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DRIVERS OF PRIVATE CONSUMPTION IN THE ERA OF FINANCIALISATION: NEW EVIDENCE FOR EUROPEAN UNION COUNTRIES[1]

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ABSTRACT

This paper provides an empirical assessment of the effects of the two stylised facts on private consumption in the era of financialisation, using panel data for all 28 European Union countries from 1995 to 2019. According to the post-Keynesian literature, there are two stylised facts in the era of financialisation that exert two contradictory effects on private consumption: a negative one linked to the fall in household labour income, and a positive one related to the increase in household debt and the increase in household financial and housing wealth. A post-Keynesian private consumption equation was estimated by including four variables connected to these two stylised facts in the era of financialisation (household labour income, household debt, household financial wealth, and household housing wealth) and five additional control variables (lagged private consumption, short-term interest rate, long-term interest rate, inflation rate, and unemployment rate). Our results confirm that these two stylised facts in the era of financialisation have been detrimental to private consumption in the European Union countries as a whole, and more specifically in the Euro area countries, as the beneficial debt and wealth effects have not been sufficient to compensate for the prejudicial labour income effect. The fall in household labour income has in fact been the greatest constraint on the evolution of private consumption in the Euro area countries.

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ABSTRACT

This paper provides an empirical assessment of the effects of the two stylised facts in the era of financialisation on private consumption, using panel data for all 28 European Union countries from 1995 to 2019. According to the post-Keynesian literature, there are two stylised facts in the era of financialisation that exert two contradictory effects on private consumption: a negative one linked to the fall in household labour income, and a positive one related to the increase in household debt and the increase in household financial and housing wealth. A post-Keynesian private consumption equation was estimated by including four variables connected to these two stylised facts in the era of financialisation (household labour income, household debt, household financial wealth, and household housing wealth) and five additional control variables (lagged private consumption, short-term interest rate, long-term interest rate, inflation rate, and unemployment rate). Our results confirm that these two stylised facts in the era of financialisation have been detrimental to private consumption in the European Union countries as a whole, and more specifically in the Euro area countries, as the beneficial debt and wealth effects have not been sufficient to compensate for the prejudicial labour income effect. The fall in household labour income has in fact been the greatest constraint on the evolution of private consumption in the Euro area countries.

1. INTRODUCTION

In recent years, and particularly until the Great Recession, household labour income exhibited a general decreasing trend in many countries, simultaneously with sustained or increasing private consumption. This 'consumption without labour income' hypothesis is somewhat puzzling for economic science, particularly because labour income tends to be regarded as the most important driver of private consumption.

Scholars of financialisation, adopting a post-Keynesian point of view, stress that two stylised facts in the era of financialisation have exerted a strong influence on the evolution of private consumption (Stockhammer, 2009; Onaran *et al*., 2011; Hein, 2012). The first stylised fact is the decline of household labour income, which implies a deceleration of private consumption. The second stylised fact is the growth of both household debt and household financial and housing wealth, which promotes the acceleration of private consumption.

The relationship between the effects of these two stylised facts and private consumption have been tested in empirical studies (Boone *et al*., 1998; Ludvigson and Steindel, 1999; Davis and Palumbo, 2001; Edison and Sløk, 2001; Mehra, 2001; Boone and Girouard, 2002; Ludwig and Sløk, 2002; Sousa, 2008 and 2009; Slacalek, 2009; Onaran *et al*., 2011; Barrell *et al*., 2015; Gonçalves and Barradas, 2021). Most derive and estimate private consumption equations by relating them to household labour income and household financial and housing wealth, following both the permanent income and life-cycle theories of consumption (Modigliani and Brumberg, 1954; Friedman, 1957; Ando and Modigliani, 1963). The majority of these empirical studies find that labour income and financial and housing wealth exert a positive influence on private consumption, in a context where the positive effect of the latter more than compensates for the negative effect of the former. This seems to suggest that these two stylised facts in the era of financialisation could be a potential response to the aforementioned puzzle surrounding the 'consumption without labour income' hypothesis.

The empirical studies present at least two shortcomings, however. They do not consider the effect of household debt on private consumption. They rely on both the permanent income and life-cycle theories of consumption, which do not properly explain the unprecedented and unsustainable levels of household debt reached in recent years, particularly until the Great Recession (Cynamon and Fazzari, 2008). Kim *et al*.

(2015) and Stockahmmer and Bengtsson (2020) are the only two exceptions. They estimate alternative post-Keynesian consumption functions in which current household labour income, current household debt, and current household financial and housing wealth all affect current private consumption. The former concludes that household labour income, household debt, and household wealth have a positive impact on private consumption in the long-term. The latter finds that household financial and housing wealth positively affects private consumption in Norway, France, and the UK, and that household debt exerts a positive impact on private consumption in Norway and the UK.

Empirical studies on this matter have also pointed out that the effects of household housing wealth are traditionally greater than the effects of household financial wealth (Sousa, 2008; Onaran *et al*., 2011; Stockahmmer and Bengtsson, 2020), and that these effects are greater in 'market-based' countries than in 'bank-based' countries (Boone *et al*., 1998; Edison and Sløk, 2001; Ludwig and Sløk, 2002; Slacalek, 2009; Stockhammer and Bengtsson, 2020).

