Private sector deleveraging in Europe[☆]

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ABSTRACT

The current crisis revealed the unsustainable levels of private sector indebtedness, fuelled by a prolonged period of rapid credit expansion during the upturn phase in some EU Member States. The subsequent deleveraging process now taking place, although necessary, stands as a source of concern in terms of its implications for economic activity. Against this background, this paper develops an analytical framework to assess private sector debt sustainability. Our approach revolves around two axes: (*i*) identifying and quantifying sectorial debt overhang pockets that are likely to generate high deleveraging pressures; and (*ii*) exploring the interactions between such deleveraging pressures and economic and credit market conditions. Based on the precedent analysis, policy implications are also discussed.

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1. Introduction

The financial crisis has highlighted the dire implications of excessive indebtedness for financial stability and economic growth. During the upturn phase, rapid credit expansion led in several EU Member States to high levels of debt in the non-financial private sector, which became clearly unsustainable at the onset of the financial crisis. A generalized and necessary deleveraging process is now taking place (see Crowe et al., 2011 on households, and Ruscher and Wolff, 2012, on firms), having adverse effects on economic activity. The pace and extent of the on-going adjustment varies across countries, reflecting the heterogeneity in credit market conditions, in financial institutional frameworks, and, crucially, the different potential deleveraging needs. In order to devise appropriate policy responses, facilitating the correction of existing imbalances while limiting the negative impact on growth, it is of key importance to understand the interaction between the

drivers of deleveraging and assess the likely macroeconomic impact of the adjustment process.

Against this background, the objective of this paper is to develop an analytical framework to assess private sector debt sustainability. Our approach revolves around two axes: (*i*) identifying and quantifying sectorial debt overhang pockets that are likely to generate high deleveraging pressures; and (*ii*) exploring the interactions between such deleveraging pressures and economic and credit market conditions.

Having this objective in mind, the first part of the paper puts forward two methodological contributions to assess potential deleveraging pressures. Firstly, we construct an encompassing indebtedness metric based on the informational content of several alternative indebtedness indicators in order to identify those EU Member States which are more prone to face deleveraging pressures in (*i*) the household sector and (*ii*) the non-financial corporation sector. Secondly, we develop a dynamic country-specific sustainable benchmark against which indebtedness can be measured, and which adds to the existing literature by taking into account the influence of valuation effects on debt sustainability over time. In particular, building on Arrow et al. (2004), private debt is considered to be sustainable whenever it evolves in line with notional assets (i.e. the level of assets filtered from valuation effects). The rebalancing of balance sheets thus depends on the interaction between debt reduction (effective deleveraging) and asset price valuation effects.

After having identified the countries facing deleveraging needs in the private sector, we proceed, in the second part of the paper, by exploring some key aspects of interactions between deleveraging

pressures and economic conditions. This includes, on the one hand the impact of credit-market and broader economic conditions on deleveraging needs and, on the other hand, the assessment of the potential impact of deleveraging on the macroeconomy. In this context, we first integrate credit demand and supply conditions in the analysis. This allows us to further screen the group of EU Member States identified as facing deleveraging needs, by taking into account the existing feedback loops between deleveraging in financial and non-financial private sectors: (i) credit supply constraints, which can be triggered by deleveraging pressures in the financial sector itself, may have a direct and binding impact on non-financial sector deleveraging (the "credit crunch" effect); and (ii) a depressed credit demand leading to a disordered deleveraging can adversely affect the soundness of the financial system and hence credit supply. In a second stage, the impact of deleveraging on the macroeconomy is assessed using a dynamic stochastic general equilibrium model (the European Commission's QUEST model). In particular, we discuss the impact of household sector deleveraging on main economic aggregates and assess the transmission mechanisms through which such a shock influences the economic activity under alternative scenarios. The results show that the adjustment leads to several years of subdued economic activity, amplified by a debt-deflation spiral, which can nevertheless be attenuated if the economy benefits from lower rigidity in product and labor markets.

The remainder of the paper is organized as follows. Section 2 focuses on identifying countries with high private sector deleveraging pressures and quantifying the deleveraging needs against a dynamic country-specific sustainable benchmark. Building on the countries identified previously, Section 3 looks at potential factors determining the adjustment costs related to their private sector debt overhang. Section 4 concludes.

2. Private sector balance sheet dynamics: identifying debt overhang pockets

It is difficult to extract a clear-cut conclusion on the existence of private sector debt overhang and the size of possible deleveraging pressures by looking at different indebtedness indicators in isolation, as they sometimes deliver diverging messages. The assessment of the extent of deleveraging requires, in turn, the identification of a sustainable benchmark against which to gauge indebtedness dynamics.

