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Romania: Selected Issues Paper

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ROMANIA

Selected Issues

Prepared by Romania team

Approved by European Department

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I. POTENTIAL GROWTH AND THE OUTPUT GAP[1]

1.   **Measuring potential output involves a high degree of uncertainty, especially in economies in the midst of transition such as Romania.** The output gap serves as an important indicator of a sustainable, non-inflationary growth path and allows assessing macroeconomic policies against it. Potential output and the output gap are unobserved variables and are thus estimated with considerable uncertainty. This uncertainty is especially large in Romania, a country in the midst of transition. The Romanian economy underwent substantial structural changes since the beginning of transition. Political and economic reforms spurred an uptake in economic growth, fueled by foreign investment and technology transfer. At the same time, the declining manufacturing sector pushed large numbers of workers out of the labor force, thus depressing employment rates.

2.   **Economic activity boomed in Romania in the run-up to the global crisis but contracted sharply thereafter.** Decompositions suggest that Romania's growth acceleration since 2000 was fueled mainly by improvements in TFP and, in the run-up to the global crisis, increasingly by a foreign financed credit and investment boom.[2] With the onset of the crisis, the boom came to a halt and unemployment increased, accompanied by a sharp contraction in TFP. Going forward, staff expects growth to be driven by a recovery of domestic investment, fueled by inflows of EU funds, and

Romania: Growth Decomposition 2000–2017

Sources: WEO; Haver; and IMF staff calculations.
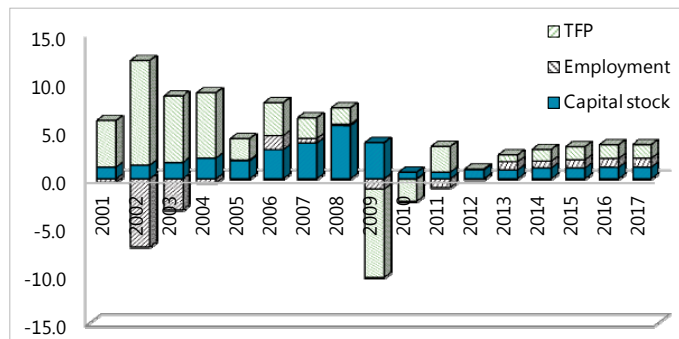
a resumption of productivity growth. However, medium term growth projections have been revised down from 4 percent to 3.5 percent due to delays in structural reforms and limited capacity to absorb EU funds.

3.   **This note uses a variety of techniques to determine the extent to which Romania's growth potential was affected by the crisis and how fast it can be expected to recover.** Based on a sample of 88 banking crises over the past four decades, the October 2009 World Economic Outlook concludes that output typically does not return to its old trend path following a financial crisis. The reason is that balance sheet effects and significant declines in production factors leave lasting scars: first, falling employment rates translate into lower labor force participation or lasting increases in structural unemployment

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[1] Prepared by Christian Saborowski.

[2] The growth decomposition is based on the production function approach discussed below.

through hysteresis effects (Ball, 2009); second, limited access to finance hampers investment needed to maintain and upgrade the existing capital stock; and third, business failures and skill depreciation among the unemployed render obsolete parts of productive capacity.[3] This note uses data for the period 2000:Q1–2017:Q4 to estimate potential output and the output gap based on three techniques, a univariate Hodrick-Prescott (HP) filter, a production function (PF) approach and the multivariate (MV) filter described in Benes et al (2010).

4.   **The multivariate filter proposed in Benes et al (2010) has important advantages over more conventional approaches and is thus chosen as a benchmark model.** The HP filter and the PF approach are perhaps the most popular techniques used to estimate potential output and the output gap, partly due to their simplicity. However, estimates of potential that are based on HP filtering—either of output itself or of its production factors—have known deficiencies related to end-point estimates. Moreover, these filters ignore relevant information from structural economic relationships. For instance, a period in which inflation is low and stable would likely be one in which output is close to potential, while falling inflation rates suggest a negative output gap. Estimates of trend GDP that ignore the decline in inflation may thus understate potential. The MV filter proposed in Benes et al (2010) could serve to avoid such pitfalls.[4] It uses Bayesian techniques to simultaneously estimate key macroeconomic relationships. The output gap is inferred as a common factor that drives variables sensitive to the cycle, such as inflation, unemployment and capacity utilization.

5.   **Both the HP filter and the PF approach suggest that the global crisis resulted in a large drop in potential growth.** The HP filter and the PF approach provide similar estimates of potential output, suggesting that it grew at a pace of around 5–6 percent in pre-crisis years in spite of a shrinking labor force. The initially negative output gap turned positive in 2006, reaching a maximum of about 6–7 percent of potential in 2008. When the crisis hit, actual output dropped below potential with a low point of -3 to -4 percent of in 2010. Going

Potential GDP Levels
(BN 2005 LEI, SA)

Sources: WEO; Haver; and IMF staff estimates.

forward, potential growth is projected to recover only gradually and is outpaced by projected

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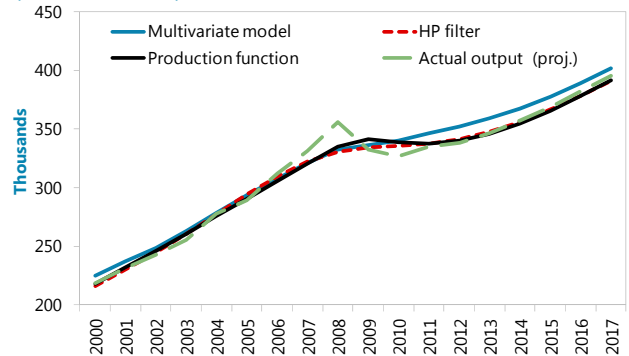
[3] In standard production function approaches, the latter effect would remain unexplained and thus be reflected in total factor productivity (TFP).

[4]Indeed, for much of the period under consideration, the Romanian central bank was successfully fighting inflation, suggesting that the link between inflation and the output gap should be taken into account when estimating potential growth. However, this link is likely to be less stable in the context of a transition economy in which inflation is volatile and the economy experiences major structural transformations.

growth for some years as the Romanian economy bounces back from the crisis and inflows of EU funds boost investment. Both techniques project the output gap to close around 2014/15 and medium term potential growth to be around 3.5 percent.

6.   **The MV filter predicts a larger output gap in the medium term.** The estimates imply a smaller drop in potential growth on impact of the crisis than suggested by the HP filter and the PF approach. Likewise, the output gap is larger and more persistent throughout the medium term. After reaching a low point of -4 percent of potential in 2010, it shrinks only marginally until 2012 and remains negative throughout our projection horizon. Compared to previous estimates, however, these estimates suggest a somewhat less persistent output gap in the medium term. Estimates presented as part the fifth review of the current SBA predicted an output gap of almost 5 percent of potential for 2012 and projected it to remain negative throughout the medium term, reaching -2.5 percent of potential in 2017. The smaller output gap under current estimates also has implications for the assessment of the fiscal policy stance. In particular, the MV filter predicts a somewhat smaller cyclically adjusted fiscal retrenchment following the crisis. The structural deficit is projected to stabilize around 1 percent in the medium term.

Potential GDP Growth
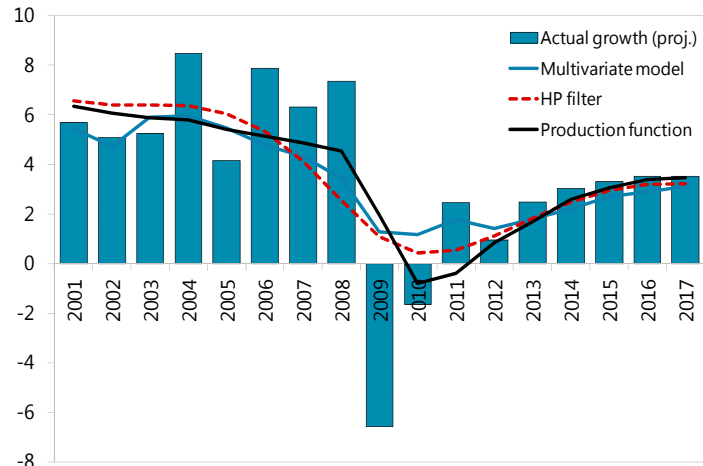
Sources: WEO; Haver; and IMF staff estimates.

Output Gap
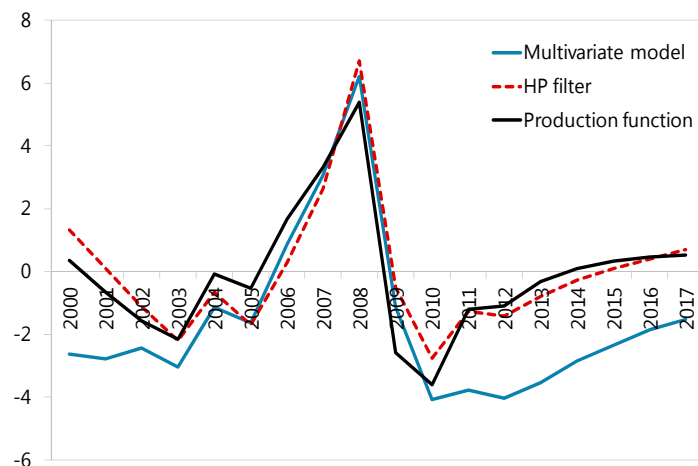
Sources: WEO; Haver; and IMF staff estimates.

7.   **The estimates suggest that the crisis left lasting scars in the economy and potential growth will take time to recover.** The MV approach predicts potential growth to remain below 2 percent until 2014 and to increase only gradually to 3.1 percent by 2017. This slow recovery suggests that the crisis left lasting scars in the Romanian economy. In particular, the unexpectedly strong growth rate in 2011 likely reflected temporary factors such as the exceptional harvest rather than a recovery of output potential. Pre-crisis potential growth rates of 5 or 6 percent per year will be difficult to attain in the absence of major reforms that bring more people to work and attract more investment.

Conventional Structural Fiscal Balance

Sources: WEO; Haver; and IMF staff estimates.

NEW AND OLD ESTIMATES OF POTENTIAL GROWTH AND THE OUTPUT GAP

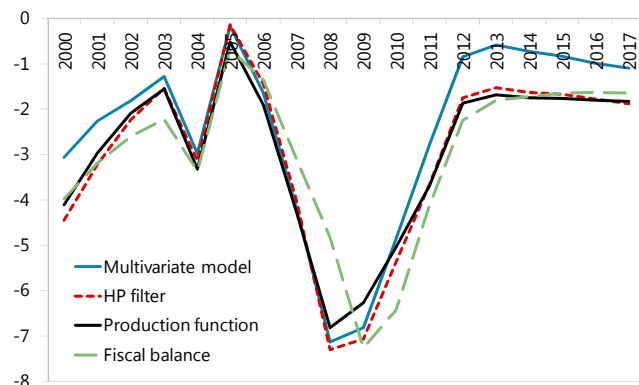|	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Output Gap																
New (MV approach)	-2.4	-3.0	-1.1	-1.6	0.9	3.0	6.2	-1.1	-4.1	-3.8	-4.0	-3.5	-2.8	-2.3	-1.8	-1.5
Old (5th Review)	0.6	0.9	4.2	3.4	6.2	7.6	10.0	-0.3	-3.6	-3.6	-4.8	-4.6	-4.1	-3.5	-3.0	-2.5
Potential Growth																
New (MV approach)	4.7	5.9	6.0	5.5	4.8	4.3	3.4	1.3	1.2	1.8	1.4	1.8	2.2	2.7	2.9	3.1
Old (5th Review)	4.5	5.0	5.0	5.0	5.0	5.0	5.0	3.0	1.5	2.5	2.0	2.9	3.2	3.4	3.5	3.5
Conventional Structural Fiscal Balance																
New (MV approach)	-1.8	-1.3	-3.0	-0.2	-1.6	-4.2	-7.1	-6.8	-4.9	-2.8	-0.8	-0.6	-0.7	-0.8	-1.0	-1.1
Old (5th Review)	-2.8	-2.5	-4.8	-1.8	-3.4	-5.8	-8.5	-7.2	-5.1	-2.8	-0.6	-0.2	-0.3	-0.4	-0.6	-0.8

8.   **Returning to pre-crisis rates of potential growth will require decisive implementation of an ambitious structural reform agenda.** Since the last Article IV consultation, Romania has fallen behind many of its peers in terms of perceptions of corruption, ease of doing business, and competitiveness: the healthcare and education systems are underfunded and of relatively low quality; the business climate could be more welcoming, and the energy and transport sectors are still dominated by inefficient state-owned enterprises. Achieving higher rates of potential growth will require decisive implementation of an ambitious reform agenda. Over the past two years, pension and labor market reforms were put in place as well as measures to improve the regulatory and pricing framework for the energy sector. However, significant reform gaps remain and progress has been slow. Going forward, the reform agenda should focus on improving institutional and regulatory quality, modernizing the healthcare system as well as reforming the energy and transport sectors, and state-owned enterprises. Measures to protect the most vulnerable are also important. Furthermore, the authorities should step up the absorption of EU funds to unlock a higher growth potential.

References

Ball, L. (2009). "Hysteresis in Unemployment: Old and New Evidence," NBER Working Paper 14818.

Benes, J., K. Clinton, R. Garcia-Saltos, M. Johnson, D. Laxton, P. Manchev and T. Matheson (2010). "Estimating Potential Output with a Multivariate Filter," IMF Working Paper 10/285.

Statistical Appendix

Hodrick-Prescott (HP) filter: The smoothing parameter is set equal to 1600 as is standard for quarterly data.

Production Function: We assume a Cobb-Douglas form for the production function where output is given by $Y = A \times L^{\alpha} \times K^{1-\alpha}$ where A is TFP, L is employment and K is the capital stock. We use the perpetual inventory method to determine the initial capital stock and set the depreciation rate to 0.05. The existing capital stock is assumed to equal potential. The labor share is assumed to be $\alpha = 0.7$, and the HP filter is used to provide estimates of potential employment and TFP. The smoothness parameter for HP filtering is set to 1600.

Multivariate filter: We use quarterly data for growth, core inflation, inflation expectations, capacity utilization and the unemployment rate to estimate the model described in Benes et al (2010) by Regularized Maximum Likelihood. The model was calibrated to ensure reasonable smoothness of potential output growth, and assumes a steady-state growth of 3.7 percent, a steady state unemployment rate of 6 percent, and a labor share in output of 70 percent.

II. BOOSTING GROWTH THROUGH REFORM OF STATE-OWNED ENTERPRISES[1]

A. Introduction

1.   **Romania is one of the least economically developed members of the European Union.** Poverty rates are higher, education and healthcare spending are lower, and convergence with EU norms lags other emerging European countries. Many factors account for Romania's relative standing, including historical, political and past policies. The dominate role of inefficient state-owned enterprises, particularly in the energy and transportation sectors, is also a contributing factor. Romania could be one of the European Union's faster growing economies and a leading investment destination—it is well endowed with natural and human resources.

Convergence with EU (GDP per capita in PPS)
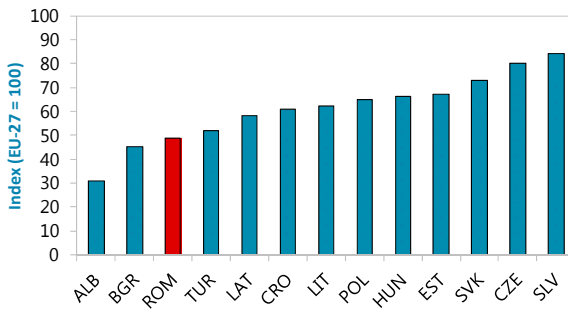
Sources: Eurostat; IMF staff estimates.

Spending on Primary Education and Health
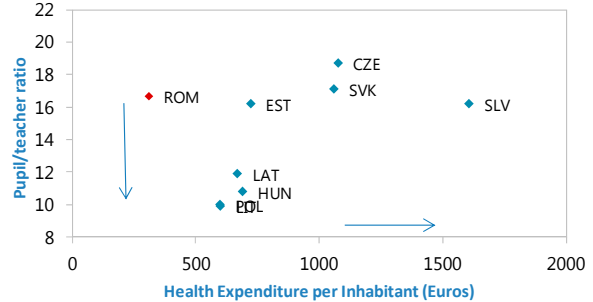
Sources: Eurostat; Haver.

2.   **There is substantial empirical evidence that structural reforms can lift growth markedly in the medium to long term**. Staff simulations show that large-scale labor, product market and pension reforms in European countries could boost output by 4½ percent over five years.[2] Romania has already undertaken important public sector employment and benefits, labor market, and pension reforms. But reform of the state-owned enterprises has lagged. There is some evidence that suggests a correlation may exist that the size of countries

SOE Presence and Per Capita GDP
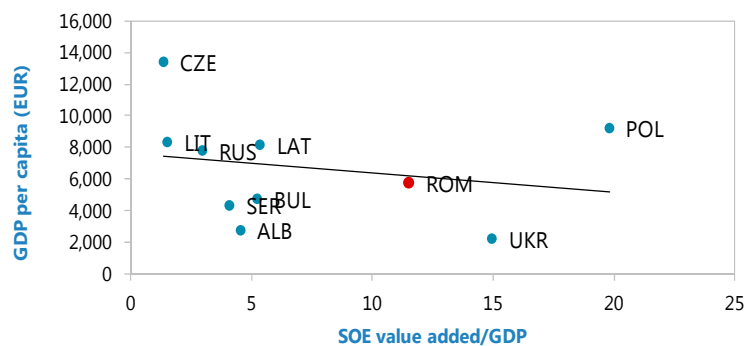
Sources: Country authorities; IMF staff
1/ For ZCE, LAT, and UKR, SOE employess as a percent of the labor foce used a s a proxy for SOEs contribution to economic output.

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[1] Prepared by Anca Paliu and John Ralyea.

[2] Fostering Growth in Europe Now—A Note by IMF Staff (May 4, 2012).

state-owned enterprises (SOEs) relative to GDP may influence a country's living standards. Romania has a relatively large SOE sector compared to many of its peers in Eastern Europe. Reform of inefficient state-owned enterprises, while maintaining prudent macroeconomic policies, is critical to fostering efficiency and investment in the Romanian economy, unlocking its potential and achieving higher growth and creating jobs over the medium term.

3.　　**SOEs can be a positive force for growth.** In addition to generating resources for investment, well run SOEs can generate resources for education and health spending through dividend and tax payments. The key is for the state, as a shareholder, to seek value creation in SOEs for the benefit of the entire society. One of the successful cases in emerging Europe is Poland, whose public companies are generally run efficiently and transparently, in line with corporate governance rules. However, in many other countries, including Romania, the state fails to act as a responsible shareholder as it seeks multiple objectives and interferes in governance and operational decisions that are best left to professional boards and management. The cost is reduced investment and growth, and less budget resources for social spending and infrastructure investment.

B.　Overview of SOEs in Romania

4.　　**Structural reforms, particularly improvements in SOEs, slowed in Romania following EU accession.** Restructuring and privatization efforts leading up to accession moved a lot of companies off the government's books. These efforts are reflected in the EBRD's transition indicators, which point to progress in closing infrastructure gaps relative to advanced industrial economies. However, post EU accession the reform effort stalled. While specific measures have yielded some

EBRD Transition Indicators

Source: EBRD; IMF staff

successes in the last 18 months, such as passage of the law on corporate governance of SOEs and development of a centralized financial reporting system on SOEs at the ministry of finance, little has yet been done to reduce SOEs drag on growth. This comes at a cost. Lack of reform has likely hurt investment needed to ensure energy provision for medium-term growth and upgrading the rail sector that is not able to pay its bills, much less provide the quality of service needed to make Romania an attractive investment destination.
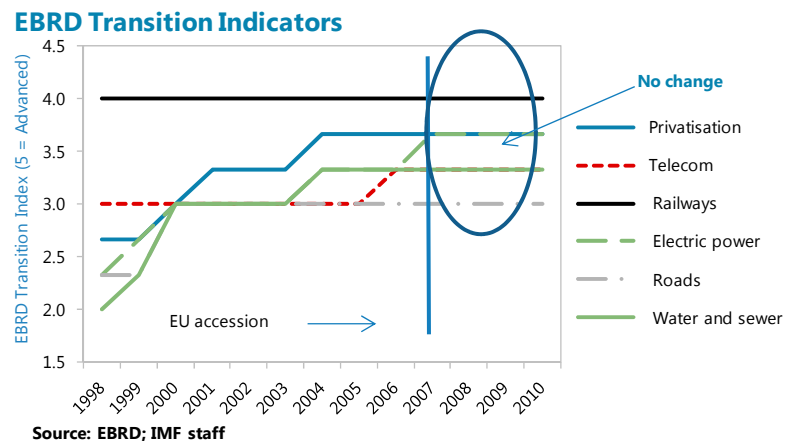
5.   **State-owned enterprises still play a large role in the Romanian economy.** There are almost 1,000 SOEs in Romania, with about 240 majority-owned by the central government and the remainder by local governments.[3] SOEs range in size from the very small—one employee—to the very large—the post office and the railway infrastructure company employ 20–30,000 people. In aggregate, SOE's employ 10 percent of the employed labor force and account for 9 percent of annual output. Their role is also large relative to the presence of state-owned enterprises in other emerging eastern European countries.

6.   **SOEs produce a significant amount of the output in key economic sectors.** SOEs control 53 percent of the energy sector and 34 percent of the transport sector whose performance is of great importance to broad segments of the population and to other parts of the business sector. While potential market failure, such as the existence of a natural monopoly, the provision of public goods, or presence of externalities, may provide a legitimate reason for state ownership of the road transportation network, the large presence of state-owned enterprises in sectors where market forces can and do operate in many other countries, such as energy, mining, and chemical sectors, to name a few, suggests that Romania's SOE sector remains too large.

SOE Activity by Economic Sector

SOE activity (% of total economic activity)

SOE activity (% of total SOE economic activity)

Sector	SOE activity (% of total economic activity)	SOE activity (% of total SOE economic activity)
Energy and gas	53	31
Transport and storage	34	24
Mining and quarrying	27	12
Public administration and defense	96	5
Water supply; Sewerage, waste management…	31	4
Other services	22	4
Postal and courier activities	58	3
Agriculture, Hunting, Forestry, Fishing	14	3
Manufacture of chemicals and chemical…	25	3
Programming and broadcasting activities	40	2
Other sectors	1	9

Source: Romanian authorities; Romanian Fiscal Council; and IMF Staff estimates.

7.   **Inefficiencies in SOEs lead to poor operating performance, arrears, and less resources for investment.** SOEs are also relatively inefficient with lower profitability and higher average wages compared to private sector. In addition, SOEs account for almost all the arrears in the Romania state-sector and are a drain on the public purse in the form of subsidies. Not surprisingly, Romania's private companies regularly invest more than SOEs relative to total assets.

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[3] The Fund monitors 22 of the central government owned companies. The monitored companies dominate the energy and transport sectors and account for the bulk of SOE employment, arrears, and value added.

SOE Profitability
(Percent)
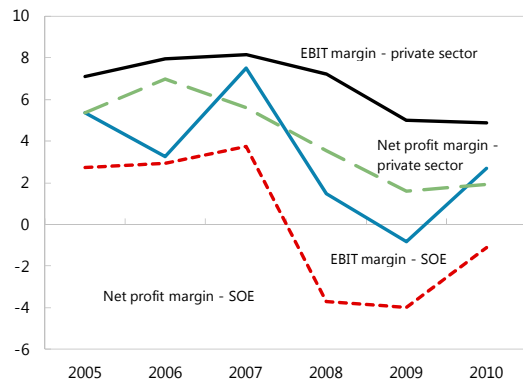
Sources: Romanian authorities; Romanian Fiscal Council; and IMF staff calculations.

Investment/Total Assets
(Percent)

Sources: Romanian authorities; Romanian Fiscal Council; and IMF staff calculations.

Arrears
(In billions of lei)

	2010	2011	June 2012	% of Total
Total	25.76	22.07	21.41	100.0
Central government	0.19	0.09	0.12	0.6
Local government	0.91	0.75	1.00	4.7
State-owned enterprises 1/	24.66	21.23	20.29	94.8
Central government SOEs	20.31	17.37	16.33	76.3
Local government SOEs	4.35	3.85	3.96	18.5
Memorandum:				
Nominal GDP	522.6	578.6	607.8	

Sources: Romanian authorites; IMF staff estimates.
1/ Based on preliminary and possibly incomplete data

8. **Losses and arrears in SOEs drain public finances and constrain the government's fiscal policy flexibility.** Subsidy transfers amount to 0.5 percent of GDP on average. Accumulated arrears to the state budget, the social insurance budget, and the health budget of around 2.5 percent reduce resources available for much-needed investments in these sectors. Arrears to suppliers may have contributed to the rise of nonperforming loans of the banking system. Moreover, loss making SOEs add to the budget deficits. A stark example of this was the 0.3 percent of GDP increase in the reported budget deficit in 2009 that was mainly due to the reclassification of SOEs under the general government according to EUROSTAT rules. Another example is provided by the weak performance of hydro power producer Hidroelectrica (see Box II.1).