This paper therefore examines the role of these two stylised facts in the era of financialisation as regards the evolution of private consumption in European Union (EU) countries from 1995 to 2019, and makes six contributions to the literature. Firstly, the paper focuses on EU countries, for which there is less evidence due to a strong emphasis on large and highly developed and financialised economies, like the US economy. Stockhammer (2009) also warns that this econometric evidence for the US economy is often based on a short period of observations, and notes that the evidence for EU countries is relatively scarce. Edison and Sløk (2001) also state that econometric empirical studies covering the EU countries are relatively limited. There are exceptions, but they are often confined to the G7 countries (e.g., Boone *et al*., 1998; Boone and Girouard, 2002; Barrell *et al*., 2015). EU countries are an interesting case, as they present a certain institutional diversity despite belonging to the same economic and political region. Secondly, the paper reports a panel data econometric analysis, whilst the majority of empirical studies on this subject have used time series econometric analyses (Boone *et al*., 1998; Ludvigson and Steindel, 1999; Davis and Palumbo, 2001; Edison and Sløk, 2001; Mehra, 2001; Boone and Girouard, 2002; Sousa, 2008 and 2009; Onaran *et al*., 2011; Barrell *et al*., 2015; Kim *et al*., 2015; Stockhammer and Bengtsson, 2020; Gonçalves and Barradas, 2021). Ludwig and Sløk (2002) and Slacalek (2009) are the only exceptions, ascertaining the financial and housing wealth effects for a panel of 16 countries as a whole, and for both 'market-based' and 'bank-based'

countries separately. Note that a panel data econometric analysis offers several advantages, due to the potential to collect more observations with more variability and less collinearity, which improves the accuracy and the reliability of estimations (Baltagi, 2005; Brooks, 2009). Thirdly, the paper assesses the periods before, during, and after the crisis, whereas the existing literature is typically focused on the period prior to the Great Recession. Barrell *et al*. (2015) and Gonçalves and Barradas (2021) are the only exceptions, but they only analyse Italy and the UK, and Portugal, respectively, through a time series econometric analysis. This is relevant due to the significant impact of the Great Recession on the evolution of private consumption, household labour income, household debt, and household financial and housing wealth (Figure A1 in the Appendix). Fourthly, this paper evaluates the effects of these two stylised facts in the era of financialisation on total private consumption and on the individual components of private consumption (consumption of services and consumption of non-durable, semi-durable, and durable goods), which is a novelty in the literature. In fact, the previous empirical works on that subject only estimate the effects of household labour income and household financial and housing wealth on non-durable goods by assuming that the consumption of durable goods represents additions and replacements to asset stocks (Mehra, 2001; Ludwig and Sløk, 2002; Barrell *et al*., 2015). The impact of household labour income, household debt, and household financial and housing wealth on the different components of the private consumption, however, could vary because they reflect different priorities in the scale of household needs. As pointed out by Romer (1990), the rise of uncertainty with regards to future income may depress the consumption of (irreversible) durable goods, and boost the consumption of (reversible) non-durable goods because households will have more wealth to spend on this type of goods. Fifthly, this paper applies an alternative post-Keynesian consumption function in order to contour the flaws linked to both permanent income and life-cycle theories of consumption (Cynamon and Fazzari, 2008; Palley, 2010; Kim *et al*., 2015), according to which current household labour income, current household debt, and current household financial and housing wealth all affect current private consumption. This post-Keynesian consumption equation is also employed by Kim *et al*. (2015) and Stockhammer and Bengtsson (2020), but they perform a time series econometric analysis centred in the US, and in France, Norway, Sweden and the UK, respectively. Sixth, and contrary to the majority of empirical studies on this subject, the paper estimates a private consumption equation by including several control variables in order

to take into account other important determinants of private consumption, such as income uncertainty, substitution effects, and the depreciation of non-indexed financial assets (Church *et al*., 1994; Boone *et al*., 1998; Davis and Palumbo, 2001; Boone and Girouard, 2002). This mitigates the risk of potentially inconsistent and biased estimates due to the problem of omitted relevant variables (Wooldridge, 2003; Kutner *et al*., 2005; Brooks, 2009).

A post-Keynesian private consumption equation was estimated using four variables linked to these two stylised facts in the era of financialisation (household labour income, household debt, household financial wealth, and household housing wealth) and five additional control variables (lagged private consumption, short-term interest rate, long-term interest rate, inflation rate, and unemployment rate). Estimations were produced using the least-squares dummy variables bias-corrected estimator (LSDVC) due to the existence of a dynamic panel data model, an unbalanced panel, and a macro panel.

The paper concludes that these two stylised facts in the era of financialisation have been prejudicial to private consumption in EU countries as a whole, and more specifically in the Euro area countries, because the positive debt effect and the positive financial and housing wealth effect have not been sufficient to compensate for the negative labour income effect. The fall in household labour income was in fact the greatest constraint on the evolution of private consumption in the Euro area countries.

The remainder of the paper is organised as follows. Section 2 presents a review of the literature on the effects of the two stylised facts in the era of financialisation on private consumption. In Section 3, a private consumption equation is presented, as well as the expected effects of each variable included in that equation. The data and methodology are described in Sections 4 and 5, respectively. In Section 6, we present the main results and the respective discussion. Finally, Section 7 concludes.

2. PRIVATE CONSUMPTION IN THE ERA OF FINANCIALISATION

It is widely accepted that understanding the determinants of private consumption is central in economic science, notably because private consumption tends to be the most important component of aggregate demand, and makes a strong contribution to

gross domestic product (GDP) in several countries, therefore playing a crucial role in economic growth (Palley, 2010).

Scholars on financialisation have claimed that the emergence of this phenomenon has had profound effects on household consumption since the mid-1980s, due to the higher engagement of households in the realm of financial markets as debtors (especially through credit) and/or asset holders (housing, pensions, insurance, money market funds, and other financial assets) (Stockhammer, 2010; Lapavitsas, 2011; Barradas, 2016).[1] This behaviour is common to the majority of households, including low-income and middle-class households (Barba and Pivetti, 2009; Van der Zwan, 2014).

Indeed, the evolution of private consumption in recent years cannot be dissociated from the process of financialisation. Framed in the post-Keynesian tradition, it is argued that there are two stylised facts in the era of financialisation which have two contradictory effects on private consumption (Stockhammer, 2009; Onaran *et al.*, 2011; and Hein, 2012). Figure 1 illustrates these two stylised facts in the era of financialisation (and the factors that contribute to explain them), as associated with their contradictory effects on private consumption.