Against this background, this section first identifies countries which are more likely to face deleveraging pressures in the household and non-financial corporation sectors, by putting together all the relevant information conveyed by the various existing indebtedness indicators. In a second stage, it quantifies the deleveraging needs faced by the previously identified economies, by developing a dynamic country-specific benchmark against which to assess actual indebtedness developments.

2.1. Likelihood of deleveraging pressures: a sectoral composite indicator

Indebtedness is defined throughout the paper as the sum of outstanding loans and securities other than shares.[1] It is based on non-consolidated data, i.e. including intra-sector liabilities such as inter-company loans.[2] Changes of indebtedness are considered together

with the levels, thus complementing the stock analysis. Indeed, both the pace and the extent of the leverage increase provide first-hand signals of building indebtedness pressures, which might lead to periods of balance sheet repair.

Debt in the households and non-financial corporations' sectors is then measured against two alternative benchmarks — income or servicing capacity on the one hand and wealth or assets held by each one of the sectors, on the other hand.[3] The analysis is done separately for households and firms, looking first at capacity to repay indicators and, subsequently, at the leverage (debt-to-asset) ratios. For the former, GDP as well as household disposable income or firms' gross operating surplus are considered as benchmarks.[4] The latter include the debt to financial asset ratio as well as debt to notional assets (i.e. the notional leverage). Notional assets are obtained through filtering for valuation effects by accumulating transactions to the corresponding stock at a given starting date, as in Bakk-Simon et al. (2012).[5,6] Both the evolution of the ratios over the accumulation phase (from 2000 to 2008) and their 2011 level are considered in order to account for actual deleveraging need as well as diverging starting points and catching-up processes, which could mitigate the need for deleveraging despite rapid accumulation of debt in the past. The information coming from the different indicators is summarized by using clustering and composite indicator techniques.

In a first step, cluster analysis is used to find underlying similarities in the data and classify countries accordingly. Clusters represent groups of countries where members are more similar to one another than to non-members. Similarity is assessed mathematically as a distance measure between multi-dimensional data vectors. Subsequently, principal component analysis is implemented in order to reduce the dimensionality of the clusters and allow for a two-dimensional representation.[7] In all cases, the first two common factors are selected as they explain most of the variance in the sample. By looking at the factor loadings of the different indicators, the first factor could be identified as representing common dynamics to all indebtedness ratios in the build-up phase, while the second factor is associated with the level effect.

Figs. 1 and 2 show the groupings of Member States around cluster centres according to existing household deleveraging pressures.[8] The degree of membership to the different groups is represented by level curves, signaling the corresponding distance to the centroid or average value. As regards households' capacity to repay (Fig. 1), Cyprus, Denmark, Estonia, Ireland, Latvia, The Netherlands, Spain and the United Kingdom are among those that experienced a rapid increase in household indebtedness before the crisis. Despite the varying starting position in terms of household debt, the information content of the level dimension also points to the same set of candidates for deleveraging pressures, but also includes Portugal and Sweden. Moreover, Estonia, Ireland and Latvia

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[1] Data used stem from the annual financial accounts and balance sheets (AFA) collected by Eurostat and the quarterly financial accounts (QFA) collected by the ECB.

[2] Two alternative approaches have been applied for robustness purposes: i) including other items in the concept of indebtedness, such as trade credit; and ii) assessing the implications of using consolidated data, abstracting thereby from intra-sector incurrence of debt. Including trade credit does not fundamentally change the results, while generating noise in the aggregate data due to the series' high volatility. As for consolidated data, the results remain consistent but for the case of Belgium, where the magnitude of intra-company loans (almost 100% of GDP) calls for further qualifications when assessing its sustainability.

[3] These dimensions may point to different conclusions: for example Belgian firms stand out as being particularly highly indebted but only when looking at the debt over GDP ratio.

[4] Disposable income accounts for differences in wealth redistribution within Member States and the balance of income flows with respect to the rest of the world. Gross operating surplus provides relevant information on firms' capacity to generate income and thus service debt.

[5] Financial asset transactions are taken from the national sectorial account transaction data. The selection of the starting date for the accumulation of transactions is of importance. By considering the 1995 stock level as the starting point, implicitly Member States are assumed as being balanced in that year. This simplification allows for cross-country comparison on the evolution of notional leverage.

[6] Debt-generating instruments are not deflated as the underlying valuation effects are minor and therefore not affecting the conclusions of the analysis.

[7] Fuzzy clustering techniques are implemented using the Matlab Fuzzy Clustering and Data Analysis Toolbox developed by Balasko et al. (2005). For further technical details see Cuerpo et al. (2013).

[8] The analysis is not carried out for Luxembourg and Malta due to lack of data. For results on non-financial corporations see Cuerpo et al. (2013).