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BULGARIA

SELECTED ISSUES

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BULGARIA

SELECTED ISSUES

April 16, 2015

Approved By
European Department

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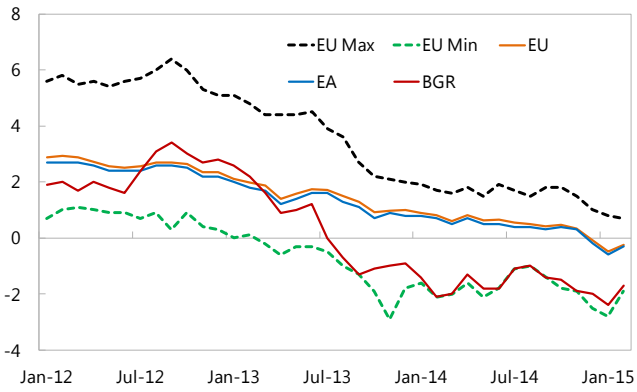
CONTENTS

INFLATION DETERMINANTS AND IMPLICATIONS IN BULGARIA[1]

A. Introduction

1. Bulgaria has experienced sustained deflation since mid-2013. HICP headline inflation has been negative since August 2013. While inflation in EU member countries has generally been subdued during this period, and average inflation in the EU became negative recently, deflation in Bulgaria stands out in terms of its early start and its magnitude. Regardless of inflation measures (headline, core, headline excluding administered prices, etc.), Bulgaria has experienced the deepest deflation since mid-2013 among EU member countries except for Greece and Cyprus, where a much sharper demand contraction had taken place.

HICP Inflation (Headline)
(12-month change in percent)



Source: Eurostat.

2. A number of factors have been offered to explain recent price development in Bulgaria. Recent analysis by the authorities, EC, and World Bank focus on falling import prices, reductions in administered prices, and still recovering domestic demand from a large slump in 2013.[2] Iossifov and Podpiera (2014) explored, in a panel setting, the causes for low inflation in a number of non-euro European countries, including Bulgaria. They found a number of contributing factors, including commodity prices, low inflationary pressure in the euro area, as well as administered price changes. The relative importance of those factors is affected by a particular country's exchange rate regime, the import content of domestic demand, and other country specific factors. For instance, countries with fixed exchange rates, like Bulgaria, tend to import more inflation from the euro area. This is also true for countries with a higher share of foreign value-added in domestic consumption, which is the case in Bulgaria, with a share of 42 percent against an average of 35 percent for non-EA New Member States (NMS).

3. In this paper, we will focus on inflation dynamics in Bulgaria from January 2012 to February 2015. This is the most relevant period for identifying factors contributing to recent deflation in Bulgaria, as well as their relative importance. Regressions suggest that during this period the inward spillover of low inflationary pressure from the EU to Bulgaria has been the most

[1] Prepared by Zaijin Zhan.

[2] See the winter macro forecasts by the EC and WB, as well as BNB Economic Review 14/3.

significant factor, which was further exacerbated by consecutive electricity price cuts in 2013 and fast falling global commodity prices, especially since late 2014.

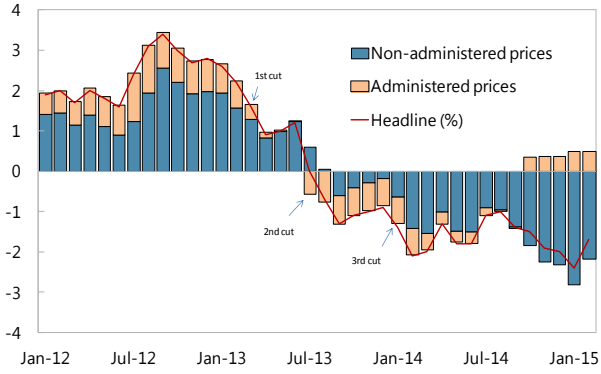
4. This paper is organized as follows: section II highlights some stylized facts about inflation dynamics in Bulgaria in recent years; section III describes the model and data; section IV presents the results; section V looks at the near-term inflation outlook; section VI discusses implications; and the last section concludes.

B. Some Stylized Facts

5. Inflation developments in Bulgaria have gone through four distinct phases since 2012. In 2012, headline inflation in Bulgaria remained close to the average level of inflation in the EU. From early 2013 to early 2014, there was a sharp decline in headline inflation, coinciding with reductions in administered prices (see below). After that, inflation remained broadly stable in negative territory for most of 2014. Towards the end of 2014, deflation in Bulgaria deepened again before an uptick in February 2015, in line with inflation movements in the EU.[3]

6. Reductions in administered prices had a sizable impact on inflation during 2013–14. In early 2013, the government reduced electricity prices three times by a cumulative 15 percent for residential households.[4] After the first cut, the positive contribution from administered prices to inflation dynamics shrank rapidly. The negative contribution from the second cut completely offset the positive contribution from non-administered prices, pushing headline inflation to negative levels. This was the first time since 2002 when administered prices contributed negatively to headline inflation. Deflationary pressure contributed by administered price cuts was broadly stable during the second half of 2013. After the much smaller third cut, the importance of administered prices started to fade, becoming negligible after mid 2014. Starting October 2014, administered prices resumed their positive contribution to headline inflation as electricity prices were raised by around 10 percent.

Contribution to 12-month Headline Inflation
(Percentage points unless otherwise noted)



Sources: Haver; and IMF staff calculations.

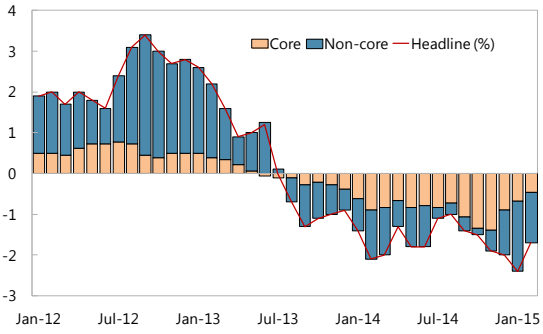
[3] Inflation in the EU and EA area are very closely linked. This paper links inflation in Bulgaria to EU inflation, rather than EA inflation, because it could potentially capture more spillover from the trade channel as Bulgaria has a number of non-EA EU trading partners.

[4] On March 5, 2013, electricity prices were cut by between 6.2–7.3 percent depending on location. Starting August 1, 2013, daytime tariffs were further reduced by between 4.2–4.9 percent depending on location, and night-time tariffs were cut by between 3.4–6.8 per cent. Effective on January 1, 2014, a one percent reduction was made to household daytime tariffs while the night-time rate was cut by 10 per cent, and prices for industrial consumers were also reduced by 1.5 percent.

7. Deflationary pressure came from both core and non-core components, with increasing importance of the former. While non-core components had much larger swings during this period, core components fell below zero slightly ahead of non-core components and saw their relative importance steadily increase since late 2013.[5] Toward the end of 2014, deflationary pressure from core components clearly dominated, before a reversal starting in December 2014, likely reflecting the impact from falling oil prices.[6]

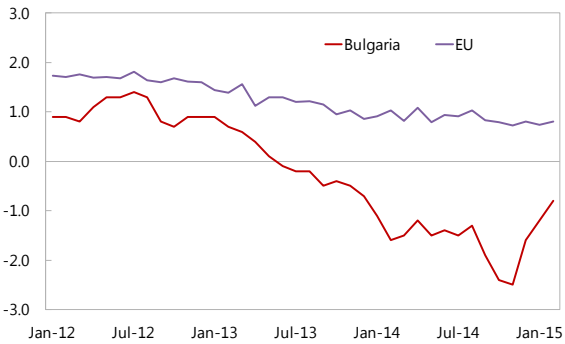
8. Core inflation in Bulgaria has tracked closely core inflation in the EU during this period. Despite increasing level differences, core inflation in Bulgaria moved broadly in tandem with EU core inflation before a sudden uptick of core inflation in Bulgaria starting in December 2014.

Contribution to 12-month Headline Inflation
(Percentage points unless otherwise noted)



Sources: Haver; and IMF staff calculations.

12-month Core Inflation
(Percent)



Sources: Haver; and IMF staff calculations.

C. Model and Data

9. Similar to Iossifov and Podpiera (2014), this paper will utilize an expectation-augmented Phillips curve framework using monthly data for 2012–14. The regression will take the form below:

$$\pi = \alpha + \beta\pi_{t-1} + \delta\pi^{E} + \rho\pi^{EU\_core} + x\theta + \varepsilon$$

where: π= headline inflation in Bulgaria

π^{E}= inflation expectation

π^{EU_core}= core inflation in the EU

[5] It is worth noting that since 2002, Bulgaria has experienced three periods with near or below zero inflation: 2003, 2009, and 2013–present. In the first two periods, core components remained positive at 0.5–1.5 percent while large negative contribution from non-core components depressed headline inflation. The current period is the only one when core inflation was below zero.

