

**EXECUTIVE  
BOARD  
MEETING**

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June 10, 2016

To: Members of the Executive Board

From: The Acting Secretary

Subject: **Czech Republic—Staff Report for the 2016 Article IV Consultation**

Board Action:	Executive Directors' <b>consideration</b> (Formal)
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Questions:	Mr. Christou, EUR (Ext. 36743) Ms. Shabunina, EUR (ext. 35825) Mr. Iossifov, EUR (ext, 36061) Ms. Caselli, EUR (ext. 35792)
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**\*Unless an objection from the authorities is received prior to the conclusion of the Board's consideration, the document will be published.**





# CZECH REPUBLIC

## STAFF REPORT FOR THE 2016 ARTICLE IV CONSULTATION

June 10, 2016

### KEY ISSUES

**Context.** A favorable external environment, high utilization of EU funds, and supportive macroeconomic policies have boosted economic growth. The authorities' medium-term fiscal objective is appropriate, but fiscal framework legislation that would anchor policy is yet to be approved by parliament. The central bank's use of an exchange rate floor to achieve its inflation target has helped stem deflationary pressures, but inflation is still well below target. The financial system is sound and resilient to shocks.

**Policy recommendations.** Policies should aim at comprehensively addressing obstacles to strong and sustained growth, while safeguarding macroeconomic stability.

- **Fiscal policy.** Support the economy in light of the expected growth slowdown using available space to increase capital spending, while remaining within the medium-term deficit objective (MTO). Anchor fiscal policy in a medium-term framework enshrined in legislation and consistent with the MTO, to avoid pro-cyclicality and enhance predictability. In tandem with efforts to reduce tax avoidance, improvements in the efficiency of public spending would create room for public investment.
- **Monetary policy.** Continue to focus on inflation targeting in policymaking and communication, and prepare the modalities for an eventual exit from the exchange rate floor to a fully floating exchange rate that should commence once the inflation forecast and inflation expectations become entrenched around the inflation target. If downside risks for inflation materialize, stand ready to employ other tools to counter an undesirable tightening of monetary conditions.
- **Financial sector.** Remain vigilant and be ready to address possible risks to financial stability.
- **Structural reforms.** Boost potential growth by increasing labor market participation of certain population groups, and enhancing investment in human and physical capital. Efficient utilization of EU funds is also important to maximize their growth impact.

Approved by  
**Philip Gerson and  
 Martin Kaufman**

Discussions took place in Prague during May 4–16, 2016. The staff team comprised Messrs. Christou (head) and Iossifov, and Mmes. Caselli and Shabunina (all EUR). Mr. Kollár (OED) attended some meetings. Mmes. Chen, Calixto, and Vega (all EUR) assisted in the preparation of the staff report. The staff team met with Czech National Bank Governor Singer, Minister of Finance Babis, other senior officials, and representatives from the private sector, the academia, and trade unions. Czech Republic is an Article VIII country (Informational Annex: Fund Relations). Data provision is adequate for surveillance (Informational Annex: Statistical Issues).

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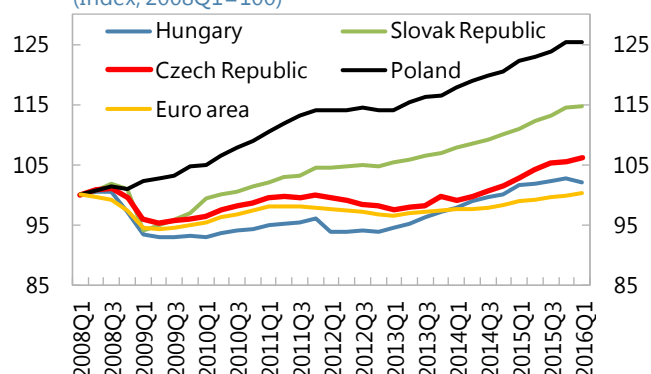
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## CONTEXT

### 1. Czech economic performance has been impressive recently, but challenges remain.

A favorable external environment, high EU fund utilization, and accommodative macroeconomic policies have contributed to a strong growth performance, with output having surpassed its pre-crisis level, and a sharp decline in unemployment. This performance along with solid fundamentals has enhanced market confidence, as reflected in record-low bond yields and credit default swap rates. But inflation remains well below target, despite the central bank's (CNB) exchange rate floor and very low policy interest rates, due in part to the slump in oil prices. Fiscal policy has been prudent, but fiscal framework legislation that would anchor policy, avoid pro-cyclicality, and enhance predictability is yet to be approved by parliament. The strong growth performance has helped keep the government coalition that took office at end-2013 stable. The challenge for the authorities is to create conditions for sustainable strong growth while maintaining macroeconomic stability.

**Real GDP: Czech Republic and Peers**  
(Index, 2008Q1=100)



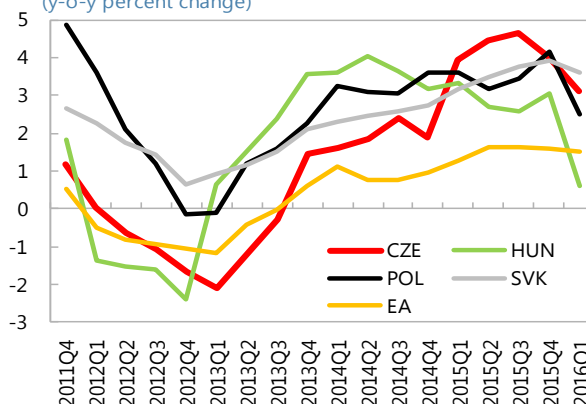
Sources: Haver Analytics; and IMF staff calculations.

## BACKGROUND AND RECENT DEVELOPMENTS

### 2. The economy has been growing at an exceptionally strong pace.

Driven by robust domestic demand, output expanded by 4.2 percent—the highest rate in the CEE region—in 2015. Government consumption and investment, alongside an increase in inventories, accounted for close to half of 2015 economic growth. Private consumption benefitted from a boost to disposable income from higher employment and wages, and improving consumer sentiment. On the supply side, manufacturing, helped by strong external demand, and services, benefitting from improved domestic sentiment and disposable income, contributed equally to the growth in gross value added. The growth momentum continued this year (output expanded by 3 percent y-o-y in 2016:Q1), with positive contributions by private consumption and investment, as well as external trade.

**Real GDP Growth**  
(y-o-y percent change)



Sources: CZSO and Haver Analytics.

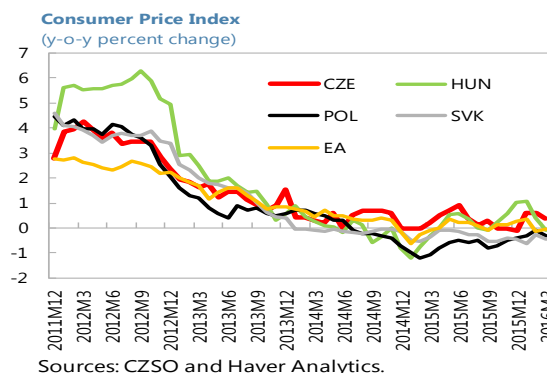
**3. Labor market performance has been strong.** Solid private sector-led employment growth of 2 percent y-o-y in 2016:Q1 helped reduce the unemployment rate to 4.1 percent in April. Labor participation reached 75 percent and hours worked continued to grow steadily. Real wage growth accelerated to 3.9 percent in 2016:Q1, boosted by an improving labor market, and increases in public sector wages and the minimum wage. Following the post-crisis freeze, the minimum wage has been increased by a cumulative 24 percent during 2014–16, thus bringing it to 35 percent of the average economy-wide wage compared with an EU average of 42 percent.

**4. However, the strong growth momentum has not translated into higher inflation.**

Headline inflation remained subdued at 0.3 percent last year and after picking up slightly to 0.5 percent y-o-y in 2016:Q1, it eased to 0.1 percent y-o-y in May, as positive domestic developments were offset by external disinflationary factors; e.g., declining oil, gas, and food prices.

Meanwhile, core inflation has been stable at around 1 percent and one-year ahead inflation expectations of financial markets (at 1.7 percent in May 2016) have recovered

from their historic lows a year ago, while three-year inflation expectations remain well-anchored at 2 percent.



**5. Fiscal performance was better than budgeted in 2015.** The fiscal deficit narrowed from 1.9 percent of GDP in 2014 to 0.4 percent—against the 1.9 percent target—on account of robust tax revenues and spending discipline, implying a 0.5 percentage point tightening of the fiscal stance.<sup>1</sup> But, the main driver was a significant shift in the structure of funding of public investment during the transition between EU fund cycles. To maximize absorption, government units shifted their focus to EU-funded investments, postponing domestically-financed investments.<sup>2</sup> Public debt declined to 41 percent of GDP, as the government continued to economize on cash balances in the Single Treasury Account, by extending the scope of the State treasury system.

<sup>1</sup> Stripping net EU revenues out of the structural balance offers another measure of fiscal stimulus. The resulting structural deficit widened by 1 percentage point in 2015, capturing the impetus of EU-fund utilization.

<sup>2</sup> 2015 was the last year that capital expenditures could be financed from the 2007-13 EU fund allocation. Such spending has a much lower impact on the deficit than domestically-financed investment, as up to 85 percent of the projects is EU funded.

**Czech Republic: Fiscal Stance**  
(In percent of GDP)

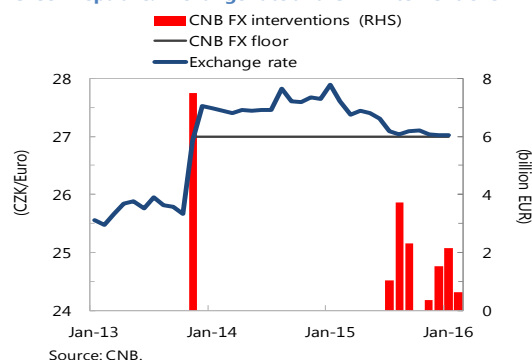
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
					Proj.					
Net lending/borrowing (overall balance)	-4.0	-1.3	-1.9	-0.4	-0.6	-0.6	-0.5	-0.5	-0.5	-0.5
Primary balance	-2.8	-0.1	-0.8	0.5	0.2	0.2	0.3	0.3	0.2	0.2
Structural balance	-1.5	0.1	-0.8	-0.3	-0.6	-0.8	-0.6	-0.5	-0.5	-0.5
Cyclically adjusted budget balance	-3.3	0.1	-1.1	-0.5	-0.7	-0.7	-0.6	-0.5	-0.5	-0.5
Structural balance excl. net revenues from EU <sup>1</sup>	-2.1	-0.6	-1.6	-2.7	-0.8	-1.0	-1.2	-1.0	-1.0	-1.0
Public debt	44.6	45.2	42.7	41.1	40.8	39.8	38.9	37.9	37.1	36.2

Source: Czech Ministry of Finance, Czech National Bank, and Fund staff projections.

<sup>1</sup> Structural balance net of receipts of EU Structural and Cohesion Funds and national contribution to EU budget.

**6. Monetary conditions remain accommodative.** CNB has kept its policy rate at 0.05 percent since November 2012. In November 2013 amid mounting disinflationary pressures, the CNB started using the exchange rate as an additional instrument for easing monetary conditions and introduced a CZK 27 per euro floor. Besides FX intervention upon the floor's introduction, the koruna remained above that level until mid-2015. However, with appreciation pressures building, the CNB intervened to defend the floor, purchasing €12.2 billion during July 2015–April 2016. The koruna has been trading slightly above the floor subsequently. In February 2016, the CNB extended its commitment to the floor until end-2016.

**Czech Republic: Exchange rate and CNB interventions**



**7. The banking sector is stable and credit growth continues to strengthen.** Czech banks are mainly self-financed with deposits that grew by 8 percent y-o-y in 2016:Q1. They continue to enjoy high capital buffers and profitability, and strong asset quality. The deleveraging process bottomed out at end-2014, and credit to the private sector has been growing at around 8-9 percent since August 2015, driven by demand for both corporate and household loans.

**8. Czech Republic's external position is strong.** The current account surplus widened to 0.9 percent of GDP in 2015, on account of an improvement in the income account due to stronger EU transfers and lower dividend payouts. The trade balance deteriorated slightly relative to GDP, owing to the higher import component of investment, which boomed in the transition between EU-fund cycles. Higher EU-fund absorption also boosted the capital account. Foreign direct investment was weaker than in previous years, while portfolio inflows increased significantly. The net international investment position improved to -31 percent of GDP, on the back of higher official reserves.

**9. Staff's assessment is that the external position is broadly in line with fundamentals and desirable policies.** The EBA methodology yields mixed results for the Czech Republic in terms of the current account and the real effective exchange rate, with a negative current



account norm (Box 1). Other considerations also point to the absence of evident imbalances in the external position, or of significant shortcomings in non-price indicators.

## OUTLOOK AND RISKS

**10. Economic activity is expected to decelerate in 2016.** Private consumption will remain robust on the heels of higher disposable income and employment, but the projected slowdown in EU-fund absorption will weigh on growth. Over the medium-term, output growth is set to stabilize at slightly above 2 percent in line with the economy's potential (Box 2). Inflation is expected to reach the 2 percent target in 2017, as base effects from the oil price shock fade and domestic demand pressures pull inflation up. The current account is projected to remain in a small but declining surplus, before moving toward a deficit on account of improving investment and in line with fundamentals.

**Czech Republic: Key Macroeconomic Indicators, 2013–21**  
(In percent of GDP, unless otherwise indicated)

	2013	2014	2015	2016	2017	2018	2019	2020	2021
				Proj.					
Real GDP growth (percent)	-0.5	2.0	4.2	2.2	2.7	2.4	2.2	2.2	2.2
Inflation (period average, percent)	1.4	0.4	0.3	0.6	1.9	2.0	2.0	2.0	2.0
General government overall balance	-1.3	-2.1	-0.4	-0.6	-0.6	-0.5	-0.5	-0.5	-0.5
General government gross debt	45.2	42.7	41.1	40.8	39.8	38.9	37.9	37.1	36.2
Current account	-0.5	0.2	0.9	1.4	1.0	0.6	0.1	-0.4	-0.8
Reserves (in billions of euros)	41.0	44.2	60.4	67.9	75.8	81.5	84.7	86.9	87.3
Gross external debt	63.5	68.8	70.7	71.2	71.2	71.7	72.7	73.8	75.4

Sources: Czech authorities, and IMF staff projections.

**11. The balance of risks to the outlook—highlighted in the Risk Assessment Matrix—appears to be tilted to the downside.** Weaker-than-projected external demand, notably from the euro area but also indirectly from China and other emerging markets would weigh on exports, especially given the role of the Czech industry in the Germany-Central European supply chain. An escalation of the refugee crisis in Europe or a decision by UK voters to leave the EU could increase market uncertainty, and affect trade and economic activity. Moreover, global financial market turbulence could generate safe-haven capital inflows that would contribute to appreciation pressures, while a prolonged period of low interest rates could—absent effective macro prudential measures—lead to overvaluation of real estate and other asset prices that could threaten financial stability. On the upside, the positive effects from supportive macroeconomic policies, lower oil prices, improved economic sentiment, and the ECB's quantitative easing could be larger than currently forecast.

### Authorities' views

**12. There was broad agreement on the economic outlook and the balance of risks.** The authorities shared the view that economic growth would slow this year on account of a decline in

public investment, and they broadly agreed on the medium-term prospects. They saw mostly externally-driven risks as tilted primarily to the downside, notably the possible slowdown in the euro area and emerging markets, and intensification of geopolitical tensions which could have a negative impact on market sentiment in the region. All in all, the authorities saw these risks as a reason to sustain or even strengthen policies supportive of domestic demand. Finally, they agreed on the need to boost potential growth as a key element for the convergence process.

## POLICY AGENDA

*Discussions focused on the need to anchor fiscal policy in a medium-term setting, conditions and modalities of monetary policy normalization, and policies to boost potential growth.*

### A. Fiscal Policy

**13. Staff welcomed the authorities' commitment to fiscal discipline and a continued reduction in public debt. However, the near-term fiscal outlook carries some uncertainty.**

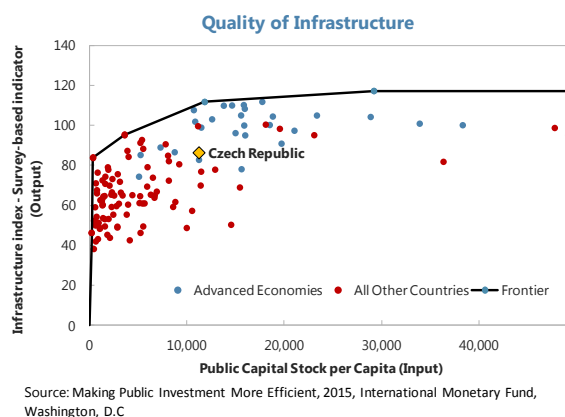
- In their 2016 Convergence Program (CP) the authorities are targeting headline fiscal deficits of 0.6 and 0.5 percent of GDP for 2016 and 2017, respectively. According to staff's baseline scenario, this would imply a slight widening in the structural fiscal deficit to 0.8 percent of GDP in 2017 against the 1 percent medium-term deficit objective (MTO). This near-term policy stance is appropriate, in light of the expected growth slowdown and with inflation projected to remain below target well into 2017.
- Measures to fight tax evasion—e.g., electronic VAT reporting and the gradual rollout of online cash registers—are expected to begin bearing fruit in the near term. However, projected revenue gains would be more than offset by increases in public wages and child tax credits, new hires in education and police, and the topping-up of the automatic pension indexation. Staff acknowledged that the increases in the public wage bill and social security benefits incorporated in the CP reflected a welcome catching-up with the cost of living, following a prolonged wage and benefit freeze or even some decreases after the 2008 crisis. However, staff urged the authorities to resist pressures for additional wage and benefit hikes in the run-up to next year's elections, until the effectiveness of the strengthening of tax collection becomes firmly established. Similarly, the authorities should resist shifting more items to the reduced VAT rate—following the cut in VAT on meals and non-alcoholic drinks that are served in restaurants—and other tax reductions. Future tax cuts should be part of a broader review of the tax system.

**14. The envisaged medium-term fiscal deficit objective is appropriate, but needs to be accompanied by a clear medium-term strategy.** Staff's baseline scenario projects that on current policies the structural deficit would decline to ½ percent of GDP over the medium term, which is below the 1 percent medium-term deficit objective. This, along with potentially sizeable tax administration gains still to be realized, provides the authorities space for maneuver and for

accommodating fiscal priorities, including higher public investment on much-needed infrastructure. Nevertheless, staff reiterated its recommendation for speedy adoption of fiscal framework legislation—currently under consideration by Parliament—to anchor fiscal policy, reduce pro-cyclicality, and enhance predictability.

**15. Government decisions and plans for the pension system could undermine its long-run sustainability.** Recently-approved legislation creates the possibility for discretionary increases of pensions—in certain cases and up to a limit—beyond what would be indicated by the automatic indexation formula. In addition, plans are under way to cap the statutory retirement age, which is being increased by two months every year, but which will remain below the EU average over the medium-term. Moreover, the granting of early retirement benefits to miners employed by the now bankrupt mining company goes against the objective of improving the system’s efficiency. Staff therefore urged the authorities to refrain from ad hoc pension adjustments beyond what is implied by the standard indexation formula, and from putting an ex-ante limit on the maximum retirement age.

**16. The authorities’ focus on reducing tax avoidance needs to be complemented by other structural fiscal reforms.** The challenge of rising health-care costs calls for further policy actions aimed at raising the efficiency of spending and improving health outcomes. Measures should aim at putting in place incentives for substitution away from higher-cost, hospital-based care to equivalent, typically lower-cost, outpatient services. The labor tax wedge—which is above the OECD average—would need to be narrowed to improve labor market outcomes, including by closing loopholes that allow abuse of the lower effective tax and contribution rates for the self-employed. Finally, with the quality of transport infrastructure lagging behind that of other advanced countries, staff recommended better planning and prioritization of such investments. Addressing weaknesses in public procurement likewise remains a priority.



**17. The level of public debt is moderate but consideration could be given to increasing its average maturity.** Under current policies, public debt is expected to decline to around 36 percent of GDP by 2021, and would remain sustainable under alternative scenarios incorporating negative shocks to the debt-servicing capacity (Annex VII). The Ministry of Finance has carried out buybacks of limited amounts of bonds with short remaining maturities, financed by issuance of long-term bonds. However, the average maturity of public debt has decreased following the sizable issuance of two- and three-year bonds with negative auction yields. Going forward, public debt management could take advantage of the current low interest rate environment to increase the average maturity of debt and lower debt service.

**18. Strengthening the capacity to absorb EU funds is a key priority.** Weaknesses in national management and control systems resulted in significant delays in absorption of funds from the 2007–13 program period, and the highest rate of financial accounting corrections in the EU (Annex III). The Ministry of Regional Development was recently given the powers to carry out centralized management and coordination of Operational Programs, resulting in significant improvement in outcomes. The absorption rate rose sharply in 2014–15, but there are concerns about a possible increase in the incidence of irregularities, as control systems had come under strain. Despite better planning for the 2014–20 program period, the start of projects has been slower than in the previous period. This is in part due to the incompatibility of Environmental Impact Assessments (EIA) with revised EU-wide standards. Staff urged the authorities to take all necessary measures to ensure compliance with EU requirements, with a view to launching large transport infrastructure projects as soon as possible. Furthermore, there is a need to systematically follow up and correct the systemic shortcomings identified in the Supreme Audit Office’s audits of utilization of EU Structural and Cohesion Funds.

#### **Authorities’ views**

**19. The authorities re-affirmed their commitment to fiscal discipline.** They pointed to their strong efforts to further reduce the deficit and noted that the structural deficit was already well below the medium-term objective. They considered the slightly expansionary near-term stance necessary to support the economy, also given the moderate level of public debt and its projected decline, and noted that in their view the structural deficit would reach the MTO already in 2017, on account of the larger than Fund staff’s estimates of the output gap, and remain at that level over the medium term. At the same time, they admitted that pressures for higher current expenditures and lower taxes would probably increase in the run-up to the elections, but were committed to adhere to the fiscal deficit targets of the Convergence Program. Moreover, they were hopeful that approval of fiscal responsibility legislation would take place expeditiously. The authorities agreed on the need to narrow the labor tax wedge and address the rise in health care costs. A number of measures were taken in the area of health care, including the introduction of centralized public procurement for selected pharmaceuticals, while the envisaged changes in the allocation of health premiums among insurance funds would better reflect the cost profile of patients. The authorities have been discussing with the European Commission ways to resolve the issue of incompatibility of existing EIA with revised EU-wide standards so that large transport EU-financed infrastructure projects could start soon. Finally, they were optimistic that the new Public Procurement Act would increase transparency and reduce administrative requirements.

