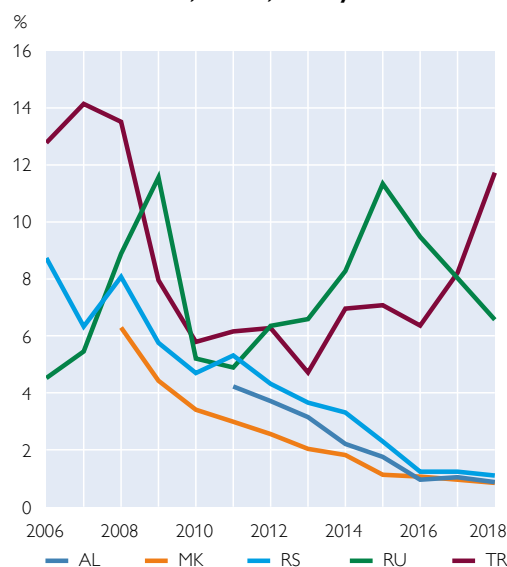| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Frequency |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | % | | | | | | | | | | | | | |
| AL | . | . | . | . | . | 3.7 | 3.6 | 3.2 | 3.4 | 3.5 | 3.3 | 3.1 | 3.4 | 109 |
| BA | 4.7 | 4.3 | 4.0 | 3.5 | 3.6 | 4.4 | 4.3 | 4.0 | 3.7 | 3.6 | 3.8 | 3.6 | 3.0 | 200 |
| BG | 6.4 | 6.1 | 5.6 | 5.2 | 4.6 | 3.2 | 2.9 | 3.1 | 3.3 | 3.6 | 3.8 | 3.8 | 3.7 | 182 |
| CZ | 2.5 | 2.7 | 2.9 | 2.9 | 2.9 | 2.4 | 2.1 | 2.1 | 2.2 | 2.0 | 1.8 | 1.7 | 1.9 | 207 |
| HR | 2.8 | 3.1 | 3.3 | 3.2 | 3.1 | 3.3 | 2.8 | 2.7 | 2.7 | 2.7 | 2.7 | 2.9 | 2.7 | 203 |
| HU | 4.1 | 3.8 | 3.1 | 3.5 | 3.8 | 3.5 | 3.7 | 3.3 | 3.2 | 2.8 | 2.8 | 2.2 | 2.1 | 214 |
| ME | 2.3 | 2.6 | 2.7 | 4.1 | 3.7 | 4.5 | 4.4 | 4.5 | 4.0 | 3.6 | 3.3 | 3.2 | 3.1 | 85 |
| MK | 5.2 | 4.4 | 4.0 | 4.5 | 4.2 | 4.5 | 3.9 | 4.0 | 4.2 | 4.1 | 4.1 | 4.0 | 3.8 | 128 |
| PL | 3.2 | 3.2 | 3.3 | 2.6 | 2.8 | 3.8 | 3.8 | 3.4 | 3.3 | 2.8 | 3.0 | 3.1 | 3.2 | 264 |
| RO | 4.5 | 3.8 | 4.3 | 4.2 | 4.5 | 4.3 | 3.6 | 3.4 | 3.4 | 3.2 | 3.1 | 2.8 | 3.0 | 207 |
| RS | 5.6 | 6.8 | 7.2 | 6.2 | 4.7 | 5.6 | 5.3 | 4.9 | 4.9 | 5.0 | 4.7 | 4.5 | 4.3 | 221 |
| RU | 8.3 | 6.8 | 6.5 | 5.4 | 5.1 | 5.7 | 5.7 | 5.7 | 5.6 | 5.3 | 5.5 | 5.5 | 5.1 | 1,897 |
| SI | 2.7 | 2.5 | 2.5 | 2.2 | 2.3 | 2.4 | 2.2 | 2.0 | 2.5 | 2.3 | 2.1 | 2.1 | 2.1 | 123 |
| SK | . | . | 2.6 | 2.8 | 3.2 | 4.6 | 4.6 | 4.6 | 4.6 | 4.7 | 4.4 | 3.6 | 2.5 | 124 |
| TR | 5.2 | 5.6 | 5.7 | 6.2 | 4.9 | 4.3 | 5.2 | 4.2 | 4.3 | 4.2 | 4.2 | 4.5 | 5.2 | 333 |
| Frequency | 65 | 78 | 100 | 104 | 108 | 489 | 505 | 514 | 517 | 516 | 512 | 522 | 467 | 4,497 |

*Source: OeNB.*

the years before 2011 markedly fewer banks are available in the said database. Up to end-2010, the number of banks per country varies between 1 (Montenegro, Serbia, Slovakia and Slovenia) and 23 (Russia). From 2011 onward, this number ranges from 10 (Montenegro) to more than 200 (Russia). To complement the bank-level data, we use macroeconomic data from different sources, mostly national central banks, but also Eurostat, Bloomberg and Macrobond.

We exclude leasing and factoring companies as well as all credit institutions that reportedly do not hold deposits, as we assume that the latter have a "special" business model and are therefore not relevant for this study. In addition, we exclude banks that were put under restructuring or were liquidated after we had collected our data. The cleaned dataset comprises 4,497 observations, of which roughly 40% can be attributed to Russian banks. For the other countries, the total number of observations collected for the entire period ranges from 85 (Montenegro) to 333 (Turkey).

A cursory glance at our variable of interest shows that NIMs were trending downward over time (see table 1). When we exclude the pre-2011 period given the lower number of reporting banks, the sample NIM had fallen by roughly 70 basis points since 2011, namely to 4.7% (mean) and 4.1% (median) in 2018. When we exclude Russia and

Chart 3

**Median of net interest margins and monetary policy conditions**

*Net interest margin – country median*



*Level of monetary policy conditions variable r*
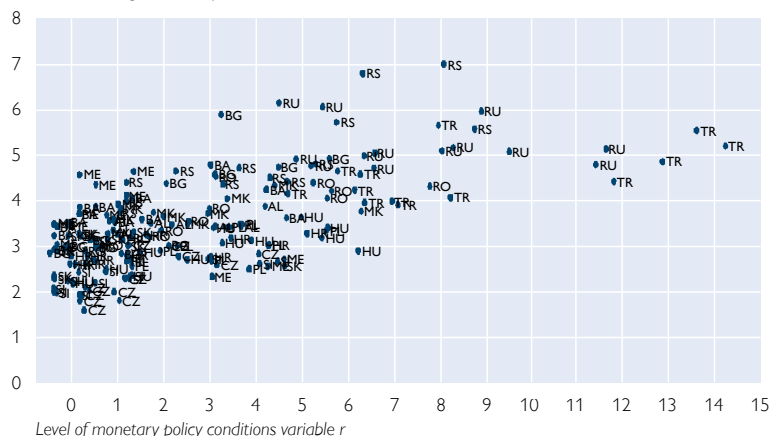
*Source: Authors' calculations.*

*Note: Median of net interest margin by country and year; monetary policy conditions reflect a weighted average of foreign and domestic monetary policy rates.*

Turkey, which make up a large portion of the sample, the average NIM decreased by roughly 85 basis points to 3% and the median NIM by roughly 70 basis points to 2.8% between 2011 and 2018. T-tests confirm that the NIMs of the full sample and the sample excluding Russia and Turkey are statistically significantly lower in 2018 than in 2011.

Chart 3 plots the median NIM for each country in each year against our proxy for monetary policy conditions (i.e. the interest rate variable, see the next section for a description of this indicator). At lower interest rate levels, NIMs tend to be lower as well, and this positive relationship seems to be concave.[9] This would be in line with the literature.

## 3 Methodology

Using the model estimated by Borio et al. (2015) as a reference, we modified it to better fit our CESEE sample. Borio et al. (2015) theoretically base their estimations on a modified version of the Monti-Klein model for an oligopolistic banking market. It should be noted that this model is not uncontested, as several studies have found that one of its critical assumptions (cost-separation) does not hold (Elyasiani et al., 1995; Siebenbrunner and Sigmund, 2019). However, given the widespread practice in the literature of modeling bank profitability (components) in ways similar to that used in Borio et al. (2015), we choose this approach to better embed our study in the existing literature and leave more complicated modeling approaches for further research. Indexing individual banks with $i$, countries with $k$ and years with $t$, we use the following model:

$$nim_{i,k,t} = \alpha_1\, nim_{i,k,t-1} + \alpha_2\, nim_{i,k,t-2} + \beta_1\, r_{k,t} + \beta_2\, r^2_{k,t} + \gamma_1\, \sigma_{k,t} + \varphi' C_{k,t}$$
$$+\, \omega' X_{i,k,t} + \text{time dummies} + \mu_i + \varepsilon_{i,k,t}$$

In this model, we take the NIM as the main dependent variable, which is defined as NII over average financial assets. The variable $r_{k,t}$ and its square stand for the interest rate variable akin to a weighted interest rate and are the explanatory variables of interest. Borio et al. (2015) construct their interest rate variable for each bank in their sample, using the asset and liability structure by currency as weights for the short-term money market rates of different jurisdictions. This approach seems also highly relevant for CESEE banks, which often hold high shares of foreign currency loans and deposits, and for the CESEE countries, which are largely small, open economies that considerably depend on the euro area in economic terms. However, a currency breakdown by bank is not available for most CESEE banks. Instead, we use country-wide data on the currency breakdown of loans to the private sector and construct a weighted monetary policy rate variable that varies by country, but not by bank. For instance, in Croatia the three-month EURIBOR receives a weight of 57% in the construction of $r_{k,\,2018}$ given that the reported share of loans denominated in euro was 57% in 2018. The use of short-term market rates for this purpose is standard in the literature.[10]

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[9]  *This relationship also holds when we exclude Russia and Turkey, the two countries with the highest NIMs and interest rates.*

[10]  *For Bosnia and Herzegovina, we used the EURIBOR for local currency exposures for lack of a suitable market rate. For some countries in the region, local interbank markets are rather small and illiquid – for Bulgaria and Croatia, we tried our specification with a deposit-based reference rate as robustness check and found that our baseline results are mostly unchanged.*

To capture the nonlinearity in the relationship which is suggested by chart 1 and also noted in other studies, we include the square of $r_{k,t}$ in the equation. Unlike Borio et al. (2015), we do not include the term spread in the baseline, given that long-term yields are not available for several countries in our sample. We add the absolute value of the coefficient of variation of the national three-month interbank rate ($\sigma_{k,t}$) to capture perceived uncertainty about financial conditions in a given country.