[6] Methodological differences in data collection for a number of goods and services, such as passenger transport by air, dental services, and pharmaceuticals, have also contributed. See European Commission (2015b).

x = vector of external and domestic shocks including world oil and food prices, changes in domestic administered prices as well as indicators of domestic demand

Given likely inflation inertia, lags of the dependent variable will also be included.

10. All variables are expressed in 12-month growth rates in percent, unless otherwise noted, so as to reduce the effect from seasonality.

- Headline inflation—calculated using the Harmonized Indices of Consumer Prices (HICP) published by Eurostat.
- Expected inflation—this is represented by the mean forecasts of average annual inflation one-year ahead published by Consensus Economics.[7]
- EU price pressures—this is measured by HICP core inflation for the EU published by Eurostat, which is stripped of direct, first-round effects of commodity price changes.
- World energy and food price inflation—the IMF's World Economic Outlook world oil and food price indices in US dollars are used to capture commodity price changes.
- Exchange rate appreciation/depreciation—calculated using the nominal effective exchange rates published by the IMF.
- Domestic demand growth—a number of indicators are tried, including wage growth, retail sales growth in constant prices, employment growth, and the unemployment rate (in percent of labor force).
- Contribution of administered prices to headline inflation—the impact of administered price changes is constructed with HICP data for headline and for administered prices as published by Eurostat.

D. Results

11. The regression results based on the monthly data for the sample period of 2012-14[8] are summarized in the text table below, followed by the discussion on key observations (the discussion

[7] While inflation expectation for a longer term would be preferred given a possibly high correlation between actual inflation and one-year ahead expectations, there is limited availability of high-frequency longer-term expectation survey results in the case of Bulgaria.

[8] Due to unavailability of some regressors for 2015, the sample period stops at end-2014.

is mainly based on specification (1)):[9]

	Headline HICP Inflation in Bulgaria			
Dependent variables	(1)	(2)	(3)	(4)
Inflation (-1)	0.421 (0.101) ***	0.564 (0.114) ***	0.465 (0.085) ***	0.542 (0.085) ***
Inflation expectations (one-year ahead)	-0.122 (0.218)	-0.136 (0.245)	-0.403 (0.218) *	-0.097 (0.218)
Contribution of administered prices	0.658 (0.248) **	0.490 (0.323)	1.092 (0.289) ***	0.484 (0.289) *
Wage growth	0.067 (0.026) **			
Retail sale growth		0.009 (0.025)		
Unemployment rate			0.538 (0.156) ***	
Employment growth				0.065 (0.127)
EU area core inflation	1.088 (0.456) **	1.090 (0.528) *	1.074 (0.423) **	1.220 (0.423) **
Nominal effective exchange rate	-0.105 (0.057) *	-0.073 (0.082)	-0.048 (0.054)	-0.048 (0.054)
World oil price inflation	0.023 (0.006) ***	0.019 (0.006) ***	0.025 (0.006) ***	0.021 (0.006) ***
world food price inflation	0.032 (0.010) ***	0.034 (0.011) ***	0.017 (0.010) *	0.295 (0.010) **
N	36	36	36	36
R^2	0.984	0.980	0.986	0.980

Note: S.E. in parentheses; *, **, and *** denote significance at the level of 10%, 5%, and 1%, respectively; sample period 2012m1-2014m12.

- **Inflation inertia is modest and fades away quickly.** The estimated coefficient for one-period lagged inflation is statistically significant at the 1 percent level across all specifications. However, this inflation inertia disappears quickly, as the coefficient for the second lag of inflation is very small and statistically insignificant (results not shown here). This seems to suggest that, as a small open economy, Bulgaria is prone to external shocks, with inflation inertia often diluted by new shocks.

- **The transmission of EU core inflation to Bulgaria's headline inflation is fast and sizable.** The coefficient from the regression suggests a broadly one-to-one transmission from EU core inflation to Bulgaria's headline inflation at the same period. The contemporaneous nature and magnitude of inflation spillover from the EU to Bulgaria is another indication that this country is deeply integrated into and affected by the EU economic system.

- **Commodity prices are important factors affecting headline inflation in Bulgaria.** The coefficients for both world oil prices and food prices are statistically significant, although their magnitude is on the small side, which may be explained by indirect and incomplete pass-through of world commodity prices to domestic prices.[10] This is related to the fact that the prices for more than 15 percent of the consumer basket in Bulgaria are administered by the government to various degrees.

[9] The regression results are sensitive to the sample period, especially for the inward spillover from EU core inflation. Using the same model for the period of 2002–14, the estimated coefficient for EU core inflation is small and statistically insignificant. This likely reflects the difficulties for this simple model to capture structural factors related to price movements during the pre-crisis boom and the post-crisis adjustment periods, when domestic demand was driven notably by fluctuations in foreign direct investment flows that peaked around 27 percent of GDP during the height of the boom in 2007.

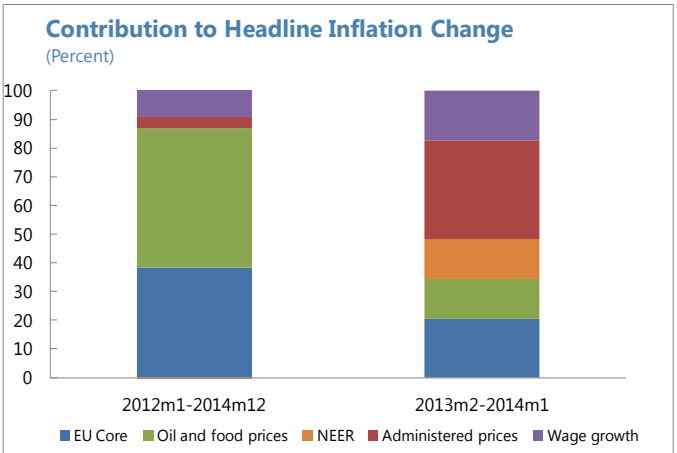
[10] This may also reflect the fact that commodity price fluctuations are large and volatile.

- **Changes in administered prices have a direct impact on headline inflation**. The coefficient is statistically significant as expected, but less than 1, which may result from correlation between commodity prices and changes in administered prices.

- **The NEER also has a modest effect on headline inflation.** Although Bulgaria's currency is pegged to the euro, more than half of external trade is with countries outside the euro zone. This, together with dollar-denominated commodity trades, subjects Bulgaria to exchange rate movements, which in turn affect domestic prices. Depreciation in the nominal effective exchange rate makes imports more expensive in local currency, raising inflation; and appreciation has the opposite effect.

- **The impact on inflation of domestic demand varies with different indicators.** Wage growth, as a gauge of domestic demand, has the right sign and is significant, although the magnitude is small.[11] Retail sales growth in constant prices, has the expected sign, but, is small and not statistically significant. The estimated coefficient for the unemployment rate has the "wrong" sign. This likely reflects the simultaneous decline of inflation and unemployment during a substantial part of the sample period in Bulgaria and may have also been affected by the effects of demographic changes and emigration on the labor force. Employment growth has the expected sign, but is not statistically significant.

12. The decomposition of contributions to headline inflation changes points to varying importance of various factors over time.[12] For the whole sample period, external factors dominate. The combined weight of spillover from low EU core inflation and declining commodity prices exceeds 80 percent. While both weak domestic demand, measured by wage growth, and changes in administered prices contributed to declining headline inflation, their shares are moderate. However, for a sub-sample period from February 2013 (prior to the first electricity price cut) to January 2014 (after the third cut), the contribution from the administered price changes is clearly the most important factor with a weight of around 35 percent. This, combined with the impact from weak domestic demand, leads to a roughly 50/50 split between external and domestic factors in depressing headline inflation in Bulgaria for that period.



Source: IMF staff calculations.

[11] The granger causality test suggests that the causality runs much more significantly from wage growth to inflation.

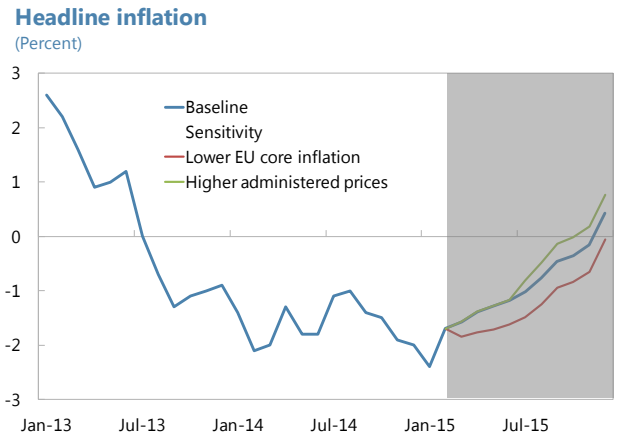
[12] Contributions, excluding those from lag inflation and inflation expectation, are normalized to 100 percent.