[Figure 1 around here]

The first stylised fact is connected to the fall (rise) of the labour income (profit) share in the era of financialisation (Kristal, 2010; Dünhaupt, 2011; Stockhammer, 2012 and 2017; Lin and Tomaskovic-Devey, 2013; Barradas and Lagoa, 2017; Barradas, 2019), which places downward pressure on private consumption through the reduction of household labour income. This happens because wage incomes are normally related to higher consumption propensities than profit incomes (Stockhammer, 2012).

Several reasons are identified for the fall in the labour income share in the literature. The most important are technological progress (European Commission, 2007; Dünhaupt, 2013b), globalisation (European Commission, 2007; Dünhaupt, 2013b), and financialisation and neoliberalism (Hein, 2012). According to the latter authors, financialisation and neoliberalism have a negative influence on the labour income share

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[1] Note that these authors also provide a detailed analysis of the effects of financialisation on the remaining economic agents (non-financial corporations, financial corporations, and policy makers). Here, we focus only on households, given our interest in analysing the drivers of private consumption in the era of financialisation.

through three different channels: the change in the sectorial composition of economies (visible in the increasing importance of financial activity and the decreasing importance of general government activity), the emergence of 'shareholder value orientation', and the deterioration of bargaining power of workers in general through the weakening of trade unions.[2] Kristal (2010), Dünhaupt (2013a), Lin and Tomaskovic-Devey (2013), Alvarez (2015), Barradas and Lagoa (2017), Stockhammer (2017), and Barradas (2019) are good examples of empirical econometric studies on the effect of financialisation and neoliberalism on the labour income share. Most find it to be damaging. More recently, Kohler *et al.* (2019) provide a theoretical clarification by identifying four different channels through which financialisation has contributed to the decline of the labour income share in recent years: the enhanced exit options of corporations and their bargaining power regarding workers, rising price mark-ups due to financial overhead costs (e.g., interest and dividends payments), increased short-termism and competition in capital markets in order to satisfy impatient shareholders, and the increase in household debt and the corresponding vulnerability of households in the labour market. They performed a panel data econometric analysis for 14 OECD countries from 1992 to 2014 and concluded that financialisation negatively impacts the labour income share, mainly through the channels related to the exit options of corporations and financial payments.

The second stylised fact is related to the increase in both household debt and household financial and housing wealth in the era of financialisation, which puts upward pressure on private consumption. The growth of household debt has been fed by a higher availability of credit, which could be explained by financial innovation (e.g., debt securitisation and the 'originate to distribute' strategies of banks) in an environment of low interest rates, resulting in a deterioration of creditworthiness standards, and making increased credit available even for low-income and low-wealth households (Hein, 2012). Technological progress has also allowed banks to more easily obtain information about the risk of potential borrowers, making credit more accessible to everyone (Cynamon and Fazzari, 2008). Stockhammer (2009) adds that banks have followed more aggressive credit policies, giving households greater access to credit, not only for mortgages, but also other forms of consumer credit, credit cards, and overdraft

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[2] Barradas (2019) explains all these three channels in detail, and how they have contributed to the decline of the labour income share in recent decades. The author also emphasises that these three channels are connected through financialisation and neoliberalism.

bank accounts (with small penalties and/or without any penalties) in a context of increasing competition between financial institutions (Boone and Girouard, 2002). Credit has also been encouraged by the appearance of new financial instruments, such as home equity loans and credit cards (with high credit limits and/or without any credit limit). Credit meant that households could mitigate the fall in their wages, feed conspicuous consumption, and follow a Veblen consumption pattern, 'keeping up with the Joneses' (Hein, 2012).[3] This behaviour has been exacerbated by the availability of new goods and services (e.g., mobile phones and other information and communication technology devices), which have become irresistible to low-income and middle-class households (Barba and Pivetti, 2009), particularly influenced by advertising, marketing, and the mass media (Cynamon and Fazzari, 2008).

As a result, household indebtedness has increased considerably in the era of financialisation, as traditionally attributable to stagnant or falling real wages, the rise of personal inequalities, and even welfare state retrenchment in recent years (Barba and Pivetti, 2009). It is also connected to the characteristics of the baby-boomer generation, which has demonstrated less risk aversion with regards to financial decisions, and a more relaxed attitude about incurring debt, in comparison with previous generations (Cynamon and Fazzari, 2008). This means it is increasingly difficult to assess whether such indebtedness is due to rational household decisions, and whether it is sustainable. On the one hand, wage stagnation seems to be counter-productive to the maintenance of consumption levels by households, especially with increased consumption using credit cards (Stockhammer, 2009). On the other hand, stock market and housing price boom episodes, by serving as collateral, have both increased the (notional or virtual) wealth against which households were willing to borrow (Palley, 2011; Hein, 2012). High levels of household indebtedness tend to increase financial fragility by making economies more vulnerable to any downside risks (e.g., increases in interest rates and/or decreases in household labour income). The increase in household wealth could also be associated with the proliferation of incentive payments to employees in the form of stock options in addition to cash, not only in the US, but also in EU countries (Edison and Sløk, 2001).