C. SOE Influence on Growth

9. **Inefficient SOEs are an economic burden for Romania**. Many face multiple objectives, are overstaffed and poorly run, and fail to generate the revenues needed for investment. Actual investments frequently have no or very limited multiplication effect. Several run arrears to other companies, banks, and state, pension and health budgets. Moreover, they pose a significant fiscal risk. The Romanian state, on a number of occasions

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Box II.1. Romania: Hidroelectrica

The government placed state-owned power producer Hidroelectrica into insolvency procedures on June 20 in view of its deteriorating financial position.[1] Hidroelectrica is one of Romania's largest energy producers, supplying over a third of Romania's domestically produced electricity. However, poor corporate governance, characterized by heavy political interference in management and operating decisions, has made it one of the least efficient and least profitable hydro power producers.[2] As a result, Romania incurs large opportunity costs in terms of forgone infrastructure investment and social spending (through reduced dividend payments to the budget).

GWh per Employee

Sources: Fondul Proprietatea; Companies' reports; JP Morgan; Raiffeisen Bank.

Operating Margin (percent)

Sources: Fondul Proprietatea; Companies' reports; JP Morgan; Raiffeisen Bank.
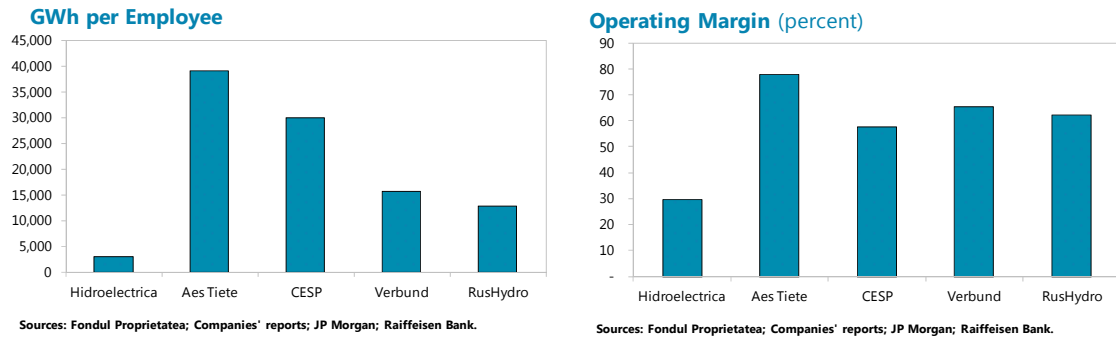
The judicial administrator has made progress in improving the financial performance of Hidroeletrica. The administrator has cancelled or renegotiated all non-commercial bilateral energy contracts, which absorbed well over half of its output and cost the company an estimated € 1.1 billion in lost revenue. The cancellations will also eliminate the need for Hidroelectrica to buy more expensive electricity from other state-owned producers and sell it at a loss to meet contracted volumes.[3] Moreover, the administrator is pursuing cost savings throughout the company, with a target to reduce costs by at least 10 percent.

The resort to insolvency procedures to address Hidroelectrica's financial problems carries some short-term costs and potential risks. An initial public offering of 10 percent of Hidroelectrica and the appointment of private managers, which are government commitments under the program, are delayed until the Hidroelectrica exits insolvency procedures. More broadly, placing Hidroelectrica into insolvency poses risks to market confidence, the profitability of exposed banks, and the viability of sales of stakes in other public firms. A steadfast commitment on the government to implement reforms in SOEs as previously announced would help mitigate these broader risks.

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[1] Under insolvency procedures, Hidroelectrica is being restructured, while it continues to operate.

[2] Compared to the following energy companies: AES Tiete, private company controlled by American utility company, AES, and Brazilian Development Bank (BNDES); CESP: controlled by the municipality of Sao Paolo, Brazil; Verbund: Austrian SOE; Rus Hydro: Russian SOE.

[3] Hidroelectrica sells about 30 percent of its production on the regulated market and will also benefit from the government's commitment to gradually reduce the volume of electricity sold at regulated prices.

has bailed out SOEs directly through capital increases, or indirectly by folding them into the general budget.

10.   **Romania's investment needs are large.** Public investment is already relatively high by European standards, but it is of low quality. Thousands of investment projects are underfinanced or even abandoned. Moreover, the poor quality and low level of investment relative to what is needed in sectors dominated by SOEs, such as transportation and electricity, are detrimental to perceptions of the quality of the infrastructure in those sectors. This undermines perceptions of Romania as a place to do business. Romania ranks 74 out of all countries on the World Bank's Doing Business Index with sub-index on electricity being Romania's worst relative ranking. In the competitive global environment for investment financing, these rankings do not help Romania's case for attracting more investment.
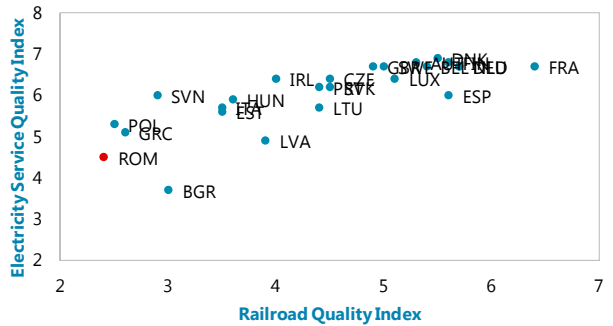

Efficiency of Capital Spending in the EU-27, 2011
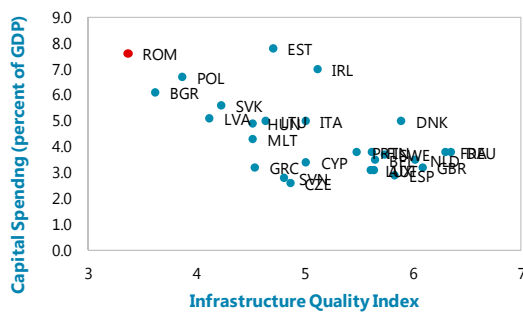
Source: Eurostat; World Competitiveness Report.

Quality of Rail and Electricity Service, EU-27

Source: World Competitiveness Report.

11.   **SOEs poor finances also undermine other sources for boosting potential growth**. SOE arrears and subsidies payments to SOEs reduce financial resources available for spending on other public goods such as education and healthcare. The irony here is that companies operating in the energy, mining, and other competitive sectors where Romania SOEs have a strong presence could be cash cows for such expenditures. SOE arrears also help perpetuate a culture of non-payment. This hampers development of the private sector, particularly smaller firms which lack the financial resources to cover payment delays, and adds some grist to the financial system. Numerous studies show that small firms are an engine for job creation and a well functioning financial system can be supportive of economic growth.

D. Recent Reforms

12.   **Poor governance is the proximate cause of inefficiencies in state-owned enterprises in Romania.** The state's political, social, and economic objectives frequently collide with the goal of maximizing firm value. Appointing board members and management teams based on ministerial order and political affiliation can lead to frequent and disruptive management turnover. Requiring state-owned enterprises to provide services such at a price below cost as part of broader social objective, e.g., passenger rail or hydro power, without adequate transfers undercuts the firm's financial viability. Keeping open non-viable enterprises to provide jobs results in financial losses that can have a ripple effect through the

economy in terms of unpaid bills and bad debts as well as lead to a significant misallocation of factors of production. Another weakness of Romanian state-owned enterprises is the lack of transparency and accountability.

13.   **Since the last Article IV consultation in 2010, Romania has taken some steps to address the problems caused by the inherent conflicts in state-ownership of commercial entities.** These reforms seek to improve the framework for administering SOEs, their financial position, and the operating environment for energy producers.[4]

- A law to improve the corporate governance of SOEs was approved in November 2011. The law reinforces OECD good corporate governance principles for SOEs, strengthens rights of minority shareholders, establishes a clearer distinction between the role of line ministries and management, requires the government to hire professional board members for SOEs, and ensures adequate audit and reporting. In addition, two divisions have been established in the Ministry of Public Finance to monitor the financial and restructuring performance of central government SOEs. For local SOEs, financial reporting requirements have been strengthened and a new law for the district heating sector, which is responsible for substantial arrears, should stop the accumulation of new arrears. However, potential disincentives for district heating companies to file claims for payment of arrears to the central authorities have to be addressed.

- Arrears reduction has taken place though a number of schemes. Measures include tailored solutions for arrears reduction via increase of public or private capital, neutralization schemes within the public sector, credit with government guarantee, debt swaps, and facilitation of installment agreements. While this has reduced SOE arrears in the short term from about 4.7 percent of GDP in 2010 to 3.3 percent of GDP at end-June 2012, broader restructuring is still needed to put arrears on sustainable downward path.

- Under recently passed legislation, regulated electricity and gas prices for non-households will be fully liberalized by January 2014 and January 2015, respectively, and regulated electricity and gas prices for households will be liberalized by January 2018 and January 2019, respectively. The laws provide protection for vulnerable consumers. However, effective implementation will require the full pass through of price increases to end users. In addition, bilateral contracts that required the state-

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[4] The authorities also held a successful secondary public offering of 15 percent of the government's shares in the electricity transmission operator (Transelectrica) in March 2012.

owned hydroelectric power producer (Hidroelectrica) to sell xx percent of its electricity at below market prices were cancelled or renegotiated. Importantly, the government has committed to sell the freed up supply on the open market. These measures should improve the financial health of efficient SOEs that are energy producers.

E. Policy Recommendations

14.   **Efforts to create value and corporate governance improvements should be the focus of SOE reforms.** Greater transparency and public discloser of SOE activities and better communication of the government's strategy toward SOE reform would make the reforms easier to implement. Romania's own experience with earlier SOE reform efforts suggest these measures will lead to greater investment in the economy and economic growth. The proposed reforms below build on recent government actions in this direction:

- *Ownership function*: The government should decide which enterprises should remain in state hands because the market failure in a given sector cannot be rectified through better regulation. The list of companies should be published. All other enterprises should be privatized or liquidated. There is no need for the state to own chemical or mining companies, for instance. For those enterprises that remain in the government's portfolio, the authorities should rebalance the government objectives more toward value enhancement. A clear objective statement should guide the approach. For example, in Sweden, the state's commitment is simple but strong *"The Government's overall objective is creating value for the owners"* while the U.K.'s considers that the objective of the SOEs is *"to ensure that Government's shareholdings deliver sustained, positive returns and return their cost of capital over time within the policy, regulatory and customer parameters set by Gov, by acting as an effective and intelligent shareholder."* [5]

- *Corporate governance*: The law on corporate governance should be implemented without further delay. Importantly, the law establishes a framework for the selection of candidates for the boards and management of SOEs without political interference. For Romania to realize the full benefit of this provision, the authorities need to respect the spirit, as well as the letter, of the law in its implementation. The government should select its nominees for professional boards and general managers of SOEs from short lists of qualified candidates prepared by independent and well-respected human resource firms. Political and interim appointments to boards and management should be strictly avoided. Management remuneration should be

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[5] Corporate Governance of State-Owned Enterprises, A survey of OECD Countries, 2005, ISBN 92-64-00942-6 – No. 54075 2005.

competitive, but not excessive, and linked to key financial and operating performance indicators. General managers' salaries should be published. Dismissal of general managers should only be done by the board of directors and only for lack of performance.

- *Financial performance:* The guiding principal should be value creation. In many cases, this will require measures to cut costs such as renegotiation of inflated procurement contracts. SOE procurement contracts should be reviewed to ensure they are in compliance of the law on public procurement. Those that are not should be cancelled. Fees and tariffs may also have to be raised. In cases where this is not politically desirable, government subsidies to the SOE should fully compensate for the public service obligation of the SOE. Ideally, revenue and expenditure measures to put individual SOEs on more sound financial ground should be undertaken before one-off measures to reduce the stock of arrears.

- *Transparency and communication*: While the government has made efforts to gather more data on the financial performance of SOEs, the information remains largely out of the public domain. A public database with historic and current information on the financial performance of all centrally- and locally-owned SOEs should be created. The staffing and legal powers of the department within the Ministry of Public Finance currently in charge of monitoring state assets should be strengthened to support the database. As importantly, comprehensive annual analytical reports on SOE operating and financial performance and future plans by line ministries and the ministry of finance should be written and published, as required by the corporate governance law. Poland, Ireland and Latvia are only few examples of countries that publish good examples of comprehensive reports on their SOEs.

- *Privatization:* The main benefits of privatization are knowledge transfer, investment, and reduced fiscal risk. It also can generate capital inflow into the economy. Majority or minority privatization of SOEs is also a proven vehicle for improving the operating and investment performance of SOEs, as well as accountability. However, majority privatization is preferred as it allows for the fuller realization of the benefits of privatization. The majority sale of Petrom to OMV is instructive in this regard. Petrom has invested heavily in the Romanian economy and pays significant taxes and dividends to the state. Priority privatizations should include Hidroelectrica, Romgaz, Nuclearelectrica, Transgaz, and Marfa, as these entities are likely to attract the most investor interest and play critical roles in the economy.

F. Conclusion

15. **Reform of state-owned enterprises would enhance Romania's long-term growth prospects.** Romania's economy requires massive investment over the next decade. At the

same time, available data indicates that Romania compares unfavorably with its peers in the quality of infrastructure in key economic sectors such as energy and transportation where SOEs dominate. Reform of SOEs, with value creation, better corporate governance and greater private-sector involvement as guiding principles, would lead to more investment in these critical sectors, facilitating long-term economic growth and likely greater energy independence. SOE reform could also create fiscal space for investment in social sectors and infrastructure, ensuring all Romanians benefit from the reforms.

III.   FISCAL POLICY STANCE FOR GROWTH AND STABILIZATION[1]

A.   Background

1.   **Romania has strengthened its fiscal position considerably since the crisis.** It has implemented one of the largest fiscal consolidations in the European Union (EU). Consequently, the cyclically adjusted deficit, at 1.7 percent of GDP (in ESA terms), is now lower than in most EU members. Since 2009, the public debt ratio has increased by more than 10 percentage points, but, at less than 35 percent of GDP, remains one of the lowest in the EU. The medium term objective

Fiscal Stance (In percent of GDP)

Source: European Commission and staff estimates.

(MTO) of a structural balance of -0.7 percent of GDP is also more ambitious than for most new member states with an inflation targeting regime. Funding needs however remain significant at more than 11 percent of GDP, although much of this represents rollover needs rather than deficit financing.
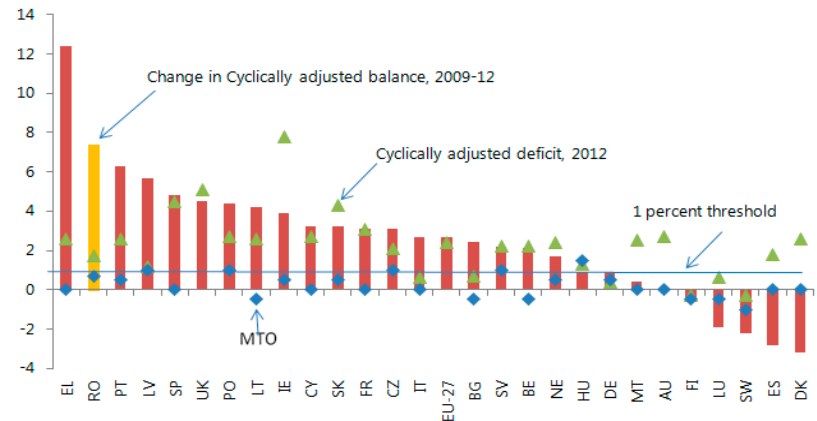
2.   **Reaffirming its commitment to fiscal discipline, in March 2012, Romania became one of the 25 EU member states to sign the Treaty on Stability, Coordination and Governance in the Economic and Monetary Union (Fiscal Compact, FC).** Against the backdrop of the fiscal adjustment already underway, this note examines the implications of the Fiscal Compact for Romania, as well as the fiscal stance and policy priorities, with a view of enhancing growth in a sustainable manner.

Debt Indicators (In percent of GDP)

Source: European Commission.

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[1] Prepared by Anita Tuladhar.

Box III.1. The Fiscal Compact

The Fiscal Compact (FC) introduces tighter benchmarks on the structural fiscal balance target and debt reduction path. It requires national authorities to adopt a rule targeting a structural deficit target of a maximum of 0.5 percent of GDP. However, for countries with debt to GDP ratio below 60 percent of GDP and low sustainability risks, this threshold is higher at 1 percent of GDP. Within these parameters, country specific national benchmarks will need to be adopted which will replace the existing medium term objectives (MTO). The transition path to meet these objectives will be determined in agreement with the European Commission. The existing provisions with respect to a maximum headline deficit to GDP ratio of 3 percent and debt rule of below 60 percent of GDP remain in force. In case debt is above 60 percent of GDP, the FC adds to the debt rule the requirement of an annual adjustment of $1/20^{th}$ the difference between current level and target. This needs to be implemented 3 years after a country has left the Excessive Deficit Procedure (EDP). An automatic correction mechanism also needs to be established in case of deviation from these rules.

This new national fiscal framework will need to be adopted by 2014. This entails incorporating the rule, the adjustment path and the automatic correction mechanism in national legislation. The European Court of Justice is responsible for verifying the transposition of these rules into national legislation. Until then, the adjustment path implied by the EDP procedures will apply if a country is in the EDP; else, an annual adjustment of 0.5 percent of GDP will need to be implemented in keeping with the SGP requirements.

Provisions for enforcement of the rules are being strengthened. Violation of the structural balance rule entails fines by the European Court of Justice and other sanctions in accordance with national legislations. Non-compliance with the deficit and debt rule would place countries in EDP. In the case of the deficit rule, the EDP is automatically triggered unless it is blocked by a qualified majority of the ECOFIN Council (the reverse majority rule). Nevertheless, some flexibility exists to accommodate cyclical conditions and crisis-related contingent liabilities, thus allowing for some judgmental factors in the enforcement of the debt rule.

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For more details see *IMF, 2012a*.

B. Key Implications of the Fiscal Compact for Romania

3.   **In contrast to many EU countries, there is no significant revision needed to the medium term deficit target path of Romania on account of the FC.[2]** Romania's existing

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[2] Many euro and non-euro area countries will need significant adjustment to achieve this target. Most euro area countries have structural deficits above their MTOs. In 2009–10, 14 euro area countries had breached the 3 percent of GDP deficit target and were under the EDP. In 2012, 11 euro area countries are still under the EDP (IMF, 2012b). Under the SGP rules, a cumulative structural adjustment, on average of 4½ percent of GDP over 2011–17, was planned for these countries. Much of this adjustment was frontloaded to 2012 with an average

MTO of -0.7 percent of GDP is within the threshold required under the FC given its debt level of below 60 percent of GDP. Since Romania is currently under the EDP, the deficit will need to be reduced to below 3 percent of GDP this year. Once out of the EDP, an annual structural deficit adjustment of 0.5 percent of GDP is required under the SGP until the MTO is achieved. Accordingly, the structural deficit target would decline from 1.8 percent of GDP in 2012 to 1.3 percent of GDP in 2013 and 0.7 percent of GDP in 2014. The corresponding cyclically adjusted deficit target would decline from 1.7 percent of GDP in 2012 to 1.3 percent of GDP in 2013 and 0.7 percent of GDP in 2014. The MTO would thus be achieved by 2014. The corresponding headline deficit

	2011	2012	2013	2014
Headline fiscal balance	−5.2	−2.8	−2.2	−1.2
Primary balance	−3.6	−1.1	−0.5	0.5
Cyclically adjusted fiscal balance	−4.3	−1.7	−1.3	−0.7
Structural balance	−3.2	−1.8	−1.3	−0.7
Output Gap	−2.9	−3.4	−2.8	−1.8
Source: Convergence Program.				

target would decline from 2.8 percent of GDP in 2012 to 2.2 percent of GDP in 2013 and 1.2 percent of GDP in 2014 (in ESA terms).

4.   **As part of the FC, the national fiscal framework will need to be revised to adopt a structural balance rule and an automatic correction mechanism in case of deviations from the rule.** The Fiscal Responsibility Act of 2010 put in place an expenditure rule limiting its growth to that of nominal GDP for three years and has also placed binding ceilings on the wage bill for two years (Box III.2). It also established an independent fiscal council which provides an assessment of macroeconomic and budgetary forecasts, annual budget laws, and medium term fiscal strategy; monitors its implementation and provides recommendations. The Law also imposes discipline on the budgetary procedures, for instance, by limiting the number of budgetary revisions. As part of the FC, the structural balance rule will now need to be adopted either in the Law or in the Constitution. The role of the Fiscal Council will also likely need to be strengthened to provide key budgetary assumptions and methodologies such as for the calculation of potential GDP and the structural balance. An automatic correction mechanism and underlying tax and spending measures in case deficits or debts approach certain thresholds will need to be introduced.[3]

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adjustment of 2 percent of GDP. However, given weaker than expected growth outlook, achieving the same targets would imply a higher adjustment.

[3] The Swiss and German structural budget balance rules contain automatic correction mechanisms ("debt brakes") whereby improvements in the structural balance are required within a pre-defined timeframe when accumulated deviations from the structural budget balance rule exceeds a threshold. The thresholds are 1.0 percent of GDP in Germany per ordinary law and 1.5 percent of GDP; and 6 percent of expenditure in Switzerland. In Germany, only those deviations that did not result from errors in real GDP growth projections matter, while in Switzerland all misses are tallied up. In Switzerland the excess amount must be eliminated

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Box III.2. Key Provisions of the Fiscal Responsibility Law

The Fiscal Responsibility Law (FRL) approved at end-March 2010 is designed to strengthen fiscal discipline. It improves medium term fiscal planning, budget formulation and execution, transparency of the budget process and accountability through the following key elements:

Fiscal framework:
- Introduction of a three year medium term budgetary framework
- Nominal expenditure ceilings are set limiting its growth to nominal GDP growth. Expenditure ceilings are binding for one year.

Budget formulation and execution:
- Supplementary budgets limited to two per year with the first budget revision submitted no earlier than July of each year,
- Total budgetary envelope and personnel spending cannot be increased in the supplementary budget.
- Budget rectification not allowed during six months prior to elections,
- Personnel and social spending not allowed to increase during 180 days prior to elections.

Upgrading of reporting requirements and raising accountability.
- Half-yearly and annual reports on economic and budget outlook to analyze the developments and fiscal policy implementation and adjust policy accordingly.
- The establishment of an independent Fiscal Council.

C. Challenges in Implementing the Fiscal Compact

5.   **There are two key policy questions that arise in the context of the new fiscal rule: the appropriate level of the structural balance target and the adjustment path towards this objective.** The literature suggests that lower deficit levels are positively correlated with long-run growth. But fiscal consolidation can have tradeoffs with short-run growth. In light of growth concerns at the current juncture, should Romania target a higher structural deficit level than the current MTO? Given the economic downturn, should the path to reach this target be slower?

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within the next three annual budgets. In Germany, overruns only need to be reduced during an economic recovery to avoid a procyclical tightening. Poland's and Slovakia's debt rules, which set a 60 percent debt of GDP ceiling, include thresholds that trigger actions to avoid that the rule is missed. In the case of Slovakia, when debt-to-GDP ratio reaches 50 percent, the Minister of Finance is obliged to clarify the increase to parliament and suggest measures to reverse the growth. At 53 percent of GDP, the cabinet shall pass a package of measures to trim the debt and freeze wages. At 55 percent, expenditures would be cut automatically by 3 percent and next year's budgetary expenditures would be frozen, except for co-financing of EU funds. At 57 percent of GDP, the cabinet shall submit a balanced budget. A caveat is that triggers do not account for the cyclical position of the economy. For more details see Schaechter, et.al. (2012).

6. **Debt sustainability indicators suggest that the current medium term fiscal deficit target is conservative.** Based on an assumption of a nominal interest rate of 6.3 percent, deflator growth of 4.5 percent and GDP growth of 3.5 percent, debt is stabilized at around 34 percent of GDP—the current level—with a primary balance of -0.7 percent of GDP.[4] Given interest costs of 1.7 percent of GDP, this would imply an overall debt-stabilizing balance of -2.5 percent. This level is much less ambitious than the structural balance target of -1 percent of GDP implied by the MTO. The relatively high level of sustainable deficit reflects the favorable dynamics owing to the interest rate-growth differential. Under most alternative scenarios with lower inflation (resulting in higher real interest rate) or weaker growth, the debt stabilizing primary deficit level is a balance or a small deficit, which is still less ambitious than the 1 percent of GDP debt stabilizing primary surplus implied by the MTO. With more than half of debt denominated in foreign currency, exchange rate depreciation remains a key risk to this outlook. Given the still tepid growth recovery, subpar growth is another risk.

Debt Sustainability Scenarios

| | Baseline | Historical average | Shock to | | | | |
			Inflation	Exchange Rate	Growth	FX Share	Combined
Debt level	34	34	34	34	34	34	40
Nominal interest rate	6.3	7.7	6.3	6.3	6.3	6.3	6.3
Inflation (Deflator)	4.5	13.1	3.0	4.5	4.5	4.5	3.0
Exchange rate depreciation	-0.5	0.1	-0.5	10.0	-0.5	-0.5	5.0
Real GDP Growth	3.5	3.9	3.5	3.5	2.0	3.5	2.0
Share of foreign currency denominated de	0.5	0.6	0.5	0.5	0.5	0.8	0.5
Debt stabilizing primary balance	-0.7	0.0	-0.2	1.2	-0.2	-0.7	1.5

Source: IMF staff estimates.

