



# Workers' debt, default and the diversity of financial fragilities



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## ABSTRACT

This paper presents a model addressing the conditions under which financial instability arises in the event of household debt. The model addresses two main cases. First, household debt is affected by functional income distribution. Second, household debt is affected by credit supply and depends on bank performance. The model shows that financial fragility arises through a Fisher effect in the first case and through a debt financed consumption boom in the second case. The model then explores two extensions. First, we raise the question of debt default and its impact on financial instability. Second, we discuss the ability of capital adequacy ratio to limit financial instability.

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## 1. Introduction

Household debt has played a key role in the current financial crisis. There are two main views accounting for the over-indebtedness of households in the literature. The first view focuses on demand side explanations of debt. Greater borrowing is linked to higher demand for credit from households in the face of a deterioration of labour income. This explanation stresses the key role played by both functional and personal income distributions.<sup>1</sup> The decline in the wage share coupled with a more unequal distribution of labour income between top and lower deciles of the distribution has forced low income households to substitute wage increases for debt. The demand side view also focuses on conspicuous consumption à la Veblen, where

low income households rely on credit to gain access to luxury goods consumed by the elites.<sup>2</sup>

The second view focuses on supply side explanations of debt. Financial institutions have increasingly supplied credit to households in general, and to low income households in particular. This approach stresses the role of financial innovation such as securitization in reducing perceived credit risk. Financial deregulation and increased competition between financial institutions lead to less vigilant monitoring of borrowers. Home equity lending, where real estate is used as collateral for credit supply, is also one factor explaining the large flows of credit that have been channeled towards households.<sup>3</sup>

This paper presents a macroeconomic model to analyse the main features and properties of these two explanations of household debt. The aim is also to understand the specific

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<sup>1</sup> See for instance Barba and Pivetti (2009) and Pollin (1988).

<sup>2</sup> Contributions from Dutt (2005) and Dutt (2008) look at the issue of conspicuous consumption.

<sup>3</sup> See for instance Crotty (2009), Wray (2009) or Palma (2009).

drivers of financial instability associated with these two theoretical approaches.<sup>4</sup> The purpose is not place the two explanations in opposition, as it is likely that both demand and supply side explanations of debt have contributed to household over-indebtedness. It is, however, useful to discuss their similarities and differences by making use of a macroeconomic model.

The model consists of three elements: household debt, income distribution and a banking sector. The model is constructed so that setting some parameters at zero enables us to consider the case with or without income distribution as well as the case with or without credit rationing. Household debt interacts in one case with income distribution and in the other case with the banking sector.

The model has the following characteristics. The demand side explanation of debt is captured by focusing on functional income distribution rather than personal income distribution. Workers raise debt to finance the gap between their income and their consumption. Income distribution affects worker labour income and their consumption decisions. The real side of the model is based on the Keynes–Goodwin framework developed by [Chiarella et al. \(2005\)](#) and [Proaño et al. \(2010\)](#). The model incorporates a Keynesian element via the principle of aggregate demand. The model also captures some of the insights of Goodwin due to the importance played by functional income distribution. In particular, the dynamic of functional income distribution is captured by a double Phillips curve for nominal wages and prices.<sup>5</sup> Consequently, this model shares similarities with [Charpe et al. \(2009\)](#) and [Charpe et al. \(2011\)](#), which address the issues of demand regime in the presence of households' debt. Related contributions are [Palley \(1994\)](#) and [Zezza \(2008\)](#). [Palley \(1994\)](#) analyses the implication of households debt for aggregate demand highlighting the importance of debt for consumption and the impact of interest payments on households' incomes. [Zezza \(2008\)](#) proposes a stock-flow consistent model with households debt to explain the drop in the saving rates of households in the USA.

The supply side explanation is captured by credit rationing, with worker consumption being a positive function of credit supplied by banks. Credit rationing is a function of bank characteristics, with banks granting loans on the basis of their own performance. [Dutt \(2006\)](#) presents a model closely related to ours in the sense that it looks at the supply of credit of banks. However, credit supply is expressed as a function of borrower characteristics in his contribution. Another difference is that [Dutt](#) uses a Steindlian model and analyses the long term implications of indebtedness while this model looks at the stability properties of an economy with debt. [Hein \(2011\)](#) also develops a Kaleckian model, in which the supply of credit to

workers depends on lenders' characteristics. However, our contribution explicitly formulates a banking sector, while there is no intermediation between rentiers' households and workers' households in the aforementioned paper.

Another feature of the model is that the model considers the possibility of debt default and its implications for households' finance and the stability of the financial sector. In this perspective, the model considers the ability of financial prudential norms to stabilize unstable debt dynamics.

This model does not explicitly address the issue of housing debt, which would require specifying two goods: consumption goods and housing goods. Modeling a housing sector with capital accumulation, profitability and prices would make the model overly complicated in light of the mechanisms we are interested in exploring here. There are few papers on the interaction between debt and asset pricing bubbles. [Taylor \(2012\)](#) considers a model in which firms' indebtedness interacts with asset price bubbles. In the Neoclassical literature, [Kiyotaki and Moore \(1997\)](#) and [Iacoviello \(2005\)](#) look at the interactions between house prices and borrowing constraints.

In the case of income distribution and household debt, we show that debt accumulation in nominal terms is stable due to the recessionary effect of income transfers from worker-borrowers with a high propensity to consume to capitalists-lenders with a low propensity to spend. Despite the overall stability of the system, there is a tendency for household debt to produce price deflation and a cumulative dynamic of debt in real terms similar to Fisher debt-deflation spirals. We also show that the traditional Keynesian consumption function has difficulties reproducing the substitution of wage increases for debt stressed by demand side explanations. The Keynesian consumption function implies a positive correlation between household income and debt. This first case calls for the need of an alternative consumption function to support the demand side explanation (see [Barba and Pivetti, 2009](#) for a few possible alternatives). In the case of credit rationing, we show that the dynamic of debt is unstable. Credit rationing generates debt-financed consumption booms. Aggregate demand expands with consumption financed by banks' credit.

We then discuss two important extensions: debt default and prudential regulation. Debt default is a key feature of the current financial crisis. Over-indebtedness leads households to default on debt. The boomerang effect of default on banks through non-performing loans can be seen as a reason for the endurance of the crisis. We show that default stabilizes debt accumulation in the case of demand side explanation. Default reduces the income transfers from workers-borrowers with a high propensity to consume to capitalists-lenders with a low propensity to spend. Default, on the contrary, generates a credit crunch in the event of credit rationing.

Lastly, the crisis has shed light on the limits of prudential regulation. We therefore assess the case where banks adjust the mark-up on household debt to meet a prudential capital adequacy ratio. We show that such prudential ratios have pro-cyclical effects. The mark-up affects income transfers between borrowers and lenders as well as the

<sup>4</sup> The advantage of a theoretical model is that it allows the identification of the demand and the supply of credit, while in reality only the market outcome is observable. This is a shortcoming of the literature on the financial accelerator. Most theoretical models and most empirical estimations proxy credit rationing with the income level of borrowers ignoring that the income level might be a proxy of credit demand.

<sup>5</sup> The real side of the model is described in Eqs. (14)–(22) and its properties are described in Section 4.

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