Despite the two conflicting effects of these two stylised facts in the era of financialisation on private consumption, the beneficial role of the increase in household

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[3] This is the so-called 'demonstration effect' or 'Duesenberry effect', according to which households imitate or copy the consumption levels of their neighbours, or other households (Duesenberry, 1949).

debt and household wealth (the second stylised fact) has more than compensated for the prejudicial effect of the decrease in household labour income (the first stylised fact), and ultimately the global effect of these two stylised facts on private consumption has been positive in the era of financialisation (Stockhammer, 2009; Onaran *et al.*, 2011; Hein, 2012). This seems to provide an explanation for the puzzle identified in several countries: the existence of a trend for lower household labour income along with sustained or even increasing private consumption in the era of financialisation ('consumption without labour income' hypothesis).[4] These countries are therefore experiencing 'credit-financed consumption-led booms', and growth models supported by debt: the so-called 'debt-driven demand regimes' (Stockhammer and Kohler, 2019). EU countries are a good context in which to verify this hypothesis due to the decreasing trend in household labour income and the increasing trends of private consumption and household debt and housing wealth in recent years, and especially until the Great Recession (Figure A1 in the Appendix). These trends were more notorious in southern European countries and Anglo-Saxon countries, which exhibited a marked increase in household debt and housing prices in the period before the Great Recession, which boosted growth of the domestic aggregated demand and the existence of large current account deficits (Stockhammer and Kohler, 2019).

From an econometric viewpoint, some empirical studies have estimated consumption functions in order to assess the effects of household labour income and household financial and housing wealth on private consumption (e.g., Boone *et al.*, 1998; Ludvigson and Steindel, 1999; Davis and Palumbo, 2001; Edison and Sløk, 2001; Mehra, 2001; Boone and Girouard, 2002; Ludwig and Sløk, 2002; Sousa, 2008 and 2009; Slacalek, 2009; Onaran *et al.*, 2011; Barrell *et al.*, 2015; Gonçalves and Barradas, 2021). As noted by Boone and Girouard (2002), this approach rests on both the permanent income and life-cycle theories of consumption, where private consumption depends on a household's permanent income, that is their current and expected future labour income plus their stock of financial and housing wealth (Modigliani and Brumberg, 1954; Friedman, 1957; Ando and Modigliani, 1963). Most of these empirical

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[4] This trend of lower labour income along with steady or even higher consumption could also be interpreted as a 'ratchet effect' (Duesenberry, 1949). According to this author, this means that when there is a decline in households' labour income, private consumption does not decline much because households try to maintain their consumption at the highest level attained before the fall in their labour incomes for two reasons. Firstly, this happens because households are accustomed to their previous standard of living. Secondly, this happens because, due to the aforementioned 'demonstration effect', households are not willing to show to the other households that they lost their previous standard of living. This explains the rigidity of private consumption with regards to households' labour income (Barba and Pivetti, 2009).

studies find that labour income and financial and housing wealth have a positive effect on private consumption. Nonetheless, these empirical studies have at least two important flaws. Firstly, they do not assess the debt effects in their estimates, which is clearly an omission. This suggests that their results may be inconsistent and biased (Wooldridge, 2003; Kutner *et al.*, 2005; Brooks, 2009). Secondly, these empirical studies rely on both the permanent income and life-cycle theories of consumption, according to which rational households maximise their utility functions to smooth consumption over their life. This means that household debt is just a tool with which to smooth consumption levels in the face of fluctuations in income levels, not depending on institutional and social contexts and/or household consumption habits (Palley, 2010). The permanent income and life-cycle theories of consumption are not effectively useful to explain the unprecedented and unsustainable levels of household debt attained in recent years, particularly before the Great Recession (Cynamon and Fazzari, 2008).

This paper uses an alternative post-Keynesian consumption function, proposed by Kim *et al.* (2015), according to which current household labour income, current household debt, and current household financial and housing wealth all affect current private consumption. These authors performed a time series econometric analysis to analyse the evolution of private consumption in the US since the 1950s. With regard to their short-term estimates, they conclude that household labour income positively affected US private consumption in the period between 1952 and 2011, and that household debt positively affected US private consumption between 1980 and 2011. They found that household labour income, household debt, and household wealth exert a positive long-term effect on private consumption.

Stockahmmer and Bengtsson (2020) used a similar consumption function to assess the debt and wealth effects on private consumption for four different countries using long historical data. Their analysis focused on France from 1896 to 2016, Norway from 1914 to 2016, Sweden from 1900 and 2016, and the UK from 1875 to 2015. They conclude that financial wealth affects private consumption in Norway and France (only for the period 1945 onwards), and especially in the UK. Housing wealth also has a positive effect on consumption in these three countries, in a context where the effect of housing wealth is larger than the effect of financial wealth. The positive effect of household debt on private consumption is only visible in Norway and the UK.

These empirical studies drew two different conclusions. Firstly, the effects of household housing wealth on private consumption tend to be higher than the effects of

household financial wealth on private consumption (Sousa, 2008; Onaran *et al.*, 2011; Stockahmmer and Bengtsson, 2020). This happens because housing assets are more widespread in the population than financial assets (Stockahmmer and Bengtsson, 2020). Secondly, the effects of household financial and housing wealth on private consumption tend to be higher in 'market-based' countries than in 'bank-based' countries (Boone *et al.*, 1998; Edison and Sløk, 2001; Ludwig and Sløk, 2002; Slacalek, 2009; Stockhammer and Bengtsson, 2020). This is because household participation in financial markets is higher in 'market-based' countries than in 'bank-based' countries (Boone *et al.*, 1998; Ludwig and Sløk, 2002).

Using macroeconomic annual data from 1995 to 2019, this paper reports on a panel data econometric analysis to assess the role of these two stylised facts in the era of financialisation on the evolution of private consumption in the specific case of the EU countries.

3. ECONOMIC MODEL AND HYPOTHESES

In what follows, and similarly to Kim *et al.* (2015), we estimate a post-Keynesian private consumption equation by including two different groups of variables. We include four variables linked to the two conflicting effects of the two stylised facts in the era of financialisation on private consumption: household labour income, household debt, household financial wealth, and household housing wealth. We also incorporate five control variables that are normally also recognised as important drivers of private consumption: lagged private consumption, short-term interest rate, long-term interest rate, inflation rate, and unemployment rate.