7. **The more ambitious medium-term deficit objective than required under the FC and the debt stabilizing level reflects the need to create fiscal space to deal with ageing costs.** According to the 2009 Sustainability Report, the required budgetary adjustment to ensure that the 60 percent of GDP debt threshold holds in 2060 (S1 indicator) was 6.9 percent of GDP and the budgetary adjustment needed to ensure that the infinite horizon intertemporal budget constraint holds (S2 indicator) was 9.1 percent of GDP, based on an initial structural deficit of 3.7 percent of GDP. Of these indicators, the long term component (LTC) or the adjustment needed to offset the age-related spending increases and meet the 60 percent debt threshold by 2060 was 3.2 percent of GDP and to meet the intertemporal budget constraint over the infinite horizon was 4.9 percent of GDP. These indicators incorporated

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[4] Debt stabilizing primary balance, $pb = \frac{[r-\pi(1+g)-g+\alpha\epsilon(1+r)]}{(1+g+\pi+\pi g)}$ times initkial debt level where r = real interest rate; π = growth rate of GDP deflator; g = real GDP growth rate; α is the share of foreign currency debt; and ϵ is the rate nominal exchange rate depreciation. The values are based on medium term macroeconomic projections.

projected increases in age-related spending of 8.5 percent of GDP (pensions of 7.4 percent of GDP and healthcare of 1.3 percent of GDP) during 2010-60. The MTO was thus adjusted to create fiscal space for the higher age-related spending.

Sustainability Indicators and Ageing Costs (Percent of GDP)						
	S1 Indicator (2060)	LTC	S2 Indicator (infinite horizon)	LTC	Increase in pensions spending	Increase in health spending
2009	6.9	3.2	9.1	4.9	7.4	1.3
2012	---		---		3.7	2.1
Source:	Sustainability Report, 2009 and Ageing Report, 2012					

8.   **With the pension reforms that are underway, the pressures on long run sustainability are expected to moderate.** Significant reforms to the public pension system have been already introduced since 2010, mitigating the impact of age-related spending increases over the medium term. Measures limiting the generosity of pensions, increasing the retirement age and tightening eligibility for early and invalidity pensions were approved (Box III.3). A mandatory second pillar pension system is also in place. Consequently, age-related spending is expected to rise by a smaller magnitude of 5.8 percent of GDP (pensions of 3.7 percent of GDP and healthcare of 2.1 percent of GDP) during 2010–60, with much of the increase coming after 2030.[5] Based on the sustainability indicators above and a debt stabilizing overall balance of 2.5 percent of GDP, a structural deficit target of 0.7 percent of GDP would imply that an adjustment of 1.8 percent of GDP is being undertaken to create fiscal space to accommodate the projected increase in age-related spending. This would constitute a heavily frontloaded adjustment accommodating more than half of this projected increase.


Box III.3. Key Measures Under the 2010 Pension Reforms

- Pension indexation gradually linked to inflation instead of gross average wages.
- Gradual increase in statutory retirement age for men from 62 to 65 years and for women from 58 years to 63 years.
- Reduced incentives for early retirement and partial early retirement.
- Tightening of eligibility for invalidity pensions to prevent fraud.
- Broadening of the contribution base by including various exempted groups and integration of different categories of special pensions within the public pension system.

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[5] Furthermore, the transition to the second pillar pension would temporarily increase deficits which would be reversed over time.
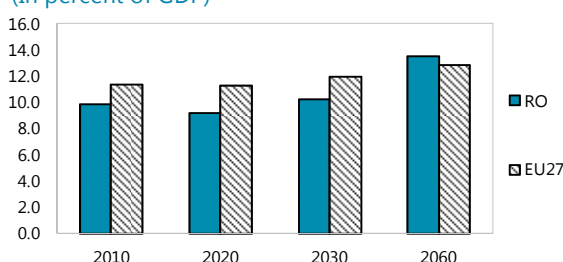
Public Health Spending
(In percent of GDP)
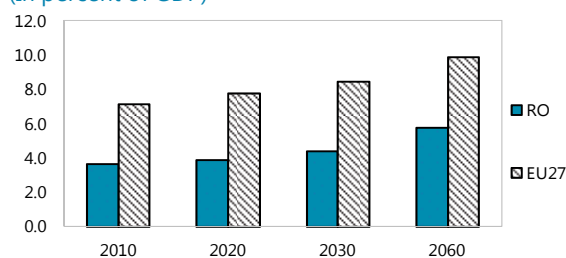
Source: European Commission Ageing Report, 2012.
Note: For health care spending, cost convergence scenario is used.

Public Pensions
(In percent of GDP)

Source: European Commission Ageing Report, 2012.

9.   **In implementing a structural deficit target rule, some margin may be needed to ensure compliance given output gap uncertainty.** This arises due to difficulties in estimating an unobservable variable such as the potential output. This is particularly the case for economies such as in emerging economies that are undergoing structural changes. Differences in methodology in computing the potential GDP as well as ex-post revisions to the potential GDP estimations make implementation of such a target and enforcement of a rule based on the output gap challenging. In the case of Romania, output gap estimates varied by up to 2.8 percent of GDP on account of revisions in the potential GDP (Simone et al., 2012). Consequently, estimate of cyclically adjusted primary balance (CAPB) changed by 1 percent of GDP due to this revision. Such a revision reflects a large shock during the crisis period. During more "normal" times, a revision of the CAPB by 0.4 percent was observed. Under the Production Function methodology, the largest ex-post revision of the CAPB was 0.4 percent of GDP. A comparison of the CAPB during budget plan versus actual outturn shows that for many countries, revisions in output gap measures due to potential output re-estimations can contribute even more than slippages in budgetary execution in explaining this difference. In the case of Romania, however, revisions in potential output have not been a significant factor in explaining this difference, and budgetary execution and forecast errors have been the main contributors behind the different outturn compared to plans. Based on the above factors, it appears that the structural balance target is well within the margin needed to stay within the 1 percent of GDP structural balance required by the FC.

Romania: Ex-Post Estimates of Output Gap and Cyclically Adjusted Primary Balance (percent of GDP)

		2003	2004	2005	2006	2007	2008	2009	2010
Output Gap									
HP filter	Average	-2.7	1.0	0.6	3.6	6.0	11.3	1.0	-2.6
	Standard Deviation	0.2	0.5	1.0	1.8	2.8	1.0	1.1	0.2
Production Function	Average	-1.6	2.5	2.1	4.8	6.3	9.6	-0.8	-3.8
	Standard Deviation	0.4	0.4	0.4	0.7	0.7	0.4	0.2	0.3
Cyclically adjusted primary balance									
HP filter	Average	1.0	-0.1	-0.1	-2.6	-4.4	-9.3	-7.9	-4.3
	Standard Deviation	0.0	0.2	0.3	0.6	1.0	0.4	0.4	0.1
Production Function	Average	0.6	-0.5	-0.6	-3.1	-4.6	-8.7	-7.2	-3.8
	Standard Deviation	0.2	0.2	0.2	0.3	0.4	0.2	0.1	0.2

Source: European Commission and staff estimates.

Romania: Contributions to the Cyclically Adjusted Primary Balance, Plan versus Outturn

	Fall T-1	Spring T+1	Change	o.w. Change in G	Change in Y	Change in Y*	Change in Int	Residual
2007	-2.2	-4.5	-2.3	2.0	-2.6	-1.6	-0.3	0.1
2008	-2.8	-7.2	-4.4	-0.4	-2.5	-1.6	-0.1	0.2
2009	-1.5	-5.5	-4.0	-1.5	-2.9	-0.1	0.5	0.0
2010	-3.5	-3.5	0.1	-2.3	2.6	-0.1	-0.2	0.0

Source: European Commission and staff estimates.

10.   **The current MTO allows for an adequate cyclical margin to be in compliance with the SGP requirements of a 3 percent deficit target.** For Romania, the largest negative cyclical balance observed during 2003–2010 was 0.9–1.3 percent of GDP, depending upon the methodology used for calculating the output gap. This was recorded in 2010, when the output decline was one of the largest by historical standards. The median value of the negative cyclical balance over the same period was nearly half this level at 0.5–0.9 percent of GDP. This small cyclical balance reflects the relatively small automatic stabilizers prevalent in Romania. Based on this cyclical margin and the stated MTO of 0.7 percent of GDP, the overall deficit would be below 2 percent of GDP, well within the SGP requirement of 3 percent of GDP.

11.   **The adjustment path to reach the medium term objective over 2013–14 is broadly consistent with the outlook for economic recovery.** A gradual pace of consolidation of ½ percent of GDP is envisaged in contrast to the fiscal adjustment in 2012 that has been frontloaded with a consolidation of nearly 1½ percent of GDP. This adjustment has been heavily procyclical as it takes place while the negative output gap is widening. From 2013 onwards, the fiscal stance is more countercyclical with a gradual tightening planned as the output gap narrows.

Fiscal Stance (percent of GDP)

■ Change in Structural Balance
▨ Change in Ygap
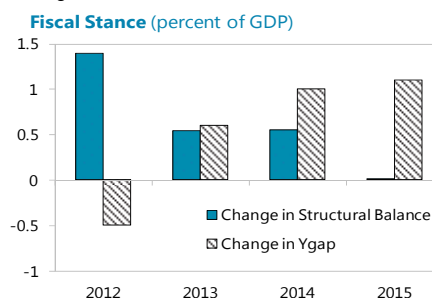
Source: Convergence Program, 2012.

12.   **The adjustment eases partially the high funding pressures.** Gross financing needs have been declining, but at around 12 percent of GDP, still remain relatively high compared to other new member states in the EU. While deficit reduction helps alleviate the pressure, a more critical need is improved debt management since much of the funding needs are due to rollover needs of maturing debt.

Selected Emerging Economies: Gross Financing Needs, 2012–13
(Percent of GDP)

	2012			2013		
	Maturing debt	Budget deficit	Total financing need	Maturing debt	Budget deficit	Total financing need
Hungary	16.3	3.0	19.3	17.1	3.4	20.5
Romania	10.4	1.9	12.3	10.3	1.0	11.4
Poland	7.2	3.2	10.5	7.1	2.8	9.9
Lithuania	5.9	2.9	8.8	6.3	2.6	8.9
Latvia	6.2	1.2	7.3	5.6	0.5	6.1
Bulgaria	2.8	1.9	4.7	5.6	1.6	7.2

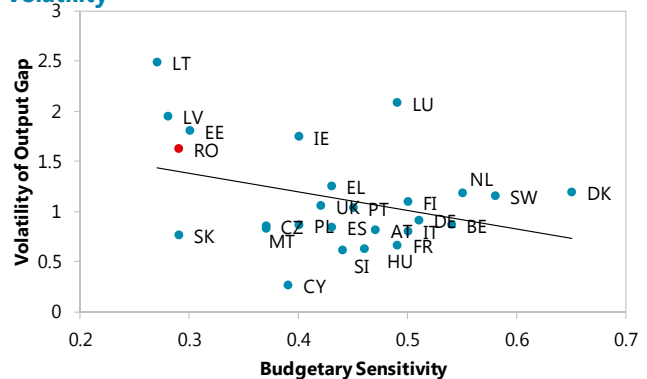Sources: IMF staff estimates and projections.

13.   **In summary, the fiscal targets and the planned adjustment path going forward appear to be conservative.** It prudently leaves considerable margin for cyclical fluctuations and uncertainties in measuring output gap, based on historical standards, to ensure compliance with SGP requirements. The target also seeks to accommodate projected age-related spending increases even as reforms of pensions and healthcare are also underway. Much of the adjustment towards the medium term target has already been implemented or is underway this year. Given this fiscal position, there is some scope to target a higher medium-term structural fiscal target that is consistent with the minimum necessary under the FC (1 percent of GDP) and to undertake reforms that can help address fiscal sustainability without jeopardizing short-term growth. We discuss some of these policies below.

D.   Policy Priorities

14.   **First, a stronger role for automatic stabilizers is warranted to lower output volatility.** In the event of a slower growth, automatic stabilizers should be allowed to fully pay out. Furthermore, policies to strengthen automatic stabilizing property of the fiscal system should also be considered. The key benefit of having higher automatic stabilizers is that increases in cyclical deficits would be reversed over time. Currently, the size of automatic stabilizers in Romania, measured as the sensitivity of the budget to the output growth, is relatively low by

Budgetary Sensitivity and Output Gap Volatility

Sources: European Commission and IMF staff estimates.

European standards. The low stabilizers are associated with higher output volatility in general. The main factors accounting for the low automatic stabilizing property of the budget is the flat tax regime with a low statutory tax rate and a single tax bracket with limited progressivity (text charts). The share of direct taxes in total taxes is also small resulting in lower stabilizers. The size of government is relatively small, reflecting the low tax share to GDP.[6] On the expenditure side, the size and duration of unemployment insurance can also play an important stabilizing role. In Romania, the size of unemployment insurance is relatively small, although this is partially a reflection of the underlying informal sector. The

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[6] Such tax and benefit structures are not uncommon amongst emerging economies, however, which suggests that there are other considerations limiting the size of automatic stabilizers. For instance, automatic stabilizers may be limited by the financing constraint. A larger size of government, which would necessitate higher taxes, may also be constrained by efficiency considerations. Increased progressivity of the income tax regime would help meet both stabilization and equity objectives. However, high marginal tax rates could have adverse effects on efficiency and create disincentives to search for work.

net replacement rate of unemployment insurance is low by European standards, whereas the duration of benefits is average. These features also contribute to a lower stabilizing effect.

15.   **Automatic stabilizers can be increased through different adjustments in the design of tax and benefits.** Progressive taxation would be one way of achieving this goal. However, increasing automatic stabilizers does not necessarily entail restructuring of the entire tax system or increasing the size of government. Even within the flat tax regime, automatic stabilizing property could be strengthened depending on the level of the tax-exempt threshold and the distribution of the taxpayers. Furthermore, designing the income tax system to allow refundable tax credits rather than tax deductions can also provide stronger stabilizing effects. While the latter is usually more beneficial to high income earners, refundable tax credits are more beneficial to low-income earners who are more liquidity constrained and can spend this money. In the corporate income tax regime, the design of loss carry-forward and backward provisions can play an important stabilizing role particularly during recessions. The link between corporate income taxes and the economic cycle can also be strengthened by allowing collections to be based on estimated income for the current year rather previous year's actual income. On the spending side, ensuring that social spending is more appropriately targeted to low income earners or households that are liquidity constrained would help improve the stabilizing property.[7]

16.   **Second, reforms should aim to directly deal with ageing costs over the longer run.** While prefunding can help growth over the longer run by reducing the debt burden, lowering non-age related spending or tax increases to offset longer run spending can have short run output costs when the recovery is still weak. Alternative reforms that directly deal with longer run fiscal pressures should be considered which can address sustainability concerns without sacrificing short-run growth. For example, a phasing in of a higher retirement age would not entail output costs in the short term (Karam, et.al., 2010). Increasing retirement age in line with rising longevity and increasing labor participation rates of the elderly can help address the problem of long-run labor shortage and increase potential growth while also lowering fiscal pressures. Such reforms also ensure greater intergenerational equity in the pension system as the main beneficiaries of pensions would have paid more contributions into the system. To the extent that pension reserves would be accumulated through short- run consolidation, prefunding may not be optimal in the context of very low interest rates.

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[7] See Baunsgaard and Symansky (2009) for more measures to help improve automatic stabilizers.
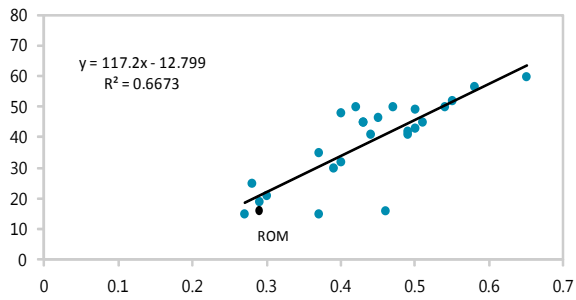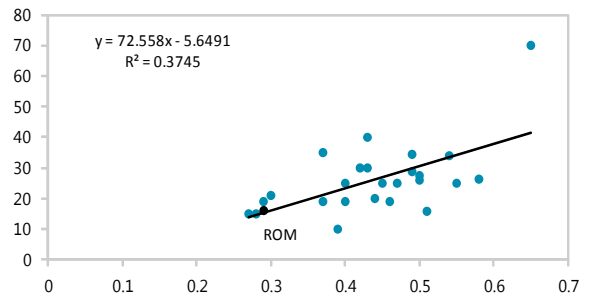
**Budgetary sensitivity vs.
No. of PIT Tax Brackets**

y = 9.0682x - 0.6302
R² = 0.1624
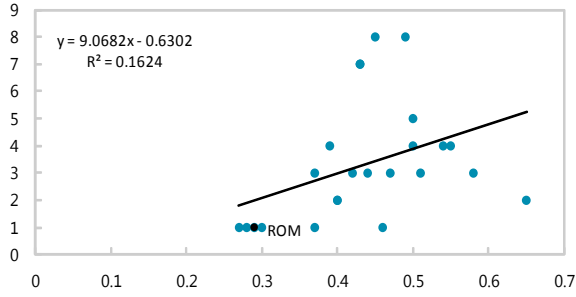
**Budgetary sensitivity vs.
No. of CIT Brackets**

y = 4.0012x + 0.1118
R² = 0.1394
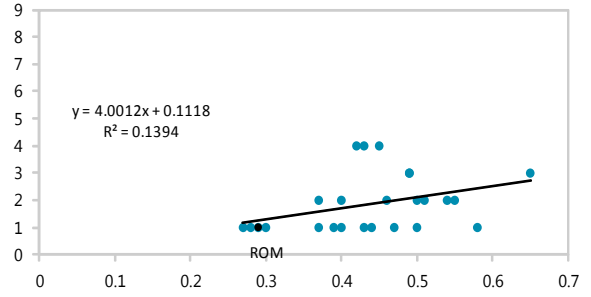
**Budgetary sensitivity vs.
Top Marginal PIT Rate**

y = 117.2x - 12.799
R² = 0.6673

**Budgetary Sensitivity vs.
Top Marginal CIT Rate**

y = 72.558x - 5.6491
R² = 0.3745

**Budgetary sensitivity vs.
Social Contribution Rates**

y = 0.6012x + 33.995
R² = 3E-05
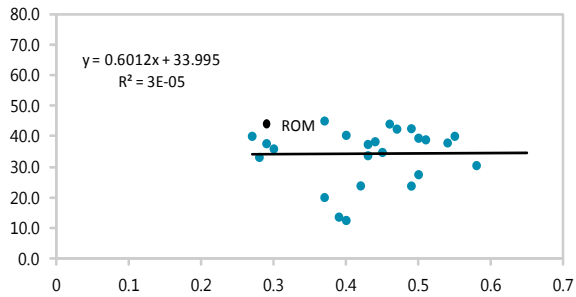
**Budgetary Sensitivity vs.
Size of Government (Cyclically Adjusted
Expenditure)**

y = 0.4101x + 0.2879
R² = 0.4289
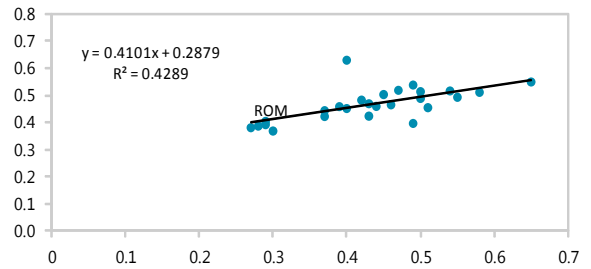
**Budgetary Sensitivity vs.
Replacement Rate of Unemployment Insurance
(percent of average wage)**

y = 49.897x + 42.925
R² = 0.0985
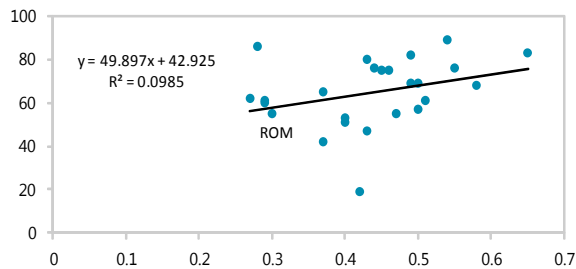
**Budgetary Sensitivity vs.
Duration of Unemployment Insurance (months)**

y = 50.82x - 8.5287
R² = 0.2606
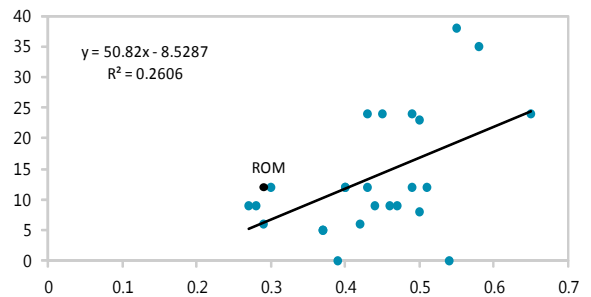
Sources. European Commission, KPMG, Organization of Economic Cooperation and Development, US Social Security Administration, and staff estimates.

17.   **Reforms in the health sector should be a high priority to address long-run fiscal pressures.** The ongoing effort to prepare a comprehensive health care law is an important step in this direction. As part of this legislation, it would be important to implement efficiency enhancing spending reforms that would ensure (i) rationalization of the hospital network focusing away from in-patient services towards ambulatory care; (ii) introduction of a basic benefits package covered by mandatory basic health insurance that is consistent with available resources; and (iii) a framework for Health Technology Assessment that would enable an ongoing process for delivering cost-effective services. Additional cost saving measures such as centralized procurement of pharmaceuticals should also be implemented. To increase resources devoted to the health sector, supplementary private health insurance should also be considered alongside measures to widen the contribution base. Introduction of copayments would also help better manage demand for services.

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IV. ENSURING THE FINANCIAL VIABILITY OF THE HEALTH CARE SYSTEM—FINANCING OPTIONS FOR ROMANIA[1]

A. Introduction

1.   **Under unchanged policies healthcare spending is projected to increase as a share of GDP in most countries over coming decades (IMF, 2012). Reforms are required to contain or even eliminate this increase. Still, spending is likely to increase in a number of countries despite reforms and options need to be explored how these funding needs can be met in the future.** This question is particularly relevant for Romania, which faces dramatic demographic changes going beyond those projected in most other countries while at the same time starting from the lowest level of health care spending in the European Union. In 2010 Romania spent around 5½ percent of its GDP on health care compared with an EU average of 9 percent, while in absolute terms per capita spending was only around a sixth of the EU average.

2.   **Romania's healthcare system faces a number of challenges, which need to be addressed**. The Government's planned comprehensive healthcare reform presents a unique opportunity to address these challenges, which include:

- Eliminating current financial imbalances, which exist despite the low level of spending;

- tackling inefficiencies, which could free financial resources today and would help to dampen spending growth in the future;

- improving healthcare services and thereby health outcomes, which are low by international standards; and

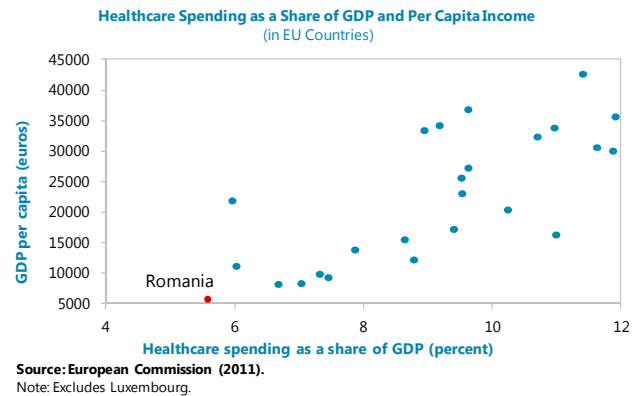- establishing a long-term sustainable funding structure.

3.   **Addressing the first two challenges ought to be a policy priority in the short to medium term.** Romania's healthcare system, for example, suffers from significant inefficiencies, and healthcare services and outcomes could be improved even within the existing funding constraints. Once these inefficiencies have been eliminated, there will still be pressure to increase spending though in the future, for example from the aging of the population. This note focuses on the final challenge, namely how to ensure that these likely increases in healthcare spending are adequately financed over the coming decades. Romania shares this challenge with other countries in the region (Mihaljek, 2008). These spending increases are likely to materialize on top of any discretionary increases aimed at narrowing

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[1] Prepared by Frank Eich.

the gap between Romanian and EU average spending, which has often been stated as a key social policy priority in the past.

B. Healthcare Spending Today and in the Future

4. **Total health spending in Romania at 5.6 percent of GDP in 2010 is the lowest in the European Union**—the EU average is around 9 percent. By comparison, neighboring Bulgaria, a country with a lower level of per-capita GDP, spends around 1¼ percentage points more. The low share of spending in itself is not surprising though: it reflects Romania's level of development relative to that of other EU countries. More advanced countries, as measured in terms of GDP per capita, tend to have higher healthcare spending as a share of GDP.


Total Health Expenditure
(Share of GDP, 2010)

Unweighted average = 9.0

Source: WHO Global Health Expenditure Database.