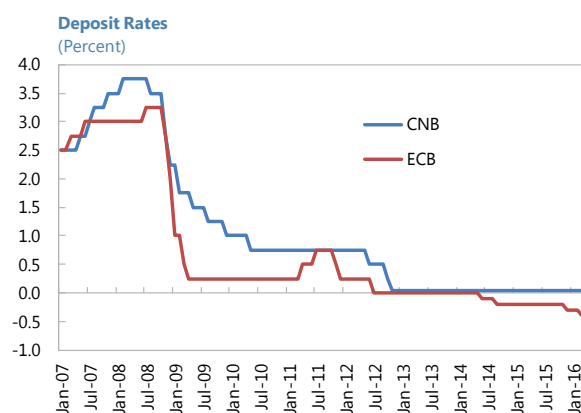
## **B. Monetary Policy**

**20. With the balance of risks remaining on the downside, there was agreement on the need to maintain the current supportive monetary conditions for now.** In recent years, the role of the output gap in explaining headline inflation dynamics has been reduced, whereas external factors, including spillovers from euro area inflation, commodity price changes, and exchange rate movements, have played a larger role. The positive dynamics of the real economy

and labor markets suggest that a scenario that involves damaging second-round effects of low inflation has become less likely. However, the positive price impetus from domestic demand and the tight labor market continues to face anti-inflationary headwinds including from declining import prices. There was thus agreement on the need to maintain the current accommodative monetary conditions until the inflation forecast and inflation expectations become entrenched around the inflation target. Against this backdrop and with current policies remaining in place through end-2016 (including the exchange rate floor), inflation is projected to reach the central bank's 2-percent target in mid-2017.<sup>3</sup>

**21. Staff urged the authorities to maintain their focus on inflation targeting and to begin laying the groundwork for monetary policy normalization.** The exchange rate floor was introduced as a temporary instrument in the inflation targeting regime and has provided a clear and credible signal of the CNB's commitment to the inflation target. Moreover, staff analysis suggests that it has been successful in mitigating deflationary pressures (Annex IV). However, the CNB should begin to prepare for the eventual exit from the floor to a floating exchange rate. If downside risks for inflation materialize, the bank could employ other tools to counter an undesirable tightening of monetary conditions. To this end, the bank should be ready to use discretionary interventions in case FX market conditions became disorderly, and to be prepared to reduce interest rates to a negative level. Clear communication about CNB's focus on inflation targeting would be important for guiding expectations and reinforcing the credibility of the framework during the normalization process.

**22. Negative interest rates would help in the event that downside risks for inflation materialize.** Since mid-2015, appreciation pressures on the koruna have intensified and reserve accumulation has been fast although the FX reserve-to-GDP ratio (at 40 percent) is still moderate. Looking ahead, further monetary easing in the euro area and the growing positive interest rate differential with the ECB are likely to exacerbate speculative capital inflows and currency appreciation pressures. To this end, and to reinforce the consistency of the policy framework, in the event that downside risks for inflation materialize, the CNB should be ready to introduce mildly negative interest rates, with the timing depending on developments in inflation, capital inflows, and appreciation pressures, and following lessons from international experience (Annex V). In particular, given the reliance of Czech banks



Sources: CNB and ECB.

<sup>3</sup> According to both CNB's and staff's projections, absent the envisaged monetary accommodation until end-2016, inflation would fall short of the 2-percent target within the monetary policy horizon.

on domestic deposits as a funding source and the sizable excess liquidity at the central bank, negative rates could have a substantial impact on net margins for banks. To mitigate this, negative deposit interest rates could be applied in tiers, thus excluding certain parts of the deposit base.

### Authorities' views

**23. The authorities agreed on the need for monetary policy to remain accommodative in light of the current anti-inflationary balance of risks.** They shared staff's view that underlying inflationary pressures should be building on account of strong domestic demand and tight labor market conditions. However, they noted that wages were growing more moderately than hoped, and were concerned that a prolonged period of very low inflation could start affecting wage agreements. In this connection, they emphasized the need to maintain the exchange rate floor till end-2016 and their readiness to raise it further if disinflationary pressures increase sharply. Nevertheless, they repeated their commitment to inflation targeting and the floating exchange rate regime as soon as conditions allow normalization of monetary policy. Regarding additional monetary policy tools, the authorities noted that the CNB board had been discussing the pros and cons of negative interest rates, and that the bank and commercial banks were operationally ready for their introduction. To this end, they did not see significant risks to the banking sector from the introduction of mildly negative policy rates. At the current juncture though, they did not consider the interest rate differential with the euro as the main driver of capital inflows. Finally, they assessed the koruna to be broadly in line with the long-term fundamentals, and thus they foresaw a smooth exit to a fully floating exchange rate but noted their readiness to intervene in the FX market to smooth excessive volatility.

## C. Financial Sector

**24. The financial system is stable and resilient to shocks.** Recent stress tests suggest that banks are sufficiently resilient against substantial shocks. The sector has a large capital buffer (a capital adequacy ratio of 16.7 percent), which should enable it to absorb significant adverse shocks.<sup>4</sup> Bank profitability remains strong, notwithstanding the low interest rate environment, as the impact of the decline in net interest margins has been offset by strong credit growth and cost reduction. However, persistently low interest rates could negatively affect bank profitability going forward. The NPL ratio remains low at 5.5 percent, and the banking sector has long been self-financed with deposits, which have continued to increase, keeping the loan-to-deposit ratio below 80 percent.

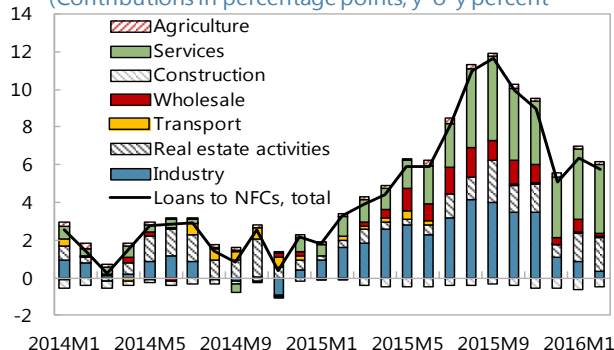
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<sup>4</sup> Capital buffers would remain sufficiently above the 8 percent regulatory minimum under an adverse scenario that includes a W-shaped recession, quantitatively similar to the 2009 and 2012 downturns.

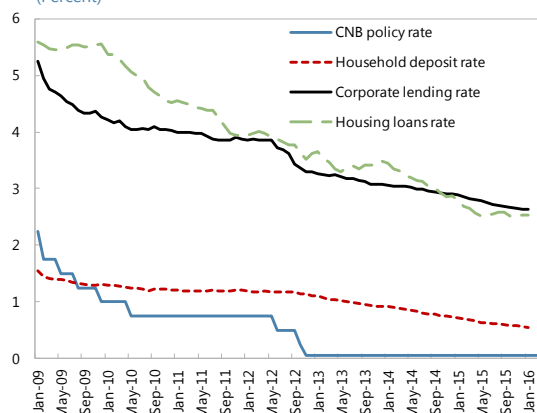
**25. Credit growth remains robust on the back of easy monetary conditions and improved market sentiment.** Driven by strong growth in manufacturing, real estate, and energy, credit to non-financial corporations expanded by 8 percent last year. Household credit has been growing at 10 percent on account of strong demand for mortgages. Survey results suggest that credit standards for loans to non-financial corporations continued to ease in 2016:Q1 on the back of increasing competition among banks and improving economic sentiment, while the ones for mortgages remained broadly unchanged.

**Loans to Non-Financial Corporations**

(Contributions in percentage points; y-o-y percent)



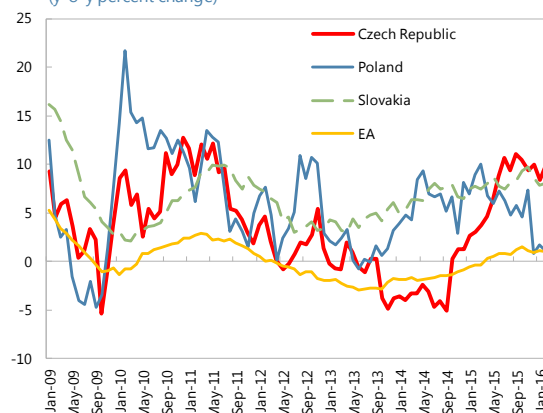
**Interest Rates**  
(Percent)



Sources: CNB and Haver Analytics.

**Credit Growth**

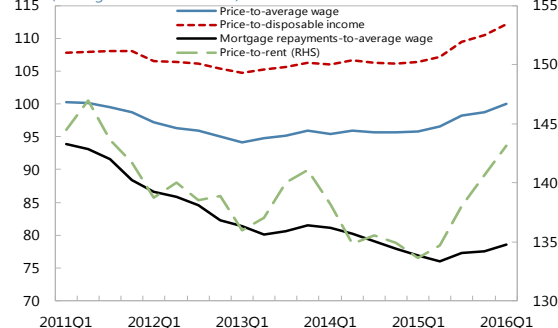
(y-o-y percent change)



**26. A strong housing market is becoming a potential source of risk.** Mortgage rates are at historic lows and have boosted new mortgage lending to a 10-year high, thus putting upward pressure on prices. Residential housing prices increased by 10 percent y-o-y in 2015:Q4, despite a 16 percent increase in housing starts. A slight deterioration in the affordability-of-housing indicators has taken place recently despite strong wage growth and a continued decline in interest rates. On the other hand, the estimated average apartment price-to-annual wage ratio of 4 is still low by international standards.

**Apartment Price Sustainability Indicators**

(Average for 2000-07 = 100)



Source: CZSO, CNB, Institute for Regional Information.

**27. Continued vigilance will be needed to prevent a buildup of vulnerabilities in the housing market.** Staff welcomed CNB's recommendations to tighten mortgage lending



standards, but for them to be effective, they need to become legally binding. More broadly, the authorities should consider giving the CNB the authority to issue binding macroprudential regulations. Going forward, continued vigilance will be needed and, if current trends in the mortgages segment continue in the coming months, the macroprudential stance should be further tightened. Preference should be given to targeted measures, including raising risk weights on mortgages, lowering LTV limits with possible regional differentiation, and issuing clear guidance on maximum debt-to-income limits.

**28. Staff welcomed progress on improving the regulatory and supervisory framework.**

The authorities have largely implemented the 2012 FSAP recommendations. (Annex II). Moreover, the Bank Recovery and Resolution Directive (BRRD) was transposed into local law, making the CNB a designated resolution authority. The Deposit Guarantee Scheme Directive has been transposed via a change in the Act on Banks effective January 2016, in parallel with the BRRD transposition. The new harmonized resolution framework should allow the authorities to minimize taxpayer exposure to loss from solvency support when resolving financial institutions while maintaining financial stability. Finally, the Consumer Credit Act transposing the Mortgage Credit Directive that aims to create a Union-wide mortgage credit market with a high level of consumer protection is currently in the Parliament.

**Authorities' views**

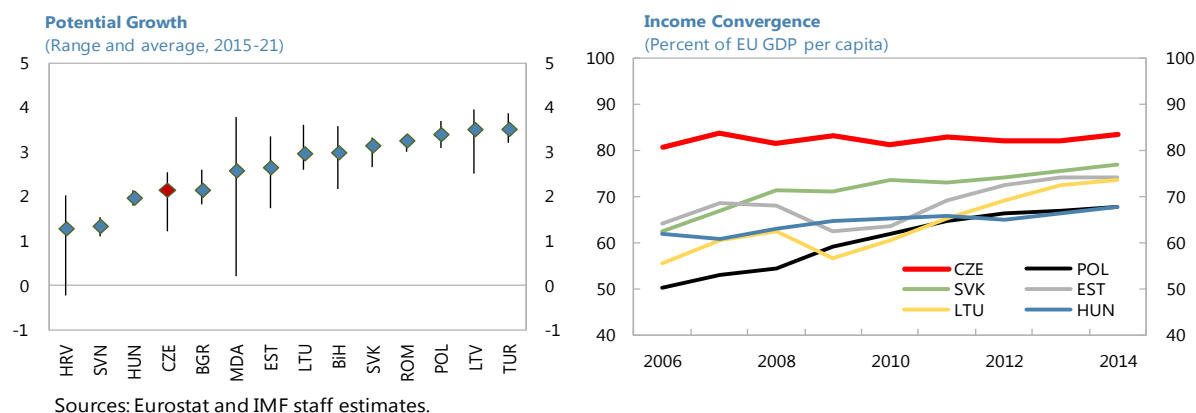
**29. The authorities broadly shared staff's assessment and emphasized their readiness to address potential risks to financial stability.** They noted that overall banking sector risks remained low, and pointed to recently-completed stress tests suggesting that banks have sufficient capital to cover two-year losses. They admitted though that potential systemic risk had increased, a fact they attributed to growing risk appetite of economic agents due to positive macroeconomic developments, expectations of low interest rates for a prolonged period, and a strong housing market. To mitigate this risk, they had increased the countercyclical capital buffer to 0.5 percent effective 2017, and they stood ready to increase it further if credit growth turned out to be faster than currently foreseen. As for the housing market, the authorities noted the risk from the potential feedback loop between real estate developments and mortgage lending, and pointed to strong credit growth in buy-to-let mortgages and to some estimates suggesting a mild overvaluation of apartments. To this end, the CNB has been monitoring developments closely, had started to collect data on a loan-by-loan basis, and was currently reviewing the need for and modalities of tighter prudential measures, including ways to make them binding.

## **D. Structural Reforms**

**30. Higher potential growth will be necessary for speedy convergence with other advanced economies.** The gap between Czech per capita income and the EU average has ceased falling, largely due to a sharp slowdown in Czech growth from an annual average of 4.5 percent during 2000–07 to 0.9 percent during 2010–14. Besides cyclical factors, structural factors could also be at play: the rapid initial convergence was underpinned by higher trade



integration, technology transfer, and an inexpensive labor force, and contributed to a strong export-oriented manufacturing sector.



### 31. Ambitious structural reforms remain essential for increasing potential growth.

Consideration should be given to measures to enhance investment in physical and human capital, and promote innovation.

- Labor market.** Although overall labor force participation has increased, it remains low in some segments of the population; especially among the low-skilled. Moreover, the labor force is projected to decline due to demographic factors, and skill shortages could become binding, thus making it difficult to attract more knowledge-intensive industries and raise productivity. To this end, improving tertiary education and vocational training is important, while consideration should be given to the introduction of a dual vocational education system, more flexible immigration policies, and providing incentives to boost labor mobility.
- Investment.** Staff analysis suggests that the average post-crisis investment rate has been near its optimal value (Annex VI). However, this outcome has been partly driven by the extraordinary EU-fund drawdown, which will be difficult to sustain. Therefore, the Czech economy faces the challenge of filling the void through higher private and public investment, and more efficient EU-fund utilization.
- Innovation.** R&D expenditure has increased significantly, reaching the EU average in 2014, but outcomes remain weak (see: EC country report 2016). The *National Research, Development and Innovation Policy for 2016–20* includes important measures to address weaknesses, improve the coordination and prioritization of R&D spending, and increase cooperation between research centers and business. Steadfast implementation would help the Czech Republic move up the value chain.
- Business environment.** Czech Republic ranks highly overall in business climate indicators. It advanced from 53<sup>rd</sup> to 37<sup>th</sup> place in Transparency International's Corruption Perception Index. This was due to changes to public procurement rules and adoption of legislation requiring proof of property origin. The country slipped from 33<sup>rd</sup> to 36<sup>th</sup> place in Doing Business

Indicators, which highlighted high labor taxation and difficulties dealing with construction permits. Other institutional-quality indicators show that the Czech Republic lags behind competitors in business regulation and quality of institutions (Figure 4). Staff thus underscored the need to address remaining weaknesses, and to improve the predictability of policy and regulation, reduce the administrative burden, and increase the efficiency of judicial procedures, including the framework for formation; restructuring and liquidation of firms.

### Authorities' views

**32. The authorities were confident that their reform agenda—as elaborated in the recently-approved National Reform Program—boded well for higher medium-term potential growth.** They noted the need to jump start large infrastructure projects and believed that the new construction law (currently in Parliament) that unifies multiple approval procedures and the new public procurement law would help increase infrastructure spending, enhance the efficiency of use of EU funds, and increase their absorption. Better infrastructure could also increase labor mobility. Moreover, measures to help parents and women returning from maternity leave, namely increasing the tax allowance for the third child, and continued improvement in the availability of childcare services, should help boost labor participation further. The authorities pointed to policies to support the integration of immigrants—a Fast Track project and a Welcome Package—and their cooperation with the industry to identify potential jobs that could be filled by immigrants, although noting their gradual approach to integration. Finally, a number of measures were under way, including improvements in electronic points of single contact for entrepreneurs and regular evaluation of the administrative tax burden, to enhance the business environment and reduce the administrative burden.

## STAFF APPRAISAL

**33. The Czech economy has been performing very well.** Supportive macroeconomic policies over the past three years, along with a favorable external environment, and high utilization of EU funds have contributed to strong output growth and a steady decline in unemployment. This performance, along with solid fundamentals, has enhanced market confidence.

**34. But challenges remain.** The central bank's exchange rate floor has helped keep inflation in positive territory, but inflation is currently still below target. In addition, potential growth is below the level necessary to facilitate fast convergence toward the income levels of other advanced European countries. Thus, the challenge for the authorities is to create the conditions for a sustained increase in potential growth and to maintain macroeconomic stability.

**35. The authorities' medium-term fiscal deficit objective is appropriate, but needs to be anchored in fiscal framework legislation.** The projected slight widening in the structural fiscal deficit over the near term is warranted by the expected growth slowdown and with inflation well below target. Moreover, with the structural deficit already below the medium-term deficit objective, there is space for maneuver and for increasing much-needed public infrastructure to

support faster medium-term potential growth. However, it is important to resist pressures to reduce taxes and increase current spending in the run-up to next year's elections, and to eschew changes in the pension system that could jeopardize its long-term sustainability. Finally, a speedy adoption of fiscal framework legislation would help anchor fiscal policy and guard against pro-cyclical tendencies.

**36. The central bank should continue to focus on inflation targeting and set the stage for monetary policy normalization.** With the balance of risks for inflation remaining on the downside, monetary policy should remain accommodative until the inflation forecast and inflation expectations become entrenched around the inflation target. However, the central bank should begin to prepare for the eventual exit from the exchange rate floor to a floating exchange rate. If downside risks for inflation materialize, the CNB could employ other tools to counter an undesirable tightening of monetary conditions. To this end, the bank should be ready to use negative interest rates to help mitigate speculative capital inflows and discretionary interventions in case market conditions became disorderly. Finally, clear communication about CNB's focus on inflation targeting would be important for guiding expectations and reinforcing the credibility of the framework.

**37. Continued vigilance will be needed to safeguard financial stability.** The banking sector is self-financed with a low system-wide loan-to-deposit ratio and strong capital and liquidity buffers, which make it resilient to shocks. Recent trends in the mortgage segment suggest an increase in potential vulnerabilities and the CNB has issued recommendations to tighten mortgage lending standards. However, for them to be effective, they would need to become legally binding. Going forward, continued vigilance will be needed and if current trends in the mortgage segment continue in the coming months, the macroprudential stance should be further strengthened. The authorities have made further progress in strengthening the supervisory and regulatory framework and have largely completed the implementation of the 2012 FSAP recommendations, including the transposition of the Bank Recovery and Resolution Directive into local law.

**38. Ambitious structural reforms are key to raising Czech Republic's growth potential.** Priority should be given to enhancing investment in physical and human capital, and promoting innovation. Strong efforts would be needed to ensure compliance with EU environmental regulations for large infrastructure projects and to boost the effectiveness and efficiency of infrastructure spending. Priority should also be given to reforms of tertiary education and vocational training to help attract more knowledge-intensive industries and prevent skill shortages from becoming binding. Steadfast implementation of measures aimed at improving the coordination and prioritization of R&D spending, as well as cooperation between research centers and business would help the Czech Republic move up the value chain. Finally, an improvement in the predictability of policy and regulation, a reduction in the administrative burden, and enhanced efficiency of judicial procedures are essential for higher investment.