The vector C includes various macroeconomic control variables. We use the growth rate of nominal GDP[11]. In addition, we include the ratio of total loans to GDP as a measure of financial development. Reflecting higher costs of financial intermediation and less efficiency, NIMs in emerging economies are often higher than in advanced economies. As the financial development progresses in emerging markets, NIMs tend to decline (see Schwaiger and Liebeg, 2007). We thus use the financial development proxy to capture this effect.

In addition, we control for several bank characteristics and the bank-fixed effect $\mu_i$. We use many of the control variables as Borio et al. (2015), namely the logarithm of bank size, the equity-to-total assets ratio, the cost-to-income ratio and the liquidity-to-total assets ratio (for summary statistics, see table A1 in the annex). We rely on the literature on the bank-lending channel, according to which these control variables only have an impact on the supply of loans as they affect banks' ability to withstand shocks and influence banks' lending decisions (see Borio et al., 2015, for a detailed justification of the choice of controls).

We include two lags of the dependent variable in our model. The lags reflect the persistence of NIMs attributable to banks' efforts to stabilize this important profitability component and to the fact that current NIMs reflect past choices regarding asset and liability volumes and pricing. Including a lag of the dependent variable also helps with potential endogeneity if the state of the banking sector influences monetary policy. However, given that our monetary policy rate indicator also includes foreign monetary policy rates, we do not think that endogeneity is a major issue in our model.

We try different estimation methods for our dynamic panel data model and choose the difference Generalized Methods of Moments (GMM) estimation following Arellano and Bond (1991) as our baseline. We use Windmeijer-corrected robust standard errors and forward orthogonal deviations (FODs) to minimize the loss of data in our unbalanced panel. We collapse the instrument set and limit the lag length for the instrument to avoid instrument proliferation (Roodman, 2009a). Borio et al. (2015) estimate their model using a system GMM with instruments suggested by Blundell and Bond (1998). For our sample, we are skeptical of the additional moment conditions and sensitivity of the system GMM estimator to instrument set choices and therefore choose to estimate via difference GMM. In a system GMM estimation comparable to our difference GMM baseline, the coefficients of our main variable of interest are roughly equal (see annex 2 for a detailed discussion of the choice of estimator).

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[11] *In an earlier version, we also included the stock market indices of the countries in our sample where available, following Borio et al. (2015). The coefficient turned out to be insignificant and the results remained unchanged, which may be related to the small size of the stock market in many CESEE countries.*

## 4 Results

Our baseline specification is presented in the first column of table 2 (see annex 2 for details on the choice of the econometric specification). We find that our results are qualitatively similar to Borio et al. (2015), i.e. most of the coefficients have the same sign and significance[12]. We conclude that NIMs are highly persistent and that the level of interest rates has a positive and nonlinear relationship with the level of the NIM. Our results are therefore very much in line with the broader literature on banks' NIMs and monetary policy.

The coefficients of our monetary policy rate variable and its square term ($r_{k,t}$ and $r_{k,t}^2$) are 0.19 and −0.01, respectively, and calculating $\frac{\delta\,nim}{\delta\,r}$ serves to illustrate how the effect of monetary policy rates on net interest margins changes with the level of $r$.

As chart 4 shows, a decrease of $r$ from 1 to 0 lowers NIMs by 0.19 basis points, while a decrease from 6 to 5 only leads to a reduction of NIMs by 0.09 basis points. It should be noted that because of the dynamic nature of the model, the coefficient shown is the short-term coefficient, while the long-term coefficient is higher given the positive coefficient of the lagged NIM variable.

While our coefficient of $r_{k,t}$ is less than half of that in Borio et al. (2015), it should be noted that the samples are quite different and that, unlike us, Borio et al. are able to construct a bank-specific $r_{k,t}$. Our results are quantitatively similar to Kerbl and Sigmund (2016), who find a coefficient of 0.15 for the effect which the EURIBOR has on NIMs in a static panel model of Austrian banks. Including a large number of small banks with traditional business models, their sample also resembles ours more closely. Our results would probably improve if we could construct a bank-specific and not just a country-specific monetary policy rate variable. Given

Chart 4

**Marginal effects of monetary policy conditions on net interest margins**
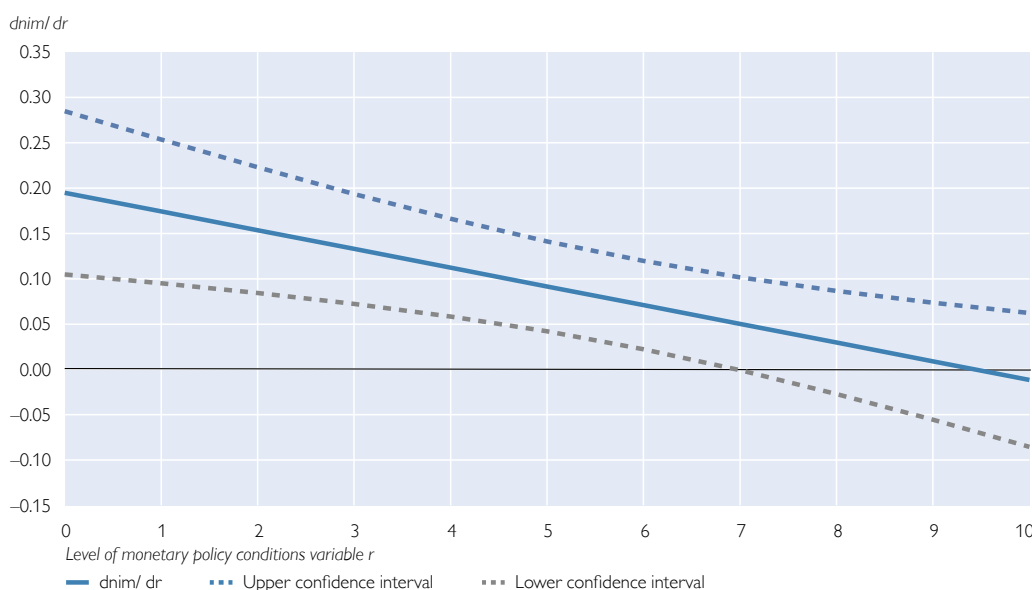


Source: Authors' calculations.

[12] *We replicate the specification in Borio et al. (2015) as closely as possible with our sample and report it in column 2 of table 1. This specification exhibits second-order serial autocorrelation.*