Accordingly, our consumption equation takes the following form:

$$C_{i,t} = \beta_0 + \beta_1 C_{i,t-1} + \beta_2 LI_{i,t} + \beta_3 D_{i,t} + \beta_4 FW_{i,t} + \beta_5 HW_{i,t} +$$
$$+\beta_6 SIR_{i,t} + \beta_7 LIR_{i,t} + \beta_8 INF_{i,t} + \beta_9 UR_{i,t} + \mu_{i,t}$$

(1)

where *i* is the country, *t* is the time period (years), *C* is the private consumption of country *i* at time *t*, *LI* is the household labour income of country *i* at time *t*, *D* is the household debt of country *i* at time *t*, *FW* is the household financial wealth of country *i* at time *t*, *HW* is the household housing wealth of country *i* at time *t*, *SIR* is the short-term interest rate of country *i* at time *t*, *LIR* is the long-term interest rate of country *i* at

time t, *INF* is the inflation rate of country i at time t, and *UR* is the unemployment rate of country i at time t.

The two-way error term component is given by:

$$\mu_{i,t} = \eta_i + \lambda_t + \varepsilon_{i,t} \tag{2}$$

where η_i accounts for unobservable country-specific effects, and λ_t accounts for time-specific effects. The term $\varepsilon_{i,t}$ is the random disturbance in the regression, varying across countries and years.

We include the lag of the dependent variable, taking into account the degree of persistence exhibited by private consumption. This consumption inertia, or sluggishness, is associated with consumption habits by households according to the framework of habit formation, or with households that are unaware of macroeconomic news according to the framework of sticky expectations (Sommer, 2007; Slacalek, 2009; Barrell *et al.*, 2015). Sousa (2009) also notes the adjustment costs of changing consumption, evaluating finances only at periodic intervals, and inattention, as other potential sources of consumption inertia. Sørensen and Whitta-Jacobsen (2005) note the strong persistence of private consumption as a stylised fact of business cycles.

As in previous econometric empirical studies, we propose to estimate an aggregate consumption function. This approach implicitly entails the assumption of the existence of a representative household, which introduces some limitations to the assessment of our results, notably because we are interested in analysing a macroeconomic issue – drivers of private consumption – but the theory of household spending is supported by microeconomic fundamentals. It prevents the assessment of determinants of private consumption from households with different labour income levels and net wealth levels and from different countries. It also underestimates the historical, social, and economic environments responsible for the evolution of private consumption in each country because a panel data econometric analysis estimates an average effect of several countries. This paper takes a macroeconomic perspective, allowing us to look beyond the specificities of each household/country, and to ascertain the main relationships that dominate private consumption. If the two stylised facts in the era of financialisation are found to have a macroeconomic effect on private consumption, we thus cannot conclude whether it is due to the effect of some

households/countries, or is common to all households/countries. If the two stylised facts are not found to have any macroeconomic effect, we cannot exclude that they affect a subset of households/countries, which, however, is not enough to create a macroeconomic effect on private consumption in all EU countries.

Lagged private consumption, labour income, and financial wealth are expected to affect private consumption positively, whilst inflation rate and unemployment rate are expected to impact negatively. Debt, housing wealth, and interest rates could positively or negatively impact private consumption. The coefficients of these variables are therefore expected to have the following signs:

$$\beta_1 > 0, \beta_2 > 0, \beta_3 \gtreqless 0, \beta_4 > 0, \beta_5 \gtreqless 0, \beta_6 \gtreqless 0, \beta_7 \gtreqless 0, \beta_8 < 0, \beta_9 < 0 \tag{3}$$

Labour income is expected to have a positive impact on private consumption, following a Keynesian argument. According to Keynes (1936), the respective coefficient is less than one, given the idea that households increase (decrease) their consumption as their labour income increases (decreases), but not as much as the increase (decrease) in their labour income. This happens because consumption tends to be inelastic with respect to labour income (Barba and Pivetti, 2009).

Household debt has an undetermined effect on private consumption (Stockahmmer and Wildauer, 2015). On the one hand, household debt represents a source of finance, which has a positive effect on private consumption. On the other hand, household debt implies higher costs from debt service, which has a negative effect on private consumption.

Financial wealth is expected to positively affect private consumption through five different transmission mechanisms (Ludwig and Sløk, 2002). The first mechanism is the 'realised wealth effect', according to which the increase in the value of consumer stock holdings tends to spur private consumption when households decide to realise their gains by liquidating them (Boone and Girouard, 2002). The second mechanism is the 'unrealised wealth effect', which means that the increase in the value of consumer stock holdings tends to spur private consumption because households feel more confident. They believe that this increasing trend in stock prices could persist in the future, so they will consume more due to expectations that their income and wealth will be higher in the future when they realise those gains. The 'liquidity constraints effect' is the third mechanism. Here, private consumption increases due to the increase in the

value of household portfolios that can be used as collateral for new borrowers.[5] The fourth mechanism is the so-called 'stock option value effect', which is associated with an acceleration of consumption as a result of an increase in the value of household stock options. The fifth mechanism is the rise of private consumption by households that do not participate in financial markets but that are also affected by increases in these asset prices due to the general recognition by consumers that stock markets function as a predictor of the evolution of the economy (Romer, 1990).

Ludwig and Sløk (2002) note that housing wealth has an ambiguous effect on private consumption, and suggest that three mechanisms explain a positive relationship between housing wealth and private consumption: the aforementioned 'realised wealth effect'; the 'unrealised wealth effect'; and the 'liquidity constraints effect', when there is a surge in house prices. Nonetheless, they also note that there are two further mechanisms explaining a negative relationship between housing wealth and private consumption. The first is the 'budget constraint effect', which explains that an increase in housing prices has a negative impact on private consumption by households that are renters due to the expected increase in rents, and by households that are owners due to the expected increased prices of other housing services, such as fuel and power. Boone and Girouard (2002) also note that house owners do not feel wealthier when there is a rise in housing prices because their implicit rental costs also increase. The second mechanism is the 'substitution effect', which occurs when households that are planning to buy a house respond to a surge in house prices by buying a smaller house or lowering private consumption.