Healthcare Spending as a Share of GDP and Per Capita Income
(in EU Countries)

Romania

GDP per capita (euros)

Healthcare spending as a share of GDP (percent)

Source: European Commission (2011).
Note: Excludes Luxembourg.
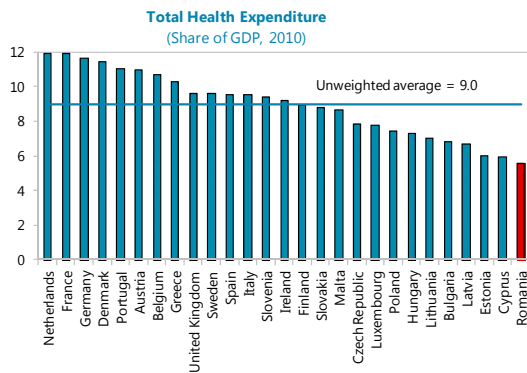
5. **Romania faces adverse long-term demographic and labor market trends**. Romania's economic old-age dependency ratio (the number of pensioners over the number of economically-active people of working age) will nearly double from 30 percent now to close to 60 percent over the coming two decades, overtaking the EU average by 2030. This development partly reflects the nearly 30 percent increase in the number of people aged 60 years and over but also adverse labor market developments. Over the next two decades the Romanian labor force is projected to shrink by around a sixth

Long-Term Trends in the Economic Old-Age Dependency Ratio

■ Romania economic old-age dependency ratio
▨ EU economic old-age dependency ratio

Source: European Commission (2011).

mainly as a result of continued low fertility rates. Moreover, the labor force participation rate is projected to decline by several percentage points. This contrasts with projected trends in the EU overall (European Commission, 2011).
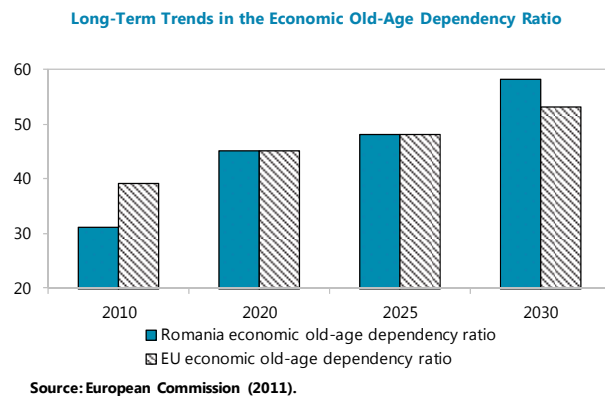
Romania Labor Force and Participation Rates
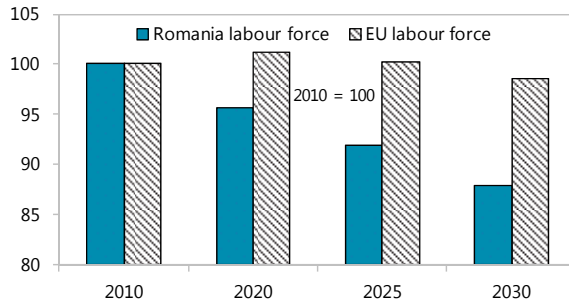
Source: European Commission (2011).
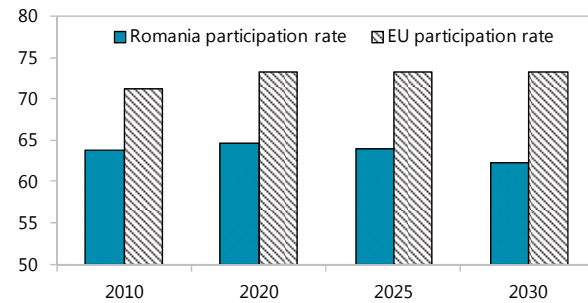
Source: European Commission (2011).

6.   **As in other countries, population aging will lead to an increase in health spending in Romania but non-demographic factors will be even more important (IMF, 2012 and European Commission, 2012).** Non-demographic factors are often captured by "excess cost growth" (ECG), which is attributable to the combined effect of rising incomes, technological advances, the Baumol effect,[2] and health policies and institutions. Based on the historical trend of ECG, public health spending is projected to increase by around 1¼ percentage points of GDP in Romania between 2011 and 2030, somewhat lower than the

Projected Increases in Public Health Spending in EU Countries, 2011–30
(percentage points of GDP)
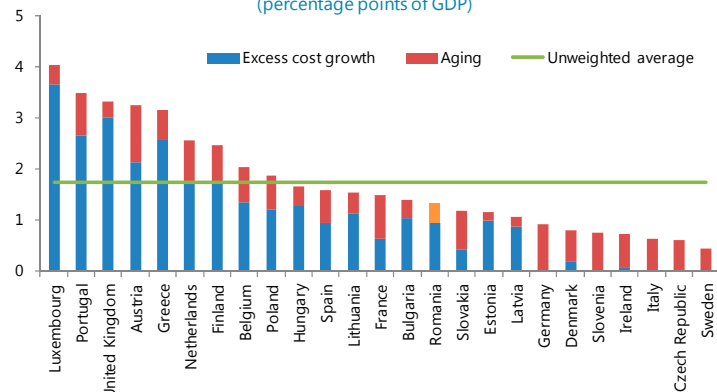
Source: IMF (2011).
Note: Excludes Cyprus and Malta.

EU average and substantially lower than in some of the more advanced EU countries. Four-fifths of this increase is projected to come from ECG (IMF, 2012).[3] See. The projections imply that by 2030 Romanian public health spending would be even further away from the EU average than it is now if country-specific historical trends in excess cost growth continued in the future, in other words countries did not introduce reforms to contain future spending increases.

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[2] The Baumol effect captures the fact that productivity growth is lower in the healthcare system than in the economy generally, driving up relative labor costs.

[3] Projections published by the EU Commission present a similar picture once non-demographic cost drivers are taken into account. In the so-called non-demographic determinants scenario (NDD), public health expenditure is projected to increase by an (weighted) average 1.3 percentage points between 2010 and 2030 in the EU and by 0.7 percentage points in Romania (EPC, 2012).

7. **These projections do not cover private health care spending.** In 2010 public health care spending accounted for around three quarters of total health care spending in EU countries on average, with richer countries tending to have slightly higher shares (but there

are exceptions such as the Czech Republic and Estonia spending more than the average, or Ireland spending less). Private health care spending accounts for a larger share than the public sector spending in only country: Cyprus. The breakdown in Romania—where public spending accounts for 78 percent of total spending— was close to the EU average. Assuming that private health

Share of Public Healthcare Spending in Total (percent)

Average: 73 percent

Source: WHO Global Health Expenditure Database.

expenditure will grow in line with public health expenditure (reflecting a no-policy change assumption in terms of the roles of public and private funding), total health expenditure will increase by an average of around 2½ percentage points of GDP in the EU and by around 1¾ percentage points in Romania over the next two decades.
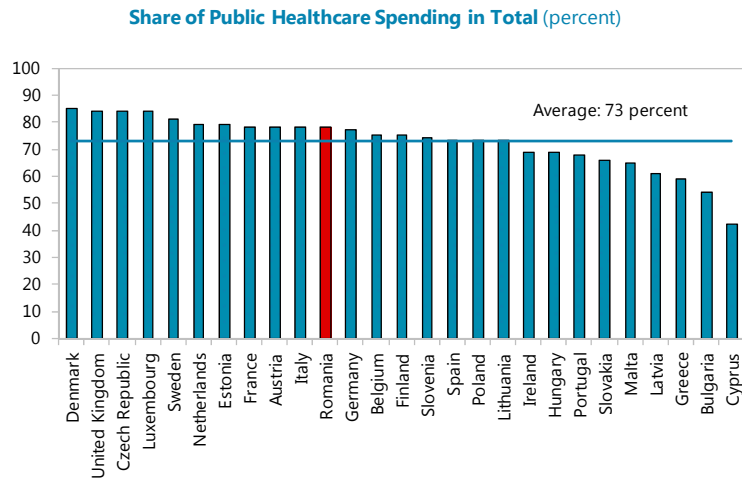
C. Sources of Revenue

8. **To sustain the viability of the Romanian health care system, once all opportunities for efficiency enhancements have been exploited, rising total health care spending will have to be financed through higher public and/or private revenue.** Public resources comprise social health contributions and revenue from the general government budget. Private resources comprise voluntary health insurance and out-of-pocket payments such as co-payments.

9. **Social health contributions are paid by those in formal employment, with employee and employer contribution rates of 5½ and 5.2 percent respectively.** Since 2011 pensioners also make contributions. Up to 2008 the contribution rate stood at 14 percent of taxable earnings.

10. **There is around one person not contributing for every person contributing to the social healthcare system**. Around 19 million of the country's 21½ million inhabitants are registered with family doctors and as such covered by the social health insurance.[4] At the

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[4] The latest 2011 census conducted by the National Institute of Statistics puts the number of inhabitants closer to 19 millions. If true, it is likely that it is mainly the younger working-age cohorts (i.e. those in their 20s and early

same time only 9 million people make social health contributions, comprising 6.3 million employed, around half a million self employed (out of total employment of around 8.7 million), and 2.3 million pensioners with monthly incomes above 740 lei (ANAF, 2012; EFOR, 2012 and Eurostat, 2012). The self-employed and pensioners only pay the employee contribution part of 5½ percent.

11.   **A large number of people is excluded from making personal contributions**, including children up to the age of 18 years, young adults in full-time education up to 26 years, the unemployed, war veterans, those on social assistance or bringing up children and many of those employed in the agricultural industry (Zaman, 2011). On behalf of the 1.3 million people who are unemployed, on social assistance etc the government contributes 5½ percent of the minimum wage (currently 700 lei), totaling around 235 million RON, to the social health insurance fund financed from outside that fund. In 2011 employee and employer contributions amounted to 5.9 billion and 6 billion RON respectively (ANAF, 2012). The self employed and those with incomes from independent activities made employee contributions amounting to 268 million RON, while pensioners with incomes exceeding 740 RON per month are expected to contribute around 750 million RON (EFOR, 2012).

12.   **In 2009 social health expenditure accounted for 80 percent of public health expenditure—equal to 3½ percent of GDP**. This includes the contributions made by government on behalf of those who are not making contributions themselves. As such this figure overstates the true importance of the social security system.[5] EU countries generally either rely heavily on social security contributions to finance their

Social Security Expenditure on Health as Percent of General Government Expenditure on Health, 2009

Source: WHO Global Health Expenditure Database.

public health care systems ("Bismarck") or rely on general taxation instead ("Beveridge"). Only a few have an explicitly mixed set up (Bulgaria, Austria and Greece). With a total

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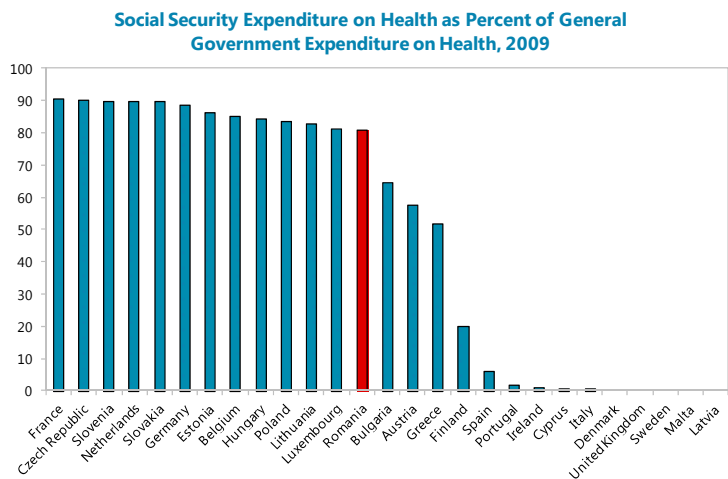
30s) who will have emigrated from Romania. This would have an adverse effect on revenue collection while leaving social spending on pensions and health care more or less unaffected.
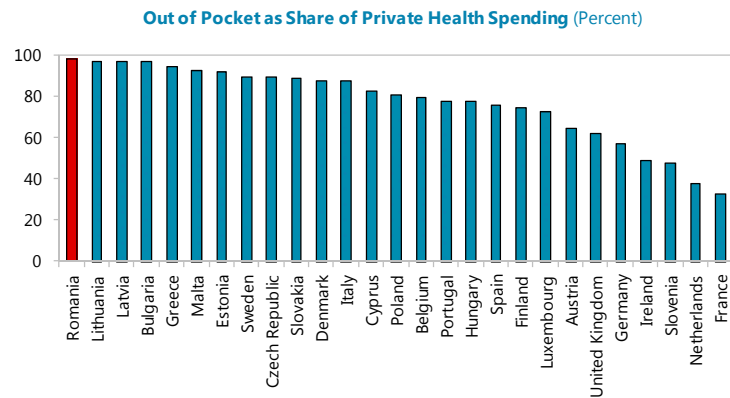
[5] This is not limited to Romania: "…*WHO data classify all funds channeled through health insurance funds as social insurance contributions, even though substantial amounts of tax-based allocations are also often channeled through health insurance funds, ...via subsidies for those who do not contribute*…" (Thomson et al, 2009, page 31).

contribution rate of 10.7 percent Romania takes a middle position in terms of rates in the group of countries, which rely mainly on social security funding (MISSOC, 2012).

13.   **Around a fifth of public health spending—accounting for around ¾ percent of GDP—is financed through general taxation and excise** (WHO, 2011). This includes spending on national health programs and capital investment. It also covers the remaining deficit in social health insurance scheme. For example children are automatically covered by the social health insurance scheme but do not have to contribute, either directly or indirectly by government transfers. Currently "vice taxes" on tobacco and alcohol generate around 1.2 billion Ron (0.2 percent of GDP) and are earmarked for this purpose.

14.   **Private resources comprise voluntary health insurance (VHI) and out-of-pocket payments (OOPS).** VHI, to supplement basic health coverage, plays only a very limited role in transition economies (Thomson et al, 2011) and currently no major role in Romania. Just more than three quarters of all private health care spending in the EU is in the form of OOPS. Accounting for 98 percent of private health care spending, the share is highest in Romania. OOPS comprise co-payments, formal payments (e.g. visiting a specialist without referral from a general practitioner) but also informal payments. In

Out of Pocket as Share of Private Health Spending (Percent)

Source: WHO Global Health Expenditure Database.

Romania as in other central and eastern European countries these are common, with more than a quarter of those visiting a physician and half of those hospitalized making informal payments (European Policy Brief, 2011). In 2005 it was estimated that around 40 percent of all OOPS were in the form of informal payments. Despite reform efforts, only a few affected countries have been able to reduce informal payments.

D. Options to Increase Revenue—A Partial Analysis

15.   **The pure demographic impact on social health contributions and personal income tax will most likely be modest**. With respect to the effect of demographic change on revenue, for those of working age, social health contributions and income tax can be expected to grow in line with GDP. However, currently 40 percent of pensioners (2.4 million out of 5.6 million) also contribute to social health insurance.[6] Assuming that this share will

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[6] Pensionable age is currently 55 years for females and 60 years for males, rising to 60 years and 65 years by 2030 respectively.

remain stable over time, the number of contributors could increase by nearly a third between 2010 and 2030. Social health contributions from pensioners could therefore also increase by a third over that period. In today's money, this would add around 250 million RON (0.05 percent of GDP). In addition, the increase in the number of people above working age who pay PIT on incomes above 1000 RON should provide a further small boost to revenue.

16. **Widening the contribution base would help to raise health insurance revenue and should be a priority**. Currently around three quarters of those in formal employment contribute to the social health insurance scheme and within that group, parts only make employee contributions. Moreover, the contributions of the co-insured (spouse, parents or parents-in-law of those making contributions) and for younger adults in full-time education are paid out of the state budget:

- Including the nearly 2 million individuals who are in employment but not making contributions (mainly to be found in the agriculture sector) would add to revenue. Assuming that every person paid only employee contributions on the minimum wage would yield around 0.15 percent of GDP.

- The self-employed make employee and employer contributions to the social security pension scheme but only employee contributions to the social health insurance scheme. Introducing employer contributions for the self employed would nearly double current contributions, which stood at around 270 million RON in 2011. The increase of around 300 million RON is equivalent to 0.05 percent of GDP.

- Including the co-insured would also widen the active contribution base. The authorities currently plan that the insured with incomes twice the minimum wage will have to make lump-sum contributions for up to three co-insured (spouse, parents, parents in law) equivalent to 5½ percent of the minimum wage. Around half of the co-insured could be covered by that (Health House).

17. **Standing at currently 10.7 percent and 16 percent respectively, Romania's health insurance contribution rate and income tax rate are relatively low by international standards.** While raising rates could have an impact on the degree of labor market formality—in other words it could encourage movement into informal employment—this should be less of a concern over the time horizon under discussion. Over the next two or more decades, it is likely that the Romanian economy will become more formalized as the country develops further and continues to integrate into the EU:

- The combined (employee and employer) social insurance contribution rate currently stands at 10.7 percent, yielding 12 billion RON. Everything else equal, increasing the combined rate by one percentage point would lead to an increase in revenue of just over 1 billion RON, nearly 0.2 percent of GDP. The Government's current plan to include all sources of incomes as taxable income would further add to revenue

- The Personal Income Tax (PIT) rate is 16 percent. In 2011 PIT revenue amounted to 20 billion RON (3½ percent of GDP). Everything else equal, a one percentage point increase in the PIT rate would yield an additional 1.2 billion RON (0.2 percent of GDP) in revenue.

- At standard and two reduced rates of 24 percent, and 9 percent, and 5 percent respectively, VAT generated 48 billion RON in revenue (8¼ percent of GDP) in 2011. The lower rates apply to books, newspapers, hotel services, medicines, and building supplies. Raising the VAT rate by one percent would yield around 2 billion RON (0.3 percent of GDP) in additional revenue.

18.   **Further revenue could be raised by improving the efficiency of tax collection**, for example by closing existing loopholes, improving collection efforts and thereby compliance.

E.   Discussion and Concluding Comments

19.   **Before considering increases in spending, Romania ought to address the inefficiencies in its healthcare system.** Beyond that, funding projected increases in total healthcare spending—potentially around 1¾ percentage points of GDP—over the coming decades represents a formidable challenge. Dealing with this challenge should be within reach of an ambitious government though starting from a strong fiscal position will be paramount. This suggests that there is little scope today for tax policy measures, which would reduce revenue. When addressing these challenges future governments should also benefit from the further formalization of the economy, reducing the risk that an increase in contribution or tax rates would merely shift economic activity into the informal sector. A multi-pronged approach appears to be most promising.

20.   **Widening the contribution base by eliminating exemptions and eliminating the difference between the dependent employed and self-employed in terms of employer contributions should be a policy priority and could yield up to 0.2 percent of GDP.** Against this would have to be considered though that many of those not contributing today only use the emergency services or make out-of-pocket payments for health services. Making them contribute to the system would change that relationship. Over the longer term, formalizing their relationship with the public healthcare system would still arguably be desirable. Asking the insured on higher incomes to contribute a lump sum for up to three co-insured family members—as is currently planned by the Government—is a step in the right direction. This policy could be developed further by asking those on even higher incomes to support a larger number of co-insured family members, including perhaps their older children in full-time education. In other words, government could means test the payment of contributions out of the general government budget for young adults in full-time education.

21.   **A return to a pre-crisis social health contribution rate of 14 percent—up from currently 10.7 percent—would lead to a significant increase in revenue of around**

0.6 percent of GDP and should be considered a policy priority. This already amounts to around a third of the required increase.

22.   **Romania could also rely more heavily on general government revenue, as is the case in many other countries.** An increase in the personal income tax rate, for example, from currently 16 to 18 percent (ignoring deductions) would yield around 0.4 percent of GDP—more than one-fifth of the required increase. A one percentage point increase in VAT would raise revenue by 0.3 percent though the standard VAT rate is already at the upper end in an EU context.

23.   **There is limited evidence that voluntary supplementary health insurance makes a significant contribution to the financing of health care systems in EU countries (Thomson et al., 2009).** This perhaps reflects the fact that in most EU countries public healthcare provision is perceived to be of a sufficiently high quality, thus limiting the attraction of supplementary voluntary health insurance. This might not be the case in Romania. While even in central and eastern European countries voluntary supplementary health insurance is only playing a minor role, it could still probably be developed to make some contribution to funding. However, the contribution of voluntary insurance will depend on the scope of the basic healthcare package, which raises basic equity issues.

24.   **Overall, a mixture of the above measures would allow Romania to fund future projected increases in healthcare spending arising from population aging and other non-demographic factors.** For example, widening the contribution base and raising contribution rates could fund around half of the increase out of the social health insurance scheme itself. Asking those on higher incomes to support a greater number of co-insured family members (including potentially younger people in full-time education) would help further. Given the flat-rate income tax system, this would also appear to make the welfare state more equitable. Higher transfers from the general government budget and voluntary supplementary health insurance could then be used to fund the remaining gap.

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https://webgate.ec.europa.eu/sanco/heidi/index.php/Heidi/Healthcare/Financing_healthcare/Healthcare_financing_systems#

Eurostat: Employment by sex, age and professional status database.

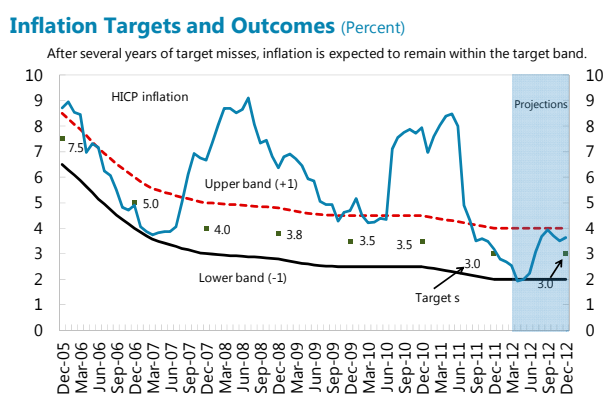MISSOC: EU's Mutual Information System on Social Protection database (accessed August 2012).

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V. THE EFFECTIVENESS OF INTEREST RATE TRANSMISSION IN ROMANIA[1]

1.   **This note assesses the effectiveness of interest rate transmission in Romania and the factors that determine it.** A good understanding of the interest rate transmission mechanism is crucial for an inflation targeting regime that uses reference interest rates as its primary policy instrument. The Romanian banking system has a history of structural excess liquidity and deviations of money market rates from policy rates, prompting some observers to question the effectiveness of monetary policy. The analysis contributes to this discussion by, first, comparing the speed and magnitude of pass-through in Romania to other countries and, second, identifying factors that may determine its effectiveness.[2]

2.   **Direct inflation targeting was introduced as a new monetary policy regime in Romania in August 2005.** The inflation targeting framework gives the NBR sole responsibility for monetary and exchange rate policy. It targets a headline inflation rate around which an inflation band of +/- 1 percentage points anchors expectations. Announcements of targets two years in advance emphasize the focus on medium-term developments. Romania's exchange rate regime is a managed float, consistent with using inflation targets as a nominal anchor.

Inflation Targets and Outcomes (Percent)

After several years of target misses, inflation is expected to remain within the target band.

Source: Haver; and IMF staff estimates.

3.   **The policy rate is the central bank's primary policy tool and determines the interest rates used in open market operations and the central bank's standing facilities.**

- *Standing facilities* aim to absorb and provide overnight liquidity. Interest rates on the NBR's lending and deposit facilities form a symmetrical corridor of +/- 4 percentage points around the policy rate. The wide corridor allows money market rates to deviate from the policy rate, and makes the use of standing facilities costly relative to interbank transactions.

- *Open market operations* have been given the main role in managing liquidity and controlling short term interest rates since the introduction of inflation targeting.

- *Reserve requirements* have varied over time as well as between domestic and foreign currency bank liabilities and can in principle contribute to liquidity management.

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[1] Prepared by Christian Saborowski. Sebastian Weber contributed to the analysis in Section B.

[2] Data sources are described in the Appendix.

Interest is paid on reserves at varying rates depending on the asset's currency of denomination.

4.   **The inflation targeting regime inherited a structural liquidity surplus in the financial system as a result of foreign reserves accumulation.** Since the end of the 1990s, foreign exchange inflows represented the NBR's most important money creation instrument. The NBR steadily accumulated foreign reserves while liquidity effects were only partly offset through absorbing open market operations. As a result, money market rates often deviated strongly from the policy rate (Antohi, Undrea, and Braun, 2003).

5.   **The liquidity surplus turned into deficit during the global crisis but reappeared as funding strains eased.** Amid strong depreciation pressures the NBR intervened heavily in the foreign exchange market, draining liquidity at a large scale. Repo operations and changes in reserve requirements offset the liquidity effect partially. Liquidity conditions later improved despite further foreign exchange intervention. Most recently, banking sector fragmentation led to situations in which the NBR acted as a net lender to the system although money market rates signaled abundant liquidity in the system as a whole.