**39. It is recommended that the next Article IV consultation with the Czech Republic be held on the standard 12-month cycle.**

Czech Republic—Risk Assessment Matrix<sup>1</sup>

Source of Risks		Relative Likelihood	Impact if Realized	Policy Response
Global	<i>Tighter or more volatile global financial conditions</i>	<b>High</b> Investors reassess underlying risk and respond to unanticipated changes in growth and financial fundamentals in large economies, Fed policy rate path, with poor liquidity amplifying volatility	<b>Low</b> Czech sovereign and banks are not reliant on external borrowing to any significant extent.	Maintaining accommodative monetary conditions, while loosening the fiscal stance would allow for absorption of shocks.
	<i>Heightened risk of fragmentation /security dislocation in part of Europe</i>	<b>High</b> A non-cooperative outcome of the refugee crisis could weigh on economic activity through trade and confidence channels.	<b>Low</b> Border closures and restrictions on the free movement of goods, services, and labor weigh on trade. Failure to agree on an EU-level solution could weigh on confidence and economic activity.	An easing bias would be appropriate provided supply constraints do not become binding.
	<i>Sharper-than-expected global growth slowdown</i>	<b>High/Medium</b> In the euro area, weak demand and persistently low inflation leads to “new mediocre” growth rate. Significant China slowdown, triggered by corporate distress precipitating deleveraging, uncertainty and capital outflows.	<b>Medium</b> External demand would wane, weighing on Czech Republic’s exports and growth.	Policies supporting domestic demand, as well as diversifying trade partners and specialization could help cushion the impact on the economy.
	<i>Persistently low energy prices</i>	<b>High</b> Domestic demand would accelerate supporting growth, while inflation would decline, complicating the conduct of monetary policy. The current account surplus would widen.	<b>Medium</b> Household real incomes would be boosted and lower production costs would support growth. Lower inflation would pose challenges for monetary policy.	Consistent monetary framework and CNB’s transparent communication strategy, emphasizing the priority of the inflation objective and the temporary role of the FX floor.
	<i>British voters elect to leave the EU</i>	<b>High</b> Subsequent renegotiation of cross-border trade, financial, and migration relationships could elevate financial volatility and uncertainty. Long-run economic performance could diminish.	<b>Medium/Low</b> The direct trade impact should be moderate. The UK is the 4th export partner of the Czech Republic, accounting for 5 percent of total export. Rising uncertainty could lead to higher volatility in financial markets.	Maintaining accommodative monetary conditions, while loosening the fiscal stance would allow absorbing the shocks through the trade and financial channel.
Domestic	<i>Permanently lower potential growth</i>	<b>Medium</b> If the growth momentum falls sharply, hysteresis effects can reduce potential growth further.	<b>Medium</b> A prolonged period of low growth can lead to long-term output losses. Structural reforms could be delayed due to lack of political appetite.	Advancing structural reforms and safeguarding public investment would help mitigate risks of further reductions in potential growth.
	<i>Financial stability risks arising from the housing market</i>	<b>Medium</b> A protracted period of low interest rates could lead to increased leverage and housing price overvaluation, exposing banks and households to adverse interest, price, and income shocks.	<b>Low</b> Overall household indebtedness and price-to-income ratios while rising are relatively low by international standards. Banks are well-capitalized to absorb potential losses.	Tighten macroprudential regulations (risk weights, LTV and DTI limits).

<sup>1/</sup> The Risk Assessment Matrix (RAM) shows events that could materially alter the baseline path (the scenario most likely to materialize in the view of IMF staff). The relative likelihood of risks listed is the staff’s subjective assessment of the risks surrounding the baseline (“low” is meant to indicate a probability below 10 percent, “medium” a probability between 10 and 30 percent, and “high” a probability of 30 percent or more). The RAM reflects staff views on the source of risks at the time of discussions with the authorities.

## Box 1. External Sustainability and Competitiveness

**Staff's assessment is that Czech Republic's external position is broadly in line with fundamentals and desirable policies.** The EBA current account methodology suggests a current account gap of 2 percentage points of GDP, pointing to a stronger external position than the norm in the long run. This indicates a moderate undervaluation of 4 percent in 2015. This result is in line with the estimates of the External Sustainability approach that points to an undervaluation of 4.4 percent. In contrast, the REER methodology suggests a 10 percent overvaluation, based on fundamentals. In staff's view, this result is inconsistent with the recent increase in the share of world imports and the good export performance.

**Current account.** The level of the current account does not raise major competitiveness concerns. The current account turned positive in 2014–15 driven by an improving trade balance on the back of strong exports and low oil prices and benefitting from a depreciating currency. Large historical FDI flows give rise to a high negative primary income balance, due to profit repatriation.

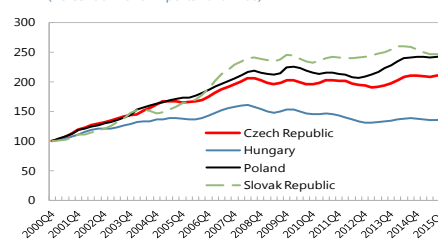
**Foreign assets and liabilities.** The IIP improved to –31 percent of GDP in 2015. External debt increased from 68.8 percent of GDP in 2014 to 70.8 percent in 2015.

**Foreign reserves.** Official foreign exchange reserves have been increasing and are adequate. The foreign exchange interventions by the CNB (to defend its exchange rate floor) along with strong EU fund inflows resulted in a significant increase in reserves in 2015. However, their level as a share of GDP (36 percent) remains moderate and the reserve adequacy metric falls within the suggested adequacy range (reserves stand at about 123 percent of the IMF composite reserve adequacy metric). Staff sees further inflows of EU funds and a persistent current account surplus contributing to a further reserve accumulation in the near term.

**The real exchange has been depreciating moderately in recent years.** Following a period of catching-up, the exchange rate stabilized both in nominal and real terms in the run-up to the global crisis. Since then, however, the koruna has been depreciating moderately, especially in ULC terms. This trend suggests an improving competitiveness, mainly due to positive dynamics in relative wages and productivity. These recent gains are also reflected in the increase in

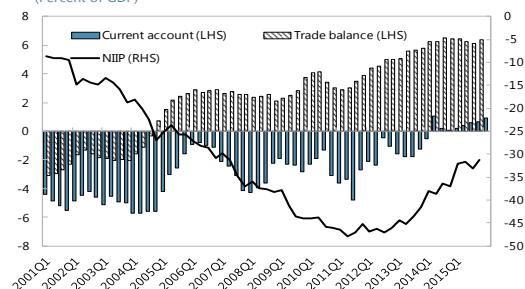
export market shares in recent years. At the same time, according to non-price competitiveness indicators, the Czech Republic is lagging behind other OECD countries in the areas of business regulation and institutions (Figure 4). Good performance is recorded for indicators measuring the quality of trading across the border and credit market rigidities. With respect to peers, the CPI-based real exchange rate also shows a more marked downward trend.

Share of World Imports  
(Percent of world imports 2010=100)



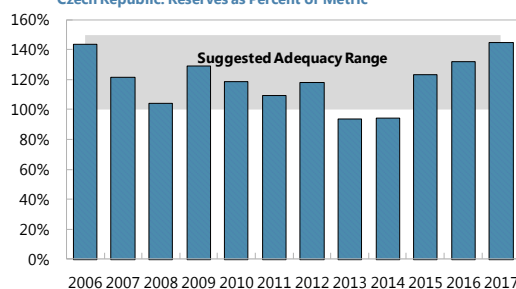
Source: Direction of Trade Statistics.

Current Account and International Investment Position  
(Percent of GDP)



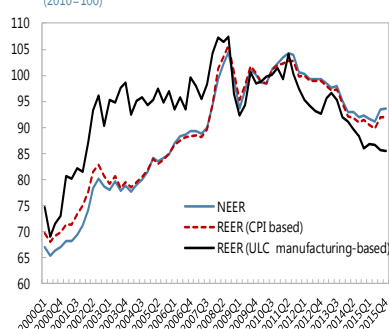
Sources: Haver analytics; and IMF staff calculations.

Czech Republic: Reserves as Percent of Metric



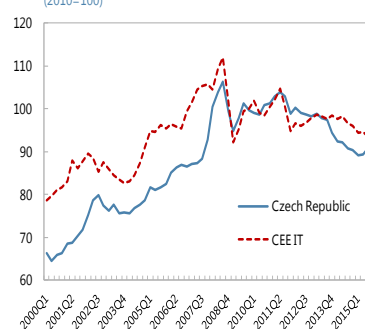
Sources: Haver Analytics; and IMF staff calculations.

Real Exchange Rate  
(2010=100)



Source: Haver Analytics.

REER CPI based  
(2010=100)

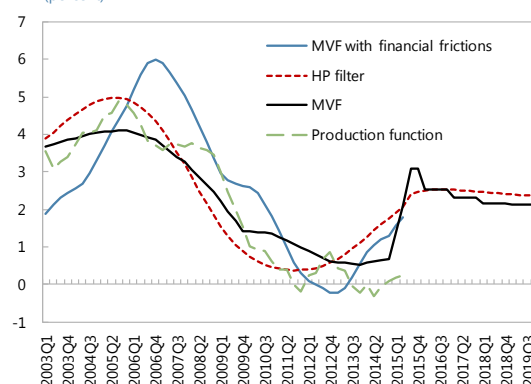


Sources: International Financial Statistics; and IMF Staff estimates

## Box 2. Potential Growth

**Potential output is estimated over the 2001-15:Q2 period using four methods:** the Hodrick-Prescott (HP) filter, the multivariate filter (MVF1), the multivariate filter with financial frictions (MVF2), and the production function approach (PF).<sup>1</sup> The MVF1 approach models potential output in relation to actual GDP, unemployment and inflation. The MVF2 approach takes into account financial cycles and capacity utilization. The PF approach employs a Cobb-Douglas production function and removes cyclical factors pertaining to capital and labor—using capacity utilization, the NAIRU, and average hours worked—and thus, the remaining residual captures the ‘structural’ component of total factor productivity (TFP).<sup>1</sup>

Potential Output Growth  
(percent)



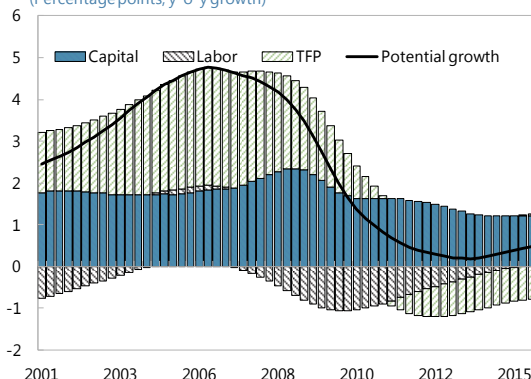
Source: IMF staff estimates.

**Potential growth is recovering from post-crisis lows but is projected to remain subdued at about 2–2½ percent.**<sup>1</sup> It decelerated sharply during the crisis coming to a standstill in 2012–13. Since then it has been growing reaching an average of 2½ percent in 2015 (according to all estimates, with the exception of the production function). It is projected to remain at well below pre-crisis levels and thus would be insufficient to speed up income convergence with other advanced EU economies.

**The deceleration of potential growth was largely due to a decline in contribution of TFP and labor force reduction.** Negative TFP growth remained a drag on potential output since 2010, while the contribution of capital declined but remained positive. The increase in potential growth since 2013 was driven by recovering contribution of labor reflecting higher labor force participation that more than compensated the decline in working age population.

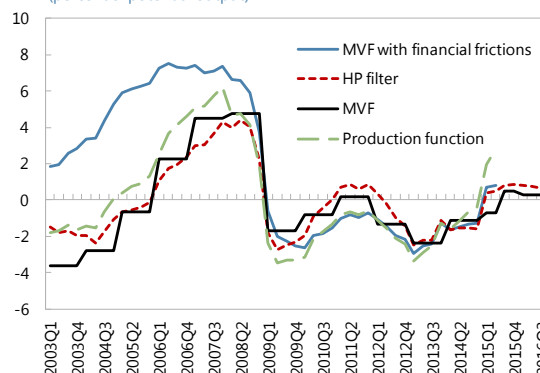
**All estimates suggest that the output gap closed in mid-2015.** It is expected to turn into a positive range of 0.3–0.7 percent in 2016 (consistent with the staff’s baseline estimate of 0.2 percent) and move to zero in the following years. However, it is important to bear in mind that significant uncertainty surrounds these estimates.

Contributions to Potential Growth: Production Function Approach  
(Percentage points, y-o-y growth)



Source: IMF staff estimates.

Output Gap Estimates  
(percent of potential output)

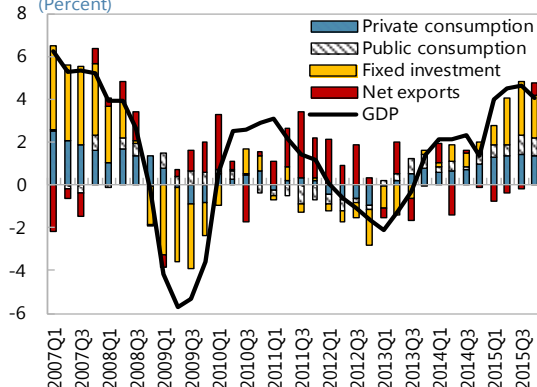


<sup>1</sup> For more details about the various approaches and their application to the CESEE region, see Podpiera *et al.* “A Fresh Look at Potential Output in Central, Eastern, and Southeastern European Countries, IMF Working Paper, *forthcoming*.

**Figure 1. Czech Republic: Macroeconomic Developments**

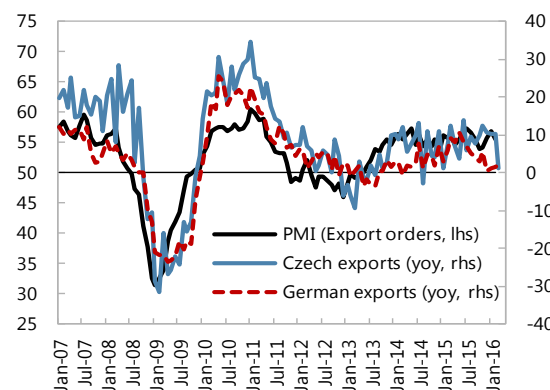
Domestic demand, especially investment, has strengthened...

**Contributions to growth**  
(Percent)



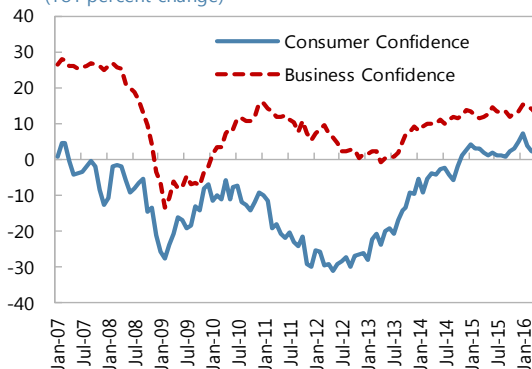
...while export performance and prospects remain robust.

**Exports**



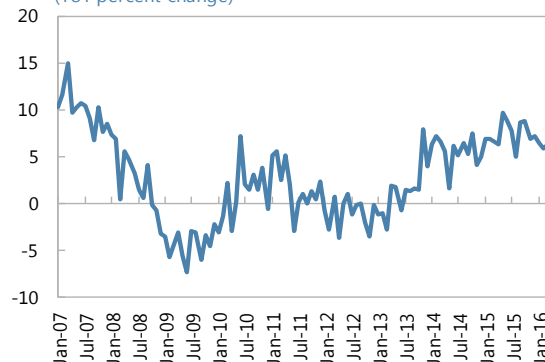
Confidence indicators are at post-crisis highs...

**Confidence Indicators**  
(YoY percent change)



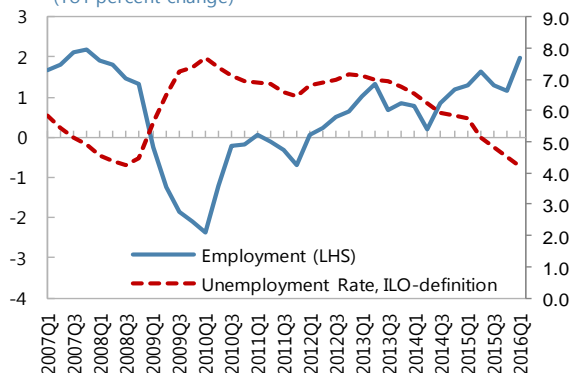
...and retail sales are growing briskly.

**Retail Trade**  
(YoY percent change)



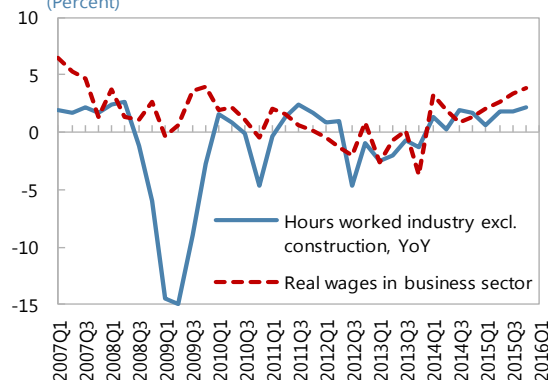
Unemployment fell below pre-crisis levels...

**Employment and Unemployment Rate**  
(YoY percent change)



...and real wages are growing strongly.

**Wages and Hours Worked**  
(Percent)



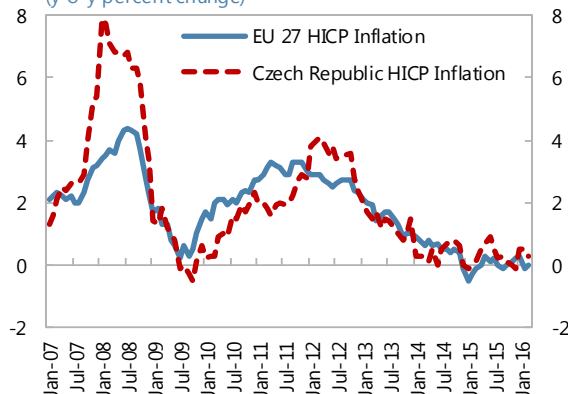
Sources: Eurostat; EMED; Haver; and IMF staff calculations.



**Figure 2. Czech Republic: Inflation Developments**

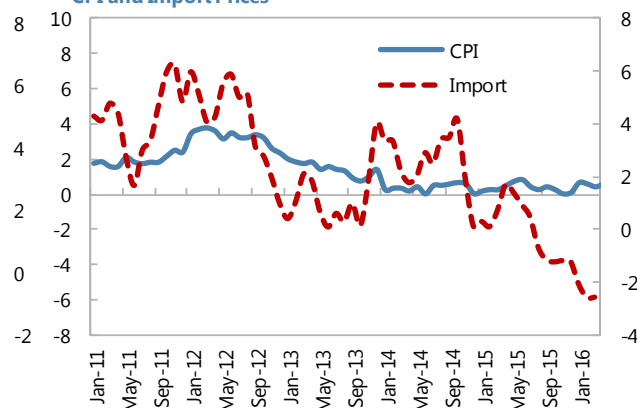
Inflation has continued to track Europe-wide inflation trends...

**HICP Inflation**  
(y-o-y percent change)



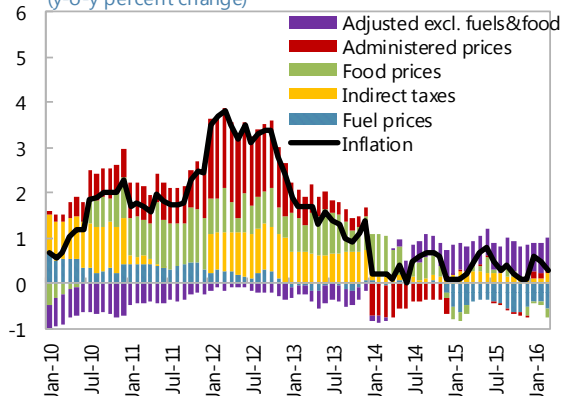
...with strong external disinflationary pressures...

**CPI and Import Prices**



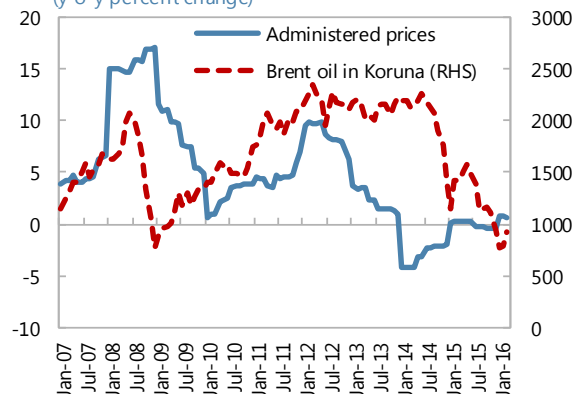
...primarily from energy and to a lesser extent food prices.

**Contribution to Inflation**  
(y-o-y percent change)



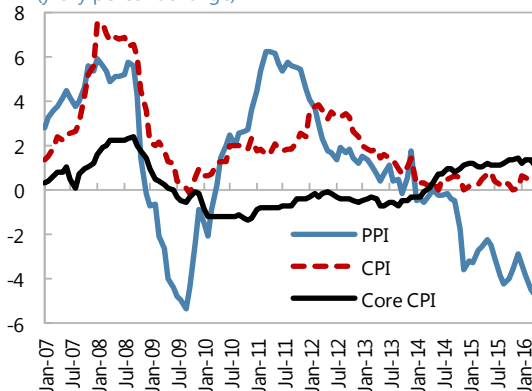
The oil price shock has also delayed effects through administered energy prices.

**Prices**  
(y-o-y percent change)



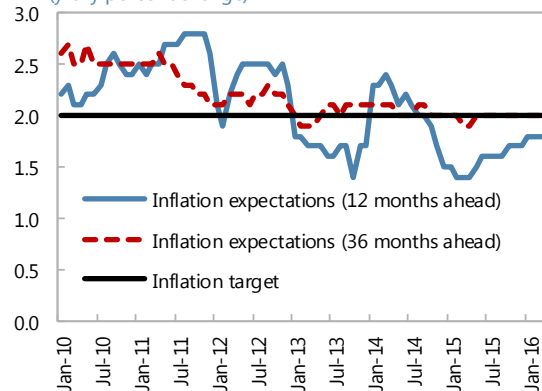
The headline is still below the target, but core is above the lower band ...

**Inflation**  
(y-o-y percent change)



...and short-term inflation expectations are recovering.

**Inflation expectations**  
(y-o-y percent change)



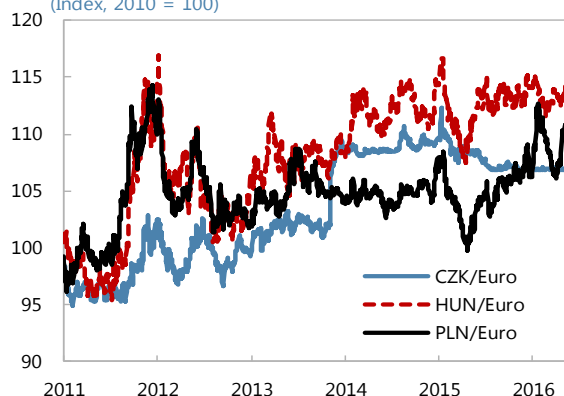
Sources: Czech National Bank, Czech Statistical Office, Haver Analytics.



**Figure 3. Czech Republic: Financial Markets**

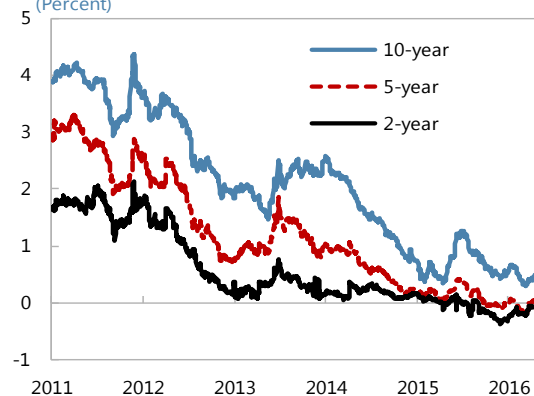
The koruna has been trading close to the floor since mid-2015.