Table 2

## Results – regression output

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| | Baseline | Borio et al. (2015) specification[1] | Non-weighted r | EU dummy[2] | Monetary policy regime[2] | Size dummy[2] | Loan share[2] | Deposit share[2] | Interest income share[2] |
| Dummy interactions with r | no | | | default = non-EU | default = non-inflation targeting | default = below country median | default = below sample median | | |
| L.nim | 0.65 *** | 0.70 *** | 0.64 *** | 0.66 *** | 0.67 *** | 0.65 *** | 0.64 *** | 0.61 ** | 0.53 * |
| L2.nim | −0.05 | | −0.06 | −0.05 | −0.05 | −0.06 | −0.05 | −0.05 | −0.05 |
| r (default) | 0.19 *** | 0.14 *** | | 0.21 *** | 0.16 ** | 0.18 ** | 0.10 | 0.17 *** | 0.09 |
| r (alternative) | | | | 0.25 *** | 0.20 *** | 0.20 *** | 0.28 *** | 0.21 *** | 0.20 *** |
| r² (default) | −0.01 ** | −0.01 * | | −0.01 ** | −0.01 * | −0.00 | −0.00 | −0.01 * | −0.01 |
| r² (alternative) | | | | −0.02 * | −0.01 | −0.01 ** | −0.02 *** | −0.01 ** | −0.01 |
| Term spread (weighted) | | 0.00 | | | | | | | |
| Term spread (weighted)² | | −0.01 | | | | | | | |
| Local interbank rate | | | 0.07 ** | | | | | | |
| Local interbank rate² | | | −0.00 | | | | | | |
| 3-month EURIBOR | | | 0.04 | | | | | | |
| 3-month LIBOR | | | −0.02 | | | | | | |
| Coefficient of variation of local interbank rates | 0.03 | 0.01 | 0.04 | 0.02 | 0.00 | 0.05 | 0.04 | 0.03 | 0.00 |
| ngdp_growth | −0.00 | 0.00 | −0.00 | −0.00 | −0.01 | −0.01 | −0.01 | −0.00 | −0.01 |
| fin_dev | −0.01 *** | | −0.01 *** | −0.01 *** | −0.01 *** | −0.02 *** | −0.02 *** | −0.01 *** | −0.01 *** |
| Size | −0.40 *** | | −0.39 *** | −0.40 *** | −0.41 *** | | −0.43 *** | −0.40 *** | −0.47 *** |
| equity_ratio | 0.01 | | 0.01 | 0.01 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 |
| Liquidity | −0.02 *** | | −0.02 *** | −0.02 *** | −0.02 *** | −0.02 *** | −0.01 * | −0.01 ** | −0.01 ** |
| cir | −0.01 *** | | −0.01 *** | −0.01 *** | −0.01 *** | −0.01 *** | −0.01 *** | −0.01 *** | −0.01 *** |
| L.size | | −0.07 ** | | | | | | | |
| L.equity_ratio | | 0.01 * | | | | | | | |
| L.liquidity | | −0.01 *** | | | | | | | |
| L.cir | | 0.00 * | | | | | | | |
| Constant | | 2.28 ** | | | | | | | |
| Time dummies | included | excluded | included | included | included | included | included | included | included |
| Groups | 512 | 461 | 512 | 512 | 512 | 512 | 511 | 512 | 512 |
| Observations | 2,699 | 3,148 | 2,699 | 2,699 | 2,699 | 2,694 | 2,698 | 2,697 | 2,696 |
| Hansen p value | 0.39 | 0.22 | 0.39 | 0.39 | 0.28 | 0.41 | 0.42 | 0.37 | 0.41 |
| AR(3)[1] | 0.59 | 0.051 | 0.57 | 0.59 | 0.59 | 0.75 | 0.56 | 0.68 | 0.69 |

*Source: Authors' estimations.*

[1] *Borio et al. (2015) estimate with a system GMM estimator and first difference transformation. The AR(3) line shows AR(2) for this specification as there is only one lag of the nim in the model.*

[2] *Columns (4) to (9) use interactions of a dummy variable with r and r2, where the dummy values are reported as "default" and "alternative".*

*Note: Significant results are marked in bold; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, estimated with Arellano-Bond two-step estimator by using the forward orthogonal deviations option, the collapse option and lag restrictions. Windmeijer-corrected standard errors.*

that the results are likely to be sensitive to our weighting mechanism, we also report estimations without weights.

Column 3 in table 2 shows that the effect of domestic interbank rates on NIMs is also significant, but weaker than with our weighted monetary policy rate variable. Yet, the coefficient of the square of domestic rates and, moreover, the coefficients of foreign interbank rates are insignificant. This seems somewhat puzzling given the evidence on monetary spillovers from the euro area to CESEE (see e.g. Feldkircher et al., 2016). Possibly, the EURIBOR has exhibited too little variation since quantitative easing started in the euro area, and a better measure would reflect unconventional measures. Our interpretation is that while our modeling of the interest rate environment may not be perfect given data limitations, including foreign monetary policy rates via country weights is nonetheless a strong improvement compared with alternatives such as those in column 3.

Regarding the control variables, the coefficient of the financial development variable is significant and negative across all specifications, which indicates what is suggested by the literature, namely that higher financial deepening is correlated with lower NIMs. The coefficients for the bank characteristics size, liquidity and cost-to-income ratio are also significant across most specifications, while the equity ratio is not significant in our baseline specification[13]. The results suggest that size is negatively correlated with the level of the NIM, which corresponds to most findings of the literature, as larger banks tend to be less focused on the traditional lending and deposit-taking business than smaller banks and have lower NIMs. Column 6 of table 2 reports the coefficients for the interaction of $r_{k,t}$ with size, namely whether banks are below (default) or above (alternative) their country median. The results show that the coefficients do not vary strongly between the two categories. This means that our results differ both from the studies that find that small banks are more affected (Kerbl and Sigmund, 2016; Genay and Podjasek, 2014) and from those finding that small banks are less affected by changes in market interest rates (e.g. Covas et al., 2015, for the U.S.A.).

Table 2 also reports additional interactions. We find that the coefficient of $r_{k,t}$ is somewhat higher for EU countries compared with non-EU countries, while it seems to be roughly the same for countries following an inflation-targeting[14] regime versus those with other monetary policy regimes. This suggests that choosing an inflation-targeting regime – and hence adopting a flexible exchange rate – does not exert significant influence on the relationship in our sample. Because monetary policy transmission depends on the monetary policy regime, we want to include this factor especially in light of the variety of regimes evident in our sample.

The final three columns of table 2 report the results for interactions with several business model characteristics by using dummies for values below (default) and above (alternative) the sample median. The results for the share of loans in total assets and the share of net interest income in total operating income tie in with the existing literature. In other words, the effects of the interest rate variable on NIMs are large and signficant for banks with above-median shares of loans in total assets and shares of net interest income in total operating income – i.e. banks

[13] *This is probably due to outliers as the coefficient becomes significant during our robustness check with outlier correction. As other coefficients remain unchanged, we do not apply a more rigorous outlier correction in the baseline.*

[14] *This refers to Albania, the Czech Republic, Hungary, Poland, Romania, Serbia and Turkey (de jure) in our sample. Russia switched to inflation targeting mid-sample and was therefore classified as other.*

with a traditional lending-oriented business model. This finding corroborates the argument in Claessens et al. (2016) of a stronger income pass-through at lower interest rates. The coefficients become weakly significant or insignificant for the below-median banks. This is in line with the idea that banks with a traditional lending business model are particularly vulnerable to changes in the interst rate environment. Interestingly, for the share of deposits in total assets, the results are similar for both groups. However, it should be noted that the median deposit share is rather high in our sample and well above the euro area median. Hence, banks with a very high deposit share also dominate in our "below-median" subsample, which might explain why we cannot find a differential effect with respect to this variable.

## 5 Robustness checks

We test our baseline specification to several modifications of the model and sample, and our main coefficients of interest prove to be very resilient. Table 3 shows that the coefficients of our main variables are robust to several changes that seem particularly important for our specification. In a first step, we add the term spread to the model. It is interesting to note that the term spread has a negative sign when included in our model but is insignificant (see column 2). This runs counter to many other studies, including Borio et al. (2015), which find that the term spread and NIMs are positively related. Column 3 presents the estimation conducted only for the CESEE EU countries, where the term spread does have a positive and significant coefficient. As soon as Russia or Turkey are included, the relationship breaks down. The term spread variable has a fairly high volatility and standard deviation for these two countries, which is likely to be related to the substantial shocks (e.g. concerning oil prices, sanctions, currency depreciation) that have also had an impact on the long end of the yield curve. This could be a possible explanation why the relationship does not hold for these countries. Moreover, it should be noted that, within our sample, roughly one-third of the term spread observations is negative, which implies an inverted yield curve. If we run the regression only for observations where our (weighted) yield curve is not inverted, the coefficient of the term spread becomes positive (around 0.36), while the coefficient of $r_{k,t}$ remains unchanged and both square terms become insignificant (not shown in table 3). Note that, in the adapted Monti-Klein model described in Borio et al. (2015), the relationship of NII and the yield curve could a priori be concave or convex, depending on the structural parameters of the model (in particular competition and hedging costs).

We also replace the NIM with an alternative variable for NIMs used in Ebner et al. (2016), which only minimally changes our coefficients of interest (column 4). The remaining columns of table 3 show that our results are also robust to the exclusion of very small (mostly Russian) banks in the sample as well as all Russian banks. Column 7 presents the estimation only for the CESEE EU countries. Restricting the sample to post-2010 – and hence to a period of historically low interest rates – leads to a mild increase in the coefficient of $r_{k,t}$, which corroborates our finding of nonlinearity in the relationship.

In addition to the variations shown in table 3, we conduct some further robustness checks.[15] We, for instance, omit insignificant control variables and include further controls (e.g. house price growth and business model variables), omit all

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[15] Results are available from the authors on request.