E. Outlook

13. Inflation is projected to bottom out and start an upward trend in 2015. Deflation deepened further in January 2015. Nevertheless, commodity prices are expected to stabilize in 2015. This, together with administered price increases in October 2014, will likely reduce downward price pressures throughout the rest of 2015 and push headline inflation to positive levels by end-2015. This outlook is based on the following assumptions:

- Core inflation in the EU will remain subdued before recovering in late 2015 to 2014Q4 levels;
- Oil prices will stabilize in the first quarter and slightly recover toward end-2015, consistent with the underlying assumption for the April 2015 IMF World Economic Outlook;
- Nominal wage growth is kept at 2014 levels.
- Administered prices are kept at end-2014 levels. This said, an increase in electricity prices may be required to support cost recovery by the electricity company; and
- Inflation expectations remain stable.

14. The inflation outlook is sensitive to these assumptions, especially the EU core inflation movements and administered prices changes. Given a fast and roughly one-to-one spillover from EU core inflation to Bulgaria's headline inflation, a ¼ percentage point reduction in EU core inflation for 2015 will lower headline inflation in Bulgaria by about 0.3 percentage points (the lower EU core inflation line in the text chart). At the same time, a 2-percent upward adjustment in administered prices starting in 2015Q3 will raise annual inflation in Bulgaria by around 0.2 percentage points (the higher administered prices line in the text chart), in part reflecting the low base in 2014.



Sources: Haver; and IMF staff forecasts.

F. Implications

15. Sustained deflation presents important risks. Although falling prices lead to higher purchasing power and lower input costs, and may temporarily raise demand due to the price effect, sustained deflation is more likely to create economic challenges through three main channels as identified by the literature. First, falling prices may postpone consumption and investment as holding cash yields a positive return. Second, deflation increases the real value of debts, worsening debtors' financial condition while improving creditors' financial condition. This is likely to reduce spending by debtors and increase the spending by creditors due to the wealth effect. Nevertheless, as Fisher (1983) pointed out, the higher demand from creditors is likely insufficient to offset the

lower demand from debtors. Finally, deflation may limit the room for adjusting nominal variables, thus forcing adjustments in real variables. For example, nominal wage growth that remains at or below levels reflecting inflation and productivity gains would sustain or improve competitiveness. However, this process could be more difficult in a deflationary environment due to downward rigidity of nominal wages.

16. In Bulgaria, these risks are high, and, under the currency board framework, policy mechanisms to address deflationary pressures are constrained:

- **Falling prices may have adversely affected private demand for consumption and investment.** While deflation may provide incentives for households to postpone consumption, empirically establishing this causality is difficult during this short period with multiple shocks. That said, Bulgaria's non-financial corporate sector has one of the highest indebtedness levels among NMS, which has been shown to affect negatively firms' investment decisions.[13] This effect would only be exacerbated by sustained deflation as the real debt burden increases and real yields of cash holdings rise. With scope to relieve such deflationary pressures through macroeconomic policies limited, measures to facilitate reductions in corporate indebtedness take on greater importance.

- **Sustained deflation has important implications for fiscal performance and public debt**. Overall (and given the absence of corrective actions on the expenditure side), about 1/2 of the fiscal balance deviation in 2014 from the original budget target (or about 1.1 percentage points of GDP) can be attributed to lower inflation than assumed by the authorities in the original 2014 budget. This is driven in part by the sizable impact of deflation on the VAT (at the 2014 collection level, a one percentage point drop in consumer inflation, other things being equal, leads to a 0.3 percentage point increase in the deficit and, in turn, public debt). The substantial sensitivity of fiscal outturns to price assumptions and limited fiscal space imply the need for flexibility to adjust spending if deflationary pressures are more sustained than currently projected.[14]

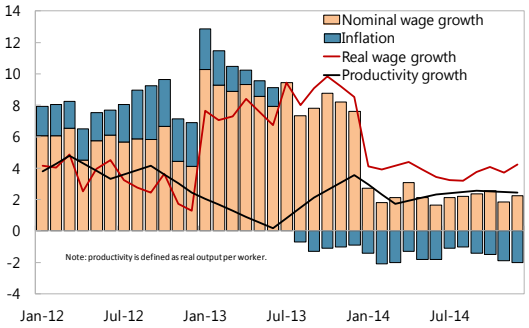
- **A decline in the price levels may also complicate adjustment in the labor market.** Immediately after the global financial crisis, the adjustment in Bulgaria's labor market was more on the quantity side, especially among low-skilled workers, than on the wage side. This contributed to a sharp increase in unemployment, as noted in IMF (2013). Since then, nominal wage growth has continued and only started to moderate in 2014. Since early 2013, real wage growth has remained well above productivity growth. While nominal wage growth moderated substantially in 2014, this was not sufficient to bring real wages in line with productivity gains

[13] See the 2015 Article IV Consultation Selected Issues Paper, "Non-Financial Corporate Debt Overhang in Bulgaria" (Country report 15/xx).

[14] As lower inflation increases the real value of given nominal spending, this should not necessarily lead to real austerity.

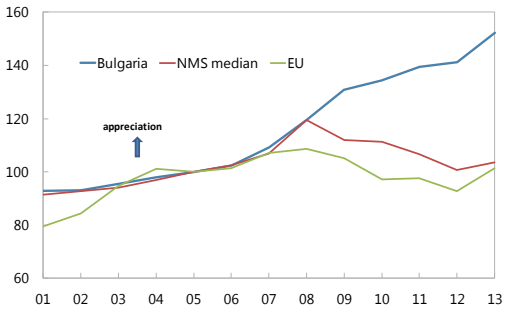
given sustained deflation.[15,16] This is particularly important since the appreciation of Bulgaria's ULC-based REER, including relative to NMS peers, has escalated in recent years.[17] This trend, if it continues, could gradually erode Bulgaria's competiveness.

Inflation and Wage
(Percent)



Sources: Haver; and IMF staff calculations.

ULC-Based REER
(2005=100)



Source: Eurostat.

- **The beneficial impacts from falling commodity prices have been limited so far in Bulgaria for a number of reasons.** For instance, Bulgaria imports about 11–12 percent of GDP in petroleum products, fuel, and gas, of which more than 60 percent is to be re-exported. This, together with longer-term contracts, limits the impact of falling prices in the short term. In addition, loss-producing state utility companies, which have kept key administered prices low relative to regional comparators, including through three electricity price reductions during 2013-14, have little space to pass recent price declines on to end-users.[18] On the positive side, however, lower commodity prices are expected to give some breathing space to the national electricity company (NEK) to realign its pricing structure more closely with international prices.

G. Conclusions

17. Declining inflation since 2012 and deflation since mid-2013 in Bulgaria was due to both external and domestic factors, with their relative importance varying over time. The inward spillover of low inflationary pressure from the EU to Bulgaria has been an underlying trend

[15] Monthly productivity data are linearly interpolated from available quarterly data.

[16] It could be argued that insufficient real wage adjustment was caused by downward surprises of actual inflation relative to inflation expectation, not deflation per se. Nevertheless, the rarity of deflation in Bulgaria may have significantly increased difficulties in taking into account falling prices when economic decisions are made.

[17] See the box of External Sector Assessment in the staff report for the 2015 Article IV Consultation with Bulgaria (Country report xx),

[18] In February 2015, Bulgaria's energy regulator declined a request by Bulgargas, the state gas company, to reduce prices given lower input costs. Instead, proceeds from lower input costs will be used to improve the profitability of Bulgargas and district heating utilities.

during this period. This has been exacerbated by consecutive electricity price cuts in 2013 and fast falling global commodity prices, especially since mid-2014.

18. Looking ahead, deflation is expected to lessen gradually in 2015. With the assumptions of a gradual stabilization of EU core inflation and global commodity prices as well as administered price changes in line with the historical pattern, year-on-year headline inflation is expected to rise gradually, ending the year in positive territory. This outlook is, of course, subject to large uncertainties, especially on the downside. Whether the QE plan announced by the ECB can successfully stabilize core inflation pressures in the EU through either increased activity or better anchored expectations has a direct impact on the inflation outlook in Bulgaria.

19. Sustained deflation so far has adversely affected macroeconomic performance, including worsening the fiscal balance, raising the public and private debt burden, and eroding part of the adjustment in nominal wages.

20. With limited policy options to influence inflation, the government should take proactive steps in managing the risks arising from sustained deflation. As a small open economy with no independent monetary policy and limited space on the fiscal front, there seems little room for the government to influence directly the inflation path. Nevertheless, clear communication on the sources and temporary nature of current deflationary pressure is key to help anchor inflation expectations and to avoid a deflationary spiral. In addition, clarification of measures to deal with the private sector debt overhang is needed. At the same time, the overshooting of the original fiscal balance target in 2014 speaks to the need for tighter expenditure controls to adjust to large uncertainties around inflation outlook. There is also a need to pay closer attention to nominal wage levels, with increases tied to productivity gains, taking into account the effect of falling prices. Finally, the moderation in energy prices provides a window of opportunity to implement long-needed reforms in this sector, including closer alignment of residential utility tariffs with global prices/cost structures. These reforms should be accompanied by enhanced protection of poor households against tariff adjustments.