Monetary policy operations
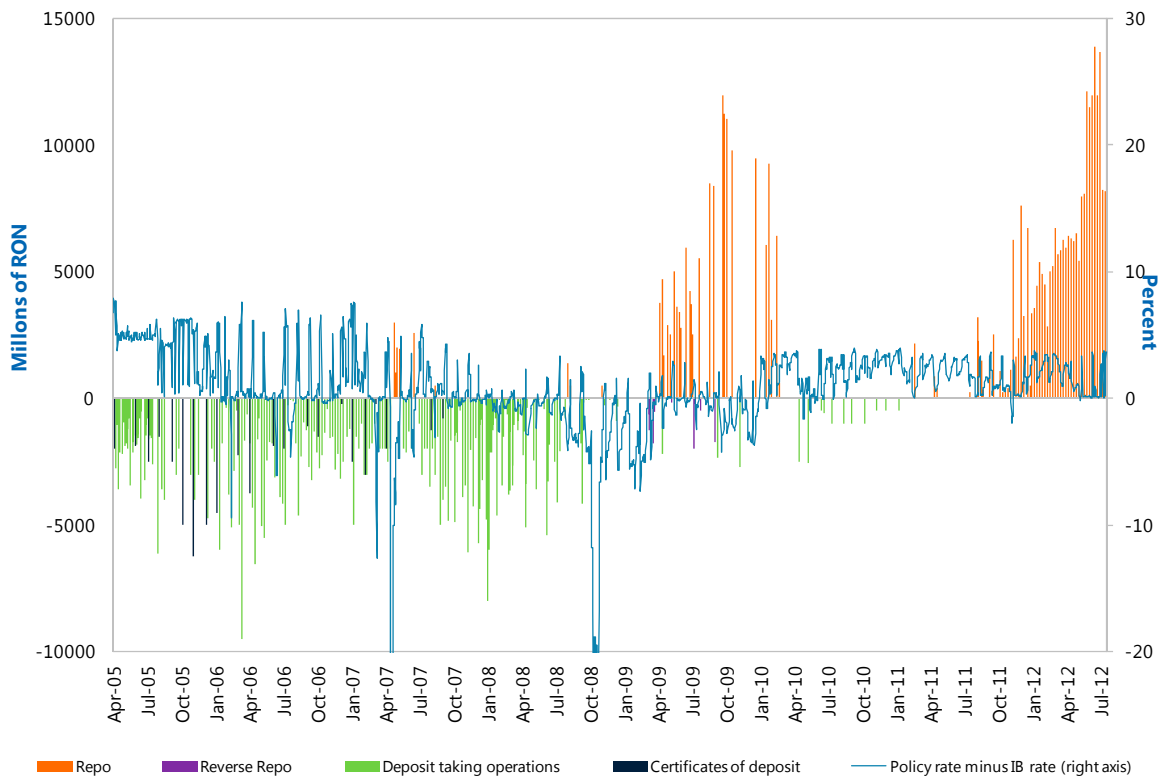
A. Interest Rate Pass-Through in Romania Under the Direct Inflation Targeting Regime

6.   **Pass-through from policy rates to retail lending rates can differ in speed and magnitude across countries.** In a developed financial system, a fall in the policy rate would normally be implemented through purchases of government securities or reduced deposit taking operations by the central bank. The resulting increase in commercial banks' excess reserves would affect the short-term money market rate and the amount of resources banks intermediate. As credit supply rises, the cost of finance for the non-bank sector falls. As a result, both retail lending and deposit rates across the yield curve drop, starting from short maturities. As central banks operate at the lower end of the yield curve, a change in the policy rate typically translates into an almost immediate change in the interbank rate.[3] Pass-through to retail lending rates can be delayed and incomplete and may vary greatly across countries (Mishra et al, 2010).

Romanian Interest Rates in Lei
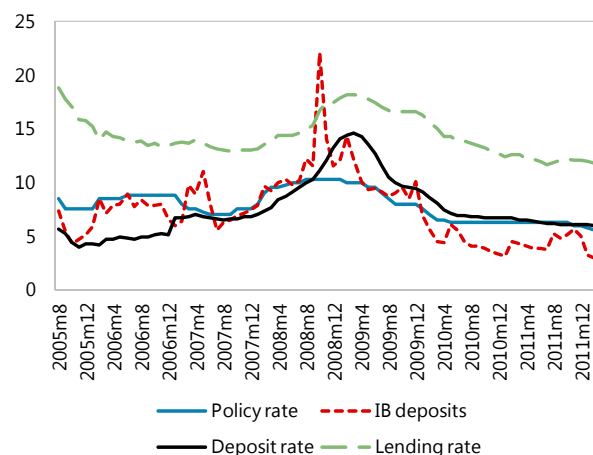
7.   **We assess the speed and magnitude of pass-through in Romania in a simple two-variable setup in which interbank and retail lending rates are modeled as functions of the policy rate.** The analysis uses monthly data for the period 2005M8–2012M4. An appropriate econometric specification must take account of the dynamic nature of the relationship and allow for lagged responses of market rates to policy changes. Moreover, the order of integration of the interest rate data is central: while pre-inflation targeting data indeed suggests a cointegrating relationship between policy and market rates (Tieman, 2004), standard tests mostly reject this hypothesis in the period covered in this note.[4]

8.   **We choose an Autoregressive Distributed Lag (ARDL) model in first differences as a first approximation of the data.** Market rates are modeled as functions of the policy rate and three lags of both variables. This specification allows for a dynamic relationship between the interest rate series and is appropriate as long as policy rates are largely

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[3] The crisis has shown that this is not the case when the bank lending channel is weakened.

[4] Interest rates are sometimes found to be non-stationary in transition economies where they exhibit a declining trend. If a cointegrating vector exists, non-stationary modeling techniques are appropriate.

exogenous to movements in market rates. It is then straightforward to calculate both short- and long run impacts. We first estimate the pass-through from policy to money market rates and subsequently to retail lending rates. To the extent that long-run pass-through is complete, we would expect a one percent increase in the policy rate to be reflected in a one percent increase in the respective market rate.

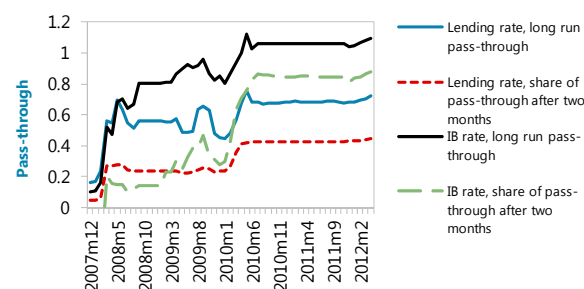**Long- and Short Run Pass-Through: ARDL Model**
Rolling Regressions not Controlling for 2008:Q2- 2009:Q2
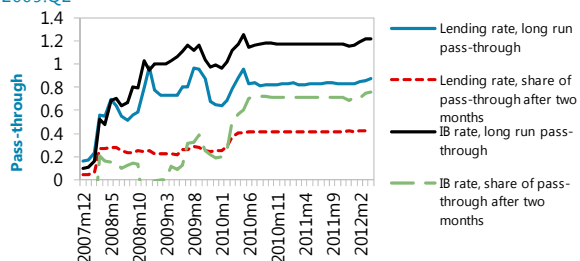
Long- and Short Run Pass-Through: ARDL Model
Rolling Regressions Controlling for 2008:Q2-2009:Q2

9.   **Results suggest that long-run pass-through to money market rates is close to complete, but policy impulses are transmitted slowly.** We used the ARDL model to calculate pass-through to market rates in rolling regressions to help understand whether estimates changed over time. The preferred specification controls for the height of the global crisis.[5] Pass-throughs for a given date are estimated based on the sample period up to that point.[6] The results suggest that long-run pass-through to money market rates was initially below 80 percent but has since been close to one. The speed of transmission also improved but continues to be low: in the early years, only a third of the total pass-through was reflected in interbank rates within the first two months. Later, short term pass-through reached about 80 percent of the total.

10.   **Pass-through to lending rates was initially weak but now compares well to other emerging markets.** The estimation suggests that pass-through to lending rates reached over 70 percent for the period as a whole, placing Romania above the median emerging markets according to most studies on the matter (e.g. Medina Cas, 2011; Mishra et al, 2010). Short-run pass-through, on the other hand, is found to be low in the early years of inflation targeting—just above 20 percent of the total—and increases to a moderate 60 percent of the total in later years. We also experimented with Structural vector autoregression (SVAR) specifications that allow us to explicitly control for factors such as inflation and economic activity in the regressions as well as to relax the assumption that the policy rate is strictly

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[5] We include a dummy for the period 2008Q4-2009Q2 in the regression as a well as interactions of the dummy with the policy rate and all its lags.

[6] The initial sample window for the 2007M9 estimates starts in August 2005 and thus contains 24 observations. For the subsequent periods, one more data point at a time is added to the sample.

exogenous to market rates.[7] The results do not change markedly and suggest that our findings are relatively robust to these specification changes.
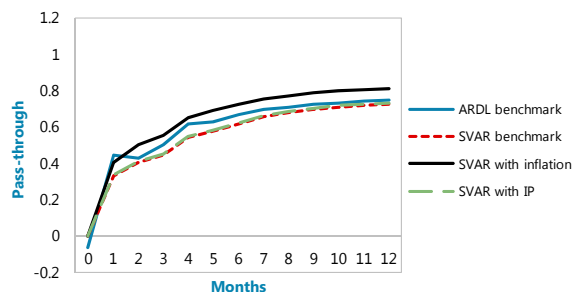
Robustness: ARDL and SVAR Specifications
Lending Rate Response (Not Controlling for 2008:Q2-2009:Q2)
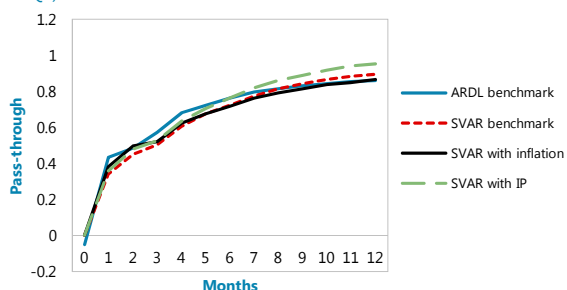
Robustness: ARDL and SVAR Specifications
Lending Rate Response (Controlling for 2008:Q2-2009:Q2)

B. What are the Factors that Determine the Effectiveness of Interest Rate Transmission?

11.   **We proceed to identify factors that determine the effectiveness of interest rate transmission in a large cross-country panel.** The country sample was chosen based on the availability of monthly interest rate data for the period 2000–11. The analysis uses a structural cross-country panel VAR augmented by interaction terms. The technique allows estimating impulse response functions for lending rates to changes in policy rates and evaluating these at different percentiles of the distribution of given country characteristics (Towbin and Weber, 2011).[8] We have thus identified a variety of factors relevant to Romania that appear to determine pass-through across countries and time periods.

12.   **We find that a strong policy mandate is associated with more effective transmission, flanked by a high-quality overall regulatory environment and a healthy and well developed financial system.** The analysis suggests that a variety of factors condition the effectiveness of interest rate transmission. These include the degree of exchange rate flexibility, the quality of the regulatory environment, financial dollarization and development as well as banking sector health, concentration and excess liquidity. In this regard, Appendix Figure compares impulse responses at the lower and upper quartiles of each of the relevant country characteristics and tests whether differences in magnitudes are statistically significant. We proceed to discuss the intuition behind each of the individual factors we identified.

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[7] We use a Choleski ordering to identify the impulse response functions in which policy rates (inflation/industrial production) are contemporaneously exogenous to lending rates (both types of interest rates).

[8] Impulse response functions are identified by way of the same Choleski ordering as in the Romania specific example in the previous section.

13.   **Interest rate transmission is effective when policy rate changes are perceived as strong signals for the central bank's monetary policy stance.** The central bank's control over market rates is likely to be tighter when policy rates are set as part of a transparent and rules based framework that is largely independent of fiscal and exchange rate policy. A lack of exchange rate flexibility, for instance, may signal that the policy rate is not the primary monetary policy tool. Indeed, pass-through appears to be significantly higher in countries with flexible exchange rate regimes (Appendix Figure). In Romania, the NBR has sole responsibility for the conduct of monetary and exchange rate policy, and the policy rate is its primary policy instrument. While reserve accumulation often complicated monetary policy making, the NBR used open market operations extensively in an effort to bring money market rates close to policy targets and emphasize the signaling function of the policy rate.

14.   **A weak overall regulatory environment increases the cost of financial intermediation, making market rates less responsive to policy changes.** A poorly functioning regulatory environment creates uncertainty in the financial system and can lead to a deformalization of financial transactions and a higher cost of financial intermediation. As a result, bank rates become less sensitive to changes in the policy rate. In fact, the small size of financial intermediation in many developing

World Bank Regulatory Quality Index

economies is likely related to a weak regulatory environment (Mishra, et al., 2010). The Appendix Figure illustrates that a weak regulatory environment is indeed associated with lower pass-through. Romania has improved its score on the World Bank index of regulatory quality but room for improvement exists.
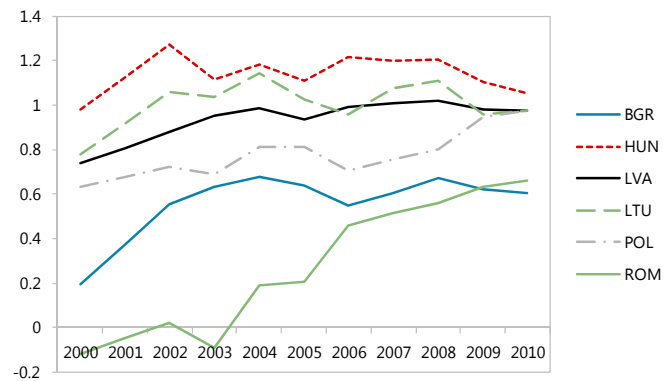
15.   **In highly dollarized financial systems the central bank has only limited control over market interest rates in local currency.** The cost of foreign currency funds is linked to external factors that are mostly outside the control of the central bank. To the extent that financial market participants can choose between domestic and foreign currency instruments, the policy rate can thus have only partial control over market interest rates (Appendix

Financial Dollarization and Development
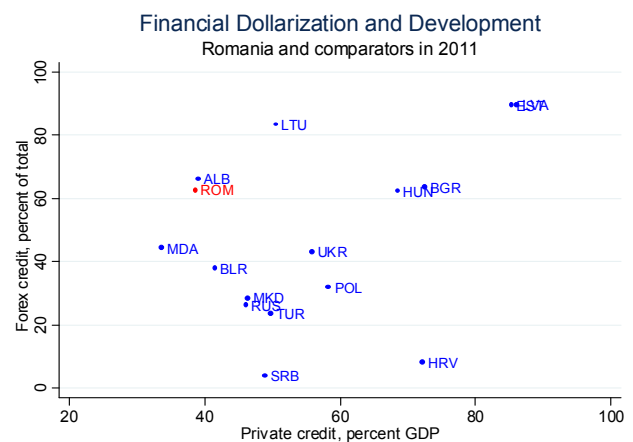Romania and comparators in 2011

Figure). Moreover, a high degree of dollarization makes bank balance sheets vulnerable, leading to a fear of floating that can be detrimental for effective interest rate transmission (Leiderman et al, 2006). In Romania, two thirds of private loans and one third of deposits are denominated in foreign currency.[9]

16.   **Market interest rates in developed financial systems are more responsive to policy rate changes as these offer a larger variety of alternative forms of investment.** Deeper financial markets are associated with increased competition between financial products. Market interest rates are thus more responsive to policy rate changes because profit margins are constrained (Cottarelli, et al., 1994). A lack of financial development is also an important source of dollarization (Leiderman et al., 2006), and a weak interbank market can lead to excess liquidity (Mishra et al, 2010). Excess liquidity, in turn, weakens interest rate transmission because policy rate changes are unlikely to cause movements in credit supply when liquidity is abundant. Indeed, the Appendix Figure illustrates that both shallow financial markets and excess liquidity in the banking system are associated with less effective interest rate transmission. While Romanian markets have deepened in recent years, equity and bond markets remain shallow and long term investment opportunities are scarce. With a private credit to GDP ratio just below 40 percent, Romania continues to lag behind most of its peers. Excess liquidity in the banking sector is a well-known and periodically re-occurring phenomenon in Romania.

Banking Sector Concentration and Health
Romania and comparators in 2011
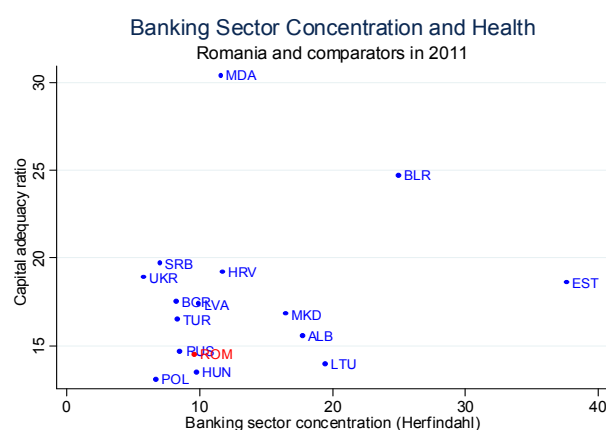
17.   **When banks have substantial market power, policy rate changes may translate into movements in spreads rather than market rates.** Imperfectly competitive financial systems are often characterized by a small number of relatively large banks, an important role for government-owned banks and a weak role for nonbank financial intermediaries. Market power allows banks to expand profit margins in response to a fall in the policy rate rather than increasing the supply of loans and passing the price change on to consumers. The analysis indeed finds that pass-through is substantially higher when the banking sector is well diversified (Appendix Figure). In Romania, most banks are privately owned, and the banking system is relatively diversified compared to its peers.

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[9] The drivers of dollarization have been well documented and include, primarily, the interest differential, the lack of a long term yield curve in Lei, easy funding in euros from parent groups, and expectations of euro convergence.

18.   **Banks with weak balance sheets may react to an expansive monetary policy stance by shoring up liquidity rather than extending credit at lower rates.** Financially weak banks may use additional liquidity to increase buffers and capital positions. A change in the policy rate may thus have a very limited impact on market rates. In essence, potential new loans are crowded out by the presence of bad loans on the balance sheet. Indeed, the analysis shows that a healthy banking system is associated with stronger pass-through (Appendix Figure). The Romanian banking system has kept solid capital buffers throughout the financial crisis but NPLs are sizable and have continued to rise in recent months.

C. Conclusion

19.   **Interest rate transmission in Romania compares well to other emerging markets although policy signals are reflected rather slowly in market rates.** A one percentage point increase in the policy rate translates one for one into money market rates in the long run, and into a 0.7 percentage point increase in the retail lending rate. This places Romania above the median in a comparison with other emerging market economies. However, transmission to both money market and retail lending rates is slow, with only 60 percent of the overall pass-through to lending rates showing up during the first two months following the policy change.

20.   **A more developed and better regulated financial system could alleviate dollarization and provide for more effective interest rate transmission.** Countries with effective interest rate transmission are those with a strong monetary policy mandate, a good regulatory environment and a well developed and healthy financial system. While the monetary policy framework in Romania is strong, financial markets remain shallow compared to most of its peers, are highly dollarized and prone to incidences of excess liquidity. Going forward, the authorities should continue to build credibility through transparent and rules based policy making, including by avoiding excessive intervention in foreign exchange markets. Moreover, efforts should be made to deepen equity and bond markets and raise investor interest in the Romanian economy by adopting legislation as needed to promote financial sector development and improving regulatory quality in the economy as a whole. The diversification of the banking sector in recent years is a welcome development, but the authorities should remain watchful to improve banking sector health and act forcefully to clean up deteriorating balance sheets should NPL ratios continue to increase.

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Medina Cas, S., A. Carrión-Menéndez and F. Frantischek (2011). "The Policy Interest-Rate Pass-Through in Central America," IMF Working Paper 11/240.

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Towbin, P., and S. Weber (2011) "Limits of Floating Exchange Rates: the Role of Foreign Currency Debt and Import Structure," IMF Working Paper 11/42.

Data sources:

Variable	Source
Repo operations	National Bank of Romania
Reverse repo operations	National Bank of Romania
Deposit taking operations	National Bank of Romania
Certificates of deposit	National Bank of Romania
Policy interest rate	National Bank of Romania
Interbank deposit rate	National Bank of Romania
Retail lending rate	International Financial Statistics
CPI inflation	International Financial Statistics
Real GDP growth	International Financial Statistics
Loan dollarization	International Financial Statistics
Exchange rate flexibility	Reinhart and Rogoff (2004)
Regulatory quality	World Bank Governance Indicators
Private credit to GDP	World Development Indicators
Liquid reserves to total assets	World Development Indicators
Banking sector concentration	Bank Scope

Appendix Figure: Impulse response functions evaluated at lower (upper) quartile
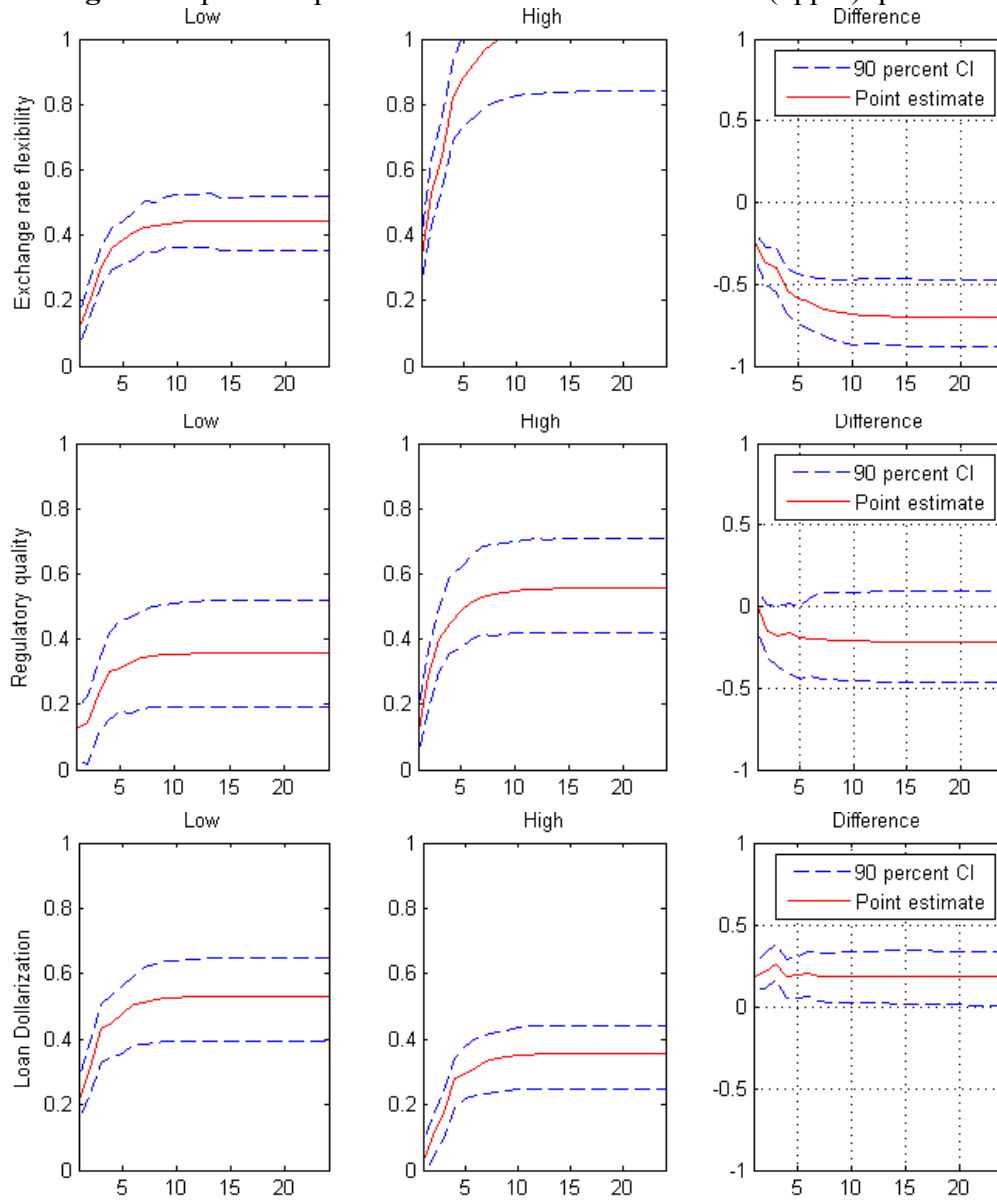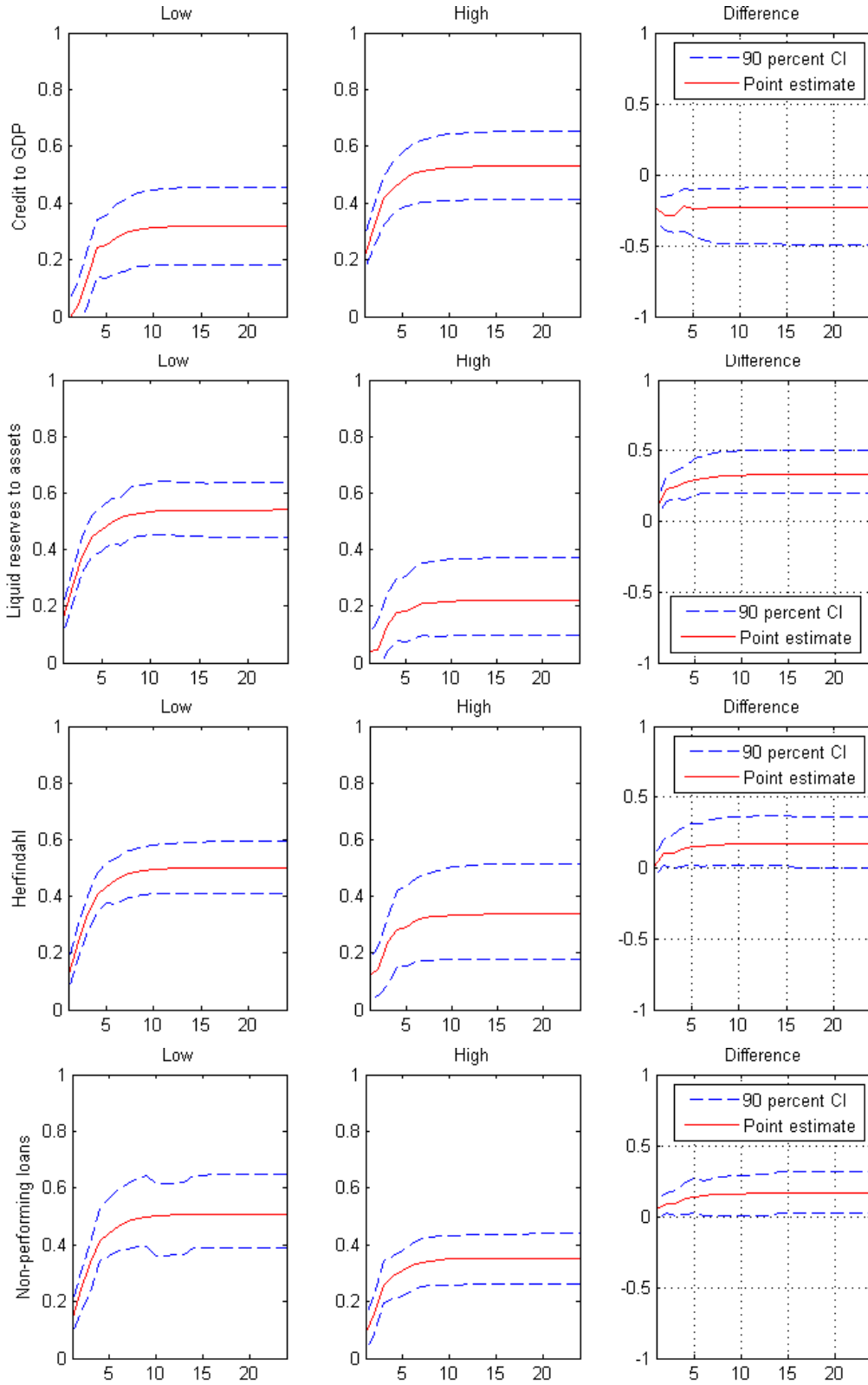
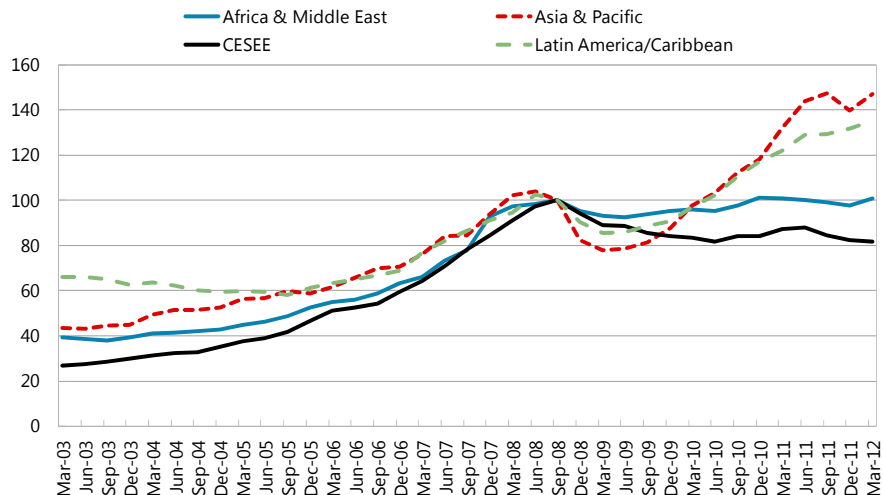## VI. FINANCIAL SECTOR LINKAGES IN ROMANIA[1]