Table 3

**Robustness checks – regression output**

| | (1) | (3) | (4) | (2) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | Baseline | Term spread plus r | Term spread plus r (EU countries only) | Alternative variable[1] instead of NIM | Excluding small banks[2] | Excluding Russia[3] | EU only | Only post-2010 observations |
| L.nim | 0.65 *** | 0.69 *** | 0.60 *** | | 0.64 *** | 0.59 *** | 0.58 *** | 0.61 ** |
| L2.nim | −0.05 | −0.04 | | | −0.02 | −0.09 ** | | −0.07 |
| L.spread | | | | 0.73 *** | | | | |
| r | 0.19 *** | 0.19 ** | 0.19 * | 0.16 *** | 0.15 *** | 0.16 ** | 0.18 ** | 0.25 *** |
| $r^2$ | −0.01 ** | −0.01 ** | 0.01 | −0.01 *** | −0.01 *** | −0.00 | −0.00 | −0.01 *** |
| Term spread | | −0.07 | 0.27 * | | | | | |
| Term spread[2] | | 0.03 | −0.05 | | | | | |
| Coefficient of variation of local interbank rates | 0.03 | 0.03 | −0.02 | 0.02 | 0.03 | 0.00 | −0.02 | −0.00 |
| ngdp_growth | −0.00 | 0.00 | 0.00 | −0.01 | −0.01 | −0.03 *** | −0.00 | 0.00 |
| fin_dev | −0.01 *** | −0.01 *** | −0.01 | −0.02 *** | −0.01 *** | −0.01 *** | −0.01 * | −0.02 *** |
| Size | −0.40 *** | −0.41 *** | 0.04 | −0.49 *** | −0.19 * | −0.19 * | 0.04 | −0.43 *** |
| equity_ratio | 0.01 | 0.01 | 0.05 | −0.02 * | 0.04 * | 0.03 | 0.05 | 0.01 |
| Liquidity | −0.02 *** | −0.02 *** | −0.01 | −0.02 *** | −0.01 *** | −0.01 *** | −0.01 * | −0.02 *** |
| cir | −0.01 *** | −0.01 *** | −0.01 * | −0.01 *** | −0.01 *** | −0.01 ** | −0.01 * | −0.01 *** |
| Groups | 512 | 426 | 162 | 523 | 288 | 270 | 162 | 512 |
| Observations | 2,699 | 2,248 | 1,101 | 3,211 | 1,688 | 1,338 | 1,101 | 2,471 |
| Hansen p value | 0.39 | 0.42 | 0.26 | 0.73 | 0.46 | 0.31 | 0.23 | 0.32 |
| AR(1) p value | 0.00 | 0.00 | 0.00 | 0.32 | 0.00 | 0.00 | 0.00 | 0.00 |
| AR(3)[3,4] | 0.59 | 0.57 | 0.72 | 0.311 | 0.14 | 0.54 | 0.772 | 0.65 |

*Source: Authors' estimations.*

[1] *The spread variable is calculated according to an ECB methodology. For details, see Ebner et al. (2016).*

[2] *The national market share is smaller than 0.3%.*

[3] *For column (6), a third lag is included to eliminate autocorrelation and AR(4) is reported instead of AR(3).*

[4] *For columnns (2) and (7), AR(2) is reported as only 1 lag is used.*

*Note: Significant results are marked in bold; \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01, estimated with Arellano-Bond two-step estimator by using the forward orthogonal deviations option, the collapse option and lag restrictions. Windmeijer-corrected standard errors.*

subsidiaries whose parent companies are also included in the dataset as well as clean the bank-specific variables for outliers.[16] In analogy to Borio et al. (2015), our results are robust to replacing the contemporaneous bank-specific control variables with the lagged ones. We find that our results are not driven by any individual country. We also interact both the interest rate variable and its square with region dummies (EU, Russia, Turkey and the Western Balkans), and the

[16] *To this end, we use a data-driven approach, running the regression only with observations excluding outliers and subsequently only inside the interquartile range.*

interaction term shows the expected sign and is significant for all regions.[17] Future research could zero in on differences between individual countries. A very crude inspection via interaction terms with country dummies suggests differences with respect to the significance and magnitude of the effect for individual countries.[18]

## 6 Conclusions

Our paper closes an important gap in the literature as it is the first, to our knowledge, to econometrically estimate the sensitivity of banks' net interest margins to the interest rate environment in CESEE. It should be emphasized that the CESEE sample is quite diverse in terms of country size, level of economic and financial development, exchange rate and monetary regimes and the share of foreign currency assets and liabilities.

In our econometric setup, we control for all these factors. Our findings confirm that the relationship between NIMs and monetary policy rates is concave and that foreign monetary policy rates play an important role for CESEE banks. As a common feature, the CESEE financial sectors are largely bank centric and have a large share of foreign banks. Still, the simple fact that, compared with studies that focus on other countries and regions, we find similar results regarding many key features of the relationship between NIMs and interest rates is in itself interesting and nonobvious.

In this study, we do not attempt to evaluate the adequacy of monetary policy as a whole or even the impact on banks' profitability. However, in light of the fact that net interest income is the key revenue source of banks – and in particular of small, retail-oriented banks prevalent in CESEE, our results have policy implications. CESEE banks' traditional business model centered on maturity transformation is under pressure amid the current low interest rate environment, and it will be even more so if the accommodative monetary policy conditions prevail for a prolonged period. While monetary policy conditions may have positive effects on other profitability components such as provisions (see e.g. Borio et al., 2015), it is critical for banks' viability, and therefore for financial stability, that banks can sustainably generate sufficient income.

To summarize, our results suggest several things: first, the sensitivity of NIMs varies from bank to bank, depending on certain bank characteristics, and the sustainability of profits of particularly vulnerable banks should be monitored closely. Second, actions banks might take to mitigate the fall in NIMs (e.g. higher risk taking) should be further investigated in the literature (see e.g. Boungou, 2020). Finally, it should be noted that the CESEE countries have not hit the zero lower bound. Negative rates may exert additional pressure on banks' NIMs (see Kerbl and Sigmund, 2016; Molyneux et al., 2018; Boungou, 2020). On the other hand, a tightening in monetary policy could alleviate the income pressure faced by banks. In the presence of a nonlinear relationship, which our results confirm, the effects are likely to weaken at higher interest rate levels. In our sample, we have

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[17] For Russia, the interaction term is only significant when small banks are excluded.

[18] Within our econometric setup, a thorough inspection of individual countries is hampered by the lack of sufficient data at the country level. The results from the interaction between the monetary policy variable and country dummies mentioned here should be taken with a grain of salt as reliable conclusions for individual countries would necessitate a differentiated econometric specification for each country (i.e. choice of lag length for the dependent variable, choice of instruments, etc. – see columns 6 and 7 of table 2 for examples of multi-country subsample specifications), which is not feasible given the small sample sizes at the country level.

observed some spikes in interest rates related to crisis situations (e.g. the global financial crisis, but also events in Turkey and Russia). In cases of extremely high interest rates (resulting from crisis events), the relationship could even turn negative again, as crisis-related factors may dampen NIMs. Hence, the impact of the future development of interest rates on NIMs should be monitored.

Moreover, the literature suggests that the relationship between NIMs and interest rates may also be affected by the degree of competition in the banking sector (see e.g. Elekdag et al., 2019).[19] Further research could therefore investigate the nexus between market structure, monetary policy and bank profitability.

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[19] *We would like to thank the referee for this interesting suggestion for further research.*

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## Annex
### Annex 1: Summary statistics

Table A1

### Summary statistics by bank size

| | Mean | | | Median | | | Standard deviation | | |
|---|---|---|---|---|---|---|---|---|---|
| | small | large | total | small | large | total | small | large | total |
| nim | 4.7 | 4.1 | 4.4 | 4.1 | 3.7 | 3.8 | 3.2 | 2.9 | 3.1 |
| Size | 17.7 | 21.6 | 19.7 | 17.7 | 21.6 | 19.4 | 2.1 | 2.2 | 2.9 |
| equity_ratio | 18.1 | 12.4 | 15.2 | 13.8 | 11.4 | 12.2 | 15.5 | 8.8 | 13.0 |
| Liquidity | 38.9 | 34.1 | 36.5 | 34.8 | 30.8 | 32.4 | 20.7 | 16.3 | 18.8 |
| cir | 76.5 | 57.9 | 67.2 | 72.7 | 55.1 | 62.5 | 32.8 | 22.5 | 29.6 |

*Source: Authors' calculations.*

*Note: "Small" refers to banks below and "large" to banks above a country's median bank size.*

### Annex 2: Choice of estimation method

Many econometric papers have analyzed the potential biases resulting from including or omitting lagged dependent variables under various conditions. We follow Keele and Kelly (2006), who argue that the choice should be motivated by considerations about the true data generation process. Since banks' past choices regarding the volume and pricing of assets and liabilities affect current NIMs, we consider it vital to include a lag of the dependent variable into our model to capture this process. Banks put a lot of effort into stabilizing their NIMs, which should make the latter even more persistent. This modeling choice implies that estimating the equation via Pooled Ordinary Least Squares (POLS) leads to biased and inconsistent estimates as the lag is correlated with the fixed effect $\mu_i$. This gives rise to a dynamic panel bias (see Nickell, 1981). Removing the fixed effect with a within transformation introduces a different bias, however, which shrinks as the size of T increases. As Roodman (2009b) points out, the true lag coefficient should lie between the POLS and fixed effects estimates. As can be seen in table A2, the coefficients for the first lag resulting from the Arellano-Bond (AB) (columns 3 and 4) and Blundell-Bond (BB) (columns 5 and 6) estimations fulfill this condition.

The estimation method following Arellano and Bond (1991) uses the orthogonality condition between lagged values of the dependent variable and the error term to create an instrument matrix using lags of the dependent variable. Blundell and Bond (1998), among others, proposed extra moment conditions – however, the use of AB versus BB estimators is somewhat contested. For instance, Baltagi (2013) points out that, with small T and persistent series, the use of the extra moment conditions discussed by Blundell and Bond (1998) is indicated as it increases precision and reduces the finite sample bias of the GMM estimator. However, Roodman (2009a) points out that the use of extra moment conditions relies on the nontrivial assumption akin to a mild stationarity restriction on the dependent variable, which is particularly contentious for persistent series.