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NON-FINANCIAL CORPORATE DEBT OVERHANG IN BULGARIA[1]

A. Introduction

1. High debt overhang in the non-financial corporate (NFC) sector can act as a drag on corporate profitability and investment, weighing on banks' balance sheets through increasing NPLs and heightening risk of corporate bankruptcies. In this context, orderly deleveraging is critical to allow resources to be redirected to productive segments of the economy, while minimizing macro-financial costs, as well as the potential migration of losses from private to sovereign balance sheets.

2. This Selected Issues Paper investigates NFC balance sheets in Bulgaria, testing whether some of these macro-financial channels might be at play given the relatively high indebtedness of its NFC sector. It also discusses available policy tools to promote a smooth deleveraging process.

3. The paper is organized as follows. The first section analyzes the status of firms' balance sheets in Bulgaria vis-à-vis standard metrics used in the literature and other New Member States (NMS),[2] with a view to detecting potential corporate liquidity and solvency risks. Diagnostics are based on aggregated data from Eurostat sector accounts. The second section makes use of firm-level data from the Orbis database to investigate corporate balance sheets at the firm and industry level. This is complemented by an empirical analysis of the drag on investment, and in turn growth, engendered by the increase in corporate leverage in Bulgaria and other NMS. Policy considerations, based on past deleveraging cases, conclude.

B. Bulgaria's Corporate Balance Sheets in Perspective

4. Bulgaria's total non-financial sector indebtedness is third highest among NMS—below only Croatia and Slovenia at over 150 percent of GDP on a consolidated basis, as of end-2013.[3] This debt is largely concentrated in the non-financial corporate sector, with household and general government debt remaining at relatively low levels, also compared to peers. As a result, NFC debt stood at over 110 percent of GDP in 2013 in Bulgaria, based on Eurostat sector accounts, the highest level among NMS and well-above the Euro area average. Across time, corporate leverage has

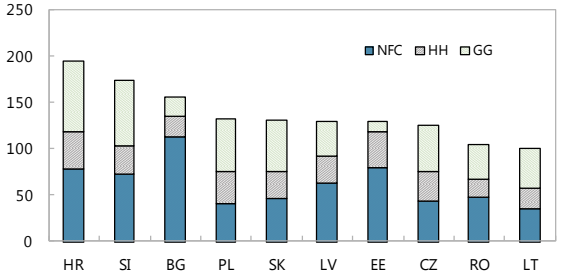
[1] Prepared by Manuela Goretti. This Selected Issues Paper draws on the analysis and methodologies presented in the forthcoming Spring 2015 REI Thematic Chapter on "Private Sector Indebtedness, Balance Sheet Repair, And The Real Economy" and the IMF Working Paper "Macro-Financial Implications of Corporate (De)Leveraging in the Euro Area Periphery", WP/13/154.

[2] Throughout the paper, the New Member States group comprises Bulgaria, Czech Rep., Croatia, Hungary, Poland, and Romania, among non-Euro area members, and Estonia, Latvia, Lithuania, Slovenia, and Slovakia, among Euro-area members.

[3] The stock of debt is defined as the sum of loans and debt securities.

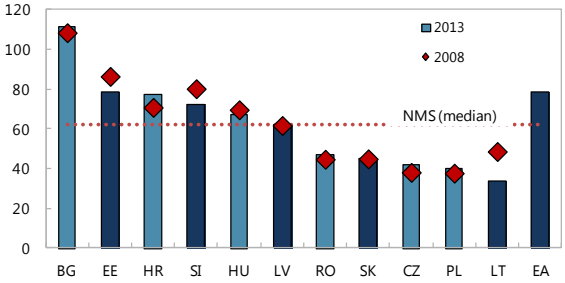
remained near its pre-crisis peak levels, a feature common to most other NMS. In terms of creditors, NFC debt in Bulgaria is largely in the form of loans, with less of 4 percent of GDP in debt securities, given limited access to capital markets. Among NFC loans, about 45 percent of GDP consists of loans from Bulgarian banks (Section IV), while foreign direct (largely inter-company) loans[4] are estimated at roughly 40 percent of GDP, as of end-2013.[5]

New Member States: Total Non-financial Debt, 2013
(Percent of GDP)



Sources: Eurostat (ESA 2010); and IMF staff calculations.
Note: Data for HU is not available.

New Member States: Non-Financial Corporate Debt
(percent of GDP)

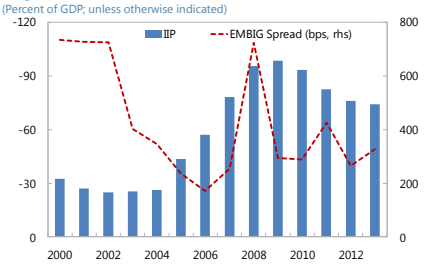


Sources: Eurostat (ESA 2010); and IMF staff calculations.

Historical trends in corporate leverage

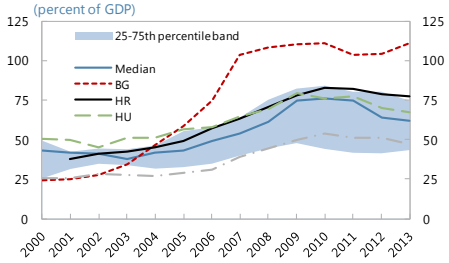
5. The origins of Bulgaria's high corporate indebtedness can be traced back to the pre-crisis period. In the run-up to EU accession (which took place eventually in 2007), Bulgaria experienced large scale foreign capital inflows, mainly in the form of FDI and foreign bank-intermediated loans, attracted by Bulgaria's relative-price competitiveness and increased prospects for faster income convergence. Abundant liquidity and credit conditions fueled a domestic-demand boom contributing to sustained large current account deficits and the build-up of a significant net external debt. Moreover, private sector credit was increasingly directed to non-tradable sectors, ranging from construction to retail sales, while sizable catch-up increases in wages and prices narrowed Bulgaria's competitiveness in tradable sectors.[6]

Bulgaria: Market Conditions and External Imbalances, 2000 - 13
(Percent of GDP; unless otherwise indicated)



Sources: BNB; Bloomberg; and IMF staff calculation.

New Member States: NFC debt, 2000-13
(percent of GDP)



Sources: Eurostat (ESA 2010); and IMF staff calculations.

[4] Estimates are based on IIP information for direct investment in debt instruments from non-residents, as of end-2013.
[5] Please refer also to the 2015 EC Country Report for Bulgaria for a discussion of corporate indebtedness and deleveraging.
[6] See Bakker and Klingen (2012) and Atoyan et al. (2013).

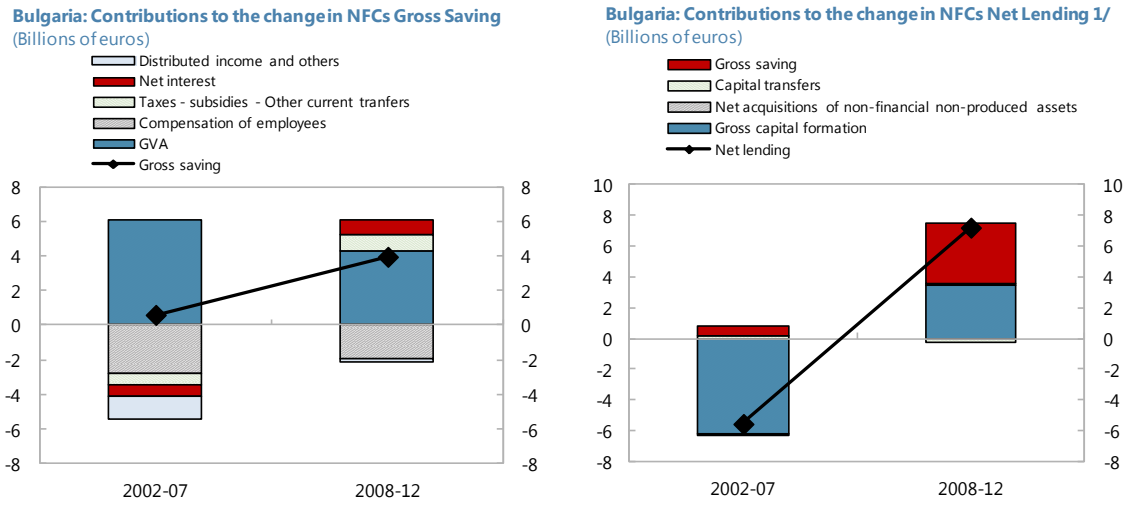
6. Against this backdrop, the flow-of-funds identity linking corporate funds' uses and sources provides a useful reference to understand the main channels of the corporate debt build up (ΔD) in Bulgaria in the pre-accession period:

$$\Delta D = (I + \Delta FA - IF) - \Delta E = \text{Corporate Gap} - \Delta E,$$

where I refers to capital investment, ΔFA to the change in net financial assets, IF to the firm's internal funds arising from its gross savings, and ΔE to the change in equity.