The level of short-term and long-term interest rates has an undetermined effect on private consumption, reflecting the classic view of the so-called substitution and income effects between savings and consumption. The substitution effect is where a rise in the level of interest rates stimulates savings due to higher rates of return, which impairs private consumption because it becomes relatively less attractive to hold cash and/or to spend. The income effect is related to returns received by savers from their savings. An increase in interest rates initiates a rise in incomes received by savers, which can stimulate private consumption if they channel these incomes to spend more,

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[5] This rests on the financial accelerator theory developed by Bernanke *et al.* (1996), which stresses that asset price inflation tends to increase collateral values, which allows for more borrowing to finance consumption and/or investment.

and if they think that they do not need to save as much to maintain the level of their savings.

The inflation rate is expected to have a negative effect on private consumption, functioning as a proxy for uncertainty, and for the real depreciation of non-indexed financial assets (Boone *et al*., 1998; and Boone and Girouard, 2002).

Private consumption also depends negatively on the unemployment rate, because its fluctuations tend to mirror the business cycle by operating as a proxy for uncertainty regarding future labour income levels (Boone *et al*., 1998; Boone and Girouard, 2002). This was confirmed by Malley and Moutos (1996), who claim that unemployment is a valuable measure of labour income uncertainty. They also state that an increase in labour income uncertainty induces more saving (less consumption) due to precautionary motives.

4. DATA

Annual data was collected for all EU countries from 1995 to 2019. This corresponds to the period and frequency for which all data is available, and does not compromise the appropriateness of the sample for our study because we cover the period when financialisation gained more influence (van der Zwan, 2014). Table 1 shows the structure of our sample.

[Table 1 around here]

We obtained panel data, including a total of 28 cross-sectional units ($N=28$), observed over time from 1995 to 2019 ($T=25$). The lack of available data meant that our panel was unbalanced because it was impossible to collect data for all the variables for all the years for each country. Our unbalanced panel includes a total of 493 observations and 207 missing values.

We now present the definitions and sources for all variables used in our study. Private consumption is proxied by the ratio between the final consumption expenditure of households and the GDP at market prices. These two variables were collected from the European national accounts at current prices and in millions of national currency, available from Eurostat.

The proxy for household labour income is the adjusted labour share, available from the AMECO database. This variable reflects the ratio between the compensation of employees per employee and the GDP at current market prices per person employed. This is the traditional variable used to measure labour income because it allows both dependent and self-employed workers to be included, and treats the earnings of these workers as labour income (Dünhaupt, 2013a).

The total financial liabilities of households and non-profit institutions serving households as a percentage of GDP at market prices were used to proxy household debt.[6] These variables were obtained from European financial accounts and European national accounts, respectively, at current prices and in millions of national currency, available from Eurostat.

We used the total financial assets of households and non-profit institutions serving households as a percentage of GDP at market prices to measure household financial wealth. These two variables were collected from European financial accounts and European national accounts, respectively, at current prices and in millions of national currency, available from Eurostat.

Housing wealth is assessed by the annual growth rate of the nominal housing price index (2015=100) from the analytical house prices indicators, available from the OECD database. When not available on the OECD database, observations of this variable were obtained from the annual growth rate of the nominal housing price index (2015=100), available from the Eurostat database, and from the annual growth rate of the nominal residential property prices (2015=100), available from the Bank for International Settlements database. This is the only housing wealth-related variable available for our sample due to the lack of data regarding the non-financial assets owned by households in the EU countries. However, house prices have been used by other authors to measure housing wealth, and they explain that this is a good proxy (Boone *et al.*, 1998; Ludwig and Sløk, 2002; Stockhammer and Bengtsson, 2020). Stockhammer and Bengtsson (2020) also recognise that house prices are not a direct measure of housing wealth, although the growth of house price indexes tends to capture the growth of housing wealth because prices are typically more volatile than quantities.

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[6] Financial liabilities (assets) comprise monetary gold and special drawing rights; currency and deposits; debt securities; loans; equity and investment fund shares; insurance, pensions and standardized guarantees; financial derivatives and employee stock options; and other accounts payable (receivable).

We also used both short-term and long-term nominal interest rates from the AMECO database.

The inflation rate used here corresponds to the annual growth rate of the price deflator of the GDP at market prices (2015=100), available from the AMECO database.

Finally, the unemployment rate is measured by the number of unemployed as a percentage of the active population, and was collected from the labour force survey in the Eurostat database. Note that our variables are expressed as ratios (private consumption, labour income, debt, financial wealth, and unemployment rate) or growth rates (housing wealth and inflation rate). This approach has a twofold advantage, notably by allowing the use of variables from different countries, which are expressed in different currencies, and by facilitating the interpretation of the respective coefficients.

Table A1 in the Appendix contains the descriptive statistics for each variable, and Figure A1 in the Appendix shows the respective plots. Table A2 in the Appendix presents the correlation matrix between variables. The most important finding is the non-existence of significant multicollinearity between variables, because all correlation coefficients are lower than the traditional ceiling of 0.8 in absolute terms (Studenmund, 2005).

5. ECONOMETRIC METHODOLOGY

As described in the previous two Sections, we use a dynamic panel data model due to the incorporation of a lagged dependent variable among the independent variables, an unbalanced panel due to the existence of missing values in our sample, and a macro panel due to the moderate cross-sectional dimension N. Under these circumstances, we will employ the LSDVC estimator (Nickel, 1981; Bun and Kiviet, 2003; Bruno, 2005a and 2005b) following the 'xtlsdvc' instruction in the Stata software.