A. Introduction

1.   **Beyond financial spillovers, Romania's growth trajectory and domestic credit performance is strongly influenced by developments in Western Europe.** According to the IMF 2012 Spillover Report, a one percent growth shock in Western Europe gives rise to a shock of about equal size in CESEE. Banking linkages are an important separate conduit for spillovers. The cross-border banking model used in the Spillover Report finds that a 1 USD change in cross-border exposure of western banks vis-à-vis CESEE banks translates over time into a 0.8 USD change in domestic credit. And each extra percentage drop in real credit growth leads to about 0.3 percentage point reduction to real GDP growth. So any intensification of the Euro area crisis that would cause disorderly deleveraging of parent banks could significantly impact private sector credit growth in Romania.[2]

2.   **The risk of disruptive parent funding withdrawals by European banks from CESEE has been a longstanding concern.** Some orderly deleveraging is unavoidable given past excessive FX driven credit booms and European banks' desire to shrink non-core assets over time. Disorderly foreign bank deleveraging can risk a credit crunch, balance of payment stress and loss of reserves, a sharp depreciation, increases in risk premia as well as spillovers to the real economy. Excessive

External Positions of BIS-reporting Banks vis-à-vis Emerging Market Regions
(Sept. 2008 = 100, exchange-rate adjusted)

Sources: BIS; and IMF staff calculations.

deleveraging in CESEE countries has been prevented thus far, partly thanks to the European Bank Coordination Initiative (EBCI) which encouraged parent banks to maintain exposure to

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[1] Prepared by Heiko Hesse.

[2] The usual caveats of directly translating the average cross-country effect (to the CESEE) onto Romania should be considered in the above estimates given some country-specific heterogeneities.

their subsidiaries.[3] The ECB's LTROs have also provided some funding relief to parent banks but the LTRO effect is diminishing. Compared to other emerging market regions, the CESEE has seen larger foreign bank deleveraging since the Lehman Brothers collapse in September 2008, with the exposure to Asia & Pacific and Latin America & Caribbean by far exceeding the level in September 2008.

3.   **Romania has been strongly impacted by the financial crisis in 2008/09 but also recently from the intensification of the euro area crisis.** Both CDS and Emerging Markets Bond Index Global (EMBIG) spreads have been steadily increasing again to levels that remain lower than Hungary but higher than Bulgaria or Poland. Domestic political tensions in Romania have also contributed to the weak performance of Romanian asset prices as well as the depreciation of the exchange rate.

CDS and EMBIG Developments
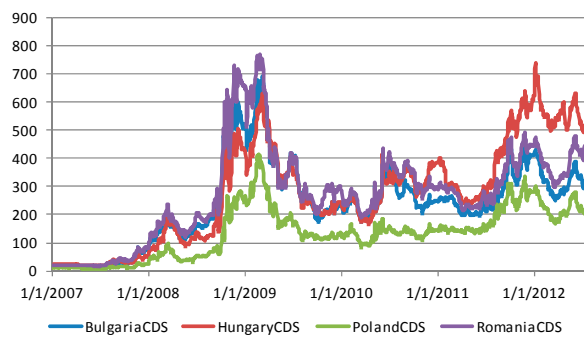
Source: Bloomberg.
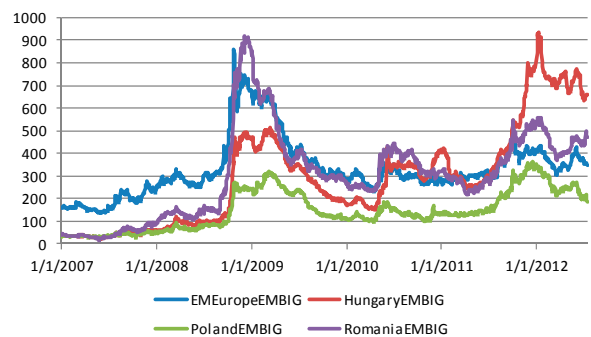
Source: Bloomberg.

4.   **This note looks at foreign bank deleveraging and examines how Romania's asset prices have been impacted from European crisis spillovers and compare those to peer group countries.** Foreign bank deleveraging has been orderly and moderate so far in Romania, also partly thanks to the EBCI. Findings from the spillover analysis suggests that Romania's asset markets tend to co-move more closely with its regional peers but have been strongly impacted by the financial crisis in 2008/09 and also recently from the intensification of the euro area crisis. A GARCH analysis shows that implied co-movements of Romanian asset prices are higher with peer group countries than with the euro area periphery or euro area asset prices (e.g. Euro Stoxx). But results also indicate that Romania's asset prices in some episodes significantly co-move with GIIPS countries and European risk premia with related correlation jumps up to 0.5-0.6. Furthermore, an ARCH Markov-Switching model analysis indicates that Romania's EMBIG spread recently moved back to a high-volatility state which could have been also driven by domestic political tensions. Equity market volatility has also soared again recently.

[3] EBCI (2012) provides an analysis of deleveraging in the CESEE.

5.   **High estimated correlations of Romania's asset prices and spreads mean that Romania is vulnerable from an intensification of the euro area crisis.** Continuing domestic political tensions would bring in an idiosyncratic and adverse component into Romania's asset prices, a risk on top of the European common factor. Vulnerabilities especially to financial spillovers from Europe call for safeguarding sufficient public and financial sector buffers and implementation of prudent contingency planning, given the negative effect sharp increases in Romania's CDS and EMBIG spreads or declines in equity prices would have on Romania's financing costs and capital inflows, exchange rate, market sentiment as well as credit and liquidity risk of the banking sector.

6.   **This note is organized as follows:** Section B discusses recent trends and causes of foreign bank deleveraging in Romania, while section C covers the methodology and data of the GARCH and ARCH Markov-Switching analysis as well as the financial spillover results. Section D concludes.

B. Foreign Bank Deleveraging

7.   **The Romanian banking sector remains vulnerable to spillovers from the euro area and domestic developments, and deleveraging remains a risk.** The banking system is 80 percent foreign owned with Austrian banks dominating the market with 38 percent of system assets. Subsidiaries of Greek banks hold about 14 percent of system assets and 12 percent of deposits. In particular, Greek banks have orderly deleveraged to cope with a more limited funding availability. While overall bank capitalization remains strong with 14.7 percent, the liquidity situation has become more heterogeneous among banks, and funding costs (such as in deposits or the interbank segment) are increasing. Credit growth has significantly slowed and nonperforming loans continued to rise to 16.8 percent in June, mainly due to the weak economic activity and the vulnerability of the large legacy of foreign-currency loans. Prudential provisions almost fully cover nonperforming loans but profitability is poor, mainly because of the persistent need for higher provisioning, lower interest rate margins and high overhead costs.

8.   **Foreign bank deleveraging has been orderly and moderate so far, also partly thanks to the EBCI initiative.** The total exposure to Romania of the nine largest foreign banks that participated in the EBCI stood at 94 percent (against March 2009 exposure) but still compares to 101.3 percent at end-2011. While the EBCI exposure to own subsidiaries has remained at a similar level between March 2009 and June 2012, the banks' exposure to non-financial institutions has been steadily declining, overall by 16 percent in the observation period. Some banks have reduced their overall exposure to below 80 percent. Overall bank system parent funding has orderly and moderately declined since end-2011, and at end-July stood at 89.2 percent of the end-2011 level, a decline from €20.3bn to €18.1bn with some July acceleration. The system loan-to-deposit (LTD) ratio has remained stable around 120 percent in recent years while due to the funding currency mismatch, the LTV ratio in foreign currency has stayed beyond 200 percent.

EBCI Parent Funding Exposure to Romania
(Bn €)

Source: EBCI.

Bank System Parent Funding (Bn €)

Source: NBR.
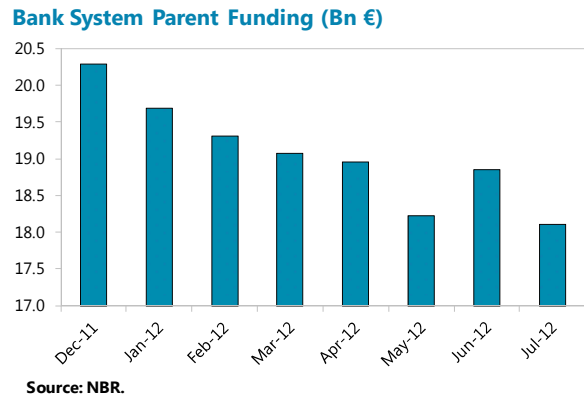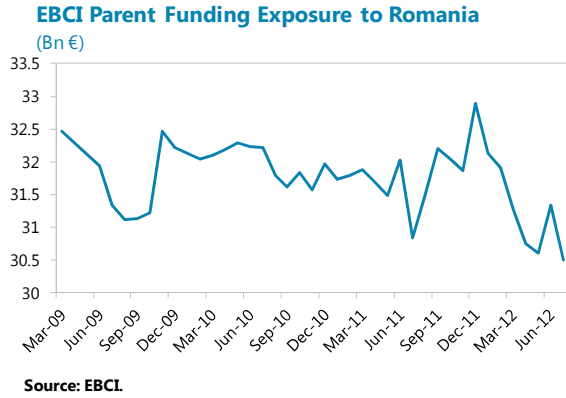
9. **A large amount of parent funding has a longer-term maturity structure.** The fact that the majority of banks' parent funding (close to 70 percent) exhibits a maturity of more than one year prevents an abrupt withdrawal. Around 12 percent has a maturity of up to one month and 21.1 percent below six months. For the overall banking system, parent funding constitutes around 20 percent of total assets.

Parent Funding by Maturity

Source: NBR.
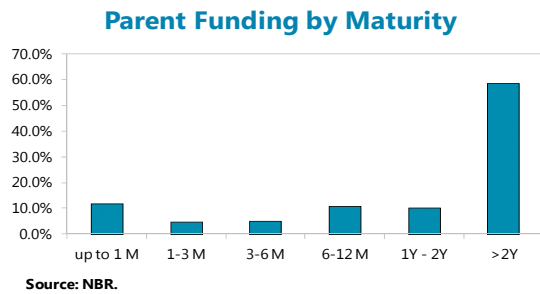
10. **Romania's overall amount of foreign bank funding is above average for the CESEE.** According to recent BIS data for 2012:Q1, BIS-reporting banks exhibited an overall exposure to Romanian banks and nonbanks of around 28 percent of GDP compared to the 18 percent average for the CESEE. It ranks lowers than peer countries such as Hungary or Bulgaria but higher than Poland, Serbia or the Czech Republic. A decomposition of BIS that Romanian banks receive over 60 percent of the foreign bank exposure while for the CESEE as a whole this share is around 53 percent with 47 percent going to nonbanks.

CESEE: Funding from BIS-Reporting Banks, 2012:Q1
(BIS-reporting banks' exposure relative to GDP, percent)

Sources: BIS; IMF, WEO; and IMF staff calculations.
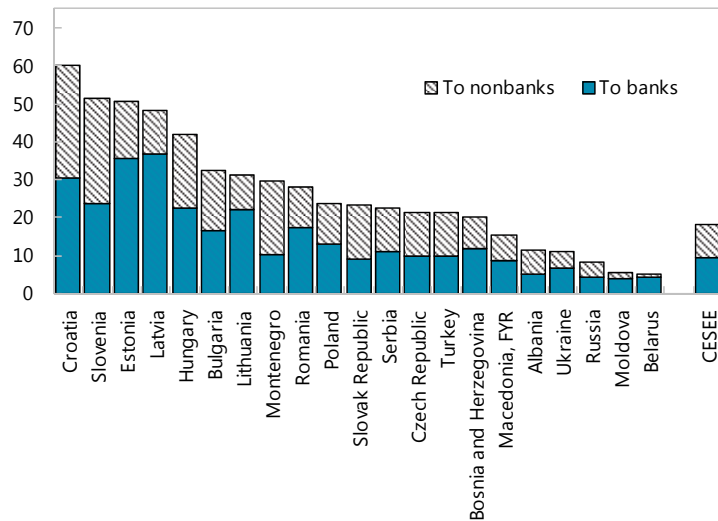
11. **The decline in overall exposure of BIS reporting banks to Romania has been moderate compared to some other CESEE countries.** While Romania's decline has been in the average for the CESEE (excl. Russia and Turkey) with a 20 percent deleveraging

($13.4bn) between 2008:Q3 and 2012:Q1, it is much lower than for instance, seen in Ukraine (52.8 percent), Latvia (38.3 percent) or Hungary (38 percent). Relative to GDP, the 7.2 percent decline also compares favorable against many CESEE countries. Part of the exposure reduction can be explained by the reabsorption of loans by subsidiaries that in the credit boom period had been outsourced to SPVs and parent- related affiliates abroad.

12.   **Deleveraging has been driven by different factors.** Some causes for the orderly foreign bank deleveraging in Romania were weak parent banks (especially Greece), changes in parent funding strategy (e.g. French banks) or some loss in domestic funding (e.g. Greek subsidiaries). Further deterioration in the financial sector environment, including soaring NPLs and continued poor profits, could lead some parents to scale back their long-term support for the subsidiaries, thus making them more reliant on domestic funding.

C.   Financial Spillover Analysis

Methodology and Data

13.   **This section analytically examines how Romania's asset prices have been impacted from European crisis spillovers and compare those to peer group countries.** The adopted modeling framework takes into account the market and idiosyncratic volatility inherent in asset prices especially at high-frequency data. *First*, the Dynamic Conditional Correlation (DCC) GARCH specification by Engle (2002) is adopted, a multivariate GARCH framework which allows for heteroskedasticity of the data and a time-varying correlation in the conditional variance (please see annex I for details). *Secondly*, the ARCH Markov-Switching model (SWARCH) by Hamilton and Susmel (1994) is utilized here because it can differentiate between different volatility states of Romania's asset prices and spreads, that is, low, medium, and high (please see annex II for details). Both models are estimated in first differences to account for the nonstationarity of the variables in the crisis period.

14.   **We choose as the sample period daily data from 2007 to (July 13, 2012).** Asset prices and spreads include Romania's equity market index, interbank, EMBIG and CDS spreads, together with asset prices in the peer countries Bulgaria, Hungary and Poland as well as GIIPS and European risk measures.

**External Positions of BIS-reporting Banks vis-à-vis CESEE**

	Stock (US$ billions, exchange-rate adjusted)			Stock (Percent of GDP)	Change (US$ billions, exchange-rate adjusted)				Change (Percent, exchange-rate adjusted)				Change (Percent of GDP, exchange-rate adjusted)			
	2008:Q3	2011:Q4	2012:Q1	2012:Q1	2011:Q3	2011:Q4	2012:Q1	2008:Q3-2012:Q1	2011:Q3	2011:Q4	2012:Q1	2008:Q3-2012:Q1	2011:Q3	2011:Q4	2012:Q1	2008:Q3-2012:Q1
CESEE	**958.8**	**789.4**	**781.5**	**17.7**	**-33.7**	**-18.7**	**-7.9**	**-177.3**	**-4.0**	**-2.3**	**-1.0**	**-18.5**	**-0.8**	**-0.4**	**-0.2**	**-4.0**
CESEE excl. Russia & Turkey	**584.5**	**469.3**	**463.2**	**27.5**	**-24.4**	**-26.0**	**-6.1**	**-121.3**	**-4.7**	**-5.3**	**-1.3**	**-20.8**	**-1.4**	**-1.5**	**-0.4**	**-7.2**
Emerging Europe	**829.1**	**685.1**	**675.8**	**16.7**	**-35.3**	**-12.0**	**-9.3**	**-153.3**	**-4.8**	**-1.7**	**-1.4**	**-18.5**	**-0.9**	**-0.3**	**-0.2**	**-3.8**
Albania	0.6	1.4	1.5	11.6	0.0	0.1	0.1	0.9	-3.2	6.5	3.8	142.7	-0.3	0.7	0.4	6.8
Belarus	3.0	3.0	2.8	4.8	-0.3	-0.2	-0.2	-0.2	-8.2	-7.6	-6.2	-5.6	-0.5	-0.4	-0.3	-0.3
Bosnia and Herzegovina	4.5	3.9	3.6	20.9	0.0	0.1	-0.3	-0.9	-1.0	1.7	-7.0	-19.0	-0.2	0.4	-1.6	-4.9
Bulgaria	23.1	18.4	17.5	34.4	-1.2	-0.9	-0.9	-5.6	-5.8	-4.5	-5.0	-24.2	-2.2	-1.6	-1.8	-11.0
Croatia	41.8	38.9	38.4	62.2	-2.3	-0.7	-0.5	-3.4	-5.6	-1.8	-1.2	-8.1	-3.7	-1.1	-0.8	-5.5
Hungary	93.6	61.7	58.7	45.1	-5.5	-6.9	-3.0	-34.9	-7.4	-10.1	-4.9	-37.3	-3.9	-4.9	-2.3	-26.9
Latvia	22.0	13.7	13.6	49.5	0.5	-1.2	-0.1	-8.3	3.2	-8.3	-0.9	-38.0	1.7	-4.4	-0.5	-30.4
Lithuania	21.0	14.1	13.4	31.5	0.6	-1.4	-0.7	-7.6	4.1	-9.0	-5.3	-36.3	1.4	-3.3	-1.7	-18.0
Macedonia, FYR	0.8	1.5	1.6	15.9	-0.1	0.3	0.1	0.8	-4.4	29.0	4.5	102.8	-0.5	3.3	0.7	8.0
Moldova	0.6	0.4	0.4	5.1	0.0	0.0	0.0	-0.2	-0.6	14.4	5.7	-36.1	0.0	0.7	0.3	-2.9
Montenegro	1.4	1.4	1.3	31.4	0.0	-0.1	0.0	0.0	-2.7	-8.7	-3.4	-2.9	-0.9	-2.9	-1.1	-0.9
Poland	125.2	120.8	122.5	25.3	-12.1	-4.8	1.7	-2.7	-8.8	-3.9	1.4	-2.2	-2.3	-0.9	0.3	-0.6
Romania	66.9	54.2	53.5	28.7	-2.1	-2.0	-0.7	-13.4	-3.7	-3.5	-1.2	-20.0	-1.1	-1.1	-0.4	-7.2
Russia	216.3	156.6	153.5	8.0	-0.4	8.4	-3.1	-62.8	-0.2	5.6	-2.0	-29.0	0.0	0.5	-0.2	-3.3
Serbia	11.0	11.6	10.1	23.4	-0.3	-0.3	-1.5	-0.9	-2.8	-2.9	-12.7	-8.3	-0.8	-0.8	-3.4	-2.1
Turkey	158.1	163.6	164.9	20.2	-8.9	-1.0	1.3	6.8	-5.1	-0.6	0.8	4.3	-1.1	-0.1	0.2	0.8
Ukraine	39.3	19.9	18.6	10.1	-3.1	-1.3	-1.4	-20.8	-12.7	-5.9	-6.9	-52.8	-1.9	-0.8	-0.7	-11.3
Other CESEE economies	**129.8**	**104.4**	**105.7**	**28.9**	**1.6**	**-6.7**	**1.4**	**-24.0**	**1.5**	**-6.0**	**1.3**	**-18.5**	**0.4**	**-1.7**	**0.4**	**-6.6**
Czech Republic	51.2	46.1	46.3	22.5	1.2	-1.8	0.2	-4.8	2.7	-3.7	0.4	-9.4	0.6	-0.8	0.1	-2.3
Estonia	19.0	11.2	11.2	51.7	-1.8	-0.7	0.0	-7.7	-13.1	-5.7	0.4	-40.8	-8.1	-3.0	0.2	-35.6
Slovak Republic	25.5	20.0	22.6	24.4	3.1	-2.8	2.5	-3.0	15.8	-12.4	12.6	-11.6	3.2	-2.9	2.7	-3.2
Slovenia	34.1	27.0	25.6	56.8	-1.0	-1.4	-1.4	-8.5	-3.3	-5.0	-5.1	-24.9	-1.9	-2.9	-3.1	-18.9

Sources: BIS; WEO; and IMF staff calculations.

Results

DCC GARCH Model:

15.   **Findings from the DCC GARCH equity market model suggest that Romania's implied equity market co-movement with a GIIPS equity market average and the Euro Stoxx appears lower than of Poland but higher than Bulgaria.** Romania hovers around 0.4–0.5 in terms of the implied correlation with an occasional correlation jump, corresponding to volatile episodes. A possible caveat is that any low liquidity in e.g. Romania's equity market would possibly distort and amplify the results somewhat.