**Spot Exchange Rate**  
(Index, 2010 = 100)



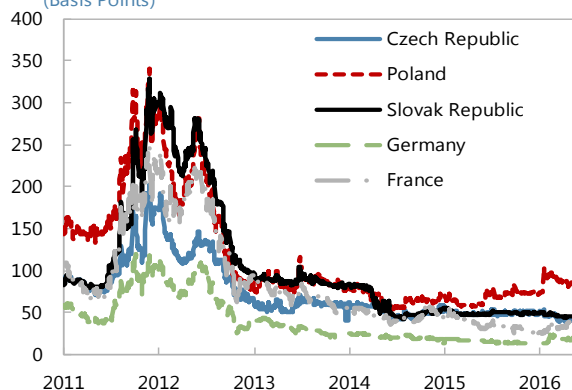
Longer bond yields have reached new lows, as the yield curve flattened.

**Government Bond Yields**  
(Percent)



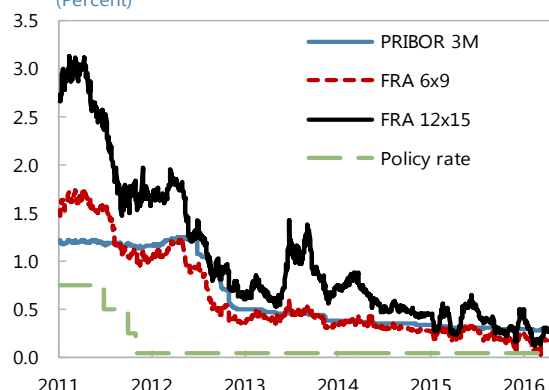
Markets deem Czech Republic a good credit...

**5-year CDS**  
(Basis Points)



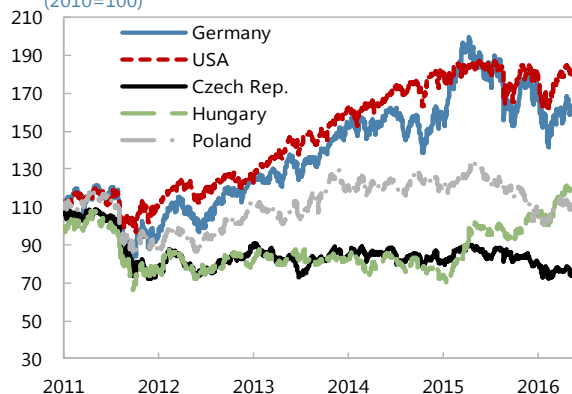
...while expecting low policy rates to be sustained.

**Money Market Rates**  
(Percent)



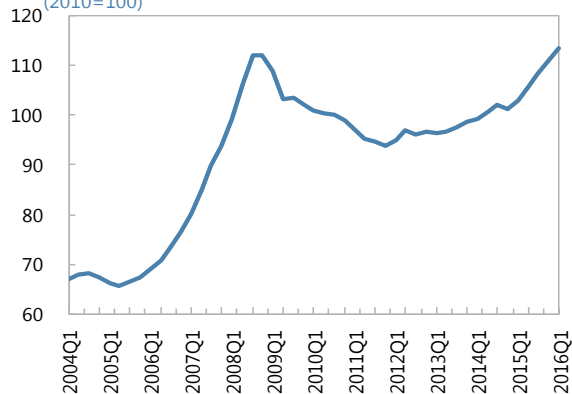
Equities have underperformed most regional and global markets...

**Stock Markets**  
(2010=100)



...while real estate prices are picking up.

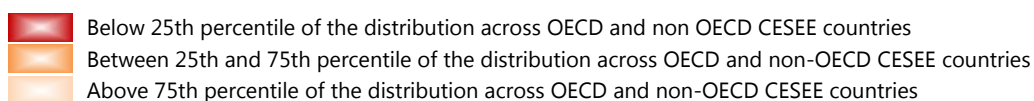
**Apartment Price Index**  
(2010=100)



Sources: Bloomberg; Haver Analytics.

**Figure 4. Czech Republic: Non-Price Competitiveness Indicators**

Relative Ranking on Structural and Institutional Indicators



Structural and Institutional Quality Indicators	Baltics	Czech Republic	Central and Eastern Europe	South-Eastern Europe
<b>Institutions and contracts</b>				
Institutions (WEF)				
Legal system and property rights (IEF)				
<b>Infrastructure</b> (WEF)				
<b>Human capital</b>				
Health and primary education (WEF)				
Higher education and training (WEF)				
<b>Labor market efficiency</b>				
Labor market efficiency (WEF)				
Female labor force participation				
<b>Business regulation</b>				
Goods market efficiency (WEF)				
Business regulations (IEF)				
<b>Openness to trade and FDI</b>				
Freedom to trade (IEF)				
Trading across borders (WB)				
<b>Credit market rigidity</b>				
Credit market regulations (IEF)				
Getting credit (WB)				
<b>Innovation</b>				
Business sophistication (WEF)				
Innovation (WEF)				

Sources: World Bank's Doing Business Reports, World Economic Forum's Global Competitiveness Report, and Fraser Institute's Economic Freedom of World Report.

Note: CESEE - Central, Eastern, and South-Eastern Europe.

**Table 1. Czech Republic: Selected Economic Indicators, 2011–21**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
						Staff Proj.					
Nominal GDP (USD billions)	227.3	206.4	208.3	205.3	181.8	183.9	189.6	192.5	194.1	195.7	194.4
Population (millions)	10.5	10.5	10.5	10.5	10.5	10.6	10.6	10.6	10.6	10.6	10.7
GDP per capita (USD)	21,676	19,651	19,810	19,526	17,252	17,412	17,911	18,156	18,264	18,384	18,221
<b>Real economy (change in percent, unless stated otherwise)</b>											
Real GDP	2.0	-0.9	-0.5	2.0	4.2	2.2	2.7	2.4	2.2	2.2	2.2
Real GDP per capita	1.7	-1.1	-0.6	2.0	3.9	1.9	2.4	2.2	2.0	2.0	2.0
Domestic demand	0.0	-2.3	-0.6	2.3	4.7	1.6	3.1	2.8	2.7	2.7	2.7
Private consumption	0.3	-1.5	0.7	1.5	2.8	3.2	2.9	2.5	2.3	2.3	2.3
Investment	1.8	-4.1	-5.0	4.4	9.9	-2.0	3.5	4.0	4.0	4.0	4.0
Exports	9.3	4.3	0.0	8.9	7.0	6.4	6.1	5.0	4.0	4.0	4.0
Imports	6.7	2.7	0.1	9.8	7.9	6.0	6.9	5.7	4.7	4.7	4.7
Output gap (percent of potential output)	0.6	-2.1	-4.2	-2.7	0.2	0.2	0.2	0.2	0.2	0.1	0.0
CPI (average)	1.9	3.3	1.4	0.4	0.3	0.6	1.9	2.0	2.0	2.0	2.0
Unemployment rate (in percent)	6.7	7.0	7.0	6.1	5.0	4.3	4.3	4.3	4.3	4.3	4.4
Gross national savings (percent of GDP)	24.9	24.7	24.2	25.4	27.6	26.8	26.5	26.4	26.4	26.4	26.4
Gross domestic investments (percent of GDP)	27.0	26.3	24.8	25.3	26.7	25.4	25.5	25.9	26.3	26.8	27.2
<b>Public finance (percent of GDP)</b>											
General government revenue	40.2	40.5	41.3	40.8	42.2	40.7	40.7	40.8	40.7	40.7	40.6
General government expenditure	42.9	44.5	42.5	42.8	42.6	41.3	41.3	41.3	41.2	41.1	41.1
Net lending / Overall balance	-2.7	-4.0	-1.3	-1.9	-0.4	-0.6	-0.6	-0.5	-0.5	-0.5	-0.5
Structural balance (percent of potential GDP)	-2.8	-1.5	0.1	-0.8	-0.3	-0.6	-0.8	-0.6	-0.5	-0.5	-0.5
General government debt	39.9	44.6	45.2	42.7	41.1	40.8	39.8	38.9	37.9	37.1	36.2
<b>Money and credit (end of year, percent change)</b>											
Broad money (M3)	2.8	4.8	5.8	5.9	8.0	...	...	...	...	...	...
Private sector credit	5.5	2.6	3.7	3.6	6.5	...	...	...	...	...	...
<b>Interest rates (in percent, year average)</b>											
Three-month interbank rate	1.2	1.0	0.5	0.4	0.3	...	...	...	...	...	...
Ten-year government bond	3.7	2.8	2.1	1.6	0.6	...	...	...	...	...	...
<b>Balance of payments (percent of GDP)</b>											
Trade balance (goods and services)	3.9	5.0	5.8	6.5	6.4	6.9	6.5	6.1	5.6	5.1	4.7
Current account balance	-2.1	-1.6	-0.5	0.2	0.9	1.4	1.0	0.6	0.1	-0.4	-0.8
Gross international reserves (billions of euros)	30.6	34.2	41.0	44.2	60.4	67.9	75.8	81.5	84.7	86.9	87.3
(in months of imports of goods and services)	3.1	3.6	4.5	4.1	5.5	6.1	6.4	6.7	6.8	6.7	6.5
<b>Exchange rate</b>											
Nominal effective exchange rate (index, 2005=100)	123.2	118.4	116.9	111.6	110.3	...	...	...	...	...	...
Real effective exchange rate (index, CPI-based; 2005=100)	122.3	118.2	116.1	109.9	108.0	...	...	...	...	...	...

Sources: Czech National Bank; Czech Statistical Office; Ministry of Finance; Haver Analytics, and IMF staff estimates and projections.

**Table 2. Czech Republic: Balance of Payments, 2011–21**  
(In billion of EUR, unless otherwise noted)

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
	Projections										
Current account	-3.4	-2.5	-0.8	0.3	1.5	2.3	1.7	0.9	0.1	-0.6	-1.5
Trade balance	6.4	8.0	9.1	10.0	10.5	11.5	11.0	10.4	9.6	8.9	8.0
Merchandise goods balance	3.1	4.9	6.4	8.0	7.7	8.8	8.3	7.7	7.0	6.3	5.7
Exports, f.o.b.	99.0	104.3	103.2	110.2	118.1	124.1	130.7	135.1	138.0	142.1	145.2
Imports, f.o.b.	95.9	99.3	96.7	102.2	110.4	115.4	122.4	127.3	131.0	135.8	139.6
Services (net)	3.3	3.1	2.7	2.0	2.7	2.7	2.7	2.7	2.6	2.6	2.3
Exports	17.9	18.8	18.1	18.9	20.5	20.9	21.6	22.0	22.5	23.2	23.7
Imports	14.6	15.8	15.4	16.9	17.7	18.2	18.8	19.3	19.9	20.6	21.4
Primary income balance	-9.1	-9.4	-9.6	-9.5	-8.9	-9.0	-9.2	-9.4	-9.4	-9.4	-9.4
Credits	5.1	6.1	5.2	5.5	6.6	6.6	6.8	6.9	6.9	6.9	6.9
Debits	14.2	15.5	14.8	15.0	15.5	15.7	16.0	16.3	16.3	16.3	16.3
Of which reinvested earnings	1.5	3.1	3.3	2.7	3.8	3.9	4.0	4.0	4.0	4.0	4.0
Secondary income balance	-0.7	-1.1	-0.4	-0.3	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Credits	2.3	2.2	2.9	2.9	3.2	3.1	3.1	3.1	3.1	3.1	3.1
Debits	3.1	3.3	3.3	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Capital account	0.5	2.1	3.2	1.2	3.9	1.4	0.9	1.8	1.4	1.5	1.5
Credits	0.8	2.4	3.2	1.2	3.9	1.6	1.3	2.1	1.6	1.6	1.6
Debits	0.2	0.3	0.1	0.0	0.0	0.2	0.3	0.3	0.2	0.1	0.1
Errors and omissions	-0.1	0.9	0.3	0.8	1.7	0.0	0.0	0.0	0.0	0.0	0.0
Financial account (change in stock, + = increase)	-3.0	0.5	2.6	2.3	7.1	3.7	2.6	2.8	1.5	0.8	0.1
Direct investment (net)	-1.9	-4.8	0.3	-2.9	1.0	-1.1	-1.6	-1.7	-1.7	-1.7	-1.7
Abroad	1.2	2.5	5.8	3.2	3.2	3.2	3.3	3.4	3.4	3.4	3.4
Inward	3.1	7.3	5.5	6.1	2.2	4.4	4.9	5.0	5.1	5.0	5.0
Of which, reinvested earnings	1.5	3.1	3.3	2.7	3.8	3.9	4.0	4.0	4.0	4.0	4.0
Portfolio investment (net)	-0.2	-2.2	-3.6	3.3	-6.0	-3.6	-2.9	-1.4	-1.3	-1.2	-1.1
Assets	0.6	1.0	0.1	2.8	2.6	2.4	2.4	2.4	2.5	2.6	2.7
Liabilities	0.8	3.2	3.6	-0.5	8.7	6.0	5.3	3.8	3.8	3.8	3.8
Other investment (net)	-0.4	4.6	-1.1	-0.5	-0.6	-0.5	-0.5	0.1	1.3	1.9	2.4
Assets	2.1	3.0	3.3	1.5	-0.7	1.5	2.1	2.8	3.4	4.0	4.5
Liabilities	2.4	-1.6	4.4	2.0	-0.1	2.0	2.7	2.7	2.1	2.1	2.1
Reserve assets	-0.7	3.2	7.2	2.7	12.9	9.0	7.6	5.8	3.3	1.8	0.4
<i>Memorandum items</i>											
Current account (percent of GDP)	-2.1	-1.6	-0.5	0.2	0.9	1.4	1.0	0.6	0.1	-0.4	-0.8
Gross official reserves (billions of euros)	30.6	34.2	41.0	44.2	60.4	67.9	75.8	81.5	84.7	86.9	87.3
in months of the current year's imports	3.1	3.6	4.5	4.1	5.5	6.1	6.4	6.7	6.8	6.7	6.5
as a ratio to the short-term debt	76.7	94.3	103.1	88.1	109.4	124.0	135.1	142.5	146.0	146.9	145.3
External debt, percent of GDP	54.9	60.3	63.5	68.8	70.7	71.2	71.2	71.7	72.7	73.8	75.4

Source: National data and IMF staff estimates.

**Table 3. Czech Republic: Statement of Operations of General Government, 2011–21**  
(CZK billion, unless otherwise noted)

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
	Staff Projections										
<b>Revenue</b>	<b>1,616.5</b>	<b>1,637.1</b>	<b>1,685.5</b>	<b>1,731.8</b>	<b>1,886.3</b>	<b>1,869.1</b>	<b>1,952.3</b>	<b>2,045.4</b>	<b>2,126.0</b>	<b>2,211.5</b>	<b>2,298.8</b>
Taxes	755.6	776.4	807.9	818.9	886.7	912.6	952.9	998.7	1,043.7	1,090.1	1,136.6
Personal income tax	142.7	144.1	150.6	161.0	164.2	167.6	175.7	185.4	194.6	204.4	213.0
Corporate Income tax	129.0	127.5	132.6	143.9	153.7	156.8	163.7	170.7	177.8	185.4	193.2
VAT	276.5	286.1	303.8	319.5	333.3	349.2	367.8	387.7	407.3	427.0	447.6
Excise	170.7	175.7	178.5	151.1	180.0	182.0	186.1	192.8	199.2	205.7	212.5
Other taxes	36.6	43.0	42.3	43.4	55.5	57.1	59.6	62.2	64.8	67.5	70.4
Social contributions	592.5	600.3	606.6	628.5	662.9	688.3	721.8	750.7	780.7	811.9	844.4
Capital and other current transfers and subsidies	84.9	74.3	80.1	91.1	142.1	70.1	74.2	84.4	87.9	91.7	95.5
Other revenue	183.4	186.2	190.9	193.3	194.6	198.1	203.4	211.6	213.6	217.9	222.3
Property income	34.9	35.2	37.7	36.4	36.9	36.4	40.9	45.7	47.6	49.6	51.7
Sales of goods and services	144.6	146.7	148.3	152.4	152.9	156.8	157.4	160.6	160.5	162.5	164.6
Other revenue	3.9	4.2	5.0	4.5	4.7	4.9	5.1	5.3	5.5	5.7	6.0
<b>Expenditure</b>	<b>1,726.6</b>	<b>1,797.1</b>	<b>1,736.5</b>	<b>1,821.9</b>	<b>1,905.0</b>	<b>1,897.3</b>	<b>1,982.4</b>	<b>2,069.4</b>	<b>2,150.3</b>	<b>2,236.9</b>	<b>2,327.4</b>
<b>Expense</b>	<b>1,546.3</b>	<b>1,628.3</b>	<b>1,584.7</b>	<b>1,656.5</b>	<b>1,673.5</b>	<b>1,722.3</b>	<b>1,799.4</b>	<b>1,870.3</b>	<b>1,942.9</b>	<b>2,020.7</b>	<b>2,102.1</b>
Compensation of employees	347.2	356.5	363.6	379.6	397.9	413.1	437.6	455.1	473.3	492.2	511.9
Use of goods and services	275.7	254.1	264.6	274.0	286.5	294.5	305.6	318.8	332.1	346.2	360.8
Interest	53.0	57.8	55.0	56.1	48.4	47.9	48.8	49.9	49.9	49.5	50.3
Subsidies	91.2	91.1	95.8	99.4	102.1	105.0	109.7	114.4	119.2	124.2	129.4
Grants	32.0	31.4	21.3	18.1	9.6	9.9	10.3	10.8	11.2	11.7	12.2
Social benefits	651.1	663.2	677.9	695.2	712.1	731.9	762.0	790.6	820.9	854.8	889.5
Other expenses	96.0	174.1	106.4	134.1	116.8	120.0	125.4	130.8	136.3	142.0	148.0
<b>Net acquisition of nonfinancial assets</b>	<b>180.3</b>	<b>168.8</b>	<b>151.9</b>	<b>165.4</b>	<b>231.5</b>	<b>175.0</b>	<b>183.0</b>	<b>199.1</b>	<b>207.4</b>	<b>216.2</b>	<b>225.3</b>
<b>Gross Operating Balance</b>	<b>70.2</b>	<b>8.8</b>	<b>100.9</b>	<b>75.4</b>	<b>212.8</b>	<b>146.8</b>	<b>152.9</b>	<b>175.1</b>	<b>183.1</b>	<b>190.9</b>	<b>196.7</b>
<b>Net lending/borrowing (overall balance)</b>	<b>-110.1</b>	<b>-160.0</b>	<b>-51.0</b>	<b>-90.0</b>	<b>-18.7</b>	<b>-28.2</b>	<b>-30.1</b>	<b>-24.0</b>	<b>-24.3</b>	<b>-25.4</b>	<b>-28.6</b>
<b>Net financial transactions</b>	<b>-132.1</b>	<b>-121.4</b>	<b>-79.1</b>	<b>-175.8</b>	<b>-18.7</b>	<b>-28.2</b>	<b>-30.1</b>	<b>-24.0</b>	<b>-24.3</b>	<b>-25.4</b>	<b>-28.6</b>
<b>Net acquisition of financial assets</b>	<b>-4.2</b>	<b>200.4</b>	<b>-43.1</b>	<b>-204.8</b>	<b>-3.3</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Net incurrence of liabilities</b>	<b>121.2</b>	<b>317.2</b>	<b>28.7</b>	<b>-32.4</b>	<b>15.4</b>	<b>28.2</b>	<b>30.1</b>	<b>24.0</b>	<b>24.3</b>	<b>25.4</b>	<b>28.6</b>
<i>Adjustment and statistical discrepancies 1/</i>	<i>-6.7</i>	<i>-4.7</i>	<i>-7.2</i>	<i>-3.4</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>
<b>Memorandum item:</b>											
General government debt	1,604.0	1,803.6	1,842.0	1,821.0	1,836.3	1,875.8	1,912.7	1,946.0	1,979.7	2,015.4	2,053.0
Primary balance	-57.1	-102.2	4.0	-33.9	29.7	19.7	18.7	25.9	25.6	24.1	21.7
Structural balance	-113.8	-60.4	5.5	-34.9	-15.3	-25.7	-36.2	-30.1	-27.4	-27.6	-28.4
Cyclically adjusted primary balance	-74.8	-85.8	50.9	1.0	17.9	7.1	4.9	11.9	11.6	10.6	10.2
Change in cyclically adjusted primary balance	51.5	-11.0	136.7	-50.0	16.9	-10.8	-2.2	7.0	-0.3	-1.0	-0.5

Sources: Ministry of Finance and IMF staff estimates and projections.

1/ Adjustments for cash-accrual differences, valuation changes and other discrepancies.