Columns 3 to 6 report selected results of the AB and BB specifications. All use the two-step option and the same choices of the instrument set, namely the collapse option and a restriction on the lags used to avoid instrument proliferation (see Roodman, 2009a; Baltagi, 2013). Windmeijer-corrected robust standard errors are used. Columns 3 and 5 are estimated using forward orthogonal deviations

## Choice of estimation method – regression output

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | POLS | Fixed effects | Arellano-Bond (fod[1]) | Arellano-Bond (fd[1]) | Blundell-Bond (fod[1]) | Blundell-Bond (fd[1]) |
| L.nim | 0.77 *** | 0.42 *** | 0.65 *** | 0.64 *** | 0.61 *** | 0.56 *** |
| L2.nim | 0.07 | −0.07 | −0.05 | −0.08 * | −0.08 | −0.10 * |
| r | 0.09 ** | 0.17 *** | 0.19 *** | 0.38 *** | 0.22 *** | 0.29 *** |
| $r^2$ | −0.00 | −0.01 ** | −0.01 ** | −0.02 *** | −0.01 ** | −0.02 *** |
| Coefficient of variation of local interbank rates | 0.05 | 0.04 | 0.03 | 0.02 | 0.07 | 0.08 * |
| ngdp_growth | −0.00 | 0.00 | −0.00 | −0.01 | 0.00 | 0.00 |
| fin_dev | −0.00 | −0.02 *** | −0.01 *** | −0.04 *** | −0.01 *** | −0.01 *** |
| Size | −0.07 *** | −0.44 *** | −0.40 *** | −0.47 * | −0.16 *** | −0.19 *** |
| equity_ratio | 0.01 ** | 0.02 | 0.01 | 0.01 | 0.03 *** | 0.03 *** |
| Liquidity | −0.01 *** | −0.02 *** | −0.02 *** | −0.02 * | −0.02 *** | −0.03 *** |
| cir | −0.01 *** | −0.01 *** | −0.01 *** | −0.01 *** | −0.01 *** | −0.01 *** |
| Constant | 2.70 *** | 13.14 *** | | | 6.14 *** | 7.20 *** |
| Groups | | 526 | 512 | 511 | 526 | 526 |
| Observations | 3,225 | 3,225 | 2,699 | 2,667 | 3,225 | 3,225 |
| Hansen p value | | | 0.39 | 0.84 | 0.66 | 0.73 |
| AR(3) | | | 0.59 | 0.65 | 0.82 | 0.98 |

*Source: Authors' estimations.*

[1] fod = forward orthogonal deviations option, fd = first difference option.

*Note: Significant results are marked in bold; * p < 0.1, ** p < 0.05, *** p < 0.01.*

(FODs), whereas columns 4 and 6 are estimated using first differences (FDs). As pointed out by Roodman (2009b) and Hayakawa (2009), FOD is preferred for unbalanced panels and/or panels with many gaps, as FD magnifies these gaps. With FOD, the average of all future available observations of a variable is used instead of subtracting previous observations from current ones. Therefore, we prefer FOD to FD in our case even though FOD consistently results in a lower coefficient of our main variable of interest. We are therefore choosing the "more conservative" estimate.

Whether AB or BB should be preferred is generally not clear a priori, as discussed above. In our case, we are skeptical of the extra moment conditions and of the enhanced sensitivity of the BB estimators to the choice of lags. Moreover, the coefficients of column 3 and 5 obtained using the same estimation options are very similar, which reassures us since our choice does not have a material impact on the main result. We therefore decide to use the AB estimator as a baseline. The results of the Hansen test p values further support our choice, as the p values for columns 4 to 6 seem inflated, which is a cause for concern (Roodman, 2009b),

while we find the p value for column 3 to be still sufficiently low. Estimations with only one lag of the dependent variable were subject to second-order autocorrelation, which made us introduce an additional lag. All estimations include a second lag and show no third-order serial autocorrelation. The Sargan test has been shown to never reject the null when T is too large for a given N and is thus not reported in this context (see Roodman, 2009a; Baltagi, 2013).

# Event wrap-ups and miscellaneous

# Conference on European Economic Integration (CEEI) 2019

## Looking back on 30 years of transition – and looking 30 years ahead

*Compiled by Julia Wörz[1]*

The CEEI 2019 gathered around 340 participants from 30 countries to review three decades of political and economic transformation in Central, Eastern and Southeastern Europe (CESEE) and explore the challenges lying ahead.[2] In his opening remarks, *OeNB Governor Holzmann* mixed praise for the CESEE countries' truly impressive transition and integration achievements with concern. After all, unfulfilled promises and unrealistic expectations about the speed and ease of transformation have led to a social, economic and political backlash. To reach out to those who feel "lost in transition" it will be necessary to keep fostering convergence by spurring inclusive economic growth. Other challenges to be met include adverse demographic developments, the further integration and deepening of capital markets both within European monetary union (EMU) and in CESEE, remaining adjustment needs and new kinds of transition in the face of climate change. The surest path for CESEE's success story of the past decades to continue, as summed up by Governor Holzman, will be continued cooperation in the spirit of the European Union's official motto, "United in diversity."

### Keynote lecture #1 by Beata Javorcik: "Achievements of the past 30 years"

*Beata Javorcik* (Chief Economist at the European Bank for Reconstruction and Development – EBRD) supplied key facts and figures: In terms of services-to-GDP ratios and the pace of market liberalization, the CESEE economies outperform all other emerging market economies. Central European countries now rank among "developed economies" with a per capita income level (at purchasing power parity) of about two-thirds of that of the G7 countries (with the metropolitan areas having benefited more in terms of GDP per capita than other areas).

These achievements have come at a cost, though, including deep initial recessions and structural shifts accompanying price liberalization, causing significant economic hardship. Looking ahead, she addressed demographics and migration as challenges for the region. The old-age dependency ratio is already close to that of euro area countries. Pension reforms promoting early retirement have depressed labor force participation among older people. A shift toward longer working lives will require improvements in health care. Today, 10% of people born in the EBRD regions live outside their country of birth or citizenship, contributing to fiscal imbalances and declining property values. Policies to foster re-immigration need to focus on the quality of governance, as corruption and weak institutions are primary causes for emigration.

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[1] *Oesterreichische Nationalbank, Foreign Research Division, julia.woerz@oenb.at. Compiled on the basis of notes taken by Katharina Allinger, Stephan Barisitz, Marc Bittner, Andreas Breitenfellner, Antje Hildebrandt, Mathias Lahnsteiner, Thomas Reininger, Maria Silgoner and Tomáš Slačík.*

[2] *The conference was held on November 26 and 27, 2019. A conference volume will be published by Edward Elgar Publishing Ltd in 2020. Presentations and papers, information about the speakers and the conference program are available at www.oenb.at/en/Monetary-Policy/focus-area-central-eastern-and-southeastern-europe/events/conference-on-european-economic-integration.html.*

Javorcik concluded that given the current stage of knowledge "we could not have done things differently" but that further catching-up will require a transition to a new growth model, based on innovation, non-cost competitiveness and environmental sustainability.

## A historic transformation: heterogeneity in CESEE in a changing global context

In session 1, chaired by *Vedran Dzihic* (Austrian Institute for International Affairs), *Ivan Krastev* (Institute for Human Sciences) and *Philipp Ther* (University of Vienna) emphasized the importance of psychology and expectations in understanding the transition process. As pointed out by Philipp Ther, economic progress was overshadowed by individual and collective experiences such as threats of poverty or the absence of family members for work reasons even in early transition. Over time, many people became disillusioned with the process of transition as economic modernization failed to produce the expected social outcomes. As explained by Ivan Krastev, the ensuing brain drain of young and educated people added to public dissatisfaction and darkened national perspectives. Even where people became more satisfied with their personal lives, satisfaction with public life and politics declined. Apart from this "crisis of expectation," outmigration (the loss of mostly young people, of money invested in education, of labor and of voters) created a new, rather homogenous electoral body with a hostile stance against immigration.

Both speakers saw the roots of challenges to liberal democracies in CESEE also in the initial goal of transition, namely that of modeling Western liberal democracies. Meanwhile, the global financial crisis and the social consequences of globalization and laissez-faire capitalism have raised questions about the desirability of imitating the "Western" model. Today, Ivan Krastev concluded, most CESEE economies do not want to be imitators of somebody else's model anymore and instead aspire to develop their own models and norms.

## The central banker's view on monetary policy during transition

The first panel brought together central bank executives from three former Yugoslav countries and the Czech Republic. *Ana Ivković* (Vice Governor of the National Bank of Serbia) underlined the need to restore confidence in monetary policy following strong currency depreciation and hyperinflation in the 1990s, and the need to have an adequate fiscal framework in place for inflation targeting to work. With the move to a coherent economic policy in the last couple of years, the Serbian economy has been fundamentally transformed and is doing well now – which does not mean that everyone would be happy, though.

*Boris Vujčić* (Governor of the Croatian National Bank) recalled that, due to a badly mismanaged economy in Yugoslavia in the late 1980s, all legacy countries had to first rein in hyperinflation and stabilize the economy in the early 1990s. A decade later, Croatia faced the challenge of having to manage capital inflows to address resulting imbalances – the irony of history being that the very measures for which the Croatian authorities were criticized back then are very widespread and well-known today as "macroprudential" policies. Finally, Croatia continues to be overbanked as a result of the liberal licensing in the 1990s and may be in for more consolidation even though two-thirds of banks have disappeared from the market again.