DCC GARCH Equity Market Model
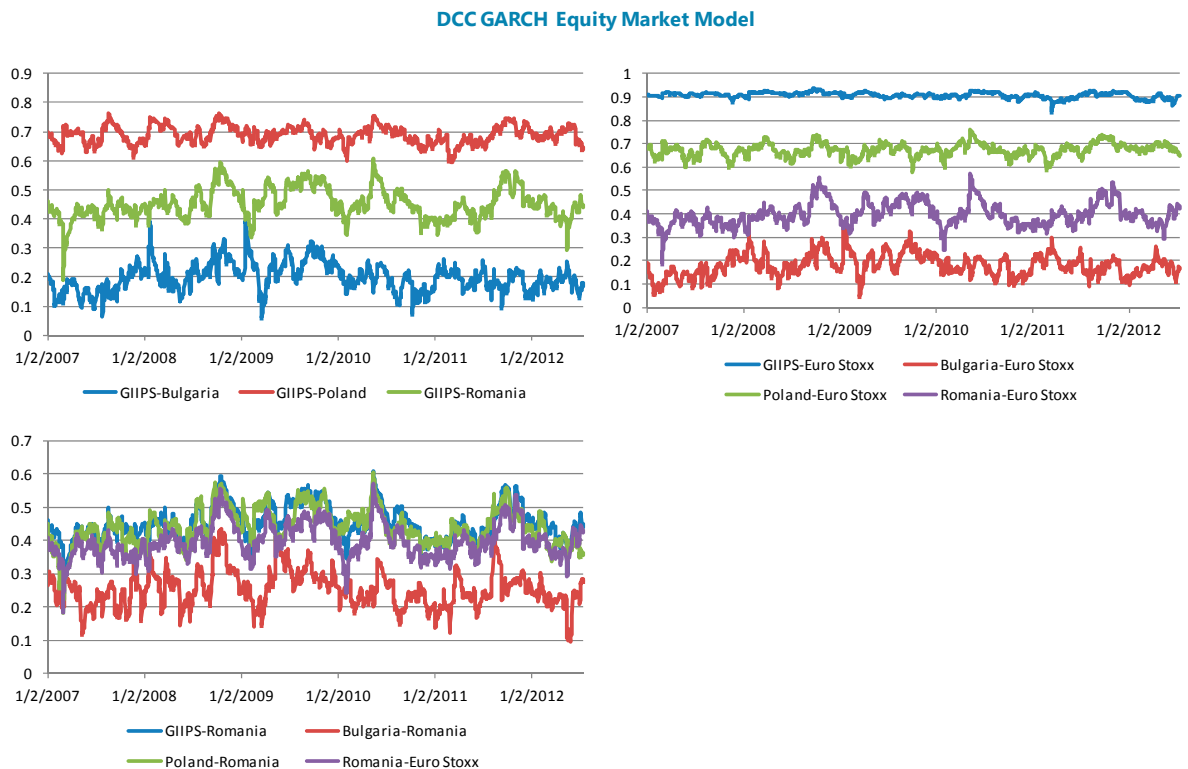
Sources: Bloomberg; and IMF staff calculations.

16.   **In terms of CDS spread co-movements, Romania shows the highest implied correlation with Bulgaria followed by Hungary/ Poland and then an average of the GIIPS CDS spreads.** The average implied correlation between Romania and the GIIPS CDS average stood at around 0.2–0.3 and sporadic volatility jumps up to 0.4 compared to co-movements of Romania with Bulgaria, Hungary and Poland of around 0.5–0.8. The CDS model with Italy confirms the results.

DCC GARCH CDS Model
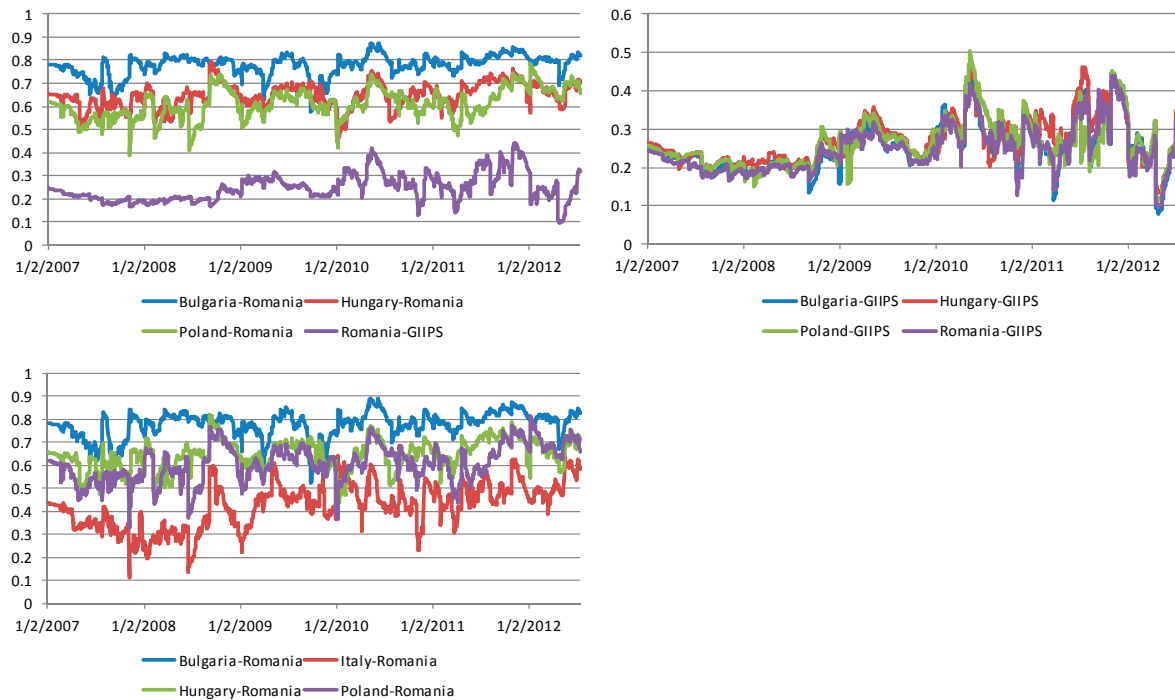
Sources: Bloomberg; and IMF staff calculations.

17.   **The EMBIG spread model finds that Romania's spread moves closer to Hungary's and Poland's EMBIG spreads than the GIIPS 10-year bond yields over Germany's 10-year (GIIPS10y) as well as the Emerging Market Europe EMBIG spread.** Comparing Romania, Hungary and Poland against GIIPS10y indicates that Romania's EMBIG spread tends to exhibit a lower DCC GARCH implied correlation to the GIIPS10y for the most part of the sample period. Results do suggest that Romania as Hungary and Poland have not been immune to volatility in the GIIPS bond spread over Germany with correlation jumps up to 0.5-0.6. Overall, an intensification of the Euro zone crisis would likely lead to heightened financial spillovers to Romania with an increase in risk premia (as measured by CDS and EMBIG spreads) as well as adverse developments on the domestic equity market.

DCC GARCH EEMBIG Model
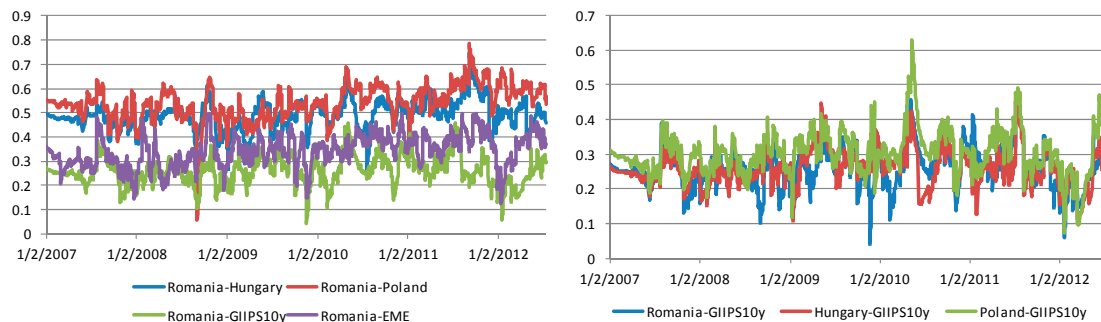
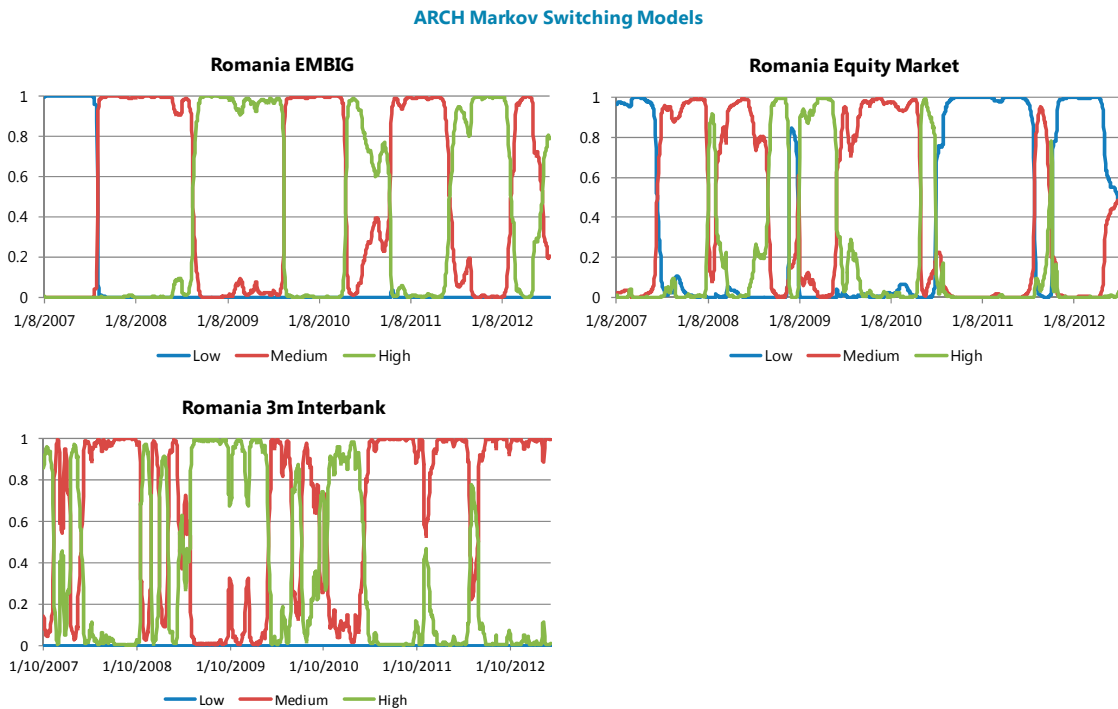Sources: Bloomberg; and IMF staff calculations.

ARCH Markov Switching Model:

18.   **Romania's EMBIG spread has seen the largest shock post-Lehman but there have been other episodes of sharp increases.** The ARCH Markov Switching model mirrors that. In particular, the EMBIG stood in the high volatility regime post-Lehman, twice in 2010/ 2011, and moved decisively back to the high state just recently. Domestic political tensions could have likely contributed to recent volatility.

19.   **The sharp decline of Romania's equity market since 2007 has been only partially recovered.** As expected, volatility in the equity market has been relatively high, and the Markov Switching model indicates a recent move back towards the medium volatility regime. Liquidity conditions in the equity market would have influenced the results.

20.   **Romania's 3m interbank rate has successively declined from 16 percent to below 6 percent between 2009 and the summer of 2012.** The Markov Switching model shows that the decline has been fairly volatile with the model oscillating between the high and medium volatility state. The fragmentation in the interbank markets could potentially distort the results.

21.   **Overall, examining the different volatility states in the Markov Switching model framework confirm the findings from the DCC GARCH framework,** that is, higher volatility states in the EMBIG spread and equity market would correspond to higher implied co-movement in the DCC GARCH models.

ARCH Markov Switching Models

Sources: Bloomberg; and IMF staff calculations.

D. Conclusion

22.   **Vulnerabilities to financial spillovers from Europe to Romania call for safeguarding sufficient public and financial sector buffers and implementation of prudent contingency planning** given the negative effect that sharp increases in Romania's CDS and EMBIG spreads or declines in equity prices will have on Romania's financing costs and capital inflows, exchange rate, market sentiment as well as credit and liquidity risk of the banking sector. According to the DCC GARCH analysis, Romania's asset markets and spreads tend to co-move more closely with its regional peers but have been strongly impacted by the financial crisis in 2008/09 and also recently from the intensification of the euro area crisis. Results indicate that Romania's asset prices significantly co-move with the euro area periphery and European risk premia with related correlation jumps up to 0.5–0.6. Furthermore, a Markov-Switching model analysis indicates that Romania's EMBIG spread recently moved back to a high-volatility state which could have been also driven by domestic political tensions. Equity market volatility has also soared again recently.

23.   **In light of the uncertain environment and spillover risks from the euro area such as an acceleration of foreign bank deleveraging, it is important that the NBR continues its intensive bank supervision and further elaborates its crisis preparedness.** Any necessary measures should be taken to ensure that banks have sufficient capital and liquidity especially from shareholders. With system deposits limited to fully replace any parent bank deleveraging, the continuing support of parents will be crucial given, in particular, the large currency mismatch in the banking system. It is equally important that the NBR, in coordination with other relevant authorities, stands ready to implement its crisis management framework and updates detailed contingency plans on an ongoing basis.

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EBCI (2012) "CESEE Deleveraging Monitor," Report prepared for the Steering Committee Meeting on July 18, 2012, in Warsaw, Poland.

Engle, R. 2002, "Dynamic Conditional Correlation: A Simple Class of Multivariate Generalized Autoregressive Conditional Heteroskedasticity Models," *Journal of Business & Economic Statistics*, Vol. 20, pp. 339–50.

Frank, N., B. González-Hermosillo, and H. Hesse, 2008, "Transmission of Liquidity Shocks: Evidence from the 2007 Subprime Crisis," IMF Working Paper 08/200 (Washington: International Monetary Fund). See also blog piece on VOX.

Frank, N., and H. Hesse, 2008, "Financial Spillovers to Emerging Markets during the Global Financial Crisis," IMF Working Paper 09/104

Annex VI.I. DCC GARCH Methodology

We use a multivariate GARCH framework for the estimation, which allows for heteroskedasticity of the data and a time-varying correlation in the conditional variance. Specifically, the Dynamic Conditional Correlation (DCC) specification by Engle (2002) is adopted, which provides a generalization of the Constant Conditional Correlation (CCC) model by Bollerslev (1990).[1] These econometric techniques allow us to analyze the co-movement of markets by inferring the correlations of the changes in the spreads discussed above, which in turn is essential in understanding how the financial crisis has impacted Romania.

The DCC model is estimated in a three-stage procedure. Let r_t denote an *n x 1* vector of asset returns, exhibiting a mean of zero and the following time-varying covariance:

$$r_t \mid \Im_{t-1} \sim N\left(0, D_t R_t D_t\right)$$

$$\text{where } D_t = diag\left\{\sqrt{h_{it}}\right\}$$

(1)

Here, R_t is made up from the time dependent correlations and D_t is defined as a diagonal matrix comprised of the standard deviations implied by the estimation of univariate GARCH models, which are computed separately, whereby the ith element is denoted as $\sqrt{h_{it}}$. In other words in this first stage of the DCC estimation, we fit univariate GARCH models for each of the five variables in the specification. In the second stage, the intercept parameters are obtained from the transformed asset returns and finally in the third stage, the coefficients governing the dynamics of the conditional correlations are estimated. Overall, the DCC model is characterized by the following set of equations (see Engle, 2002, for details):

$$
\begin{aligned}
D_t^2 &= diag\left\{\omega_i\right\} + diag\left\{\kappa_i\right\} \circ r_{t-1}r'_{t-1} + diag\left\{\lambda_i\right\} \circ D_{t-1}^2 \\
\varepsilon_t &= D_t^{-1}r_t \\
Q_t &= S \circ (\iota\iota' - A - B) + A \circ \varepsilon_{t-1}\varepsilon'_{t-1} + B \circ Q_{t-1} \\
R_t &= diag\left\{Q_t\right\}^{-1} Q_t diag\left\{Q_t\right\}^{-1} \\
S &= E\left[\varepsilon_t\varepsilon'_t\right]
\end{aligned}
$$

(2)

Here, S is defined as the unconditional correlation matrix of the residuals ε_t of the asset returns r_t. As defined above, R_t is the time varying correlation matrix and is a function of Q_t,

---

[1] Given the high volatility movements during the recent financial crisis, the assumption of constant conditional correlation among the variables in the CCC model is not very realistic especially in times of stress where correlations can rapidly change. Therefore, the DCC model is a better choice since correlations are time-varying.

which is the covariance matrix. In the matrix Q_t, ι is a vector of ones, A and B are square, symmetric and $\circ$ is the Hadamard product. Finally, λ_i is a weight parameter with the contributions of D_{t-1}^2 declining over time, while κ_i is the parameter associated with the squared lagged asset returns. The estimation framework is the same as in Frank, Gonzalez-Hermosillo and Hesse (2008) or Frank and Hesse (2009).

Annex VI.II. Markov-Regime Switching Analysis

We use Markov-regime switching techniques to examine financial stress in Romania. Given the intrinsic volatility of high-frequency financial data, especially during periods of stress, the ARCH Markov-Switching model (SWARCH) by Hamilton and Susmel (1994) is chosen here because it can differentiate between different volatility states, for example, low, medium, and high. In particular, univariate SWARCH models are adopted with variables in first differences to account for the non-stationarity of the variables.

In general, the parameters of the ARCH process can alter. Equation (3) below describes a Markov chain with y_t being a vector of observed variables and s_t denoting a unobserved random variable with values 1, 2, …, K that as a state variable governs the conditional distribution of y_t.

$$\text{Prob}(s_t = j \mid s_{t-1} = i, s_{t-2} = k, ..., y_{t-1}, y_{t-2}, ...) = \text{Prob}(s_t = j \mid s_{t-1} = i) = p_{ij} \tag{3}$$

It is possible to combine all the transition probabilities p_{ij} in a $K \times K$ transition matrix. In our SWARCH framework, the mean equation is an AR(1) process and the variance is time-varying with the ARCH parameters being state dependent. Formally, the AR(1) process follows

$$y_t = \alpha + \phi y_{t-1} + \varepsilon_t \tag{4}$$

The time varying variance h_t^2 with the error term ε_t is parameterized as

$$\begin{cases} \varepsilon_t = \sqrt{g_{S_t}} \times \tilde{\varepsilon}_t \\ \tilde{\varepsilon}_t = h_t \bullet \upsilon_t \\ h_t^2 = a_0 + a_1 \tilde{\varepsilon}_{t-1}^2 + a_2 \tilde{\varepsilon}_{t-2}^2 + ... + a_q \tilde{\varepsilon}_{t-q}^2 + \delta \bullet d_{t-1} \bullet \tilde{\varepsilon}_{t-1}^2, \end{cases} \tag{5}$$

where $\upsilon_t \sim N(0,1)$, $S_t \in \{1,2,3\}$ and d_{t-1} is a dummy variable in which $d_{t-1} = 1$ if $\tilde{\varepsilon}_{t-1} \leq 0$ and $d_{t-1} = 0$ if $\tilde{\varepsilon}_{t-1} > 0$. Hereby, it is assumed that υ_t follows a mean zero process with unit variance that is independently and identically distributed (i.i.d.). The ARCH parameters are thus state dependent due to multiplication with the scaling factor g_{S_t} which is normalized to unity for the low volatility regime.[2]

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[2] In this paper, an ARCH specification is estimated, as the GARCH(p,q) is not nested within the SWARCH framework, due to its implicit infinite lag representation.

VII. EXTERNAL COMPETITIVENESS AND ADEQUACY OF INTERNATIONAL RESERVES[1]

During the last decade, Romania's external competitiveness has improved steadily and the current account has adjusted briskly following the 2008 global crisis. Standard models suggest that the real exchange rate is broadly in line with medium-term fundamentals, but structural conditions still hamper external competitiveness. Strong capital inflows preceded the crisis and then reversed sharply. As external vulnerabilities persist, current levels of international reserves provide a comfortable buffer.

A. Introduction

1. **Romania's external competitiveness has improved steadily over the last decade**. Exports as a share of trading partners' non-oil imports increased sharply prior to the global crisis notwithstanding a real appreciation of over 30 percent between 2000 and 2008. The loss in market share in the wake of the crisis is slowly being rebuilt as the real exchange rate depreciated slightly (around 3 percent in 2008–11).

Market Share and Real Effective Exchange Rate
(Index, 2000 = 100)
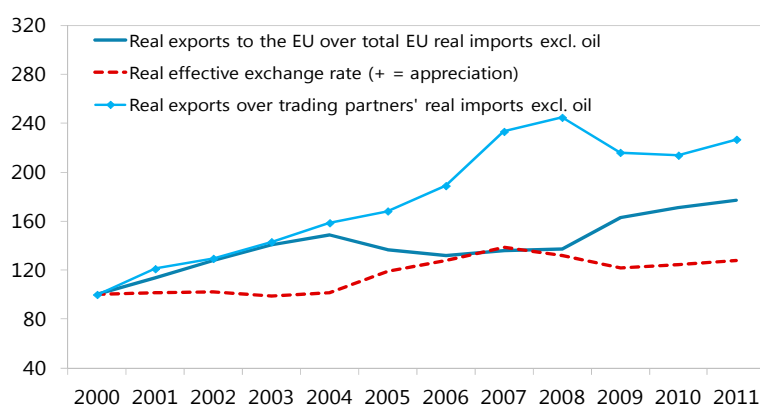
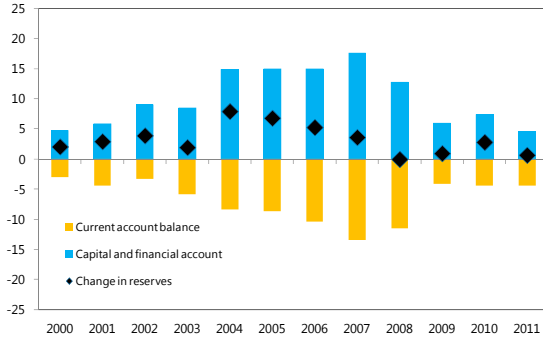Sources: WEO; Directions of Trade Statistics; INS; and IMF staff calculations.

2. **Current account deficits had been increasing rapidly before the global crisis**. In 2007, the current account deficit peaked at over 13 percent of GDP, before the crisis forced a rapid adjustment of some 9 percent of GDP during 2008–09. Romania fared well compared to regional peers with comparable current account deficits at the onset of the crisis.[2] The trade balance has been the main driver of these developments, with imports bearing the bulk of the adjustment. Remittances, at around 4 percent of GDP prior to 2008, declined to 1½ percent of GDP in 2011, while increasing EU funds absorption partially compensated for the impact on the current account.
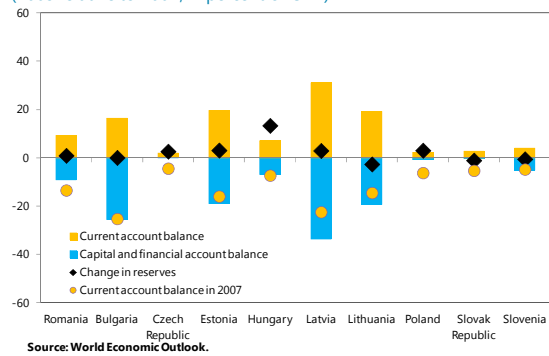
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[1] Prepared by Julia Bersch.

[2] The note uses the other new EU member states (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, and Slovenia) as comparator group as they seek real convergence in the euro area.
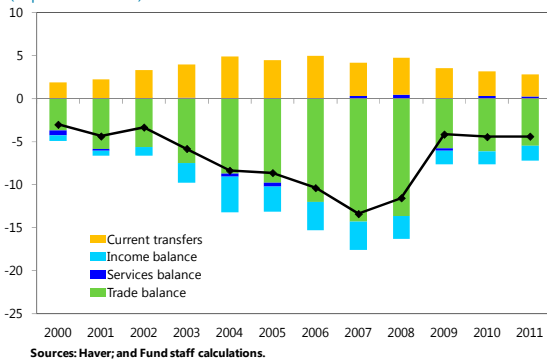
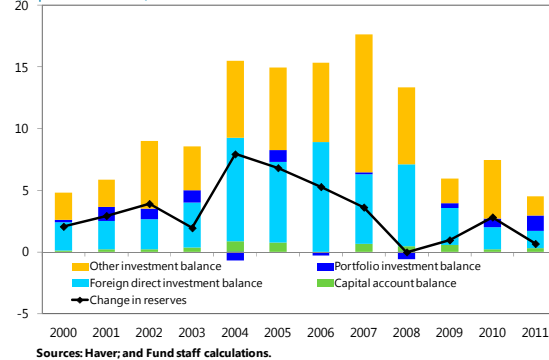**Current Account Balance and Capital Flows**
(In percent of GDP)

- Current account balance
- Capital and financial account
- ◆ Change in reserves

Sources: Haver; and Fund staff calculations.

Adjustment in the Current Account and Capital Flows
(2009 relative to 2007, in percent of GDP)

- Current account balance
- Capital and financial account balance
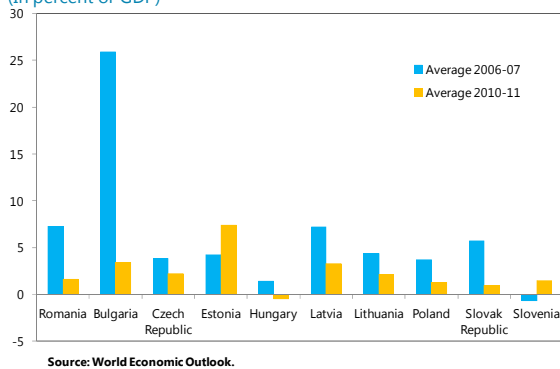- ◆ Change in reserves
- Current account balance in 2007

Romania Bulgaria Czech Republic Estonia Hungary Latvia Lithuania Poland Slovak Republic Slovenia

Source: World Economic Outlook.