**Table 4. Czech Republic: Statement of Operations of General Government, 2011–21**  
(In percent of GDP, unless otherwise noted)

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
							Staff Projections				
<b>Revenue</b>	<b>40.2</b>	<b>40.5</b>	<b>41.3</b>	<b>40.6</b>	<b>42.2</b>	<b>40.7</b>	<b>40.7</b>	<b>40.8</b>	<b>40.7</b>	<b>40.7</b>	<b>40.6</b>
Taxes	18.8	19.2	19.8	19.2	19.8	19.9	19.8	19.9	20.0	20.0	20.1
Personal income tax	3.5	3.6	3.7	3.8	3.7	3.6	3.7	3.7	3.7	3.8	3.8
Corporate Income tax	3.2	3.2	3.3	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
VAT	6.9	7.1	7.5	7.5	7.5	7.6	7.7	7.7	7.8	7.9	7.9
Excise	4.2	4.3	4.4	3.5	4.0	4.0	3.9	3.8	3.8	3.8	3.7
Other taxes	0.9	1.1	1.0	1.0	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Social contributions	14.7	14.9	14.9	14.8	14.8	15.0	15.0	15.0	15.0	14.9	14.9
Capital and other current transfers and subsidies	2.1	1.8	2.0	2.1	3.2	1.5	1.5	1.7	1.7	1.7	1.7
Other revenue	4.6	4.6	4.7	4.5	4.4	4.3	4.2	4.2	4.1	4.0	3.9
Property income	0.9	0.9	0.9	0.9	0.8	0.8	0.9	0.9	0.9	0.9	0.9
Sales of goods and services	3.6	3.6	3.6	3.6	3.4	3.4	3.3	3.2	3.1	3.0	2.9
Other revenue	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
<b>Expenditure</b>	<b>42.9</b>	<b>44.5</b>	<b>42.6</b>	<b>42.8</b>	<b>42.6</b>	<b>41.3</b>	<b>41.3</b>	<b>41.3</b>	<b>41.2</b>	<b>41.1</b>	<b>41.1</b>
<b>Expense</b>	<b>38.4</b>	<b>40.3</b>	<b>38.9</b>	<b>38.9</b>	<b>37.4</b>	<b>37.5</b>	<b>37.5</b>	<b>37.3</b>	<b>37.2</b>	<b>37.1</b>	<b>37.1</b>
Compensation of employees	8.6	8.8	8.9	8.9	8.9	9.0	9.1	9.1	9.1	9.0	9.0
Use of goods and services	6.9	6.3	6.5	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
Interest	1.3	1.4	1.3	1.3	1.1	1.0	1.0	1.0	1.0	0.9	0.9
Subsidies	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Grants	0.8	0.8	0.5	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Social benefits	16.2	16.4	16.6	16.3	15.9	15.9	15.9	15.8	15.7	15.7	15.7
Other expenses	2.4	4.3	2.6	3.1	2.6	2.6	2.6	2.6	2.6	2.6	2.6
<b>Net acquisition of nonfinancial assets</b>	<b>4.5</b>	<b>4.2</b>	<b>3.7</b>	<b>3.9</b>	<b>5.2</b>	<b>3.8</b>	<b>3.8</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>
<b>Gross Operating Balance</b>	<b>1.7</b>	<b>0.2</b>	<b>2.5</b>	<b>1.8</b>	<b>4.8</b>	<b>3.2</b>	<b>3.2</b>	<b>3.5</b>	<b>3.5</b>	<b>3.5</b>	<b>3.5</b>
<b>Net lending/borrowing (overall balance)</b>	<b>-2.7</b>	<b>-4.0</b>	<b>-1.3</b>	<b>-2.1</b>	<b>-0.4</b>	<b>-0.6</b>	<b>-0.6</b>	<b>-0.5</b>	<b>-0.5</b>	<b>-0.5</b>	<b>-0.5</b>
<b>Net financial transactions</b>	<b>-3.3</b>	<b>-3.0</b>	<b>-1.9</b>	<b>-4.1</b>	<b>-0.4</b>	<b>-0.6</b>	<b>-0.6</b>	<b>-0.5</b>	<b>-0.5</b>	<b>-0.5</b>	<b>-0.5</b>
<b>Net acquisition of financial assets</b>	<b>-0.1</b>	<b>5.0</b>	<b>-1.1</b>	<b>-4.8</b>	<b>-0.1</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Net incurrence of liabilities</b>	<b>3.0</b>	<b>7.8</b>	<b>0.7</b>	<b>-0.8</b>	<b>0.3</b>	<b>0.6</b>	<b>0.6</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>
<i>Adjustment and statistical discrepancies 1/</i>	<i>-0.2</i>	<i>-0.1</i>	<i>-0.2</i>	<i>-0.1</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>
<b>Memorandum item:</b>											
General government debt	39.9	44.6	45.2	42.7	41.1	40.8	39.8	38.9	37.9	37.1	36.2
Primary balance	-1.4	-2.5	0.1	-0.8	0.7	0.4	0.4	0.5	0.5	0.4	0.4
Structural balance 2/	-2.8	-1.5	0.1	-0.8	-0.3	-0.6	-0.8	-0.6	-0.5	-0.5	-0.5
Cyclically adjusted primary balance	-1.9	-2.1	1.2	0.0	0.4	0.2	0.1	0.2	0.2	0.2	0.2
Change in cyclically adjusted primary balance	1.3	-0.3	3.4	-1.2	0.4	-0.2	-0.1	0.1	0.0	0.0	0.0
Output gap	0.6	-2.1	-4.2	-2.7	0.2	0.2	0.2	0.2	0.2	0.1	0.0
Nominal GDP (billions of Koruny)	4,023	4,042	4,077	4,261	4,472	4,597	4,802	5,009	5,218	5,439	5,669

Sources: Ministry of Finance and IMF staff estimates and projections.

1/ Adjustments for cash-accrual differences, valuation changes and other discrepancies.

2/ In percent of potential GDP.

Table 5. Czech Republic: Medium-Term Macroeconomic Scenario, 2011–21

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
	Staff projections										
<b>Real sector</b>											
	<i>(Annual growth rates, percent, unless otherwise noted)</i>										
Real GDP	2.0	-0.9	-0.5	2.0	4.2	2.2	2.7	2.4	2.2	2.2	2.2
Private consumption	0.3	-1.5	0.7	1.5	2.8	3.2	2.9	2.5	2.3	2.3	2.3
Public consumption	-3.0	-1.8	2.3	1.8	2.8	2.6	2.8	2.0	2.0	2.0	2.0
Investment	1.8	-4.1	-5.0	4.4	9.9	-2.0	3.5	4.0	4.0	4.0	4.0
Fixed investment	1.1	-3.2	-2.7	2.0	7.3	-2.0	3.5	4.0	4.0	4.0	4.0
Exports, goods and services	9.3	4.3	0.0	8.9	7.0	6.4	6.1	5.0	4.0	4.0	4.0
Imports, goods and services	6.7	2.7	0.1	9.8	7.9	6.0	6.9	5.7	4.7	4.7	4.7
contribution of net exports (percent)	1.9	1.3	0.0	-0.1	-0.2	0.7	-0.2	-0.3	-0.4	-0.4	-0.5
Inflation (CPI, percent)	1.9	3.3	1.4	0.4	0.3	0.6	1.9	2.0	2.0	2.0	2.0
Unemployment (percent of labor force)	6.7	7.0	7.0	6.1	5.0	4.3	4.3	4.3	4.3	4.3	4.4
Output gap 1/	0.6	-2.1	-4.2	-2.7	0.2	0.2	0.2	0.2	0.2	0.1	0.0
Gross domestic savings (in percent of GDP)	24.9	24.7	24.2	25.4	27.6	26.8	26.5	26.4	26.4	26.4	26.4
Public	11.6	12.5	12.9	12.6	13.3	13.6	13.8	14.2	14.6	15.0	15.3
Private	13.3	12.2	11.3	12.9	14.3	13.1	12.7	12.2	11.8	11.4	11.1
Gross capital formation (in percent of GDP)	27.0	26.3	24.8	25.3	26.7	25.4	25.5	25.9	26.3	26.8	27.2
<b>Public finances</b>											
	<i>(In percent of GDP, unless otherwise noted)</i>										
Revenues	40.2	40.5	41.3	40.6	42.2	40.7	40.7	40.8	40.7	40.7	40.6
Expenditures	42.9	44.5	42.6	42.8	42.6	41.3	41.3	41.3	41.2	41.1	41.1
Net lending	-2.7	-4.0	-1.3	-2.1	-0.4	-0.6	-0.6	-0.5	-0.5	-0.5	-0.5
Structural balance 1/	-2.8	-1.5	0.1	-0.8	-0.3	-0.6	-0.8	-0.6	-0.5	-0.5	-0.5
General government debt	39.9	44.6	45.2	42.7	41.1	40.8	39.8	38.9	37.9	37.1	36.2
<b>Balance of payments</b>											
Current account balance	-2.1	-1.6	-0.5	0.2	0.9	1.4	1.0	0.6	0.1	-0.4	-0.8
Trade balance	1.9	3.1	4.1	5.2	4.7	5.3	4.9	4.5	4.1	3.6	3.3
Services balance	2.0	1.9	1.7	1.3	1.7	1.6	1.6	1.6	1.5	1.5	1.4
Net factor income	-5.6	-5.9	-6.1	-6.1	-5.4	-5.4	-5.4	-5.4	-5.4	-5.4	-5.4
Current transfers	-0.5	-0.7	-0.2	-0.2	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Capital account balance	0.3	1.3	2.0	0.8	2.4	0.8	0.5	1.1	0.8	0.8	0.9
Errors and omissions, net	-0.1	0.5	0.2	0.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Financial account balance (change in stocks, + = increase)	-1.9	0.3	1.7	1.5	4.3	2.2	1.6	1.6	0.9	0.5	0.0
Direct investment, net	-1.1	-3.0	0.2	-1.9	0.6	-0.7	-0.9	-1.0	-1.0	-1.0	-1.0
Portfolio investment, net	-0.1	-1.4	-2.3	2.1	-3.7	-2.2	-1.7	-0.8	-0.8	-0.7	-0.6
Other investment and derivatives, net	-0.1	2.7	-0.8	-0.5	-0.4	-0.3	-0.3	0.0	0.7	1.1	1.4
Reserve assets	-0.4	2.0	4.6	1.7	7.9	5.4	4.5	3.4	1.9	1.1	0.2
Sources: Czech National Bank, Czech Statistical Office, Ministry of Finance, and IMF staff estimates and projections.											
1/ In percent of potential GDP.											

**Table 6. Czech Republic: Financial Soundness Indicators, 2009–15**  
(In percent, unless otherwise noted)

	2009	2010	2011	2012	2013	2014	2015
<b>Capital</b>							
Regulatory capital to risk-weighted assets	14.0	15.3	15.0	15.6	16.5	17.0	16.7
Regulatory Tier 1 capital to risk-weighted assets	12.6	13.9	13.9	15.2	16.2	16.5	16.3
Capital to assets	6.1	6.5	6.5	6.9	7.2	7.3	7.8
<b>Profitability</b>							
Return on assets	1.4	1.3	1.2	1.4	1.2	1.2	1.1
Return on equity	26.4	19.7	18.3	20.4	16.2	16.5	14.2
Interest margin to gross income	55.8	63.1	64.5	60.7	59.9	61.8	63.7
Noninterest expenses to gross income	42.0	46.8	47.2	46.9	46.8	47.2	49.3
Trading income to total income	9.5	4.6	4.1	8.9	8.7	6.3	7.6
Personnel expenses to noninterest expenses	40.5	39.7	41.0	41.2	41.4	40.1	44.1
<b>Liquidity</b>							
Liquid assets to total assets	27.1	29.4	29.9	32.6	33.8	30.5	30.6
Liquid assets to short-term liabilities	70.0	71.1	72.2	71.4	67.4	64.9	61.7
Customer deposits to total (noninterbank) loans	128.2	129.6	126.0	133.1	128.3	123.2	118.1
Foreign-currency-denominated loans to total loans	21.2	21.6	22.2	20.9	29.1	28.9	...
Foreign-currency-denominated liabilities to total liabilities	14.2	14.3	15.0	14.1	21.5	23.3	...
<b>Sensitivity to market risk</b>							
Net open position in foreign exchange to capital	0.5	0.4	-3.2	5.1	1.2	1.2	9.6
Gross asset position in financial derivatives to capital	54.0	43.2	57.5	46.5	29.5	37.5	25.8
Gross liability position in financial derivatives to capital	50.9	41.2	53.5	40.5	29.7	34.3	22.8
Net open position in equities to capital	8.3	8.1	9.3	7.8	6.2	6.6	...
<b>Memo item</b>							
Nonperforming loans to total gross loans	4.6	5.4	5.2	5.2	5.2	5.6	5.5

Source: Czech National Bank



**Table 7. Czech Republic: Monetary Indicators, 2007–15**  
(CZK billion, unless otherwise noted)

	2007	2008	2009	2010	2011	2012	2013	2014	2015
<i>Monetary survey</i>									
Net foreign assets	970	975	1003	1015	993	1148	1315	1319	1541
Net domestic assets	1508	1666	1750	1830	2001	1982	1964	2111	2127
Net domestic credit to general government	72	23	166	225	335	316	319	469	370
Domestic credits to rest of economy	1628	1890	1905	1962	2070	2124	2202	2282	2431
Other items (net)	-192	-247	-321	-357	-404	-458	-557	-640	-674
Broad Money (M2)	2478	2641	2753	2845	2994	3129	3279	3430	3668
Money (M1)	1439	1545	1662	1911	2042	2213	2380	2654	2952
Quasi Money	1040	1096	1091	934	953	917	898	776	716
<i>Central bank</i>									
Net foreign assets	633	720	770	799	805	860	1121	1198	1536
Currency in circulation	324	366	354	358	378	389	405	432	467
<i>Deposit money banks</i>									
Credit									
Private sector	1451	1700	1723	1809	1923	1968	2048	2103	2243
Corporations	743	848	782	780	828	835	867	875	921
Households	708	851	940	1028	1095	1132	1181	1228	1322
of which, Foreign currency	128	157	147	146	160	152	194	202	213
Corporations	127	156	146	144	159	151	193	199	210
Households	1	1	1	1	2	2	2	2	2
Deposits									
Private sector	1904	2031	2162	2274	2384	2486	2589	2761	2956
Corporations	614	591	611	633	673	716	777	838	922
Households	1290	1440	1551	1642	1711	1770	1812	1923	2035
of which, Foreign currency	187	191	185	183	188	205	221	266	306
Corporations	128	125	118	121	128	145	160	191	221
Households	58	66	67	62	60	60	62	75	84
<i>Interest rates (percent)</i>									
Discount Rate	2.50	1.25	0.25	0.25	0.25	0.05	0.05	0.05	0.05
Lombard Rate	4.50	3.25	2.00	1.75	1.75	0.25	0.25	0.25	0.25
Repo Rate - 2 Weeks	3.50	2.25	1.00	0.75	0.75	0.05	0.05	0.05	0.05
PRIBOR - 1 Week	3.58	2.79	1.28	0.83	0.81	0.26	0.16	0.16	0.14

Source: Czech National Bank, Haver Analytics.

## Annex I. Response to Past Fund Policy Advice

Policy implementation has been broadly consistent with IMF advice.	
Key recommendations	Implemented policies
Adopt a growth-friendly fiscal strategy entailing a slight relaxation of the fiscal stance in the near term to support the economic recovery and a commitment to a medium-term objective of a 1 percent of GDP structural deficit.	Implemented. The fiscal stance is projected to ease slightly in 2016–17, but the structural deficit is expected to stay below the medium-term deficit objective of 1 percent of GDP—recently confirmed in the 2016 Convergence Program.
Adopt a fiscal rule which has wide coverage, is easy to monitor, incorporates a debt brake, and is monitored by an independent Fiscal Council.	Not yet implemented. A government proposal, broadly in line with these recommendations, is under discussion in parliament.
Maintain the focus on inflation targeting, while continuing to evaluate the conditions that would trigger a normalization of monetary policy and the mechanics of its implementation.	Implemented. The Czech National Bank has committed to maintaining the exchange rate floor through end-2016, while emphasizing in its communication the temporary nature of the floor and the exit horizon.
Continue to strengthen the supervisory architecture, transpose the Bank Recovery and Resolution Directive into domestic law.	Implemented. The Bank Recovery and Resolution Directive was transposed into local law, making the CNB a designated resolution authority. The CNB largely completed the implementation of 2012 FSAP recommendations (Annex II).
Give priority to structural reforms aimed at promoting research and innovation, enhancing apprenticeship programs, simplifying tax compliance and other administrative procedures, and improving infrastructure.	In progress. The 2016 National Reform Program envisages a number of actions, including on Research and Development policy. The new public procurement law and construction law are expected to help speed up infrastructure investment.

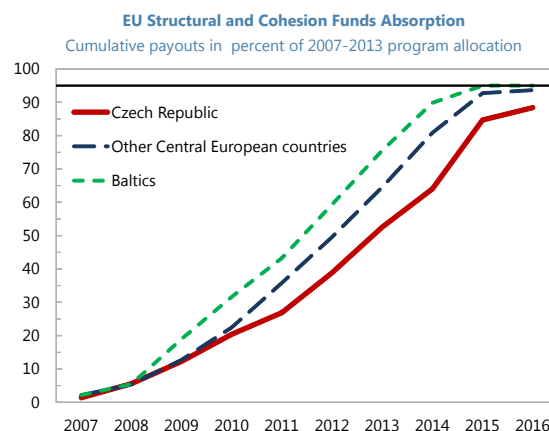
## Annex II. FSAP Recommendations and Implementation

Recommendations	Status
<b>Macropprudential Framework</b>	
Elevate financial stability to a policy objective in the CNB law	<b>Implemented.</b>
Improve the decision-making mechanisms within the CNB to take timely action to address systemic risk	<b>Implemented.</b> Regular meetings on financial stability have been instituted. Capital reserves according to the CRDI IV/CRR have been introduced and regularly re-assessed (counter-cyclical buffer quarterly, DSIB buffers annually). Regular monitoring of risks associated with lending to real estate sector was introduced and the results serve as the input to decision-making process (biannually).
Upgrade the stress testing framework for banks, focusing on group-wide risk monitoring	<b>Implemented.</b>
<b>Regulation and Supervision</b>	
Increase the number of supervisory staff to strengthen the intrusiveness of supervision	<b>Implemented.</b> Significant increase of prudential on-site and off-site examination staff enabled to increase the frequency and the scope of inspections, to focus more intensively on problem credit institutions and to shorten significantly the AML/CFT on-site supervisory cycle across all the financial sectors.
Introduce a “prompt corrective action” framework	<b>Implemented.</b> Supervisory off-site manual has been updated. Manual contains supervisory actions for particular level of capital adequacy thresholds considering capital requirements arising from Pillar 1 as well as Pillar 2. Manual also reflects new rules arising from CRDIV/CRR including capital buffers and consequent supervisory actions in case of breach of these buffers.
Set large exposure limits in line with the globally agreed levels	<b>Partially implemented.</b> Large exposure limits are currently stipulated in Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012.
Continue closely monitoring significant transactions between subsidiaries and their parents, and take action, if necessary	<b>Implemented.</b> In addition to the standard regulatory reporting, the CNB imposed extraordinary reporting duty on selected credit institutions which have to provide information about transactions with significant effect on exposure to parent company or other institutions from the group. Any extraordinary reporting duty could be extended by any indicator and imposed to any vulnerable institution.
Strengthen the framework for supervising financial conglomerate	<b>Implemented.</b> The Financial Conglomerates Directive (FICOD I) has been implemented. The legal framework for financial conglomerates in the Czech Republic is thus fully compliant with relevant EU regulation and we consider this recommendation implemented.

Strengthen the CU sector by restructuring the existing institutions	<b>Implemented.</b> Legislation (in line with IMF recommendations) has been effective since 2015. Big credit unions need to convert into banks or scale down, new rules include increase of contributions to the reserve fund, to the Czech DIF and loans to a CU member limitation, enhances involvement of CU members. The amount of credit a union can provide to its member (or connected members) is set to CZK 30 000 000. The postponed rule will introduce a minimum ratio between the deposits and the member interests (10:1), with some qualifications for deposits accepted before the amendment became effective. CNB started to monitor in detail liquidity and other aspects of credit unions, discuss the plans for conversion with eligible credit unions and provide guidance on the new rules to credit unions, their members and auditors.
<b>Crisis Management and Resolution Frameworks</b>	
Operationalize the framework for providing public support to banks;  Adjust the threshold for imposing conservatorship	<b>Partially implemented.</b> Public support to banks is covered both by the BRRD (transposed with effect on 1 January 2016) and the Commission "Banking" Communication from 30 July 2013 (not reflected in legislation yet). Public support can be used as last resort after possibility of other resolution tools has been assessed and exploited to the maximum extent practicable whilst maintaining financial stability. In line with BRRD, the institute of conservatorship has been replaced by new tools - (i) temporary administration for the early intervention phase and (ii) special management for the resolution phase. Triggers and purposes of both these tools are clearly determined by the BRRD. According to BRRD, respective authorities may appoint a special manager to replace the management body of the institution which is under resolution. Through the transposition of BRRD the conditions for appointing a special manager are softer in comparison to the preceding legal framework for conservatorship. CNB has been assigned as the National Resolution Authority.
Enhance governance of the Deposit Insurance Fund (DIF), increase its target size and strengthen the provisions for budgetary financing of possible shortfalls, clarify the trigger for payout of insured deposits, and allow the DIF to fund the transfer of deposits via purchase & assumption agreements	<b>Implemented.</b> DGSD has been transposed via a change in the Act on Banks valid from 1 January 2016, parallel with the BRRD transposition. Both the ex-ante funded Deposit Insurance Fund (DIF) and the National Resolution Fund (NRF) are operational. The DIF is fully funded (already exceeding the target level of 0.8% covered deposits) and continues to collect maintenance-level contributions. The NRF starts from zero and will reach the target level of 1.0% covered deposits in 2024, in 9 installments. The combined level of DIF and NRF contributions have no systemic impact on banking sector profitability, as the increase in NRF contributions have been matched by a decrease in DGS contributions. Both DIF and NRF contributions are risk-weighted. Preferential treatment of insured deposits in resolution is guaranteed. Trigger to pay out insured deposits is clearly stated in the DGSD transposition and from July 2016 will be shortened to 7 days. DIF assets can be used in resolution in certain instances. Governance of DIF and NRF is strengthened through the creation of the Financial Market Guarantee System (FMGS). FMGS manages money of both the DIF and the NRF and provides for the pay-box function of the DIF. The Minister of Finance appoints 5 supervisory board members, of which 2 are from the MoF, 2 from the CNB and one from banking industry, subject to conflict-of-interest rules. Budgetary financing of potential shortfalls in DIF and NRF is part of the new legislative framework, but has not been tested.

## Annex III. EU Structural and Investment Funds<sup>1</sup>

**1. Czech Republic has the second largest allocation of EU Structural and Investment Funds (ESIF) over two program periods—€48.5 billion (30 percent of GDP).<sup>2</sup>** The allocations come from three funds that are administered by national authorities and are monitored by the European Commission (EC). National authorities choose the individual projects in line with the “operational programs” and “priority axes” agreed with the EC. Besides some advance payments, reimbursements are made upon presentation of invoices that are vetted and certified initially by the national certifying authority and then ultimately by the EC.<sup>3</sup> National authorities provide co-financing—typically, around 15 percent. Certain costs, e.g., most land purchases and VAT on certain inputs, have to be fully covered by national authorities, increasing the effective rate of co-financing. In the Czech Republic, the latter ranged from 30 percent in 2008 to 15 percent in 2015.