7. In the pre-EU accession period, as presented in the text charts below, firms' net borrowing in Bulgaria increased significantly. This largely tended to reflect significant increases in investment, against only limited improvements in gross savings. In particular, sizable improvements in gross value added were for a large part offset by increases in operating costs, notably compensation of employees, and net interest payments.

8. Following the onset of the global crisis, firms' net lending position reversed on a consolidated basis, through a sharp contraction in investment as well as sizable improvements in gross savings. At the same time, companies' savings performance has been associated with improvements in other factors, including retained dividends and net interest and partly lower wage bills, while gross value added has declined compared to the pre-crisis period.



Sources: Eurostat ESA95; and IMF staff own calculations.
1/ A negative (positive) value corresponds to a decline (increase) in net lending, i.e, an increase (decline) in net borrowing.

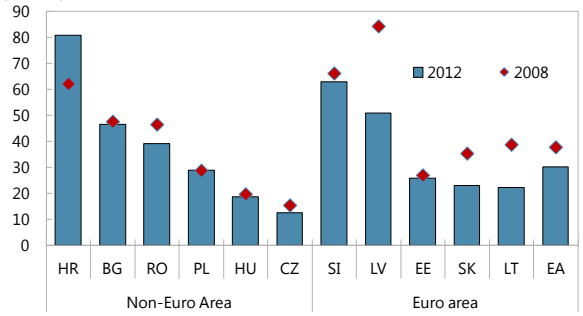
Liquidity and Solvency Risk Indicators

9. Alternative measures and relevant thresholds are frequently used in the literature to assess corporate liquidity and solvency risks stemming from NFC balance sheets. These are calculated in

this section for the entire non-financial corporate sector by using Eurostat national annual sector accounts.[7] However, given the ongoing transition of the European System of Accounts from the ESA95 to the new ESA2010 standards, data for most NMS, including Bulgaria, are only available on an ESA95 basis up to 2012 for most non-financial transaction series.

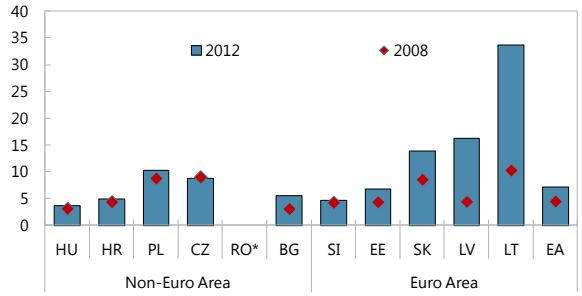
10. *Liquidity risk* reflects the potential inability of firms to service their debt obligations out of their current income (i.e., without recourse to additional borrowing). The liquidity risk metrics for Bulgaria and other NMS are constructed by comparing firms' debt servicing burden to their debt servicing capacity and include the debt-to-income and interest coverage ratio (ICR), respectively. Following Iossifov and Zumer (2014), for the debt-to-income ratio, firms' debt service capacity is proxied by gross disposable income before interest payments and shareholders' distributed earnings to avoid double-counting with the numerator and to acknowledge seniority of bondholders' claims. For the ICR, firms' debt service capacity is proxied by EBITDA (earnings before interest, taxes, depreciation, and amortization) over interest payments (incl. Financial Intermediation Services Indirectly Measured, FISIM), as it is standard in the literature.

New Member States: Corporate Net Leverage Ratio
(Percent)



Sources: EUROSTAT ESA95 Annual Sector Accounts, quarterly financial accounts, and IMF staff calculations.
Note: Ratio of stock of debt net of holdings of cash, deposits, loans and debt securities to firms' capital.

New Member States: NFC Interest Coverage Ratio
(Percent)

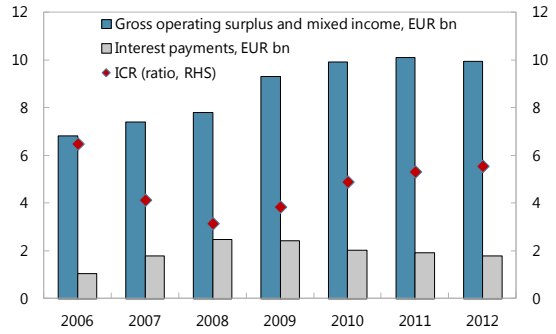


Sources: EUROSTAT ESA95 Annual Sector Accounts; and IMF staff calculations.
Note: Ratio of gross operating surplus and mixed income to interest payments (incl. FISIM). Data for Romania is not available.

[7] National Accounts are compiled in accordance with the European System of Accounts (ESA). Figures are collected and transmitted to Eurostat by the National Statistical Institutes of each EU Member State. The non-financial corporation sector comprises all private and public corporate enterprises that produce goods or provide non-financial services to the market.

11. While the debt-to-income ratio declined significantly in Bulgaria in the period since 2008 to 2012, it remained at significantly high levels (over 400 percent of income), well above its peers. The ICR points to a relatively comfortable coverage of interest payments by gross operating income, as defined above, with a consolidated ratio of 5 as of end-2012, supported both by a gradual improvement in operating surpluses, although interest costs have remained relatively high compared to the pre-crisis period. While Bulgaria's aggregate ICR level is above the standard thresholds of 2 or 1 normally used in the literature to identify firms with "debt at risk" (Glen, 2005), it remains one of the lowest among NMS, after Hungary and Slovenia. Moreover, Bulgaria's corporate balance sheets appear to be sensitive to macro-financial shocks, as evidenced by the marked reduction in ICR experienced by firms during the global crisis, with ICR levels as low as 3 for the entire system.

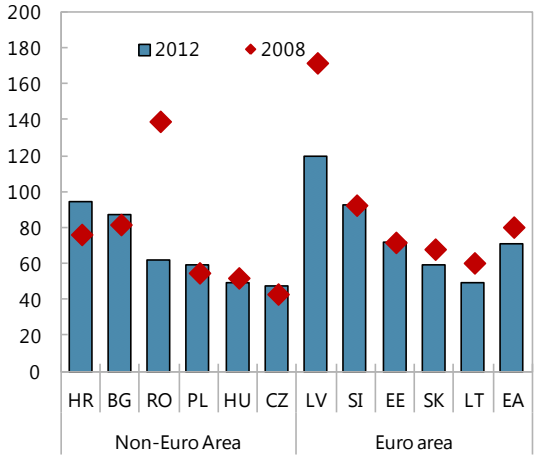
Bulgaria: Interes Coverage Rate, 2006–12
(Percent)



Sources: EUROSTAT ESA95 Annual Sector Accounts; and IMF staff calculations.

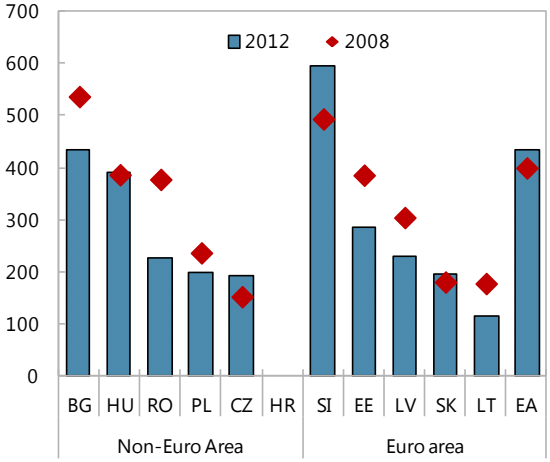
12. *Solvency risk* measures the potential inability of firms to keep the value of their assets above that of their liabilities. Leverage ratios like debt-to-equity are normally used in the literature to compare the stock of debt to firms' capital (as proxied by shares and other equity in the Eurostat sector accounts). Moreover, following Iossifov and Zumer (2014), a net leverage ratio can be constructed by deducting from the debt stock firms' assets (including their holdings of currency and deposits, securities, and loans).

New Member States: NFC Debt-to-Equity Ratio
(Percent)



Sources: EUROSTAT ESA95 Annual Sector Accounts; and IMF staff calculations.

New Member States: NFC Debt-to-Income Ratio
(Percent)



Sources: EUROSTAT ESA95 Annual Sector Accounts; and IMF staff calculations.
Note: Ratio of stock of debt (loans and debt securities) to augmented gross disposable income (before interest payments and before payments to shareholders). Data for Croatia are not available, while data for Romania are for 2011.