Current Account Balance and Main Components
(In percent of GDP)

- Current transfers
- Income balance
- Services balance
- Trade balance

Sources: Haver; and Fund staff calculations.

Capital Account Balance and Main Components
(In percent of GDP)

- Other investment balance
- Foreign direct investment balance
- Portfolio investment balance
- Capital account balance
- Change in reserves
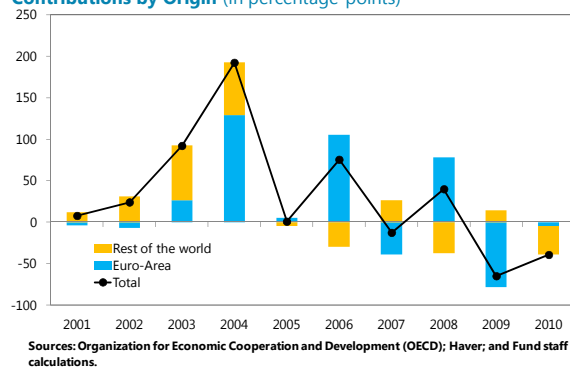
Sources: Haver; and Fund staff calculations.

3.   **Before 2008, capital inflows increased rapidly, leading to an accumulation of international reserves.** FDI and other investment inflows (mainly to banks and the non-financial private sector) nearly doubled before capital flows reversed abruptly in 2009. Capital flows barely recovered in 2011 and remained below the levels seen in 2000. FDI inflows to Romania relative to GDP are currently among the lowest in the new EU member states while prior to the global crisis they were among the highest. The manufacturing sector, which accounts for over 90 percent of exports, was the main receiver of FDI in Romania. In 2010, 32 percent of the stock of FDI was held by the manufacturing sector and the main foreign investors were from the Netherlands, Austria, and Germany.

Foreign Direct Investment
(In percent of GDP)

- Average 2006-07
- Average 2010-11

Romania Bulgaria Czech Republic Estonia Hungary Latvia Lithuania Poland Slovak Republic Slovenia

Source: World Economic Outlook.

Growth Rate of FDI Flows to Romania:
Contributions by Origin (in percentage points)

- Rest of the world
- Euro-Area
- Total

Sources: Organization for Economic Cooperation and Development (OECD); Haver; and Fund staff calculations.

4.   **Romania is gradually establishing itself as an automotive producer in Eastern Europe**. Machinery and transportation equipment are Romania's principal export goods, with Germany being the main destination. Romania received substantial FDI of German companies in this sector and doubled its market share in Germany between 2008 and 2011. The European Union (EU) remains the destination of over 70 percent of Romania's exports, with Germany receiving nearly 20 percent of total exports, followed by Italy and France with 13 and 8 percent, respectively. Hence, Romanian exports tend to strongly co-move with demand in the EU, in particular the Euro-Area.

Romanian Exports by Destination
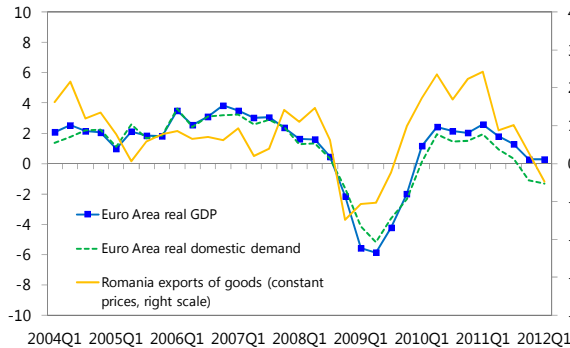(In percent of GDP)
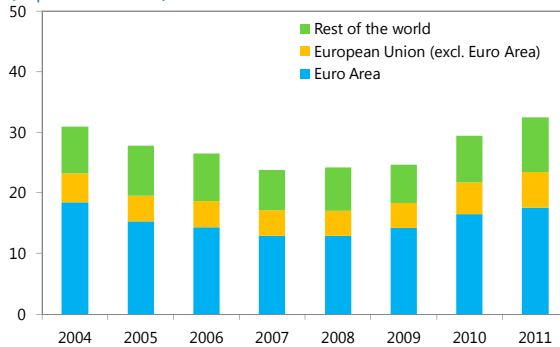
Sources: Direction of Trade Statistics; and Fund staff calculations.

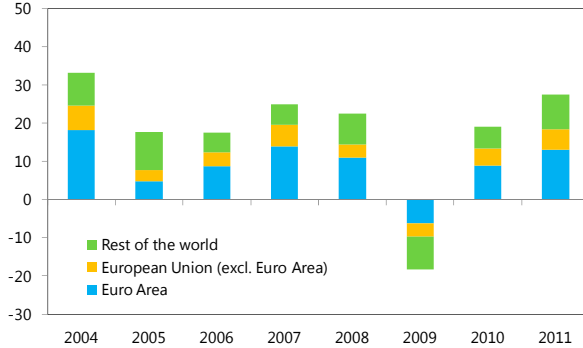**Germany: Imports of Machinery and Transportation Equipment by Origin** (in percent)
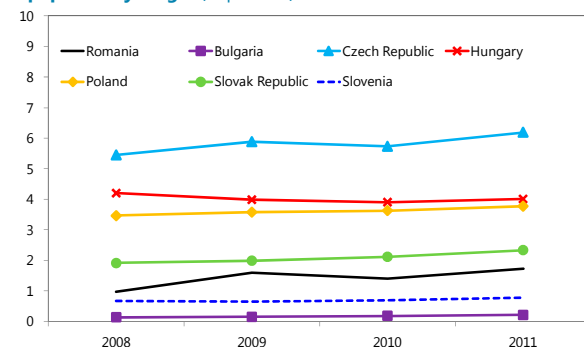
Source: Haver; and Fund staff calculations.

Romanian Exports and Euro Area GDP and Domestic Demand (growth rates, year-on-year, in percent)

Sources: Haver; and Fund staff calculations.

Growth Rate of Romanian Exports by Destination
(Contributions, in percent)

Sources: Direction of Trade Statistics; and Fund staff calculations.

5.   **Romania's international investment position has deteriorated but remains sustainable**. In the early 2000s, the net international investment position was low at around 20 percent of GDP, but it increased rapidly to 60 percent by end-2011, largely driven by FDI, but also other investments (mainly financial credits). However, Romania's net foreign assets position is comparable to other countries with a similar level of economic development.

Net International Investment Position
(In percent of GDP)

Reserve assets
Other investment
Portfolio investment
Direct investment
International Investment Position

Source: Haver; and Fund staff calculations.
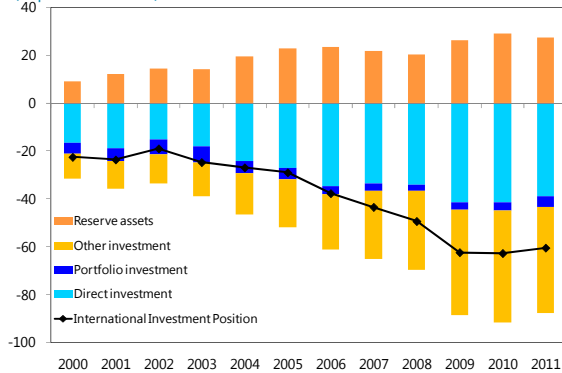
International Investment Position and Per Capita GDP

GDP per capita relative to U.S. (at PPP exchange rates, in percent)

Romania

Net Foreign Assets (in percent of GDP)

Sources: World Economic Outlook; and Fund staff calculations.
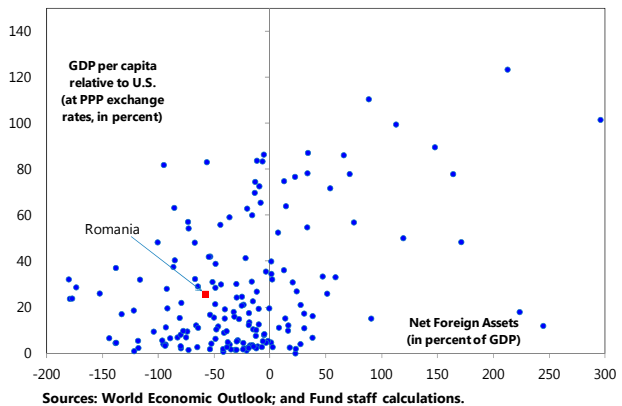
B.   Price Competitiveness: Real Exchange Rate

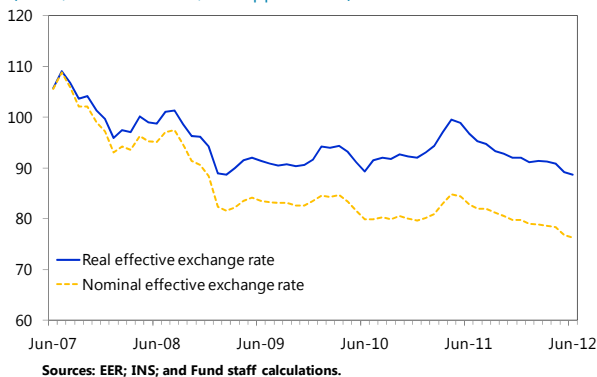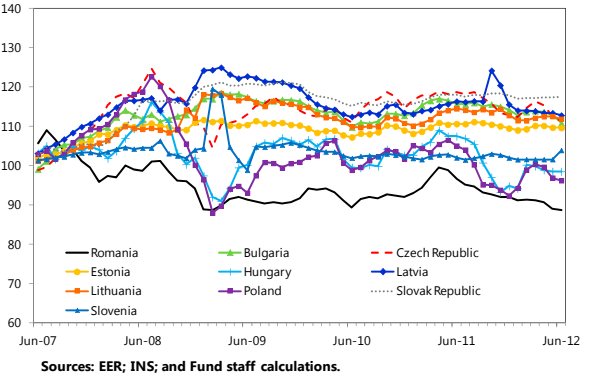6.   **Since 2007, the Romanian leu depreciated in real effective terms vis-à-vis the currencies of regional peers**. During the past five years, the Romanian leu depreciated by 16 percent, while Poland's and Hungary's exchange rates followed an appreciation and depreciation cycle which left the real exchange rates in mid-2012 at a similar level as five years earlier. In Bulgaria and the Czech Republic, the currencies appreciated by around 10 percent in real effective terms.

Nominal and Real Effective Exchange Rate
(Index, Jan 2007 = 100, + = appreciation)

Real effective exchange rate
Nominal effective exchange rate

Sources: EER; INS; and Fund staff calculations.

Effective Exchange Rate: Country Comparison
(Index, Jan 2007 = 100, + = appreciation)

Romania   Bulgaria   Czech Republic
Estonia   Hungary   Latvia
Lithuania   Poland   Slovak Republic
Slovenia

Sources: EER; INS; and Fund staff calculations.

7.   **Romania's real exchange rate is broadly in line with medium-term fundamentals**. Standard methodologies indicate that the real exchange rate is close to its equilibrium value over the medium run, with a slight undervaluation (between 0.6 and 4.7 percent) according to three approaches.[3] Given the margins of error in these estimations, the real exchange rate is assessed to be in line with fundamentals.

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[3] See Lee and others (2008) for an elaboration of these standard CGER methodologies.

8.   **The macroeconomic balance (MB) approach suggests that Romania's current account deficit is slightly smaller than implied by economic fundamentals**. The MB approach evaluates Romania's current account after correcting for any temporary factor or shock relative to an estimated current account norm, the calculation of which is based on panel estimates from Vitek (2012). Assuming that only exchange rate changes can deliver a current account adjustment, an appreciation of around one percent would be needed to close the gap between the underlying current account and the norm.

Exchange Rate Assessment

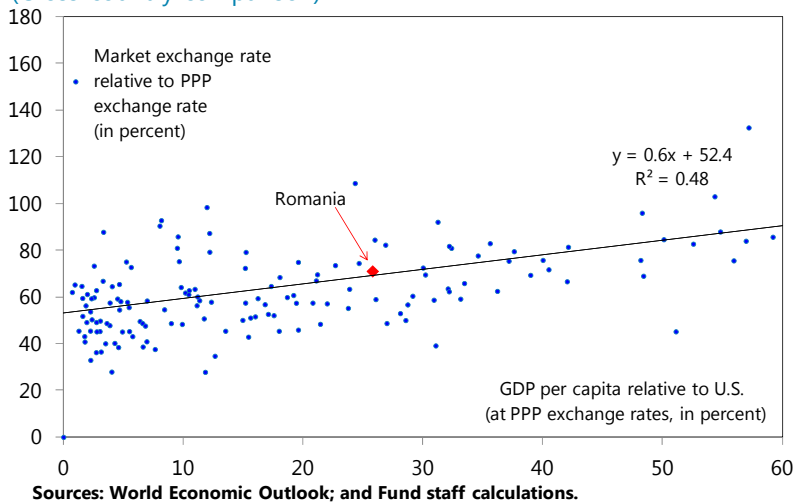| Approach	(In percent of GDP)	Over- (+) or Under- (-) Valuation
Macroeconomic Balance		-0.9
Current account norm	-5.1	
Underlying current account	-4.9	
External Sustainability		-0.6
Current account norm	-5.0	
Underlying current account	-4.9	
Equilibrium Real Exchange Rate		-4.7

9.   **The external sustainability approach (ES) also suggests that Romania's real exchange rate is in line with fundamentals**. The ES calculates the current account balance that is needed to stabilize the net foreign assets (NFA) position. To maintain its current international debtor position at 60 percent of GDP, Romania could sustain a current account deficit of 5 percent of GDP, suggesting a small undervaluation of around ½ percent.

10.   **The equilibrium real exchange rate (ERER) approach indicates that the real exchange rate is broadly in line with medium-term fundamentals**. The ERER computes a country's equilibrium exchange rate based on its medium-term fundamentals, using estimated equilibrium relationships from a panel regression. The needed exchange rate adjustment is then calculated as the difference between a country's actual real exchange rate and the

Exchange Rate and Per-Capita GDP, 2011
(Cross-country comparison)

Market exchange rate relative to PPP exchange rate (in percent)

$y = 0.6x + 52.4$
$R^2 = 0.48$

Romania

GDP per capita relative to U.S. (at PPP exchange rates, in percent)

Sources: World Economic Outlook; and Fund staff calculations.
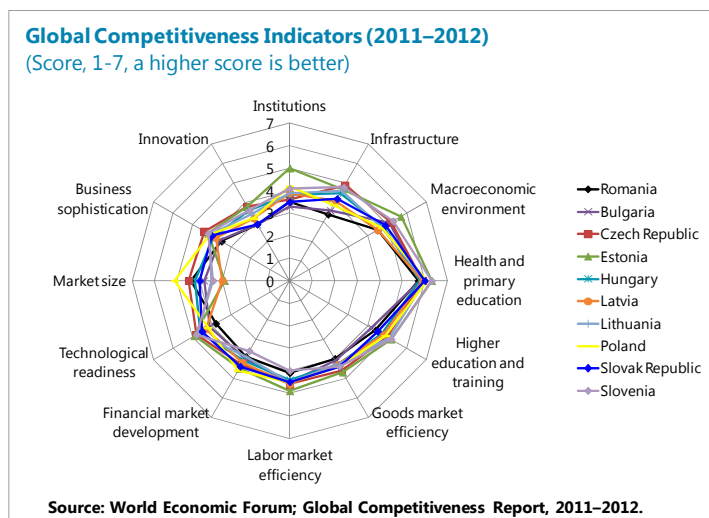
identified equilibrium value. For Romania, the ERER suggests a modest undervaluation of about 4¾ percent. Accounting for the empirical regularity that the real exchange rate tends to appreciate as a country develops and productivity increases (Balassa-Samuelson effect), Romania's exchange rate is neither over- nor undervalued.

C.   Non-Price Competitiveness: Structural Impediments

11.   **Romania's global competitiveness is fair but has been deteriorating**. The World
Economic Forum's Global
Competitiveness Index, based on a
comprehensive assessment of
countries' competitiveness, ranks
Romania 77th out of 142 countries
in 2011–12, down from rank 67 (out
of 139) in the preceding period.
Romania (together with Bulgaria)
has scored lower than the other EU-
10 countries in nearly all areas
considered. This survey identifies
Romania as having a comparative
advantage in market size and a
disadvantage in infrastructure.

Global Competitiveness Indicators (2011–2012)
(Score, 1-7, a higher score is better)

Source: World Economic Forum; Global Competitiveness Report, 2011–2012.

12.   **Structural conditions still weigh on Romania's external competitiveness**. Looking at
business regulations and their enforcement, the World Bank's Doing Business Indicators rank
Romania in the upper half of all countries assessed, but the country's relative position has
deteriorated compared to last year. Romania's rank is worse than for the median EU country and
lower than for any of its regional peers. In particular, rankings in the categories of "getting
electricity" and "paying taxes" are poor.

Doing Business Indicators (2012, rank out of 183 countries)

	Ease of Doing Business	Starting a Business	Dealing with Construction Permits	Getting Electricity	Registering Property	Getting Credit	Protecting Investors	Paying Taxes	Trading Across Borders	Enforcing Contracts	Resolving Insolvency
Romania	72	63	123	165	70	8	46	154	72	56	97
Romania 2011	*65*	*31*	*122*	*164*	*64*	*8*	*44*	*151*	*49*	*54*	*109*
Median											
EU-10	50	57	85	93	39	32	65	102	60	57	53
EU-27	32	50	53	68	61	48	65	68	27	31	33
Regional Peers											
Bulgaria	59	49	128	133	66	8	46	69	91	87	90
Czech Republic	64	138	68	148	34	48	97	119	70	78	33
Estonia	24	44	89	48	13	40	65	51	3	29	72
Hungary	51	39	55	103	43	48	122	117	74	19	66
Latvia	21	51	112	84	32	4	65	67	15	17	32
Lithuania	27	101	47	81	7	48	65	62	28	15	40
Poland	62	126	160	64	89	8	46	128	46	68	87
Slovak Republic	48	76	50	102	10	24	111	130	95	71	35
Slovenia	37	28	81	27	79	98	24	87	50	58	39

Source: World Bank (2012).

13.	**Perceived corruption could also be holding back Romania's attractiveness to international investors**. The Corruption Perceptions Index from Transparency International ranks Romania's perceived public sector corruption, as assessed in opinion surveys and by experts, in the upper half of the 183 countries covered. Romania's score is worse than the median of the EU and also lower than for its regional peers with the exception of Bulgaria.

Corruption Perceptions Index (Rank and Score)
(Score ranges from 0 = highest perception to 10 = lowest perception)

Year	Rank			Score		
	2003	2007	2011	2003	2007	2011
Number of countries	133	180	183	133	180	183
Romania	83	69	75	2.8	3.7	3.6
Median						
EU-10	54	50	56	3.9	4.9	4.5
EU-27	26	28	31	6.4	6.5	6.2
Regional Peers						
Bulgaria	54	64	86	3.9	4.1	3.3
Czech Republic	54	41	57	3.9	5.2	4.4
Estonia	33	28	29	5.5	6.5	6.4
Hungary	40	39	54	4.8	5.3	4.6
Latvia	57	51	61	3.8	4.8	4.2
Lithuania	41	51	50	4.7	4.8	4.8
Poland	64	61	41	3.6	4.2	5.5
Slovak Republic	59	49	66	3.7	4.9	4.0
Slovenia	29	27	35	5.9	6.6	5.9

Source: Transparency International (2011).

D.   Adequacy of International Reserves

14.	**Reserve coverage in Romania is ample according to most reserve adequacy metrics**. The reserve level of EUR 36.6 billion at end-July 2012 was above the standard rules-of-thumb for three months coverage of prospective imports and 20 percent of broad money. Reserves also fully covered external short-term debt (at remaining maturity), the most commonly used reserve metric for emerging markets.[4] International reserves are also in line with a new reserve adequacy metric for emerging markets developed by Fund staff.[5] Romania's reserve level performs well compared to regional peers.[6]

International Reserves Relative to Adequacy Metrics
(July 2012, In percent of GDP)
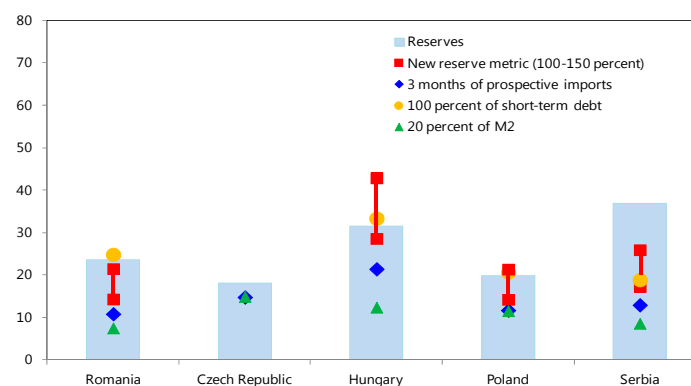
Note: Reserves are as of July 2012, while all other variables are as of 2011, except for prospective imports (for 2012).
Sources: WEO; International Financial Statistics; and IMF staff calculations.

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[4] Import coverage is generally applied to countries mainly affected by shocks to the current account and indicates how many months of imports can be sustained if all external inflows were to stop. The "Greenspan-Guidotti" rule of fully covering short-term debt is the most widely used reserve adequacy metric for emerging markets, based on the idea that countries should "be able to stay out of the market for one year". Coverage of broad money is the least established indicator and is intended to capture the risk of capital flight. See, e.g., IMF (2011).
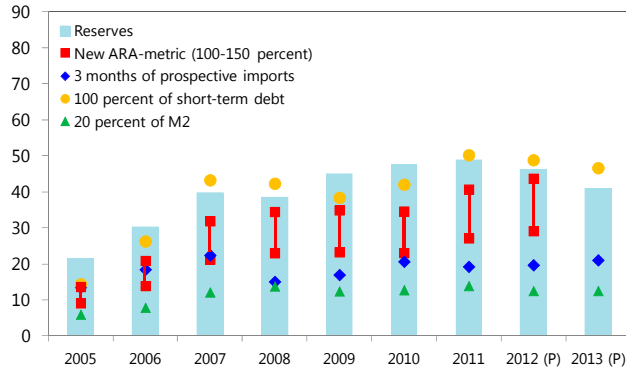
[5] The new reserve adequacy metric is constructed on the basis of the empirically observed relative riskiness of different potential drains on reserves and the amount of liquid reserve assets that should be held against each of these risk factors based on past crisis experience. This approach is similar to the calculation of risk-weighted capital adequacy ratios for banks. See IMF (2011).

15.   **However, Romania's own history suggests taking a prudent stance**. Following severe stress in the Romanian economy in the wake of the 2008 crisis, the authorities requested an exceptional access Stand-By Arrangement (SBA) from the IMF. Prior to the crisis, reserves seemed appropriate by most metrics, but they fell short of fully covering short-term debt. During the period of economic and financial stress, external debt shifted further towards short-term maturities, exposing the country to capital flight. To significantly reduce external vulnerabilities and support confidence in the economy, the

Gross International Reserves vs. Traditional Metrics
(In billion US$)

Sources: World Economic Outlook; International Financial Statistics; and Fund staff calculations.

program aimed at increasing reserve coverage of short-term external liabilities from 76 percent at end-February 2009 to about 100 percent by end-2010. The successor (precautionary) SBA approved in early 2011 aimed, inter alia, at further gradually increasing reserves to place Romania in a position to effectively service the peak payments to the Fund (some 16 percent of gross reserves in both 2013 and 2014), while maintaining full coverage of short-term external debt. Since then, reserve projections have been revised downwards and coverage is expected to fall to a still comfortable 90 percent by end-2013.

16.   **Preempting crises and mitigating their impact are key reasons for holding reserves**. Both the costs and benefits of holding and using international reserves have to be considered when deciding on an appropriate level of reserves. An exchange market pressure index can give some indication of pressures on foreign exchange markets, combining exchange rate changes and changes in international reserves. While the leu has depreciated in recent months and reserves have adjusted, current exchange market pressures remain well below crisis levels.

Exchange Market Pressure Index
(RON/Euro exchange rate)
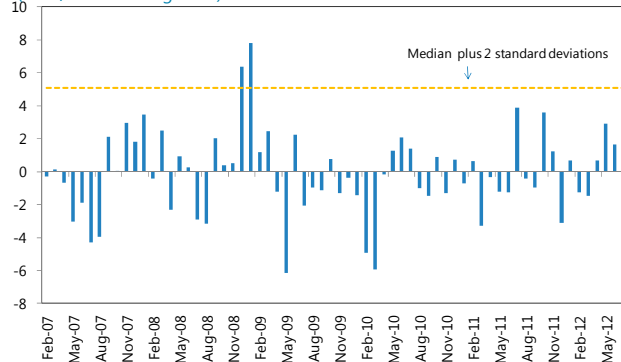
Sources: Haver; Romanian authorities; and Fund staff calculations. Based on the methodology in Kaminsky and Reinhart (1999).

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[6] For the comparison of reserve adequacy, the new EU member states that have already adopted the euro (Estonia, Slovak Republic, and Slovenia), are part of ERM II (Latvia and Lithuania) or have a fixed exchange rate (Bulgaria) are excluded. Serbia is included as an additional peer with a flexible exchange rate.

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