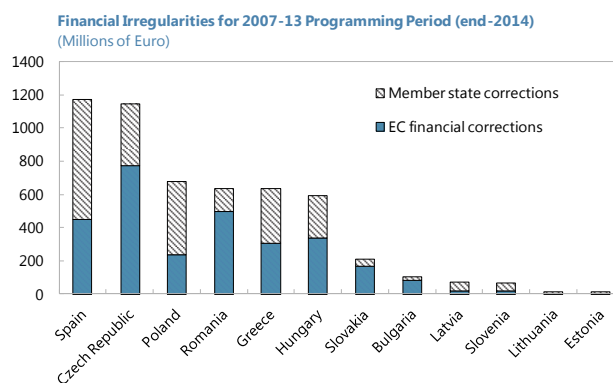


Source: European Commission and IMF staff estimates.

Notes: The maximum drawdown over the period is 95 percent, as the last 5 percent are paid out after certification of the successful completion of the Operational Programs. Country aggregates are weighted averages, using as weights country shares in 2014 GDP in PPP USD for each sub-region. Other Central European countries include: Hungary, Poland, Slovakia, and Slovenia.

**2. Weaknesses in the management of EU funds resulted in a low absorption rate and a large number of financial irregularities.** By end-2014, the Czech Republic had the fourth lowest absorption rate in the EU (at just 64 percent) and the highest financial corrections (a cumulative 5 percent of the total allocation) resulting from failure to meet EC and/or national certification rules. The European Court of Auditors and the Czech Supreme Audit Office have detailed weaknesses arising from

poor coordination between regional and the central managing authorities, the large number of programs and complexity of their implementation structure, insufficient staffing, fragmented rules and methodological materials as well as frequent changes to these rules (Box 1). Starting in



Source: European Commission “Protection of the EU budget to end-2014”, 2015.

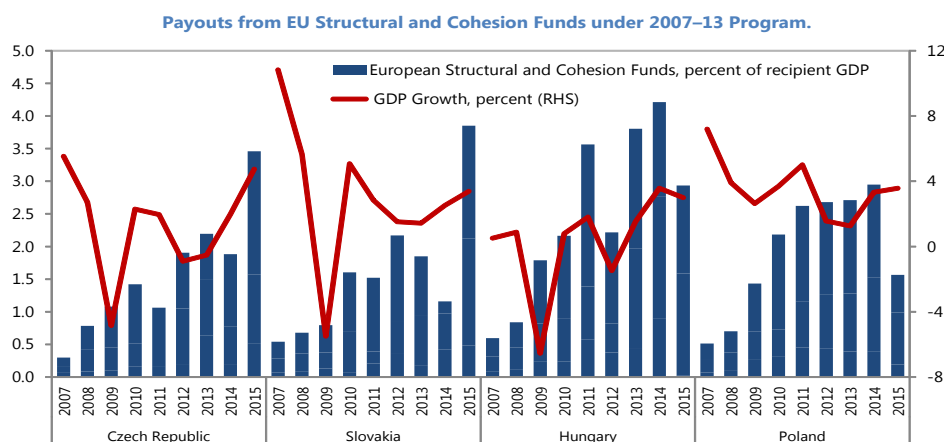
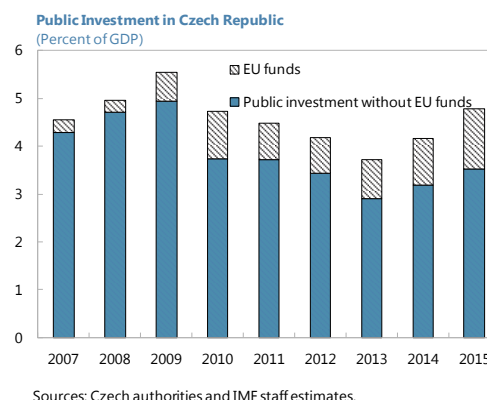
<sup>1</sup> Prepared by Plamen Iossifov and Anna Shabunina.

<sup>2</sup> Excluding agricultural subsidies and the Rural Development Fund.

<sup>3</sup> See Box 1 in Central Eastern and South Eastern Regional Economic Issues, November 2015, International Monetary Fund, Washington, D.C.

2014, the Ministry of Regional Development started to carry out centralized management and coordination of Operational Programs, resulting in significant improvement in outcomes. The absorption rate rose sharply in 2015, bringing the cumulative absorption rate to date to 88 percent, still well below the regional average.

**3. The sharp pickup in absorption boosted growth in 2015.** EU-fund related inflows amounted to about 3.3 percent of GDP in 2015. The share in total public investment of projects financed by the ESIF increased to 26 percent in 2015, from 1 percent in 2007. The overall growth contribution is estimated at 1.8 percent of GDP, assuming the EU-funded investment had the same import component as other investment. Many countries in the region followed similar patterns, amplifying the positive impact on growth via interregional trade.



**4. The expedited spending of EU funds could, however, compromise their efficacy and adversely affect the fiscal position.<sup>4</sup>** In many cases, the selection of the projects was reportedly driven by a need to spend the allocated budget rather than by the quality of the projects. And while EU funds supported growth in the short term, by focusing on “shovel-ready” projects, their impact on potential output could have likely been higher, with better prioritization. Hastened absorption could have also led to errors in project certification, resulting in potential additional fiscal costs, since the EC will not reimburse such costs.<sup>5</sup>

<sup>4</sup> Efficient use of EU funds has for long remained a challenge for EU member states. See, for instance, *Fiscal Transfers and Economic Convergence in the EU: An Analysis of Absorption Problems and an Evaluation of the Literature* by Yves Hervé and Robert Holzmann, 1998, Nomos Verlagsgesellschaft, Baden-Baden.

<sup>5</sup> In some cases, however, these grants could be re-directed to other projects. Irregularities of absorption of EU funds are in many EU countries related to poor procurement practices.

**5. The absorption rate is projected to slow down significantly in 2016.** The Czech Ministry of Finance projects that EU grants (without agricultural subsidies) would decline by €2 billion (about 1.3 percent of GDP) in 2016. This is in line with the observed slower pace of absorption in the first two years of the 2007–13 program period and is explained by the time it takes to move from planning to implementation stage of investment projects.

**6. Maximizing the growth impact of EU funds would require more effective and efficient utilization.** Measures could include: better planning of public investment, costing and prioritization of public investment plans, employing a standard methodology for cost-benefit analysis and project appraisal, taking account of potential risks to the project, and having a central review process of major projects, and more efficient and open procurement process.<sup>6</sup>

#### **Box 1. Audit Findings and Recommendations in the Area of Management of EU Funds**

During 2007–13, the Czech Supreme Audit Office (SAO) carried out a number of audits of utilization of EU Structural and Cohesion Funds. Results from these audits point to systemic shortcomings in several key areas (classified by frequency of occurrence):

- High—shortcomings in control work by entities in the implementation structure and in the legislative field.
- Medium—shortcomings in the assessment and selection of projects, financial shortcomings, shortcomings in contracts and decisions on the provision of support, and shortcomings in administrative work.
- Low—breaches of contractual duties by beneficiaries, deficiencies in public procurement, badly designed assessment criteria and unsatisfactory program outcomes.

The SAO made a number of recommendations for the new programming period 2014–20 that include:

- Simplify implementation systems and subsidy provision processes
- Simplify the rules and regulations for the provision of subsidies and reduce the paperwork involved
- Correctly define the overarching development strategies
- Analyze the needs for more precise targeting of support
- Define better specific and measurable goals reflecting the necessity of support
- Focus more on efficiency and effectiveness when selecting and financing projects
- Improve control systems; target control work at verifying benefits and necessity and simultaneously on compliance with the principles of economy, efficiency and effectiveness
- Put in place more effective monitoring systems focusing on assessment of outcomes and impacts

Source: Supreme Audit Office, 2015, “Report on the EU Financial Management in the Czech Republic.”

<sup>6</sup> See Making Public Investment More Efficient, 2015, International Monetary Fund, Washington, D.C.

## Annex IV. Impact of the Exchange Rate Floor on Inflation<sup>1</sup>

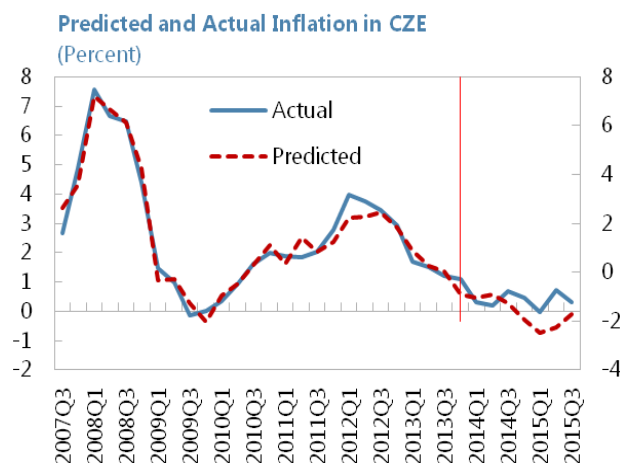
1. This note analyzes the extent to which the introduction of the exchange rate floor by the Czech National Bank (CNB) had an impact on Czech inflation. Since the counterfactual for the Czech inflation in the absence of policy intervention cannot be observed, the note attempts to create such a counterfactual for the level of Czech inflation if the CNB had not introduced the exchange rate floor. Three different empirical strategies are implemented to build a suitable counterfactual:

- An event study that exploits the pre-intervention sample to build a model to forecast inflation in absence of the FX floor.
- Difference-in-difference regression analysis that compares the evolution of inflation for the Czech Republic with a control group of similar countries.
- A synthetic control method that exploits the statistical properties of the data to choose a control group that best matches the “pre-treatment” characteristics of the “treated” country.

### Event study approach

2. An event study is implemented based on an open-economy New Keynesian Phillips curve. A standard Phillips curve model for Czech Republic is estimated on the pre-event sample (2008:Q1–2013:Q3) and then the forecasts are used to measure the “abnormal” behavior of inflation due to the intervention.<sup>2</sup> The predicted values for inflation describe the behavior of inflation in the absence of the policy change.

3. The results suggest that the introduction of the floor has helped keep inflation above zero. As can be seen in the text figure, which plots the actual and predicted series for headline inflation, after the introduction of the floor the two series diverge, with the forecast trending



Source: IMF staff estimates.

<sup>1</sup> Prepared by Francesca G. Caselli.

<sup>2</sup> See Iossifov, P and J. Podpiera, “Are Non-Euro Area EU Countries Importing Low Inflation from the Euro Area?”, IMF WP/14/191, 2014.

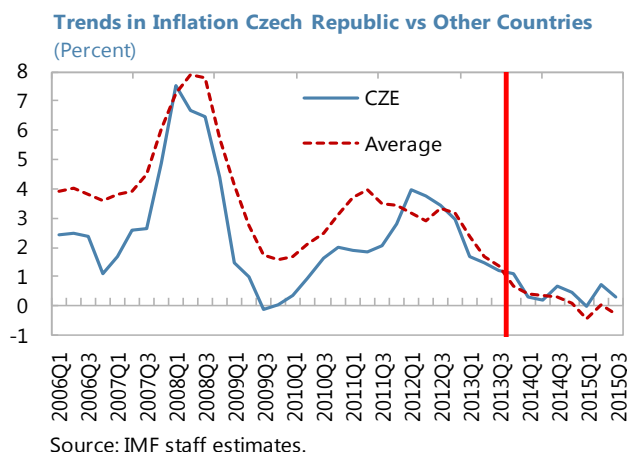


down into negative territory. However, the effect of the introduction starts to be significant towards the beginning of 2015 (with a 95 percent confidence interval).<sup>3</sup>

## Difference-in-difference approach

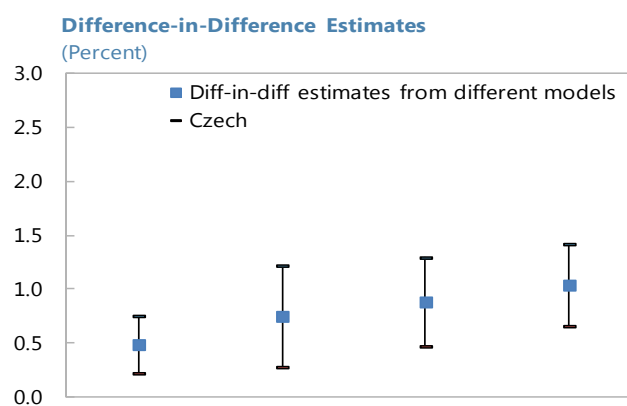
4. A difference-in-difference methodology is well suited to estimate the effect of a policy change on a *treated group*. This approach tests whether inflation in the Czech Republic behaved differently after November 2013 than inflation in a control group of similar European countries. A simple but effective way to evaluate the effect of a policy is to compare outcomes before and after the intervention for a group affected by the change (Treated Group) to a group not affected by the change (Control Group)<sup>4</sup>.

The difference in difference (or "double difference") estimator is defined as the difference in the average outcome in the treated group before and after treatment minus the difference in the average outcome in the control group before and after treatment.



5. Inflation in the Czech Republic and in the control group followed parallel trends before the introduction of the exchange rate floor. This stylized fact is supportive of the idea that the countries in the sample form a good control group to study the policy introduction in a difference-in-difference framework.

Another interesting point that emerges is that average inflation in the control group has been lower than in Czech Republic after 2013:Q4 (the date of the introduction of the exchange rate floor). This finding also supports the hypothesis that the introduction of the floor has probably helped prevent inflation from going into negative territory.



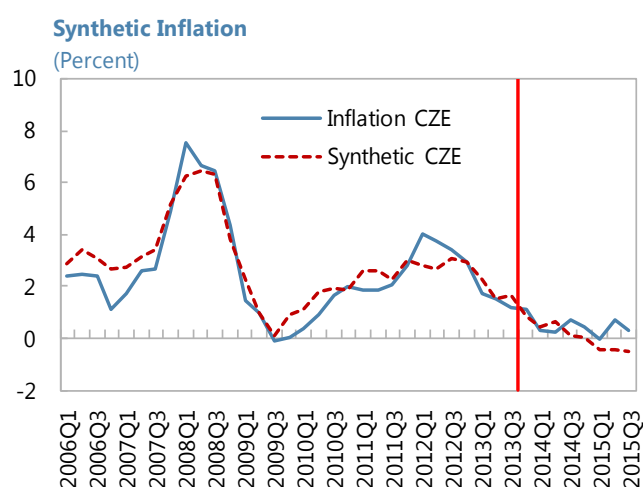
<sup>3</sup> A similar exercise on the impact of foreign exchange intervention in Brazil was conducted by Chamon et al. "FX interventions in Brazil: a synthetic control approach", Pontifical Catholic University of Rio de Janeiro Working Paper. No. 630, 2015.

<sup>4</sup> See for instance Angrist J. D. and Pischke J. S., "Mostly Harmless Econometrics. An Empiricist's Companion", Princeton University Press, 2009.

6. Across all model specifications, the interaction term is positive and significant, suggesting that the exchange rate floor worked in the desired direction against deflation. As shown in the text Figure, the magnitude of the effect varies across specifications, but in the preferred model, the coefficient on the interaction term indicates that the introduction of the floor brought Czech inflation up by 0.5 percentage points compared with the control group. An important caveat, that should be stressed at this point, is that the analysis is complicated by the *non-randomness* of the treatment. As such, it cannot be argued that the introduction of the exchange rate floor was randomly assigned to the Czech Republic. This, however, is a common problem in macroeconomics given the lack of experimental data. Still, caution is needed in interpreting the causality in these results.

### Synthetic method approach

7. The synthetic control group method is a semi-parametric approach to choose the right control group. Given the difficulties of building a good control group, the methodology developed by Abadie et al. (2010)<sup>5</sup> is adopted in order to build a synthetic control group as a weighted average of other unaffected countries.<sup>6</sup> The synthetic control method focuses on the construction of the synthetic control group by searching for a combination of other units that are selected to match as close as possible the characteristics of the country affected by the treatment.<sup>7</sup>



8. The previous specification is used to build a synthetic counterfactual for Czech inflation in absence of the exchange rate floor. The synthetic series accurately reproduces the values of inflation and inflation predictors for the Czech Republic prior to the treatment. Inflation prior to

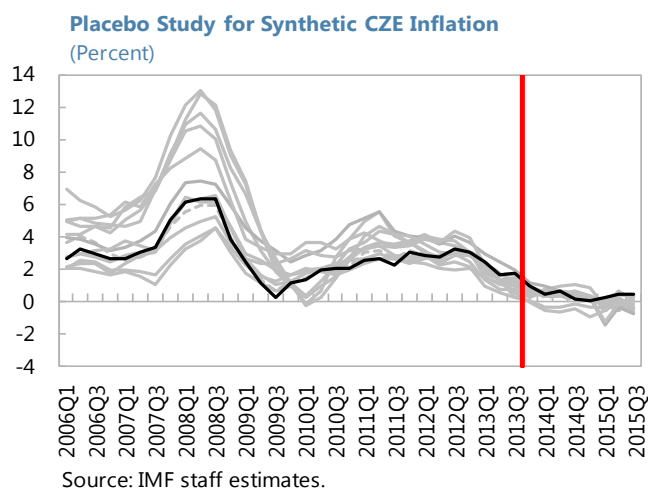
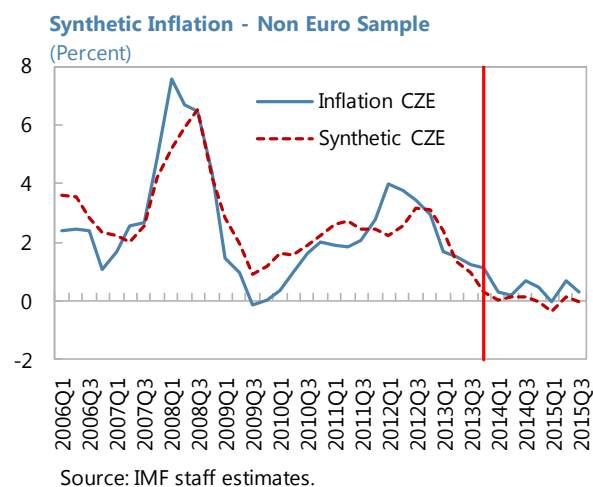
<sup>5</sup> Abadie et al., "Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California's Tobacco Control Program," *Journal of the American Statistical Association*, American Statistical Association, vol. 105(490), pp. 493-505, 2010.

<sup>6</sup> See Box 1.

<sup>7</sup> Other studies adopting this methodology include: Billmeier A. and Nannicini T., "Assessing Economic Liberalization Episodes: A Synthetic Control Approach", *The Review of Economics and Statistics*, MIT Press, vol. 95(3), pp. 983-1001, 2013, Cavallo et al., "Catastrophic Natural Disasters and Economic Growth," *The Review of Economics and Statistics*, MIT Press, vol. 95(5), pp. 1549-1561, 2013, Heilmann K., "Does political conflict hurt trade? Evidence from consumer boycotts," *Journal of International Economics*, Elsevier, vol. 99(C), pp 179-191, 2016.

the introduction of the exchange rate floor is best replicated by combining inflation in Denmark, Lithuania, Slovakia, and Slovenia.

**9.** The placebo study supports the claim that the Czech Republic managed to fight deflationary pressures after the introduction of the exchange rate floor. One of the caveats of the synthetic control method is that it does not provide standard errors to assess whether the results are statistically significant. To overcome this issue, a placebo test is conducted to detect wrongful inference. Following Abadie et al. (2010), the same model is estimated allowing all the other countries to be treated in 2013:Q4. One would expect that if the control group countries were indeed not affected by the policy change, there would be no evidence of large deviations in inflation after the introduction of the floor. The text Figure plots the synthetic series for the Czech Republic and all the other “fake” synthetic series. Especially at the end of the time series, inflation in the Czech Republic is among the highest and there is no evidence for large treatment effects for the other synthetic series. In a second exercise, consistent with the difference-in-difference estimation, countries that joined the euro are excluded from the estimation period. These results also suggest a similar pattern with the full sample estimation; however, the fit of the synthetic series is poorer.



## Conclusions

**10.** The results of the empirical analysis support the idea that the exchange rate floor achieved the objective of alleviating deflationary pressures in the Czech Republic. Despite the lack of a causal interpretation, given by the very nature of the treatment, the results of all three employed methods showed that the introduction of the exchange rate floor as an additional instrument for achieving the inflation objective prevented Czech inflation from entering negative territory.