13. Bulgaria's corporate sector presents high gross leverage ratios, at about 85 percent of equity, with no evidence of adjustment in recent years, based on the latest available data for 2012. Nevertheless, it appears less exposed to solvency risks than other NMS, like Croatia, Latvia, and Slovenia. Moreover, the ratio is significantly lower once firms' assets are accounted for, with a net debt-to-equity ratio of about 45 percent.

C. Macro-Financial Implications of Corporate Leverage

14. This section explores the macro-financial implications of firms' debt overhang resulting from the way it affects their investment decisions. According to the literature, while a firm's investment decisions should be completely unaffected by the type of security used to finance it, since the market value of a firm would be independent of its capital structure (Modigliani and Miller, 1985), in presence of market frictions (e.g., asymmetric information between external investors and company managers), firms' capital structures would increasingly deviate from a well-defined leverage target at least in the short term, with firms favoring internal to external financing, debt to equity (Meyers, 1984). In this context, a firm's leverage position would matter for its investment decisions. In particular, while financial deepening could help diversify firms' funding options and boost productivity levels, excess leverage would more than offset these benefits by raising vulnerabilities and amplifying firms' sensitivity to income and interest shocks (Bernanke and Gertler, 1989).

Empirical literature and methodology

15. The empirical relationship between corporate leverage and investment has been widely tested in the literature, including for European countries. Building on seminal work by Fazzari et al. (1988) and Bernanke et al. (1999), Vermeulen (2000) finds evidence of a financial accelerator effect in Germany, France, Italy, and Spain over the period 1983–1997 showing that weak balance sheets tend to amplify the impact of adverse shocks on firm investment, especially during downturns and for smaller firms. Goretti and Souto (2013) confirm these results using aggregated firm-level data for 21 sectors of activity and eight Euro area countries (Austria, Belgium, France, Germany, Italy, Netherlands, Portugal and Spain) over the post-Euro adoption period, 2000–2010.

16. Building on Goretti and Souto (2013) and earlier empirical work, this section of the paper follows a panel-data approach to test the hypothesis that firms' investment decisions are indeed affected by their balance sheet positions. The baseline specification for the investment equation is as follows:

$$IK_{it} = \alpha + \beta\, IK_{it-1} + \gamma\, SK_{it-1} + \delta\, D_{it-1} + \varepsilon_{it}$$

The dependent variable IK_{it} is the investment-to-capital ratio of firm *i* at time *t*. The debt overhang variable D is in turn proxied by a standard leverage measure, debt to equity, as well as the ICR. The latter is calculated as the ratio of EBITDA to interest payments, as described in Section II. The specification includes the lagged sales-to-capital ratio SK to control for standard sales-accelerator effects.

17. The coefficient δ is the parameter measuring the sensitivity of the investment rate with respect to changes in the debt overhang variable. Rejecting the null hypothesis that the coefficient δ is equal to zero (as suggested by the perfect capital market theory) would indicate that firms' investment decisions are affected by their balance sheet position. Moreover, the coefficient should present a negative sign if debt overhang is proxied by the debt-to-equity ratio, while the sign should turn positive if the ICR is used instead.

18. Since the specification introduces lags of the dependent variable to control for possible endogeneity, the standard fixed effect estimator would be inconsistent. In order to address this issue while still allowing for a dynamic model, we use the GMM two-step system estimator by Blundell and Bond (1998), applying the STATA module developed by Roodman (2003).

Database and balance-sheet diagnostics

19. For the analysis in this section, we make use of firm-level micro data from the Orbis database by Bureau van Dijck, focusing on companies in Bulgaria and other nine NMS, based on data availability.[8] The dataset covers the period 2004–2013, although firms' coverage improves in more recent years. In the case of Bulgaria, the dataset includes over 200,000 companies in 2013, including a large share of micro and small enterprises (96 percent of total), across different industries (with about 85 percent of companies in non-tradable sectors). The summary table below presents summary statistics across all firms in the dataset for the variables to be used in the econometric specification.

Orbis Dataset: Summary Statistics of Regression Variables

		Obs.	Mean	Std. Dev.	25th Perc.	Median	75th Perc.
IK: Investment to capital ratio	NMS	2,409,023	2.50	1546.00	0.00	0.11	0.42
	Bulgaria	154,550	1.79	32.09	0.02	0.14	0.51
SK: Sales to capital ratio	NMS	3,256,278	35.62	1640.71	1.50	4.93	16.33
	Bulgaria	203,050	29.77	383.23	1.41	3.72	11.76
DE: Debt to equity ratio	NMS	1,482,313	2.50	5.98	0.20	0.62	1.86
	Bulgaria	209,831	2.23	5.30	0.20	0.60	1.77
ICR: Interest coverage ratio	NMS	822,040	28.18	80.74	3.00	8.00	21.67
	Bulgaria	166,600	14.07	36.83	2.47	5.42	13.00

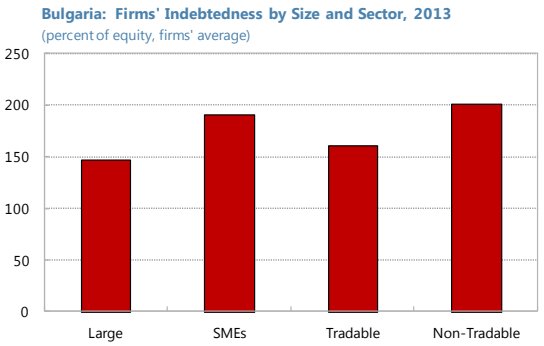
Sources: Orbis database and staff own calculations.

20. While the granularity of the dataset allows for greater insights at firm and industry level, a word of caution is needed in interpreting results at country level, given the definitional and coverage differences (including a highly unbalanced pane of data, characterized by several gaps, due to firms'

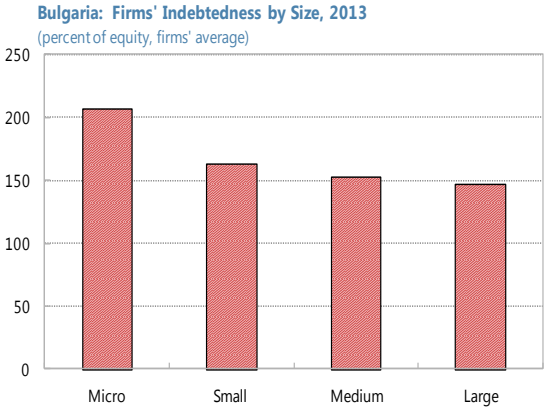
[8] Among the NMS identified earlier, Lithuania is the only country excluded from the analysis due to data gaps.

entry/exit and structural breaks in coverage) compared to the aggregate Eurostat national accounts data.[9] In particular, in the case of Bulgaria, on average total debt owed by firms in the Orbis sample accounts for about 35 percent of the aggregate corporate-sector debt calculated using sectoral accounts. Accordingly, the dataset rather presents a snapshot of the behavior of selected firms by size and sectors in the region and/or each country.

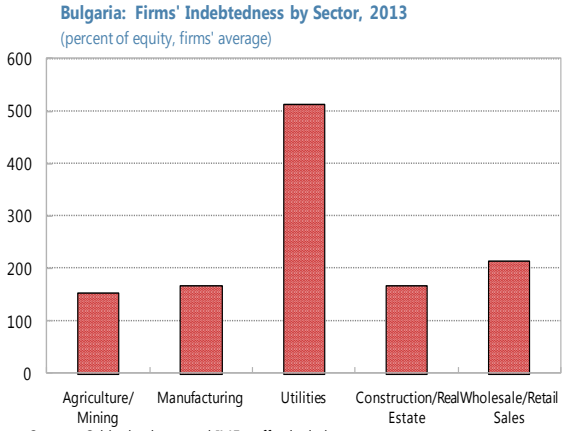
21. The firms included in the dataset tend to show on average higher leverage levels (debt to equity ratios) over the sample period than those reported in the Eurostat sectoral accounts for non-financial corporations, as presented in the previous section. However, this is subject to large standard deviations, with leverage levels ranging from 20 percent of equity in firms' lower quartile to up to 170 percent in the upper quartile. The same applies to the Bulgarian firms where the median leverage value of around 60 percent of equity— below Eurostat aggregate levels—hides significant differences at firm-level within the sample. In particular, leverage is on average higher for firms of smaller size as well as operating in the non-tradable sector, notably utilities.



Sources: Orbis database; and IMF staff calculations.



Sources: Orbis database; and IMF staff calculations.