*Boštjan Vasle* (Governor of the Bank of Slovenia) added that Slovenia mastered the transition process without major macroeconomic distortions. Beyond transformation, Slovenia had pursued EU integration as the only meaningful option for a small country. And the credibility of the euro and the common monetary policy had indeed helped contain domestic inflationary pressures in Slovenia during the crisis.

*Jiří Rusnok* (Governor of the Czech National Bank) recalled the early transition phase in which the currency, back then little more than a central-planning accounting unit, had to undergo a significant devaluation. The subsequent exchange rate peg, adopted with a view to anchoring the economy, worked well initially yet ultimately proved unsustainable given the impossible trinity of open capital markets, independent monetary policy and a fixed exchange rate. Having abandoned the fixed exchange rate under market pressure, the Czech National Bank became one of the first central banks to introduce inflation targeting. Inflation targeting was challenging particularly in the wake of the global financial crisis when inflation rates became inadequately low.

In the ensuing discussion the central bankers were asked, inter alia, to assess the exchange rate choice in their respective country and particularly to share their views of (possible) euro adoption. In principle, all speakers expressed satisfaction with their respective exchange rate arrangements and agreed that euro adoption is largely a political decision.

## Financial sector developments during transition

In his introduction to panel 2, *Gottfried Haber* (Vice Governor of the OeNB) recalled the demise of the pre-crisis business model built on parent bank funding and lending in foreign currency as well as the successful Austrian Sustainability Package that addresses banks' funding and further measures taken by the Austrian authorities to contain lending in foreign currency.

*Stijn Claessens* (Head of Financial Stability Policy at the BIS) reminded the audience that the CESEE countries did not have a functioning banking system 30 years ago. Yet, the countries demonstrated that a financial system can be built very quickly when involving foreign banks and international financial institutions. While also expressing concerns regarding foreign funding, Claessens positively mentioned the Vienna Initiative and pointed out that the presence of foreign banks helped deal with domestic shocks.

*Radovan Jelasity* (CEO of Erste Bank Hungary) portrayed the difficult situation for CESEE at the start of the global financial crisis that spilled over to Austria via rising sovereign spreads and received high international media attention. Today, the situation is very different, as reflected by the favorable market valuations of banks engaged in CESEE. Moreover, banks present in Hungary today benefit from conditions absent in the euro area: robust GDP growth, positive interest rates and advantageous margins.

*Francesco Mazzaferro* (Head of the Secretariat of the European Systemic Risk Board – ESRB) shared some memories, particularly about the time when he worked at the EU Neighbouring Regions Division of the European Central Bank in the early 2000s. In this position, he contributed to the ECB's efforts to accompany the EU enlargement process. With regard to his current position he emphasized the importance of the ESRB recommendation on lending in foreign currency, that in his view was very successful.

In the discussion that followed, Stijn Claessens stated with respect to financial innovation and its implications for CESEE that, risks in the short run apart, fintechs might ease access to financing for SMEs and households. He warned against the possible misuse of technologies based on big data and emphasized that banks would need to act fast to adjust their business models. Radovan Jelasity emphasized the need for equal treatment with regard to regulation and costs arising for banks (e.g. special taxes for banks).

## Modes of transition: the impact of different economic policy approaches

*Doris Ritzberger-Grünwald* (Director of the OeNB's Economic Analysis and Research Department) opened session 2 by pointing towards the variety of microeconomic reforms involving privatization and competition policies as well as institutional reforms and governance that characterized transition in the CESEE countries. *Marina Gruševaja* (Professor at the RheinMain University of Applied Sciences) addressed the impact of different transition patterns and approaches to economic development in the CESEE EU Member States, Russia and the Ukraine. She explained that transformation in CESEE had also been inspired by the "Washington Consensus" (1989), as a strategy of economic transformation originally designed for South American countries, and the "Augmented Washington Consensus" (2000), which added measures mainly focused on institutional transformation. Analyzing the shock therapy (liberalization, privatization and deregulation) driving the move from planned to market economies, she showed the initial effects of output decline, high unemployment and inflation, followed by a steady economic recovery before and a slowdown of progress after EU accession. Russia and Ukraine showed strong similarities to the transition processes in the CESEE EU members, even though their economic recovery started later – not least because of the lack of EU accession perspectives. The main transformation challenges for Russia and Ukraine are the low quality of institutions and the decrease of FDI inflows.

Talking about "CESEE reunion with Europe," *Andrzej Sławiński* (Professor at the Warsaw School of Economics) highlighted the successful transformation of Poland and the Polish exchange rate regime in the early 1990s (initial fixing of the zloty to overcome hyperinflation, followed by a gradual floating) and the importance of currency boards for the Baltic states and Bulgaria despite their exposure to unsustainable lending booms. A lesson from the 1990s is that intervention on foreign exchange markets can be effective. Stabilizing inflation in the 2000s was easier than initially expected, supported by central banks' credibility after successful disinflations, the rising export potential of CESEE countries, the global fall in inflation and participation in European value chains, which accelerated economic convergence and facilitated the rapid reduction of trade imbalances. While the global financial crisis had made some new EU members cautious about joining the euro area, given the relative merits of floating exchange rates, Poland's increased economic and financial integration had lowered the exchange rate pass-through and stabilized the Polish zloty against the euro, reducing the value of the option to wait. Finally, Sławiński made the case for the promotion of innovations by (public) institutions, citing best practices from Israel, Taiwan, Ireland and Nordic countries.

### 1989: the year of great ambivalence

The dinner speech delivered by *Anton Pelinka* (former Professor at the Central European University) concluded the discussions on the first day. Pelinka stressed the all-European transnational nature of the Velvet Revolution that brought communism to an end in 1989 and the role of Gorbachev in ending the "Brezhnev Doctrine," which had vindicated Soviet military suppression in Berlin in 1953, in Budapest in 1956 and in Prague in 1968. In 1989, the post-Stalinist system surrendered peacefully, accepting its financial and intellectual bankruptcy in view of the strength of liberal democracies, i.e. multiparty systems checked by independent media and jurisdiction. National sovereignty regained in 1989 has since been relinquished for EU membership, and the integration of sovereign nation states should be pursued even further. Despite its imperfections, the "best Europe we ever had" has delivered peace, liberty and prosperity. After all, the post-national Europe implied by the "Jean Monnet Process" was a response to fascism, world wars and holocaust. The current neonationalist populism across Europe is evidently an attempt to escape the complexity of globalization.

Looking ahead, the EU as the biggest economic player worldwide still needs political tools to create a balance between America and Asia. And the EU is at a crossroads between three scenarios "between the end or the return of history": in Pelinka's view, either the principles of liberal democracies will prevail; or exclusion and European disintegration will be fostered by authoritarian movements acting on frustration behind the facade of democracy; or the EU will survive but muddle through as an unfinished federation – less democratic and weaker than the U.S.A. and China.

### Keynote lecture #2 by Anders Åslund: "Ten lessons from 30 years of postcommunist economic transformation"

In his introduction to the second conference day, *Eduard Schock* (OeNB Executive Director) again highlighted the impressive speed of catching-up the CESEE countries have shown, having reached 58% of the per capita income level in the euro area by 2018, up from 36% in 2000. In this respect, *Anders Åslund* (resident senior fellow at the Eurasia Center of the Atlantic Council) emphasized the crucial role of fast and decisive reforms that need to be understood by the public but cannot always seek consensus with all players involved. In a severe crisis – such as the dismantling of communist rule in CESEE – newly appointed policymakers building on new ideas need to act fast to develop a comprehensive reform package, ideally with sufficient and timely international financial support. Other crucial factors for successful continued transition include open markets, transparency, good governance, the establishment of property rights and rule of law. Here, the EU can assert a positive influence on countries inside the EU and with or without an EU membership perspective alike. For countries without an EU perspective, more engagement in the EU's Eastern Partnership is needed with an emphasis on financial support and education.

### Can Europe/CESEE learn from Asian catching-up experiences?

In opening session 3, *Michael Landesmann* (Senior Research Associate of the Vienna Institute for International Economic Studies – wiiw) highlighted above all the differences in the catching-up process between CESEE and in East Asia. While East Asian countries have built up domestic human capital and R&D bases (industrial policy), CESEE economies have largely relied on FDI inflows. While East Asia opted for gradual economic opening, CESEE went through very fast liberalization

and was soon dominated by foreign banks. While in East Asia the state played a strong role in catching-up, in CESEE catching-up was driven by the EU accession process (the acquis communautaire) and EU membership. Looking ahead, East Asia may be on the path of increasing regional integration, whereas CESEE is facing the task of shifting to more innovation-oriented growth while grappling with serious demographic problems.

*Khee Giap Tan* (Co-Director of the Asia Competitiveness Institute at the National University of Singapore) explained the East Asian economic development (EAED) model and its experiences, which, he underlined, may be very useful for CESEE. To promote catching-up, EAED features an important role for government and industrial policy (starting with infrastructure modernization) and gradual financial integration and trade liberalization, also in countries with limited or guided democracy. Concerning the U.S. protectionist turn under president Trump, Khee Giap Tan argued that China's rise is a given because it is impossible to stop the Chinese from "thinking innovation." He made the case for more pragmatism and calmness in the EU's stance toward the Belt and Road Initiative – China's new global trade route linking Asia, Africa and Europe – since with Beijing's immense experience in infrastructure development, "China can do it cheaper, better, faster."