### Box 1. Synthetic Control Method

Abadie et al. (2010)<sup>1</sup> study the effect of California's 1988 tobacco control program on cigarette consumption. They demonstrate that, following the approval of Proposition 99, cigarette sales in California dropped significantly relative to a comparable synthetic control region. Suppose we observe  $J + 1$  region, but only region 1 (California) receives the treatment (i.e. Proposition 99). We observe each region in time periods  $t = 1, \dots, T$ . Region 1 receives the treatment from period  $T_0 + 1$  until time  $T$ .  $Y_{it}^I$  is the outcome of the treated unit  $i$  after the treatment at  $t \geq T_0$ .  $Y_{it}^N$  is the potential outcome we would observe for region  $i$  at time  $t$  if region 1 never receives the treatment. The problem is that we do not observe  $Y_{it}^N$  (the counterfactual). If we assume that the treatment has no impact before period  $T_0 + 1$ , then the average effect on the treated unit is  $\alpha_{it} = Y_{it}^I - Y_{it}^N$ . We aim to estimate  $\alpha_{1T_0+1}, \dots, \alpha_{1T}$ . Since  $Y_{1t}^I$  is observed we just have to estimate  $Y_{1t}^N$ . Suppose that  $Y_{1t}^N$  is given by the following model:

$$Y_{it}^N = \delta_t + \theta_t Z_i + \lambda_t \mu_i + \epsilon_{it}$$

Where  $Z_i$  is a vector of observed covariates (not affected by the intervention). Let  $W = (w_2, \dots, w_{j+1})'$  be a  $(j \times 1)$  vector of positive weights that sum to one. Then any such  $W$  represents a potential synthetic control. For a given  $W$ , the value of the outcome at time  $t$  is:

$$\sum_{j=2}^{J+1} w_j y_{jt} = \delta_t + \theta_t \sum_{j=2}^{J+1} w_j Z_i + \sum_{j=2}^{J+1} w_j \mu_i + \sum_{j=2}^{J+1} w_j \epsilon_{jt}$$

The optimal weights  $W^*$  satisfy:

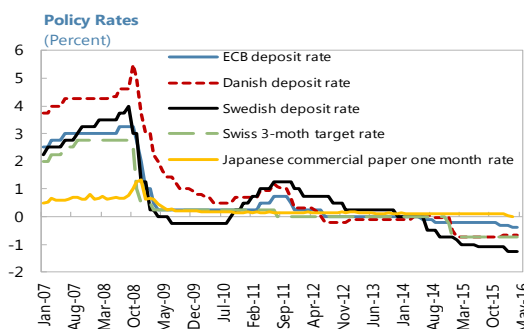
$$\sum_{j=2}^{J+1} w_j^* y_{j1} = y_{11}, \quad \sum_{j=2}^{J+1} w_j^* y_{j2} = y_{12}, \quad \dots, \quad \sum_{j=2}^{J+1} w_j^* y_{jT_0} = y_{1T_0} \text{ and } \sum_{j=2}^{J+1} w_j^* Z_j = Z_1$$

Then we can choose  $W$  to minimize:

$$\|X_1 - X_0 W\| = \sqrt{(X_1 - X_0 W)' V (X_1 - X_0 W)}$$

## Annex V. Negative Interest Rate Policy—Considerations for the Czech Republic<sup>1</sup>

**1. After a prolonged period at the zero lower bound, five central banks introduced negative policy rates.** Since mid-2014 negative policy rates moved from being a theoretical concept to an instrument used by major central banks: the ECB, the Bank of Japan, the Swiss National Bank (SNB), and the Danish and Swedish central banks. Given the short history, negative interest rates still represent uncharted waters and require cautious policy considerations.



**2. Negative interest rates eliminate the zero lower bound, could boost the operational independence of the central bank, while preserving the transmission mechanism to the real economy.** Encouraging more spending and less saving, and making more investment projects profitable, negative interest rates shift aggregate demand up with the overall effect depending on investment opportunities (TFP growth), confidence, and the health of domestic balance sheets.<sup>2</sup> By discouraging capital inflows, negative rates put downward pressure on the currency supporting external demand and helping close the output gap.

**3. However, deeply negative interest rates can lead to cash hoarding and damage the monetary transmission mechanism.** At a certain level of negative deposit rates it becomes more profitable for economic agents to hold physical cash. Estimates of this threshold range from 0.2–1 percent costs of storing cash<sup>3</sup> to 2–3 percent convenience fees associated with the use of credit and debit cards<sup>4</sup>. So far evidence shows that the cash ratios in the countries that introduced negative rates were not unusually high, and the analysis indicates that negative rates of around 2 percent are possible without causing large scale shift to cash. Additionally, central banks can recourse to a number of measures to make cash operations less attractive.

**4. Negative deposit rates could hurt bank profitability.** The extent to which profitability is affected will depend on the degree to which the banks' funding costs fall as well as the elasticity of credit demand to potential cuts in lending rates. Additionally, there is a risk that banks reluctant to impose negative interest rates on depositors will instead raise lending rates in order to maintain sufficient margins. While the current experience indeed shows that banks are

<sup>1</sup> Prepared by Anna Shabunina.

<sup>2</sup> Global Financial Stability Report, International Monetary Fund, April 2016, Washington, DC

<sup>3</sup> Countries that have large denomination bills, like Switzerland, are likely to have lower costs.

<sup>4</sup> Jackson, H. "The international experience with negative policy rates", Staff Discussion Paper 2015-13, Bank of Canada, 2015.

not charging negative deposit rates to individuals,<sup>5</sup> average lending rates have declined and credit standards were relaxed following the introduction of negative rates.

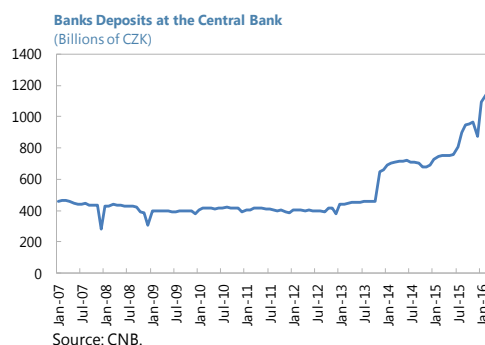
**5. Further monetary easing poses risks for financial stability.** Aggressive search for yield by investors could lead to asset price bubbles and loose credit standards. Insurance companies and pension funds are particularly hurt by the decline in long-term interest rates, and might move to more risky assets with possible negative consequences for long-term financial stability.

**6. Recent international experience with negative policy rates has been broadly positive.**<sup>6</sup> They help deliver additional monetary stimulus and easier financial conditions, thus supporting demand and price stability. So far there is no evidence of cash hoarding or money market impaired functioning in any of the economies with negative policy rates. The transmission mechanism seems to work but the pass-through to the real economy has been partial and smaller than a symmetric interest rate cut at positive levels. And while lending rates declined in most countries, there was only little impact on inflation expectations.

**7. Negative interest rates could discourage capital inflows and reduce appreciation pressures.** The experience of Denmark suggests that negative interest rates could be very effective against speculative inflows. In the aftermath of the SNB exit, Denmark witnessed a sharp increase in demand for the kroner prompting heavy FX intervention. The central bank cut the deposit rate from just below zero to –0.75 percent. The inflow of funds ceased and over the course of 2015, Denmark sold part of the foreign exchange it had acquired back into the market.

**8. The negative impact on bank profitability could be limited with targeting a marginal rate.**

Elevated levels of bank deposits at the Czech National Bank mean that the adverse impact on bank profitability can be significant. Preliminary estimations suggest that in the case of a 40 basis point interest rate cut (to the level of the current ECB deposit rate) the annual profits of the Czech banks could drop by around 6 percent. To limit the negative impact on bank profitability, negative rates could be applied in tiers, thus excluding certain parts of deposits and targeting the marginal rate on excess reserves.<sup>7</sup>



<sup>5</sup> There are examples of negative deposit rates introduced for corporate clients in Switzerland and Denmark.

<sup>6</sup> See <https://blog-imfdirect.imf.org/2016/04/10/the-broader-view-the-positive-effects-of-negative-nominal-interest-rates/>

<sup>7</sup> In Denmark, the adverse impact on bank profits was mitigated by actively varying the cap on the deposit facility. Each bank can deposit a certain maximum amount at the current account to limit scope for speculation against the peg. This implies that two tiers of interest rates are applied on bank deposits. The Danish example provides little evidence of severe adverse effects on lending rates to the real economy from moving central bank policy rates further into negative territory (at least up to –0.75 percent).

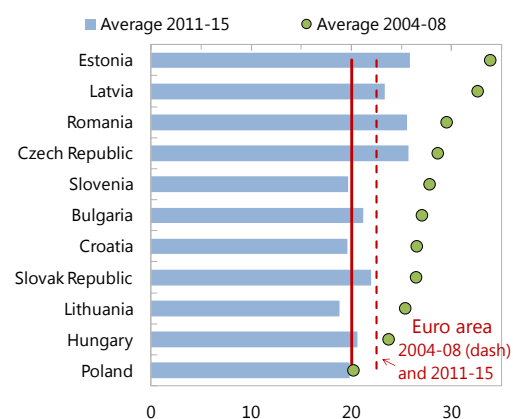
## Annex VI. Investment Trends in a European Perspective<sup>1</sup>

### Introduction

#### 1. Investment rates of Central and Eastern European countries of the European Union (CEE EU) have been higher than in the euro area since the turn of the century. This is

explained by the relative scarcity of capital and associated higher return on investment in CEE EU. In the Czech Republic, the national investment as a share of GDP (investment rate) has been among the highest in CEE EU and least disrupted by the global financial crisis (text figure).<sup>2</sup>

**CEE EU: Investment Rates, 2004–15**  
(Percent of GDP)



Sources: WEO and Fund staff calculations.

Note: Euro area average is unweighted and excludes countries that had programs with the EU and IMF.

#### 2. In the aftermath of the global financial crisis, investment rates fell across the EU, with steeper declines in CEE EU (text figure). On the

one hand, this reflected the “sudden stop” of capital inflows to CEE EU.<sup>3</sup> On the other hand, the investment crunch was exacerbated by the loss of income and higher risk premiums that lingered long after the 2009 recessions and made legacy debt burdens unsustainable for many borrowers.

The resulting push for deleveraging led to further declines in investment and higher saving rates. Despite the subsequent gradual recovery and recent notable easing of financial conditions, private investment rates remain below pre-crisis levels across the EU.

#### 3. The persistent weakness of investment rates raises the question of whether they have overshoot the equilibrium response to changing fundamentals. The optimality of

investment rates across EU CEE can be judged against the predictions of theoretical growth models—either based on regression analysis informed by first-order optimality conditions or calibration of the fundamental parameters of the utility and production functions. The analysis presented below takes the latter approach, using as benchmark the Ramsey-Cass-Koopmans neo-classical growth model (Box 1). This is an adaptation of the Miranda (1995) analysis of the optimality of Japan’s postwar saving behavior to the question of optimality of pre- and post-

<sup>1</sup> Prepared by Plamen Iossifov.

<sup>2</sup> Investment rates in CEE EU began to accelerate in the run-up to EU accession. This occurred later in countries that were part of the second wave of EU accession in 2007 (Bulgaria and Romania). To ensure comparability of the average, pre-crisis investment rates across all CEE EU, the sample starts in 2004.

<sup>3</sup> The pre-crisis investment booms, generally, far outpaced the mobilization of national savings, resulting in large current account deficits, largely financed by euro area banks through local subsidiaries and direct cross-border lending.

crisis investment rates in the EU.<sup>4</sup> The main advantage of the calibration approach is that it provides a benchmark that is invariant with respect to countries' initial conditions (i.e., it is not sample-dependent as is the case with the regression approach). Its main disadvantage is that analytic tractability requires an abstraction from important characteristics of the economy.

### Analytical framework

**4. The neo-classical “golden-rule” of capital accumulation can be seen as a lower bound for investment rates during CEE EU’s convergence to euro area income levels.** In the Ramsey-Cass-Koopmans neo-classical growth model, an economy that satisfies the optimality and transversality conditions converges to a steady-state equilibrium, in which consumption is maximized and the saving/investment rate is constant and follows the “golden-rule” of capital accumulation (Box 1). Under typical calibration of the parameters, the model implies that the investment rate would fall monotonically as the economy converges to its steady state.<sup>5</sup> As such, the closed-economy, “golden rule” saving/investment can be interpreted as a lower bound for the investment rate along the CEE EU’s convergence to euro area income levels. The interpretation of the “golden rule” as a lower bound of the optimal investment rate also holds in the case of a similar open economy, for which the world interest rate is lower or equal to the value in the steady state of the closed economy.

**5. In our analysis, the “golden-rule” of capital accumulation is calculated for most EU countries over two, nine-year periods (2000–08 and 2011–19).** The average pre- and post-crisis investment rates are estimated over 2004–08 and 2011–15, respectively, and are compared to the “golden-rule”, long-run benchmarks.

**6. The model is calibrated for most EU countries using data and forecasts for 2000–08 and 2011–19 from Eurostat and the European Commission (EC)’s AMECO database.**

Countries excluded from the sample include euro zone members that had programs with the EU and IMF and Latvia.<sup>6</sup> The parameters of the model are estimated with country-specific data for the capital share of output, productivity and population growth, and the depreciation rate. The unobserved rate of time preference is assumed to be the same across all CEE EU countries and, separately, across all euro area countries, and is kept constant in 2000–08 and 2011–19:

- The capital share of output is estimated as one minus the labor share of output. The latter is calculated from national accounts data through 2014 and is assumed to gradually converge to its 2000–15 average value by 2019. In an attempt to correct the well-known problem of

<sup>4</sup> Miranda, Kenneth, 1995, “Does Japan Save too Much?”, in Ulrich Baumgartner and Guy Meredith, eds., “Savings Behavior and the Asset Price “Bubble” in Japan”, IMF Occasional Paper, 124, (Washington: IMF).

<sup>5</sup> More generally, the investment rate “...can follow a complicated path that includes rising and falling segments as the economy develops and approaches the steady state.” (See Barro, Robert and Sala-i-Martin, Xavier, 2004, *Economic Growth*, Second Edition, (Cambridge, MA: MIT Press), p. 106).

<sup>6</sup> In the case of Latvia, the AMECO estimates of capital stock translate in unrealistically high depreciation rates of over 20 percent, signaling lack of consistency between the source data and the assumptions used in AMECO.



misclassification of labor income as profits by unincorporated entrepreneurs, the economy-wide compensation of employees is adjusted upwards by a portion of self-employment income. The adjustment is carried out in such a way that the share of labor compensation in the value added generated by the household sector (and non-profit institutions serving households) is made equal to the observed ratio in the rest of the economy. In the case of the Czech Republic, the adjustment increases the average labor share in gross value added over 2000–2015 from 44 percent to 53 percent. For the region as a whole, the corresponding correction is by 10 percentage points to around 56.5 percent. Similar adjustments to the raw data are also made in the Penn World Tables.

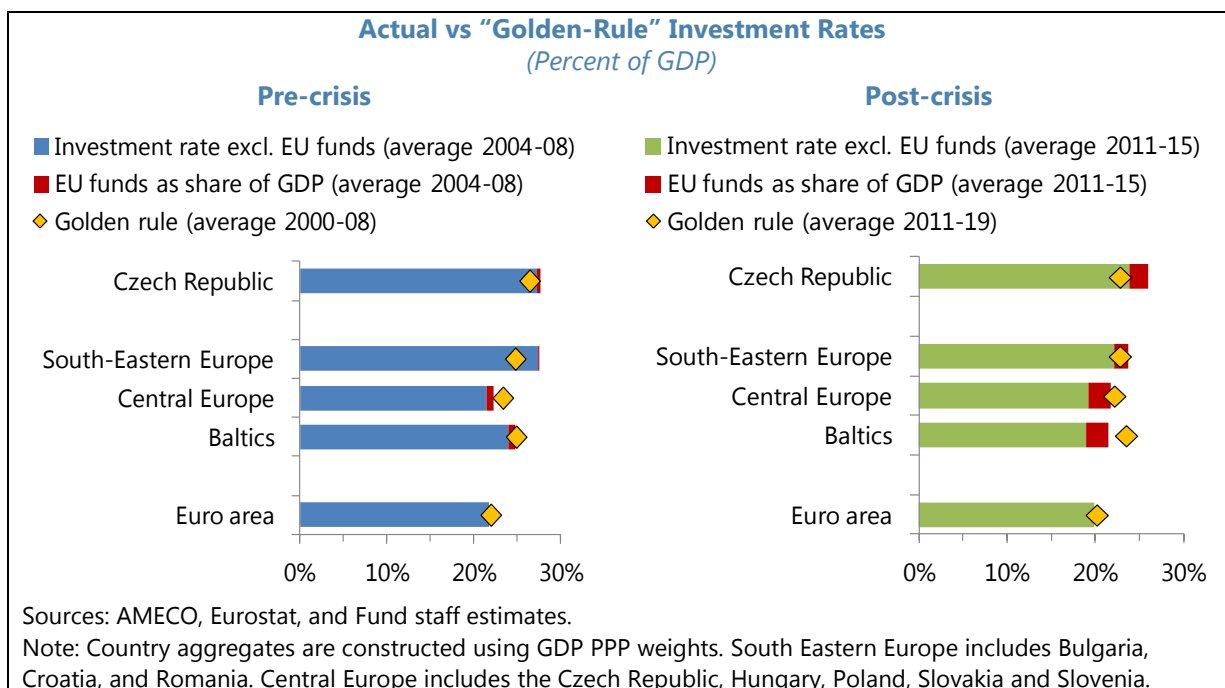
- Estimates of the capital stocks, depreciation rates, and total factor productivity (TFP) are taken from the EC's AMECO database. In the AMECO database, capital stocks are calculated using the perpetual inventory method, with investment and depreciation data from national accounts and assuming an initial capital-to-output ratio in 1995 of 3 for the Czech Republic and 2 for all other CEE EU countries. The depreciation rate is assumed to remain at its last observed value (2014) over the period 2015–2019. TFP is calculated as a residual, after subtracting the contributions to GDP growth of capital and labor. In the EC methodology, these contributions are calculated assuming uniform labor share of output of 0.65 across countries. In calibrating the Ramsey-Cass-Koopmans growth model, the multifactor TFP growth is converted into a solely labor-augmenting one by dividing the AMECO data series by the uniform labor share of output.
- The rate of time preference is assumed to be the same across all CEE EU countries and, separately, across all euro area countries, and is kept constant throughout the sample period. Its values for CEE EU and euro area countries are imputed from Equation 6 in Box 1, as the values that make actual investment rate equal to the “golden rule” on average over 2000–19. The resulting country-specific estimates are then used to calculate averages for the two groups of countries: 5 percent for euro area countries and 9 percent for CEE EU. This imputation is more plausible for euro area economies, which are arguably near their steady-state growth paths. At the same time, the higher rate of return on capital in CEE EU implies that the rate of time preference across CEE EU should be higher than in the euro area (see Equation 3 in Box 1), which is consistent with our estimates.

## Main Findings

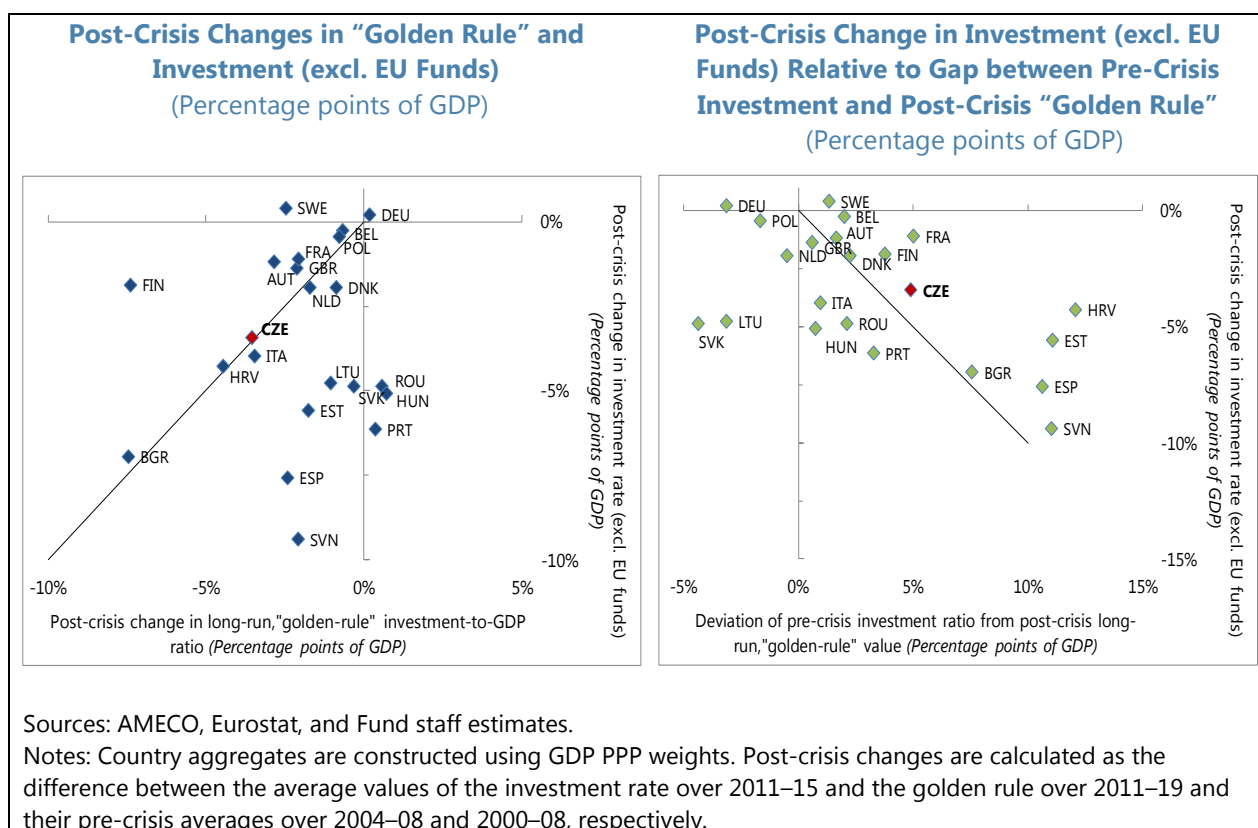
### 7. **Results from the analysis suggest that the average investment rate in the Czech Republic was higher than its closed-economy, steady-state value both pre- and post-crisis.**

The most likely explanation is that the Czech economy is converging from above to its steady-state growth path. Both in the pre- and post-crisis years, the excess investment over the “golden rule” can be, to a large extent, explained by the utilization of EU Structural and Cohesion funds (figure below). In the rest of CEE EU, pre-crisis investment rates exceeded by a wider margin their optimality benchmarks in South-Eastern Europe and were broadly in line across the Baltics and the other Central European countries (left panel of figure below). The higher than optimal

investment rates in South-Eastern Europe are better explained by overinvestment in residential construction than by convergence from above to their steady-state values. Such an interpretation is supported by the post-crisis slump in residential housing prices across the region. At the same time, there are signs of an investment crunch in the Baltics and the rest of Central Europe in the post-crisis years (right panel of figure below). The rump-up in utilization of EU Structural and Cohesion funds over the last two years has helped alleviate the credit crunch.