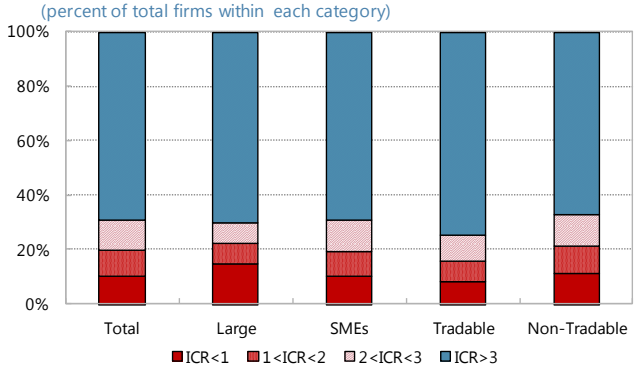


Sources: Orbis database; and IMF staff calculations.

[9] The econometric analysis focuses on solvent companies with positive equity and excludes extreme values in the dataset by trimming observations below/above the 1st/99th percentile for each regression variable to reduce the effect of possibly spurious outliers.

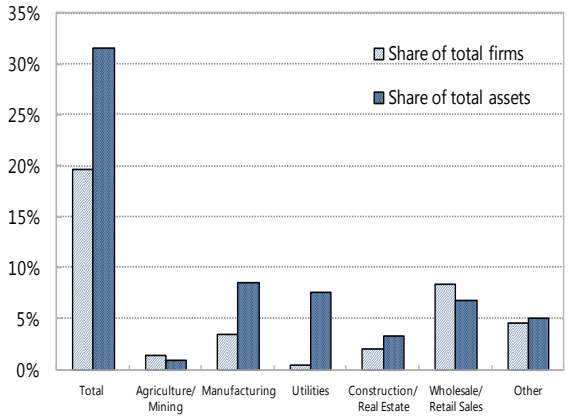
22. While interest coverage ratios tend to appear adequate on average, the sizable standard deviations indicate that several firms in the sample are under liquidity pressures. In particular, in 2013, in Bulgaria almost 20 percent of the firms in the sample (accounting for 32 percent of total NFC assets in the sample) had an ICR below the precautionary threshold of 2, used to identify "debt at risk." Among them, 10 percent of firms had an ICR lower than 1, i.e., they did not generate enough gross operating income to cover their interest burden. Consistently with the higher leverage levels, debt at risk appears concentrated in SMEs (19 percent of total firms). Nevertheless, while a smaller number of large firms present debt at risk, this accounts for a large share (21 percent) of assets in the sample. Firms in the more indebted non-tradable sector are also subject to greater liquidity risks. However, a more in depth analysis by industry shows that manufacturing actually accounts for the bulk of debt at risk (9 percent of assets), followed by utilities and sales, among non-tradables (7 percent of assets each).

Bulgaria: Firms with Debt at Risk by Size and Sector, 2013
(percent of total firms within each category)



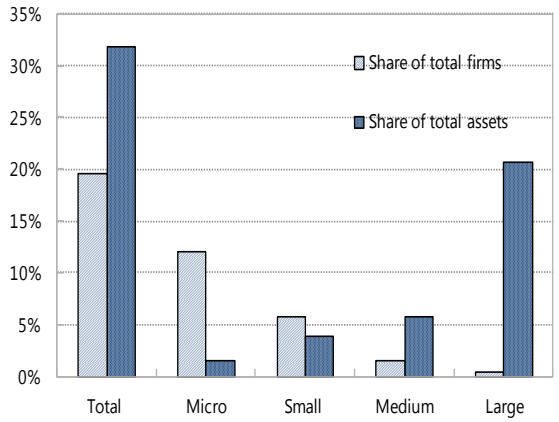
Sources: Orbis database; and IMF staff calculations.

Bulgaria: Firms with Debt at Risk by Sector, 2013
(Percent)



Sources: Orbis database; and IMF staff calculations.

Bulgaria: Firms with Debt at Risk by Size, 2013
(Percent)



Sources: Orbis database; and IMF staff calculations.

Econometric results

23. The empirical results for the NMS panel find evidence of a negative sensitivity of firms' investment-to-capital ratio to corporate debt overhang, as defined above, after controlling for sales performance and lagged investment behavior. The estimated coefficients in the regression are significant and enter with the expected sign, in line with the literature.[10] Specifically, higher debt overhang is found to reduce investment in the NMS in the sample, with an impact ranging from 1 to 6 percent depending on whether debt overhang is proxied by higher debt-to-equity leverage or lower capacity to repay (i.e., the perfect capital markets hypothesis that δ is equal to zero is rejected).

NMS: Corporate Debt Overhang and Investment Ratio

$IK_{it} = \alpha + \beta\, IK_{it-1} + \gamma\, SK_{it-1} + \delta\, D_{it-1} + \varepsilon_{it}$

	D=DE	D=ICR
Constant	1.97***	0.44***
IK_{it-1}	0.07**	-0.03***
SK_{it-1}	-0.04***	0.01***
D_{it-1}	-0.06***	0.01***
AR(1) test	-1.68*	-3.34***
AR(2) test	0.99	-1.05
Obs.	1,800,892	686,110

Notes: Dynamic panel data with GMM two-step system estimator. ***, **, * indicate significance at 1, 5, and 10 percent level.

24. Bulgaria-specific results differ significantly depending on the sample period. While the ICR measure is significant throughout 2004–2013, suggesting that a firm's liquidity risk, as proxied by its capacity to repay, matters for its funding and investment decisions, the same does not seem to apply to the debt-to-equity measure. Interestingly, results become significant once the regression sample is restricted to only consider the post-crisis period. The explanation underpinning these results is likely to be two-fold. On one side, the global crisis has heightened funding constraints, as the ample liquidity and credit appetite of the pre-EU accession years receded (as discussed in Section II). In this context, solvency considerations would become more binding. At the same time, the results are likely affected by the underlying firms' coverage of the Orbis database, since the number of firms available in the sample nearly doubles after 2010 with a more differentiated composition by both size and sectors.[11]

[10] The magnitude of the coefficients is smaller than estimated by Goretti and Souto (2013), ranging from 20 to 30 percent. This can be explained by the different datasets (and definitional differences) as well as the relatively lower leverage levels of the NMS sample compared to the EA periphery one.

[11] The unbalanced characteristics of the dataset across the sample period are also reflected in weak diagnostic tests.

BGR: Corporate Debt Overhang and Investment Ratio

$$IK_{it} = \alpha + \beta\, IK_{it-1} + \gamma\, SK_{it-1} + \delta\, D_{it-1} + \varepsilon_{it}$$

	D=DE			D=ICR		
	Full sample	2004-10	2011-13	Full sample	2004-10	2011-13
Constant	0.287***	0.184***	0.369***	0.246***	0.249***	0.223***
IK_{it-1}	0.034***	0.077***	-0.002	0.033***	0.065***	0.011**
SK_{it-1}	0.058***	0.012***	0.005***	0.006***	0.010***	0.005***
D_{it-1}	0.003	0.255	-0.677***	0.003***	0.007***	0.002***
AR(1) test	-11.72***	-7.11***	-7.91***	-10.89***	-5.46***	-8.66***
AR(2) test	3.38***	2.19*	2.06*	2.71**	1.45	2.86**
Hansen test	72.62	115.06	28.05	71.62	66.71	36.88
Obs.	75,995	30,191	45,804	68,968	18,597	50,371

Notes: Dynamic panel data with GMM two-step system estimator. ***, **, * indicate significance at 1, 5, and 10 percent level.

25. Robustness tests by sector and size also provide interesting insights depending on the selected sample period. Before 2010, higher corporate leverage appears to negatively affect with a significant sign only the micro firms in the sample, consistent with expected higher funding constraints. Across industries, the same applies to the utilities sector, which earlier diagnostic tests identified as more leveraged. Results for the post-crisis period show a consistent negative relationship between leverage and investment across sectors and/or by firm's size. Nevertheless, these results remain subject to the same important caveats highlighted above, also given more limited data availability at each disaggregated level.[12]

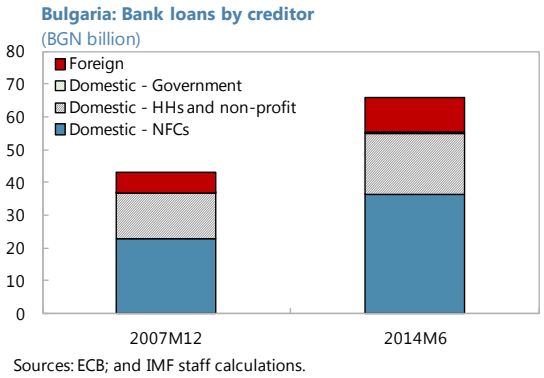
D. Policy Implications and Conclusions

26. Bulgaria's corporate sector is among the most leveraged among NMS, pointing to important liquidity risks, which could in turn raise solvency concerns in presence of severe macro-financial shocks. Moreover, available data suggest great heterogeneity at the firm level, with a significant number of firms presenting interest coverage levels below precautionary thresholds. With corporate debt accounting for over 55 percent of banks' domestic loans in Bulgaria, this is mirrored by a sustained high level of corporate NPLs in the country.[13]