*Ágnes Szunomár* (Economist at the Hungarian Academy of Sciences) argued that CESEE offered China strategic entry points to the EU, given lower political expectations and fewer domestic protectionist barriers. In the case of Hungary, Austria, of course remains a larger trading partner than China, and 80% of Hungarian exports to China are generated by German corporations. In turn, CESEE's wish to cooperate with China may partly stem from disappointment from not catching up (more quickly) with advanced EU members. In the case of the Western Balkans – the key recipient of Belt and Road infrastructural expenditures in CESEE – the exposure to China may reflect dissatisfaction with remaining outside the European Union.

Possible further reasons for CESEE's expanding cooperation with China and other powers were discussed lively with the audience. Ágnes Szunomár pointed out that rapid EU enlargement to Central and Eastern Europe in 2004 and 2007 possibly nurtured unrealistic expectations in the Western Balkans, prompting disappointed governments to reach out to China, Russia et al. On the issue of relations between China and Russia, Khee Giap Tan pointed out that these are obviously at a high level at present and that hostile U.S. policies have helped push the two giant neighbors together.

## Monetary and financial stability challenges

In session 4, *Johannes Wiegand* (Division Chief at the IMF) provided an assessment of CESEE countries' choices of monetary and exchange rate regimes. He stressed that most countries with fixed exchange rate regimes today were hit by traumatic hyperinflation in the 1990s. In such a case, pegging is arguably the right regime, consisting in prioritizing monetary stability over fine-tuning the monetary stance. Moreover, some economies may be too small to make floating worthwhile. These countries with (quasi-)fixed exchange rates have a bigger interest in adopting the euro, as this would greatly facilitate macroeconomic management, with FX deposits becoming domestic deposits and banks having direct access to euro liquidity. For them, whether inside or outside the euro area, strong use of countercyclical fiscal and macroprudential policies would be required to make convergence less bumpy

despite a somewhat misaligned monetary stance. Looking at the Baltics, which adopted the euro without prior floating, wage and price pressures returned as part of real convergence, but financial imbalances have not (yet) reemerged, probably partly thanks to strong macroprudential frameworks put in place in the meantime.

Against this background, *Markus Eller* (Principal Economist at the OeNB) presented a study co-authored with the session chair *Helene Schuberth* (Head of the OeNB's Foreign Research Division) and others on the impact of macroprudential policies in CESEE countries, in view of their pronounced boom-bust cycles in capital flows and credit over time. They found that macroprudential policies could be indeed effective in containing credit growth and capital inflows in CESEE. However, the implemented macroprudential policies have apparently not yet been effective in dampening the strong recent house price increase in the region. House price growth might possibly be contained more effectively with borrower-based measures rather than capital-based measures.

*Primož Dolenc* (Vice Governor of the Bank of Slovenia) shared the case of a severe crisis hitting Slovenia in 2013 as a result of several structural factors, including a banking system dominated by three large state-owned banks, high dependence on foreign wholesale funding, deficiencies in banks' credit approval processes and lending to a highly indebted corporate sector and to financial holdings with no or poor collateral. This situation was further aggravated by cyclically weak domestic economic activity. Swift action by the authorities provided for the transfer of a large share of nonperforming claims to a bad bank; the recapitalization of banks via cash injections and government securities; and the write-down of subordinated instruments (bail-in). By 2019, the share of nonperforming claims had declined to 1.5% (from 18% in 2019), and the total capital ratio had increased to 19.8% (from 14.0%). Also, the largest banks have been privatized to majority foreign owners.

## Keynote speech #3 by Martin Selmayr

*Martin Selmayr* (Ambassador of the European Commission to Austria) reflected on where Europe stands 30 years after the fall of the Iron Curtain and where the place of CESEE is in this new constellation. For one, key functions have been assigned to CESEE leaders in the new European Commission (2019–2024): Executive Vice-President Valdis Dombrovskis is responsible for an "Economy That Works For People & Financial Services," and three out of five vice-presidents are from the CESEE region: Věra Jourová (Values and Transparency), Maroš Šefčovič (Inter-institutional Relations and Foresight) and Dubravka Šuica (Democracy and Demography). The main topics of the new European Commission are closely related to CESEE, too. CESEE countries are among the digital forerunners and carbon reduction laggards alike. Building a green European economy will rely on the solidarity and responsibility of member states no less than the search for viable compromises on the protection of the EU borders, common procedures for asylum seekers, and meaningful action to address the challenges of aging, labor migration and brain drain. Finally, President von der Leyen took office with a vision of a "geopolitical Commission" that redefines the EU position in the world. This includes defining the relationship with Russia, whose biggest enemies and friends are located in CESEE.

Martin Selmayr concluded with five recommendations. First, the EU must learn the language of power to position the EU in the world (which presupposes a

strong and united Europe). Second, the EU must listen carefully to its neighbors, and EU accession talks must be pursued further with all candidate countries and potential candidates. Of course, there can be no progress and no EU entry without the rule of law – recently strengthened with a landmark decision of the European Court of Justice, which ruled that the independence of national courts in the EU is essential for the functioning of the single market in the EU as the courts apply the commonly agreed EU rules directly. Likewise, since the euro is at the heart of the EU project, every EU country should seek to introduce it sooner or later. Third, the EU budget is policy and solidarity in numbers. The budget might seem small from a bird's eye perspective, nevertheless, its impact on investment and growth in the CESEE countries is beneficial – for the net contributors as well. Fourth, growth-oriented policies that foster also investment into CESEE economies are key. This strengthens domestic demand, which in turn could shield the EU from rising global trade volatility. Finally, plurality and diversity are valuable assets; hence independent EU institutions need to reflect the diversity of the societies. As such, also gender equality is not simply an ideology but a necessity for the legitimacy of European institutions.

## The future of CESEE: the impact of megatrends

The concluding session of the conference was chaired by *Thomas Steiner* (OeNB Executive Director). In his introductory remarks, he highlighted the relocation of global power from the West to the East, as reflected among other things in the increasing soft power exerted by China through its Belt and Road Initiative. The subsequent speakers addressed further important megatrends such as climate and demographic changes.

*Ada Ámon* (Senior Associate at Third Generation Environmentalism – E3G), argued that the Iron Curtain as a former East-West divide has now been replaced by a Coal Curtain of Europe. In 2030, the same line on the map will mark the divide of the EU: In Western EU countries, the share of renewable energy will amount to around 50% while in the CESEE EU countries the share is expected to reach only 20% to 25%. She stressed that the Visegrad group of countries – the Czech Republic, Hungary, Poland – are ignoring climate threats, attempting to extend fossil fuel burning, violating air pollution limits and undermining the development of renewable energy. According to Ada Ámon, this is particularly worrisome as the Visegard group plays a significant role in setting the agenda for the rest of the CESEE EU Member States. The European Commission is currently the only active and forceful agent pushing the development of a new renewable energy generation that could prevent the emergence of a coal curtain to some extent. Ámon argued that the national energy and climate plans as well as the next EU budget (2021–2017) provide great opportunities to improve the green transition in the CESEE countries.

*Alexia Fürnkranz-Prskawetz* (Professor at the Vienna University of Technology) addressed another East-West divide, created by rapid population declines in many CESEE countries versus population increases in Western EU countries. Population decline in the CESEE countries is due to collapsing fertility after 1989 and its slow recovery, lower life expectancy than in the West and strong outmigration. Looking ahead, migration pressures in and migration flows from CESEE, in particular in poorer and destabilized countries, are expected to stay high. Furthermore, past

migration and low fertility lead to shrinking numbers of women in reproductive age and to long-term declines in the number of births. Hence, population aging and population shrinking, especially in peripheral regions, present a major future challenge for the CESEE countries.

*Mario Holzner* (Executive Director of the Vienna Institute for International Economic Studies – wiiw) reported that most CESEE countries are rapidly approaching the tipping point where labor demand equals labor supply. Automation, measured as the use of multipurpose industrial robots in the automotive industry, is generally lower in the CESEE countries than in Western European countries, Japan or the U.S. The new digital economy provides the CESEE countries with a new catching-up opportunity, if it were not for the fact that most CESEE countries are digital transformation laggards.

Summing up, the transformation itself was mostly seen as having been extremely successful: per capita income levels have increased impressively, far-reaching reforms have been implemented swiftly and decisively, and macroeconomic and financial stabilization has been reached. Still, the achievements of the past 30 years have also come at a cost, including deep initial recessions and structural shifts accompanying price liberalization, which caused significant economic hardship. Looking forward, major challenges were identified for the next 30 years: the relocation of global power from the West to the East, nationalist tendencies and consequently declining support of European integration, demographic change and outmigration.

# 17ᵗʰ ESCB Emerging Markets Workshop

*Compiled by Christian Alexander Belabed and Tomáš Slačík*

On December 9 and 10, 2019, the OeNB hosted the 17ᵗʰ ESCB workshop on emerging markets. Since its inception in 2003, this workshop series has been a platform for researchers in the ESCB – with the central banks of Finland, Spain and Austria taking the lead – to present and discuss their analytical work on macroeconomic and financial issues related to emerging economies.