Four aspects can be used to justify the suitability of the LSDVC estimator considering the characteristics of our panel. The first is related to the biased and inconsistent estimates produced by the standard panel data estimators (e.g., pooled ordinary least squares, least-squares dummy variables, fixed effects, and random effects), notably because the lagged dependent variable is correlated with fixed effects in the error term (Nickel, 1981; Baltagi, 2005; Cameron and Trivedi, 2009). The second is also associated with the severely biased and imprecise estimates produced by the

standard panel data estimators for dynamic panel data models (e.g., Anderson and Hsiao, 1982; Arrelano and Bond, 1991; Arrelano and Bover, 1995; Blundell and Bond, 1998), mainly when we have a macro panel with a relatively small cross-sectional dimension N (Bruno, 2005a and 2005b). The third is connected to the Monte Carlo experiments on the outperformance of the LSDVC estimator vis-à-vis the aforementioned estimators in terms of bias and root mean squared errors in the case of macro panels (Kiviet, 1995; Judson and Owen, 1999; Bruno, 2005a and 2005b). The fourth is also connected with the Monte Carlo experiments as regards the good performance of the LSDVC estimator in terms of efficiency and consistency, even when there could be endogenous variables within the independent variables (Behr, 2003).

Note that the estimates produced by the LSDVC estimator are obtained in two steps (Bruno, 2005a and 2005b). The first step involves producing consistent estimates, which needs an initial matrix of starting values to be defined through the execution of one of three consistent estimators (Anderson and Hsiao, 1982; Arrelano and Bond, 1991; Blundell and Bond, 1998). The second step is the correction of bias through the realisation of a set of multiple replications to bootstrap the standard errors, however, the estimates produced are not significantly affected by either the choice of one consistent estimator in the first step or the choice of the number of replications in the second step (Bun and Kiviet, 2001; Bruno, 2005a and 2005b).

Our estimates are presented in the next Section, where we use Arrelano and Bond's (1991) estimator in the first step and a number of replications equal to 250 in the second step. Time dummies are included, as well as WALD tests, to evaluate their statistical significance.

6. EMPIRICAL RESULTS AND DISCUSSION

We present our estimates in this Section, where we begin with the results for total private consumption and for the full period. Estimates were made not only for all EU countries but also for different groups of similar countries by splitting our sample into those groups. This approach means we can take advantage of the cross-sectional dimension of our panel data, and determine whether private consumption has been affected in the same manner and/or degree in the different EU countries, namely in

terms of financial systems and Euro area membership.[7] This approach also allows us to assess whether debt effects and wealth effects are larger in the 'market-based' countries than in the 'bank-based' countries, as found by Boone *et al.* (1998), Edison and Sløk (2001), Ludwig and Sløk (2002), Slacalek (2009), and Stockhammer and Bengtsson (2020).[8] The results are illustrated in Table 2.

[Table 2 around here]

The variables for all EU countries are all statistically significant at the traditional significance levels, except for financial wealth, housing wealth, short-term interest rate, and unemployment rate. Note that the results would not change substantially if we had used real house prices instead of nominal ones, and/or if we had used real interest rates instead of nominal ones.[9] Sousa (2009) for the Euro area countries and Barrel *et al.* (2015) for Italy, also found housing wealth to be statistically insignificant. Sousa (2009) notes that this happens because an increase in housing wealth forces young house renters to save more in order to become house owners in the future, which implies that the increase in consumption by current house owners is counteracted by the increase in savings by house renters. The coefficients of the statistically significant variables also have the expected signs, except for long-term interest rates which have a positive effect on total private consumption. The positive effect of interest rates on consumption can be explained through three different transmission mechanisms. Firstly, this seems to suggest that households use the return of their savings to consume more due to the

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[7] According to Bijlsman and Zwart (2013) and Haan *et al.* (2015), the EU countries cluster in four different groups, following the characteristics of their financial systems. The first group is the 'market-based' countries, including Belgium, Finland, France, the Netherlands, Sweden, and the UK. These countries have a financial system similar to that of the USA. The second group includes the 'bank-based' countries, Austria, Denmark, Germany, Greece, Italy, Portugal, and Spain. These countries more closely resemble Japan due to the strong importance of banks in their financial systems. The third group is the Eastern European countries, which includes Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia. Some of these countries were recently incorporated into the Euro area, and the majority have generally small financial systems. The fourth group includes the outlier countries, Cyprus, Ireland, Luxembourg, and Malta. These countries have banking sectors that are both very large and extend a large amount of credit compared to their national economies. The group of Euro area countries includes Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia, and Spain. The group of non-Euro area countries includes the remaining countries.

[8] As emphasised by Sawyer (2013), we recognise that this way of clustering the EU countries in terms of their financial systems is questionable because it neglects other specificities in their functioning (e.g., type of banks and/or their role in money creation). We follow this classification because it is the conventional way, as used by other empirical studies into debt effects and wealth effects on private consumption, which found larger effects in 'market-based' countries than in 'bank-based' countries.

[9] Results available upon request.

income effect of savings on consumption. Secondly, this could indicate that households treat a rise in interest rates as a period of economic boom, which tends to be associated with a higher level of consumption. Thirdly, this may also suggest that households anticipate their consumption decisions due to fears that the trend in rising interest rates could increase in the future, making access to funding more costly. A similar result was obtained for Italy by Boone *et al*. (1998) and for France by Boone and Girouard (2002). The remaining results are also corroborated by previous research on this matter, namely by confirming that private consumption is strongly persistent (Slacalek, 2009; Sousa, 2009; Barrell *et al*., 2015; Gonçalves and Barradas, 2021), positively influenced by labour income (Boone *et al*., 1998; Ludvigson and Steindel, 1999; Davis and Palumbo, 2001; Mehra, 2001; Boone and Girouard, 2002; Ludwig and Sløk, 2002; Sousa, 2008 and 2009; Slacalek, 2009; Barrell *et al*., 2015; Gonçalves and Barradas, 2021) and debt (Kim *et al*., 2015; Stockahmmer and Bengtsson, 2020), and negatively influenced by inflation rate (Boone *et al*., 1998; Boone and Girouard, 2002). The analysis for groups of similar countries also provides important insights. Note first that the sluggishness of total private consumption and the negative effect of the inflation rate are confirmed for the majority of country groups. In the same vein, the statistical insignificance of the long-term interest rate is also confirmed for all of them. The results for the remaining variables differ slightly between the six groups of countries. Debt remains statistically significant for the 'market-based' countries, by negatively influencing private consumption, and financial wealth is a positive determinant. In 'bank-based' countries, debt and housing wealth persist as positive determinants of private consumption. In Eastern European countries, debt maintains its positive influence on private consumption, whilst financial wealth and the short-term interest rate become statistically significant through their negative effects. The results differ slightly according to the two groups of Euro area membership countries. Those for the Euro area countries are similar to those for all countries as a whole in terms of statistical significance and signs. The only exception pertains to financial wealth, which becomes statistically significant in the Euro area countries, by positively influencing total private consumption. Debt loses its statistical significance. In the non-Euro area countries, labour income and unemployment rate are determinants of total private consumption, albeit presenting counterintuitive signs.