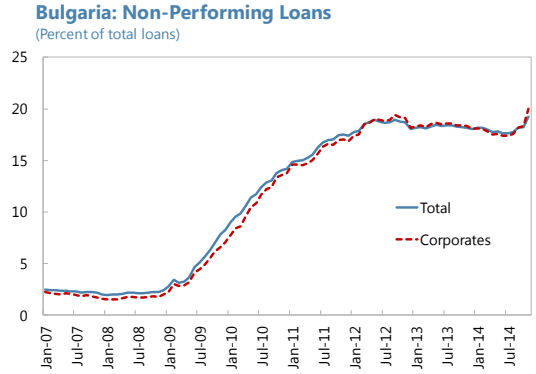
27. The paper also confirms previous evidence in the literature of an important drag on investment and growth engendered by high corporate sector debt overhang. In particular, the

[12] Robustness test results are omitted for brevity but available upon request.
[13] Bad and restructured loans in the NFC sector account for 65 percent of the total, as of end-2014.

empirical results for the NMS sample—based on firm-level data— show evidence of a negative relationship between firms' investment-to-capital ratios and their debt burdens over the sample period. In Bulgaria, the relationship between investment and leverage is found to hold consistently by firm's size and across sectors only in the post-crisis period, likely due to the higher liquidity constraints and risk aversion post-crisis, but possibly also to coverage issues in the database.



Sources: ECB; and IMF staff calculations.



Sources: BNB; and IMF staff calculation.

28. While it is critical to advance corporate deleveraging in highly indebted countries to unlock credit and investment, this process has yet to start in earnest in most NMS, including Bulgaria. Moreover, lessons from other country episodes characterized by sizable corporate adjustment suggest that this process tends to be protracted and, if conducted through a generalized withholding of credit to all firms, can generate significant macro-financial spillovers through heightened risks of corporate bankruptcies and rising NPLs in banks' balance sheets.[14]

29. To mitigate these potential costs, the policy mix needs to be supportive of an orderly and efficient adjustment process, aimed at restoring corporate productivity and growth. A self-reinforcing institutional framework needs to be in place to prevent continued build-up of imbalances in specific segments of the economy. As discussed in the Annex, in past and ongoing country experiences this has been supported by a broad range of policy initiatives, including an efficient corporate debt restructuring framework, the promotion of alternative funding sources, as well as macro-prudential tools and tax measures to promote firms' long-term viability.

[14] See Pomerleano and Shaw (2005), Mc Kinsey (2012), and Goretti and Souto (2013) for a review of past corporate deleveraging episodes.

Annex I. Cross-Country Policy Initiatives to Support an Orderly Deleveraging Process

While the specific policy toolkit to address corporate debt overhang rests on each country's specific needs and evolving circumstances, a review of cross-country experiences with corporate deleveraging in the region can offer important lessons on the range of policy tools potentially available to support an orderly and efficient corporate adjustment process, as well as to prevent continued build-up of corporate imbalances and support firms' long-term viability. A non-exhaustive summary of these policy initiatives is presented below.

- *Corporate restructuring framework*. Effective insolvency regimes are pivotal to an orderly deleveraging process, by targeting the re-organization of the financial and operational structure of distressed but still viable firms, as well as the liquidation of non-viable ones. Enforcement and foreclosure processes are also essential to enable an effective realization of collateral in case of debtor distress. Policy approaches to corporate restructuring tend to vary depending on country-specific circumstances and the severity of the problem at hand. In particular, past country initiatives have ranged from government-sponsored market-based models, including the introduction of guidelines for voluntary out-of-court debt workouts in Iceland, Latvia, Portugal and Romania (along the so-called London Approach),[1] to more intrusive government-directed models, such as the establishment of committees with strong powers including binding arbitration (Thailand, Korea) or centralized asset management companies.[2] Since the global crisis, Bulgaria has taken steps to strengthen its legal framework for insolvency resolution by amending its corporate insolvency legislation to address deficiencies identified earlier, including by IMF staff, such as limiting the backdating of insolvencies (to three years) and clarifying the rules for the set-off and for avoidance of certain transactions. Nevertheless, judicial bottlenecks to timely and predictable insolvency proceedings remain a concern.[3] Voluntary restructuring is not specifically regulated in Bulgaria, although this option is available to the creditors and the debtor. While information on the number of successfully completed restructuring plans or out-of court settlements is not available, the number of insolvency proceedings in Bulgaria has increased significantly in recent years, from 390 in 2011 to 1,339 in 2012, as reported in the latest COFACE Bankruptcy Report.

[1] See also http://www.insol.org/page/57/statement-of-principles.
[2] See Liu and Rosenberg (2013) and Laryea (2010) for more details on corporate debt restructuring in past cases.
[3] See also the EC's Cooperation and Verification Mechanism Report for a broader discussion of issues in the judicial system in Bulgaria.

- *Supervisory activity and banks' NPL management*. Intense supervision remains a central tool to secure banks' recognition of losses and promote prompt recourse to debt restructuring. Independent AQRs (and stress testing) of banks, and subsequent actions to ensure capital shortfalls are replenished in a timely manner, have proved effective in recent cases, e.g., Spain, in providing the necessary conditions for promoting effective and speedy balance sheet clean-up. These efforts can be complemented by further supervisory actions (e.g., Ireland and Portugal) to ensure banks' debt recovery and restructuring capacity and processes are adequate to manage NPLs, including with external support by independent workout specialists. In some cases, NPL management can be guided by specific guidelines, as in the recent case of Romania. In Bulgaria, the Bulgarian National Bank (BNB) relies on two macro-prudential capital instruments—a capital conservation buffer of 2.5 percent and the systemic risk buffer of 3 percent—to ensure credit institutions sustain full coverage of NPLs (net of impairments) with own funds exceeding 8 percent in terms of total capital adequacy ratio. In addition, micro-prudential measures have been introduced at the individual banks' level to address the high NPLs for the affected banks.

- *Targeted tax incentives*. In the past, time-bound tax incentives—over 2–3 years—have been introduced by governments (e.g., Thailand, and more recently, Iceland and Latvia) to accelerate corporate debt restructuring. Moreover, targeted tax measures, with limited budget implications, can also help strengthen balance sheets by limiting the distortions resulting from the different tax treatment of debt versus equity. For example, "thin capitalization rules" can be introduced to limit the amount of interest expenditure deductions allowed for over-leveraged firms, while minimizing any undesired impact on capital investment. Allowances for new corporate equity (the so-called ACE) can also be effective in enhancing tax neutrality, while avoiding pro-cyclicality, along recent experiences in Latvia and Italy. Thin capitalization rules apply in Bulgaria, if the company's liabilities exceed three times its equity.

- *Access to Funding Sources*. Continued access to funding sources by viable yet over-indebted firms throughout a deleveraging process is critical to ensure a gradual adjustment and prevent liquidity pressures deteriorating into solvency problems. In some cases, including Italy and Portugal, governments have provided guarantees to special bank credit lines to help alleviate firms' high credit risk premia and collateral requirements (often associated with banks' unwillingness to take further NFC assets in their balance sheets in the context of already high corporate leverage). This is especially relevant in the case of SMEs. Nevertheless, past experience (e.g., Korea) has also highlighted how these programs need to be well-targeted (e.g., firms with strong credit scores) and limited in time given the underlying fiscal and moral hazard risks they can generate. Efforts to diversify firms' funding sources, notably from debt instruments to credit,

are also necessary. In this context, country authorities' efforts to enhance transparency and information sharing on the corporate sector, e.g., through the development of public and private credit bureaus, can support firms' access to new funding sources by allowing investors to properly assess the credit standing of new potential clients. In Bulgaria, SMEs benefit from equity and debt financial instruments financed by EU funds under different programs. In particular, guarantee schemes are extended by the National Guarantee Fund to banks for loans towards investment projects under the EU Rural Development Program and OP "Development of the Fishery sector". Moreover, both equity and debt instruments are financed by the JERAMIE initiative under the EU OP "Competitiveness".

- *Macro-prudential tools*. Macro-prudential measures can help secure the health of firms' balance sheets and prevent the materialization of new imbalances going forward. A broad set of tools has been considered in some countries to avoid build-up of corporate risks in specific niches of the economy. Beyond standard balance sheet tools (in line with the Basel III requirements), sectoral capital requirements, or variable risk weights, have been applied in the past by supervisors to target specific sectors showing signs of exuberance, by requiring banks to hold additional capital buffers.[4] While the BNB currently relies on the capital conservation and systemic risk buffers as mentioned above in terms of macro-prudential instruments, sectoral limits and measures under Pillar II could be possibly developed, if warranted, going forward.

[4] Past examples include the use of higher risk weights on commercial real estate loans in Australia in 2004 and on corporate lending in India in 2005–2006. See also Bank of England (2011) for a broader review of macro-prudential tools.

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