Having received many high-quality submissions from a broad range of central banks from inside and outside the EU, the organizing committee, in addition to two keynotes, selected thirteen papers for the one-and-a-half-day event. The topics covered aspects of monetary and macroprudential policy, financial stability and international macroeconomics.

In his opening remarks, *Robert Holzmann*, Governor of the OeNB, emphasized the increasing relevance of emerging markets for the global economy in general and for Austria in particular. He then moved on to ponder the heterogeneity of, and reasons for, lower economic growth inside and outside the euro area and stressed that developing capital markets may provide a welcome stimulus to economic and productivity growth in many countries.

## Session 1 and 2: Monetary and macroprudential policy issues

*André Geis* (ECB) presented a paper on potential implications of euro area monetary policy normalization for CESEE countries. Using shock-specific conditional forecasts, Geis and his ECB coauthors *Isabella Moder* and *Tobias Schuler* find that changing policy rates in the euro area trigger potentially sizeable spillovers to CESEE. However, the effect is not homogeneous across the region and depends to a large extent on the economic environment in which the monetary policy stance is altered. Having studied the question to what extent macroprudential policies have been able to stabilize capital flows in CESEE, *Markus Eller* (OeNB) presented a novel regime-switching factor-augmented vector autoregressive model, which allows for potential structural breaks in the policy regime and controls for the impact of global factors. According to Eller and his coauthors *Niko Hauzenberger*, *Florian Huber*, *Helene Schuberth* and *Lukas Vashold*, tighter macroprudential policies generally do not shield CESEE countries from capital flow volatility. Yet, they could be effective in containing private sector credit growth and the volumes of gross capital inflows.

Complementing in some ways André Geis's contribution, *Martin Feldkircher* (OeNB) presented his and *Pierre L. Siklos's* work on international effects of conventional monetary policy (actual interest rate changes) and forward guidance (defined as expected interest rate changes) in the euro area. While the effects vary over the sample period, the two researchers find that both actual and expected interest rate hikes in the euro area imply significant spillovers to a broad range of countries. However, Feldkircher pointed out that, compared with actual interest rate increases, the forward guidance shock has a more persistent impact on euro area and international interest rates. *Irina Kozlovtceva* (Bank of Russia) concluded session 2 by presenting empirical evidence for the procyclicality of monetary policy in a group of inflation-targeting, commodity-exporting emerging market economies. Her coauthors *Alexey Ponomarenko*, *Andrey Sinyakov*, *Stas Tatarintsev* and she found that monetary policy eases in response to a price increase of an exported commodity, while real credit grows. In addition, in a theoretical DSGE framework calibrated to the Russian

economy, their research shows that, when commodity price volatility is relatively high, leaning-against-the-wind strategies outperform pure inflation targeting.

## Keynote lecture by Adam Geršl

Subsequently, *Adam Geršl*, senior economist at the Joint Vienna Institute, reviewed in the first keynote address a specific macroprudential tool, namely the counter-cyclical capital buffer (CCyB). The Basel Committee on Banking Supervision proposed that national policymakers set the CCyB rate as a function of the credit-to-GDP gap, which is based on standard HP filtering with a high smoothing parameter reflecting the typically longer duration of financial cycles. Geršl mentioned that there is a surprising lack of correlation between credit-to-GDP gaps and the CCyB rate in many countries and that national authorities take into account a much larger set of indicators to calibrate the CCyB rate. Based on his research, Adam Geršl discussed whether augmenting the HP filtering with forecasts improves the signaling properties of the credit-to-GDP gap and presented possible ways to assess whether existing private sector debt levels are sustainable or not – another important input into the decision on the CCyB. Geršl also reminded participants that the CCyB is designed to increase resilience against shocks, and not necessarily to tame the financial cycle. Nevertheless, as shown by preliminary results of his current research with coauthors from the IMF, capital-based tools such as the CCyB decrease the risk of a credit boom turning into a credit bust.

## Session 3 and 4: International macroeconomic and finance issues

*Oleksandr Faryna* (National Bank of Ukraine) presented a paper, coauthored with *Heli Simola* (Suomen Pankki – Finlands Bank), on the transmission of international output and oil price shocks to CIS economies, in which they employed standard GVAR estimations. The authors find that CIS countries are highly sensitive to global and regional shocks, with that sensitivity increasing after the global financial crisis. Moreover, CIS countries react most strongly to output shocks originating in the U.S.A., Russia and within the region itself, while shocks originating from China still have a relatively moderate impact. *Fabrizio Venditti* (ECB) followed up by presenting work, coauthored with *Maurizio Habib* (ECB), on how shocks to global financial risk are transmitted to capital flows. Venditti argued that not all the risk shocks driving the global financial cycle have the same effect on capital flows. Changes in global risk caused by purely financial shocks have the largest impact on the global configuration of capital flows. As regards the transmission of risk to capital flows, the authors corroborate that countries that are more financially open and have adopted a strict peg are more sensitive to global risk shocks.

    *Irma Alonso* (Banco de España) presented work carried out with *Luis Molina* on a tool to detect the accumulation of vulnerabilities in emerging market economies based on a synthetic index of vulnerability for different types of crises. The so-called SHERLOC (i.e. Signaling Heightened Emerging Risks that Lead to the Occurrence of Crises) tool outperforms all individual indicators in predicting the probability of being vulnerable to different types of crises. The first day of the workshop was rounded out by *Utku Bora Geyikçi* (Central Bank of the Republic of Turkey), who presented a paper, coauthored with *Süheyla Özyildirim*, that examines deviations from covered interest parity (CIP) in six emerging market economies (EMEs) after the global financial crisis. According to Geyikçi, the sustained deviations from CIP

after 2010 can be explained to a large extent by local factors, while global factors play no prominent role in predicting CIP deviations.

In her dinner remarks, *Doris Ritzberger-Grünwald*, Director of the OeNB's Economic Analysis and Research Department, reviewed the history of the emerging markets workshop series. She pointed out that this event is a showcase of the ESCB's division of labor, with various central banks having developed a significant comparative advantage with respect to different emerging market regions.

### Keynote lecture by Enrique Alberola

Discussions on day two of the workshop were kicked off by a keynote speech delivered by *Enrique Alberola*, advisor in the monetary and economic department of the Bank for International Settlements, who emphasized that EMEs are more vulnerable to external shocks than advanced economies. It follows that monetary policy frameworks differ quite significantly. Inflation targeting may be only one policy goal, next to exchange rate stabilization and financial stability considerations. Moreover, trade and financial channels of exchange rate changes work in different directions, which adds to the policy dilemmas faced by EME-based central banks. Other instruments such as foreign reserves and macroprudential policies are likewise needed and implemented. Alberola also warned that, while useful, macroprudential policies are not a panacea.

### Session 5: International macroeconomic and finance issues continued

*Jacopo Timini* (Banco de España) analyzed the effects of trade agreements signed by Latin American countries on international trade, using a structural gravity model and exploiting treaty-level information. Overall, trade agreements spur international trade even though the effects of such agreements vary greatly. Running various simulations on the effects of five different scenarios of enhanced integration, Timini and his coauthor *Ayman El Dahrawy Sánchez-Albornoz* showed that both trade gains and welfare gains may be substantial. In the subsequent presentation, *Claudia Maurini* (Banca d'Italia) argued that IMF assistance programs have a stigmatizing effect on EMEs in terms of increased borrowing costs. Addressing the selection bias through the propensity score matching methodology, she found that traditional IMF programs have indeed a stigmatizing effect on emerging markets by increasing sovereign spreads, while precautionary programs have the opposite effect by decreasing the sovereign spreads. Maurini's paper is particularly policy relevant as financial stigma may induce EMEs to delay or even avoid IMF assistance.

### Session 6: The financial sector and the real economy

The last session featured papers on linkages between the real and the financial economy. *Ivan Huljak* (Croatian National Bank), using a standard stochastic frontier model, argued that standard profitability measures for banks in the CESEE region may disguise underlying inefficiencies of their cost structure. According to this paper coauthored with *Reiner Martin* (Joint Vienna Institute) and *Diego Moccero* (ECB), CESEE banks would produce the same output at only 80% of current costs if they operated at the efficiency frontier. *Tania Karamisheva* (Bulgarian National Bank) studied the interactions between financial and real cycles in Bulgaria. She and her coauthors *Gergana Markova*, *Svilen Pachedzhiev* and *Boyan Zahariev* found that the Bulgarian economy is currently entering a phase of cyclical risk accumulation

and sees a high synchronization between both cycles. Finally, *Karlo Kauko* (BOFIT) cast doubt on nonperforming loan (NPL) data as reported by banks in China and attempted to estimate more realistic NPL figures. Employing stochastic frontier analysis, he found in his study that overall (including hidden) NPLs are likely to be higher than the reported NPLs. Interestingly, banks with strong capital adequacy have higher hidden NPLs, whereas high profitability (return on equity) does not play any role in the trends of hidden NPLs. According to Kauko's findings, dependence on interbank funding seems to boost the amount of nondisclosed NPLs.

### Next ESCB Emerging Markets Workshop

The Banco de España will host the *18th ESCB Emerging Markets Workshop* in the second half of 2020 in Madrid.

# Referees for Focus on European Economic Integration 2017–2019

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