**8. In the Czech Republic, the post-crisis fall in investment net of EU funds matched closely the decline in the “golden rule”** (left panel of figure below). This is another way of illustrating the finding that the lower post-crisis investment rate in the Czech Republic appears optimal in response to the deterioration in fundamentals—lower TFP growth and to a lesser extent worsening demographics. For the rest of CEE EU, results show that in the vast majority of countries the post-crisis decline in investment rates occurred alongside a downward correction in the “golden-rule” benchmarks (left panel of figure below). The latter has been driven by lower TFP growth and worsening demographics, as in the case of the Czech Republic. The investment rates in Croatia and Estonia have exceeded their optimal values in both pre- and post-crisis years, despite the recorded decline since 2008. On the other hand, Slovenia has managed to close the gap between actual and optimal investment rates significantly in the crisis aftermath. Lithuania and Slovakia, and to a smaller extent Hungary and Slovakia are experiencing sub-optimal investment rates. In these countries, the post-crisis decline of investment (net of the part exogenously financed by EU funds) has been larger than the concurrent deterioration in the “golden-rule” benchmark, resulting in a fall of the overall investment rate bigger than the legacy gap between pre-crisis average investment rate and the “golden rule” in the crisis aftermath (figure below).



**9. Returning to the path of rapid convergence to the euro area calls for policies to reverse the slump in TFP and demographics and address institutional weaknesses.** In countries that saw declines in steady-state investment rates—e.g., Bulgaria, Croatia, and the Czech Republic—policies should focus on raising TFP and human capital. In countries where investment rate declines were much larger than the deterioration in the “golden-rule” benchmarks—e.g., Estonia, Hungary, Lithuania, Romania, Slovakia, and Slovenia—policy priorities include overcoming credit constraints and institutional impediments that discourage private investment. Poland is a sole example of a country that has stayed close to its steady-state equilibrium throughout the whole sample period.

### Box 1. Ramsey-Cass-Koopmans Neo-Classical Growth Model

In the Ramsey-Cass-Koopmans model without population growth, an infinitely-lived *representative household* maximizes intertemporal utility over consumption ( $C$ ) and leisure ( $1 - L$ ), subject to budget and capital accumulation constraints, as well as positive initial capital allocation endowment:

$$\max \sum_{t=0}^{\infty} \left( \frac{1}{1+p} \right)^t U(C_t, L_t), \text{ s.t.}$$

$$C_t + I_t \leq R_t K_t + W_t L_t$$

$$K_{t+1} = (1 - \delta)K_t + I_t$$

$$L = 1, K_0 > 0, \text{ where}$$

$p$  – rate of time preference;  $I$  – investment;  $\delta$  – depreciation rate.

Households own capital, which they lend to firms for a rental rate ( $R$ ), and are endowed with one unit of labor each period that they supply inelastically to production firms, in return for a wage ( $W$ ). In this case, the utility function collapses to  $U(C_t)$ .

The first-order optimality conditions for the representative household are:

$$U'(C_t) = \lambda_t$$

$$\lambda_t = \frac{1}{1+p} \lambda_{t+1} (1 + R_t - \delta)$$

$\lambda_t$  – Lagrange multiplier for the household's optimization problem. It represents the shadow value of one extra unit of wealth (i.e., capital).

Combining the two F.O.C.s and assuming a log utility functional form yields:

$$U'(C_t) = \frac{1}{1+p} U'(C_{t+1}) (1 + R_t - \delta)$$

$$\frac{C_{t+1}}{C_t} = \frac{(1+R_t-\delta)}{1+p} \quad (1)$$

A **representative firm** rents capital ( $K$ ) and labor ( $L$ ) from the household on perfectly competitive markets and maximizes profit, subject to a production function:

$$\max Y_t - R_t K_t - W_t L_t, \text{ s.t.}$$

$$Y_t = K_t^\alpha [(1+x)^t L_t]^{1-\alpha}, \text{ where}$$

$\alpha$  – capital share of output;  $x$  – growth rate of labor-augmenting technological progress.

The first order conditions for the representative firm are:

$$MP_L = (1 - \alpha) K_t^\alpha ((1+x)^t L_t)^{-\alpha} = (1 - \alpha) \frac{Y_t}{L_t} = W_t$$

$$MP_K = \alpha K_t^{\alpha-1} [((1+x)^t L_t)^{1-\alpha}] = \alpha \frac{Y_t}{K_t} = R_t, \text{ where} \quad (2)$$

$MP_K$  – marginal product of capital;

$MP_L$  – marginal product of labor;

(continued on next page)

### Box 1. Ramsey-Cass-Koopmans Neo-Classical Growth Model (concluded)

In **market equilibrium**, the economy-wide resource constraint requires aggregate output ( $Y$ ) to equal demand ( $Y = C + I$ ). The resource constraint also holds for the representative household. The transversality condition ensures that the capital stock, when valued in terms of discounted utility, goes to zero as time goes to infinity:

$$\lim_{t \rightarrow \infty} \frac{1}{(1+p)^t} \lambda_t K_{t+1} = 0$$

A **balanced growth path** (or steady state) in this model is defined as a solution, in which all variables (except labor) grow at the same fixed rate. It can be shown that in the unique steady-state of this model, the balanced growth allocations  $\{C_t, K_t, I_t, Y_t\}$  each grow at the rate of labor-augmenting technological progress  $(1+x)$ .

For consumption to grow at a rate of  $(1+x)$ , equation (1) requires:

$$(1+x) = \frac{(1+R-\delta)}{1+p}$$

$$R \cong p + \delta + x, \text{ for small } p \text{ and } x \quad (3)$$

For capital to grow at a rate of  $(1+x)$ , the capital accumulation constraint and equation (2) require that:

$$\frac{K_{t+1}}{K_t} = \frac{(1-\delta)K_t + I_t}{K_t} = 1+x$$

$$\frac{I_t}{K_t} = x + \delta \quad (4)$$

From the firm's maximization problem we have  $\alpha \frac{Y_t}{K_t} = R_t$  which can be rewritten as:

$$\frac{K_t}{Y_t} = \frac{\alpha}{R_t} = \frac{\alpha}{p + \delta + x}$$

**The "golden rule" of capital accumulation** is obtained by substituting the above expression in equation (4):

$$\frac{I}{Y} = \frac{\alpha(\delta+x)}{p+\delta+x} \quad (5)$$

With population growth ( $n$ ) and assuming that the total utility of each generation is normalized to be the same irrespective of the number of economic agents in each generation,<sup>1</sup> all variables grow at the rate of  $(1+x)$  along the balanced growth path, when expressed *in per capita terms*. Therefore, for small values of  $x$  and  $n$  the balanced growth allocations  $\{C_t, K_t, I_t, Y_t\}$  each grow at the rate of  $(1+x+n)$ .

**The "golden rule" of capital accumulation** in a model with population growth then takes the form:

$$\frac{I}{Y} = \frac{\alpha(\delta+x+n)}{p+\delta+x+n} \quad (6)$$

Source: Authors' derivation of the Ramsey-Cass-Koopmans model in discrete time and with a log-linear utility function.

Note: <sup>1</sup> This restriction is required to replicate the "golden-rule" formula in Miranda (1995). The continuous-time version of the model in Barro, Robert and Sala-i-Martin, Xavier, 2004, *Economic Growth*, Second Ed., (Cambridge: MIT Press) presents the derivation in the more general case.

## Annex VII. Debt Sustainability Analysis

Public debt declined to 41 percent of GDP in 2015 despite the small headline deficit, as the authorities used available treasury liquidity to repay debt. Provided the fiscal targets specified in the government's convergence program are met, public debt is projected to stay on a downward path, reaching 36 percent of GDP over the medium-term on the back of the economic recovery and strong revenue collection. Public debt and gross financing needs are relatively immune to a variety of isolated shocks, including a shock to real GDP growth.

### Baseline and Realism of Projections

**The baseline scenario assumes a slight relaxation of the structural deficit from 0.3 percent of GDP in 2015 to 0.6 percent in 2016, with a subsequent decline to 0.5 percent of GDP over the medium term.** The 2016 structural relaxation is mostly due to the switch in the funding of capital expenditures from EU funds to domestic sources at the start of the new program period for EU funds. Projections assume sustained growth underpinned by healthy domestic demand, with real GDP growing close to potential at 2.2 percent over the medium-term. The inflation rate is projected to gradually move toward the 2 percent target, reaching it in 2017.

**The outlook for the fiscal path is benign under the baseline.** Staff projects that the debt-to-GDP ratio will decline steadily from 41.1 percent in 2015 to 36.2 percent in 2021. The ratio would also decline in 2016 despite the expansionary fiscal stance, as nominal growth of GDP is expected to exceed the contribution of the headline deficit and interest payments to the debt burden. Gross financing needs are projected to stay below 7 percent of GDP throughout the projection period.

### Shock and Stress Tests

**A shock to real GDP growth is the main risk over the short term.** Assuming that a shock to real GDP growth occurs with a consequent impact on the primary balance, inflation, and the real interest rate, public debt would rise to 48 percent of GDP and gross financing needs would increase to 11 percent of GDP by 2018. Thereafter, debt would decline to 47 percent of GDP and gross financing needs would drop to 8 percent of GDP by 2021.

# Czech Republic: Public Sector Debt Sustainability Analysis (DSA)—Baseline Scenario

(In percent of GDP unless otherwise indicated)

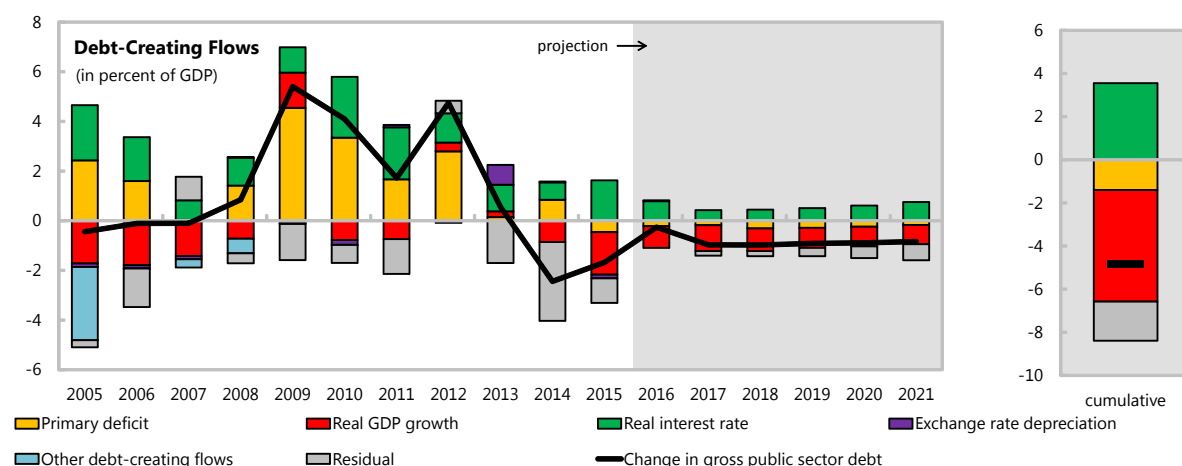
## Debt, Economic and Market Indicators <sup>1/</sup>

	Actual			Projections							As of April 01, 2016		
	2005-2013 <sup>2/</sup>	2014	2015	2016	2017	2018	2019	2020	2021				
Nominal gross public debt	34.9	42.7	41.1	40.8	39.8	38.9	37.9	37.1	36.2	Sovereign Spreads			
Public gross financing needs	6.8	8.5	5.9	6.2	5.5	6.2	6.1	5.9	6.4	EMBIG (bp) 3/ 29			
										5Y CDS (bp) 43			
Real GDP growth (in percent)	2.2	2.0	4.2	2.2	2.7	2.4	2.2	2.2	2.2	Ratings	Foreign	Local	
Inflation (GDP deflator, in percent)	1.1	2.5	0.7	0.6	1.8	1.9	2.0	2.0	2.0	Moody's	A1	A1	
Nominal GDP growth (in percent)	3.3	4.5	5.0	2.8	4.5	4.3	4.2	4.2	4.2	S&P's	AA-	AA	
Effective interest rate (in percent) <sup>4/</sup>	3.8	3.0	2.7	2.6	2.9	3.1	3.4	3.8	4.2	Fitch	A+	AA-	

Moody's	A1	A1
S&P's	AA-	AA
Fitch	A+	AA-

## Contribution to Changes in Public Debt

	Actual			Projections							cumulative	debt-stabilizing primary balance <sup>9/</sup>
	2005-2013	2014	2015	2016	2017	2018	2019	2020	2021			
Change in gross public sector debt	1.9	-2.4	-1.7	-0.3	-1.0	-1.0	-0.9	-0.9	-0.8	-4.8		
Identified debt-creating flows	2.5	0.7	-0.7	-0.3	-0.8	-0.8	-0.6	-0.4	-0.2	-3.0		
Primary deficit	2.0	0.8	-0.5	-0.2	-0.2	-0.3	-0.3	-0.2	-0.2	-1.4	0.0	
Primary (noninterest) revenue and grants	38.9	40.6	42.0	40.4	40.4	40.6	40.5	40.4	40.3	242.9		
Primary (noninterest) expenditure	40.9	41.4	41.5	40.2	40.3	40.3	40.3	40.2	40.2	241.4		
Automatic debt dynamics <sup>5/</sup>	1.0	-0.1	-0.2	-0.1	-0.6	-0.5	-0.3	-0.2	0.0	-1.6		
Interest rate/growth differential <sup>6/</sup>	1.0	-0.2	-0.1	-0.1	-0.6	-0.5	-0.3	-0.2	0.0	-1.6		
Of which: real interest rate	1.5	0.7	1.6	0.8	0.4	0.4	0.5	0.6	0.8	3.5		
Of which: real GDP growth	-0.6	-0.9	-1.7	-0.9	-1.0	-0.9	-0.8	-0.8	-0.8	-5.2		
Exchange rate depreciation <sup>7/</sup>	0.0	0.0	-0.2	...	...	...	...	...	...	...		
Other identified debt-creating flows	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
General government net privatization pr	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Contingent liabilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Please specify (2) (e.g., ESM and Euroare	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Residual, including asset changes <sup>8/</sup>	-0.7	-3.2	-1.0	0.0	-0.2	-0.2	-0.3	-0.5	-0.6	-1.8		



Source: IMF staff.

1/ Public sector is defined as general government.

2/ Based on available data.

3/ Long-term bond spread over German bonds.

4/ Defined as interest payments divided by debt stock (excluding guarantees) at the end of previous year.

5/ Derived as  $[(r - \pi(1+g) - g + ae(1+r))/(1+g+\pi+g\pi)]$  times previous period debt ratio, with  $r$  = interest rate;  $\pi$  = growth rate of GDP deflator;  $g$  = real GDP growth rate;  $a$  = share of foreign-currency denominated debt; and  $e$  = nominal exchange rate depreciation (measured by increase in local currency value of U.S. dollar).

6/ The real interest rate contribution is derived from the numerator in footnote 5 as  $r - \pi(1+g)$  and the real growth contribution as  $-g$ .

7/ The exchange rate contribution is derived from the numerator in footnote 5 as  $ae(1+r)$ .

8/ Includes asset changes and interest revenues (if any). For projections, includes exchange rate changes during the projection period.

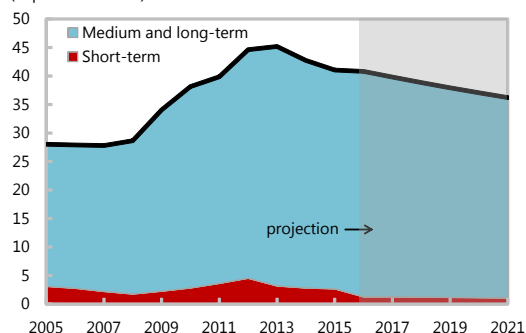
9/ Assumes that key variables (real GDP growth, real interest rate, and other identified debt-creating flows) remain at the level of the last projection year.

## Czech Republic: Public DSA—Composition of Public Debt and Alternative Scenarios

### Composition of Public Debt

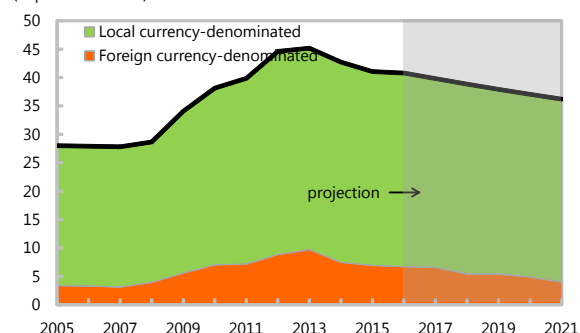
#### By Maturity

(in percent of GDP)



#### By Currency

(in percent of GDP)

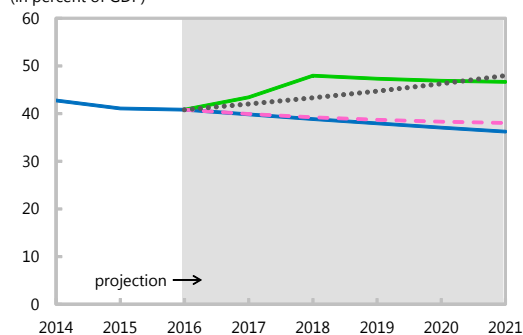


### Alternative Scenarios

Baseline      Historical      Constant Primary Balance  
Real GDP growth

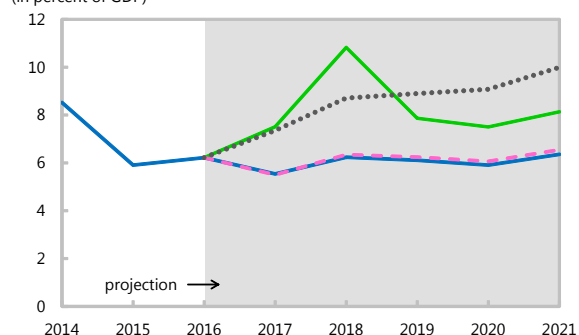
#### Gross Nominal Public Debt

(in percent of GDP)



#### Public Gross Financing Needs

(in percent of GDP)



### Underlying Assumptions

(in percent)

#### Baseline Scenario

	2016	2017	2018	2019	2020	2021
Real GDP growth	2.2	2.7	2.4	2.2	2.2	2.2
Inflation	0.6	1.8	1.9	2.0	2.0	2.0
Primary Balance	0.2	0.2	0.3	0.3	0.2	0.2
Effective interest rate	2.6	2.9	3.1	3.4	3.8	4.2

#### Constant Primary Balance Scenario

	2016	2017	2018	2019	2020	2021
Real GDP growth	2.2	2.7	2.4	2.2	2.2	2.2
Inflation	0.6	1.8	1.9	2.0	2.0	2.0
Primary Balance	0.2	0.2	0.2	0.2	0.2	0.2
Effective interest rate	2.6	2.9	3.1	3.4	3.7	4.1

#### Real GDP growth

	2016	2017	2018	2019	2020	2021
Real GDP growth	2.2	-0.7	-1.0	2.2	2.2	2.2
Inflation	0.6	0.9	1.0	2.0	2.0	2.0
Primary Balance	0.2	-1.5	-3.2	0.3	0.2	0.2
Effective interest rate	2.6	2.9	3.1	3.5	3.7	4.1

#### Historical Scenario

	2016	2017	2018	2019	2020	2021
Real GDP growth	2.2	1.9	1.9	1.9	1.9	1.9
Inflation	0.6	1.8	1.9	2.0	2.0	2.0
Primary Balance	0.2	-1.6	-1.6	-1.6	-1.6	-1.6
Effective interest rate	2.6	2.9	3.1	3.5	3.8	4.3

Source: IMF staff.





INTERNATIONAL MONETARY FUND

CZECH REPUBLIC



## Appendix I. Draft Press Release

Press Release No. 16/xx  
FOR IMMEDIATE RELEASE  
[Month, dd, yyyy]

International Monetary Fund  
700 19<sup>th</sup> Street, NW  
Washington, D. C. 20431 USA

### **IMF Executive Board Concludes 2016 Article IV Consultation with the Czech Republic**

On June, 24, 2016, the Executive Board of the International Monetary Fund (IMF) concluded the Article IV consultation<sup>1</sup> with the Czech Republic.

The Czech Republic has been growing fast on account of a favorable external environment, high EU funds utilization, and accommodative macroeconomic policies. Strong efforts to absorb EU funds supported a sharp pickup in investment, while higher employment and wages, and improving consumer sentiment benefitted private consumption. Unemployment has fallen significantly to the lowest level in the EU. The current account surplus widened in 2015, on account of an improvement in the income account mainly due to stronger EU transfers. Headline inflation remained subdued in 2015, as positive domestic developments were offset by external disinflationary factors.

Fiscal performance was better than expected in 2015, on account of robust tax revenues and spending discipline. But, the main driver was a significant shift in the structure of funding of public investment during the transition between EU fund cycles. To maximize EU fund absorption, government units shifted its focus to EU-funded investments, postponing domestically-financed investments.

Monetary policy has remained accommodative. In November 2013, constrained by the zero lower bound, the Czech National Bank decided to use the exchange rate as an additional inflation targeting instrument to fight deflationary pressures. Appreciation pressures started building up in

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<sup>1</sup> Under Article IV of the IMF's Articles of Agreement, the IMF holds bilateral discussions with members, usually every year. A staff team visits the country, collects economic and financial information, and discusses with officials the country's economic developments and policies. On return to headquarters, the staff prepares a report, which forms the basis for discussion by the Executive Board.

mid-2015 prompting the CNB to intervene and defend the floor. In February 2016, the CNB Board extended its commitment to the floor until end-2016.

The banking sector is stable and credit growth remains robust. Czech banks have high capital buffers and profitability, strong asset quality, and low non-performing loans. Credit growth has been driven by corporate sector demand for long-term investment loans and household demand for mortgages and consumer credit. Low mortgage rates have boosted lending, putting upward pressure on prices. Moreover, some deterioration in the affordability-of-housing indicators has taken place recently.

Economic activity is expected to decelerate in 2016. Higher disposable income and employment will boost private consumption, but growth will be affected by the slow start of investment projects financed by EU funds. As base effects from the oil price shock fade and domestic demand pressures build-up, inflation is expected to reach the 2-percent target in mid-2017. Over the medium-term, output growth is set to stabilize at around slightly above 2 percent in line with economy's potential.

## **Executive Board Assessment<sup>2</sup>**

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<sup>2</sup> At the conclusion of the discussion, the Managing Director, as Chairman of the Board, summarizes the views of Executive Directors, and this summary is transmitted to the country's authorities. An explanation of any qualifiers used in summings up can be found here: <http://www.imf.org/external/np/sec/misc/qualifiers.htm>.