To sum up, our results show that the two stylised facts in the era of financialisation impact the total private consumption in the EU countries. The main

differences occur with the variables of debt, financial wealth and housing wealth, where we identify several differences across space. Firstly, debt exerts a negative effect on consumption in the 'market-based' countries and a positive effect on consumption in 'bank-based' countries and in Eastern European countries. This suggests that in the case of 'market-based' countries, the costs of debt service constrain total private consumption. Note that in the majority of 'market-based' countries (unlike the remaining groups of countries), the household debt has continued to exhibit an increasing trend, even after the Great Recession, to unprecedented and unsustainable levels (close to the total value of the GDP). These higher levels of household debt have led to higher interest payments, favouring a decrease in disposable income and on private consumption in 'market-based' countries (Stockhammer and Wildauer, 2015). Secondly, financial wealth exerts a positive effect on consumption in the 'market-based' countries and in the euro area countries, being statistically insignificant in the majority of the remaining groups of countries. This confirms that financial wealth effects are more notorious in the 'market-based' countries and in the euro area countries, probably because household participation in financial markets is higher in these countries (Boone *et al.*, 1998; Ludwig and Sløk, 2002). Thirdly and due to the statistical insignificance of the housing wealth in the majority of groups of countries, our results do not corroborate the previous findings around this matter that the effects of housing wealth on consumption are higher than the effects of financial wealth on consumption (Sousa, 2008; Onaran *et al.*, 2011; Stockhammer and Bengtsson, 2020). The only exception occurs in 'bank-based' countries, which suggests that housing assets are more widespread in the population than financial assets in these countries (Stockhammer and Bengtsson, 2020).

We now assess whether the determinants of private consumption were strongly changed with the Great Recession in 2008, as this financial and economic crisis affected the EU countries in a severe way (Figure A1 in the Appendix). Estimates were carried out not only for full period but also for pre-crisis and crisis and post-crisis periods. They were also carried out not only for total private consumption but for the different components of private consumption by disaggregating it by durability. This allows us to better understand the determinants of private consumption in the era of financialisation in the EU countries. For simplicity, and to avoid dealing with relatively small samples, this analysis focuses only on all EU countries as a whole. The results are shown in Table 3.

[Table 3 around here]

The results do not change dramatically for the full period, and regarding the different components of private consumption, in comparison with the results for total private consumption, but present some specificities according to the respective durability. Three notable conclusions can be drawn. Firstly, it is worth noting that consumption inertia and the statistical insignificance of financial wealth, short-term interest rate, and unemployment rate are valid for all components of private consumption. Secondly, the variables that are statistically significant for total private consumption are almost the same as in the case of consumption of services, and have the same effects. This is probably because the consumption of services represents the highest proportion of total private consumption in EU countries, with an increasing trend in recent years due to the satisfaction of basic needs and increasing spending on health and education by households. The only exception pertains to the inflation rate, which loses its statistical significance in the consumption of services. Thirdly, labour income lost its statistical significance in the consumption of more durable goods (semi-durable and durable), but housing wealth becomes statistically significant by positively affecting the consumption of this type of goods. The most important finding for the pre-crisis period is related to the variables of financial wealth and unemployment rate, which are statistically significant, having a positive effect on private consumption as a whole. The most counterintuitive result suggests that an increase in the unemployment rate implies an acceleration of total private consumption. This is probably due to the aforementioned 'ratchet effect' (Duesenberry, 1949). As expected, households do not decrease their consumption during that time, even with a loss of income, because they use their unemployment benefits, their savings, and/or incur debt in order to maintain their standard of living. Labour income also positively affected total private consumption until the Great Recession. The effects of labour income on the different components of private consumption are quite tenuous, however, as most are statistically insignificant. The lagged consumption rate remains statistically significant for total private consumption as a whole, and for all the components, exhibiting the expected positive sign. Debt and the inflation rate lose their statistical significance not only for total private consumption but also for all their components. Debt, financial wealth, and housing wealth lost their statistical significance during the crisis and in the post-crisis period, which is not surprising given the strong decrease in debt (due to the deleverage

process since that time), the value of financial assets owned by households, and the value of house prices during the crisis (Figure A1 in the Appendix). This seems to suggest asymmetries in the relationship between these variables and private consumption, which could be a manifestation of the 'ratchet effect' (Duesenberry, 1949), suggesting that the fall in household debt and household financial and housing wealth does not necessarily imply a deceleration of private consumption because households are accustomed to a certain standard of living, and are not willing to show to other households that they have lost that standard of living ('demonstration effect'). This may be due to the 'liquidity constraints effect', according to which households faced more credit constraints during that time due to the lower values of their collateral (financial and housing wealth). The remaining variables do not change considerably in terms of statistical significance and signs, compared to the full period and the pre-crisis period, respectively.

Summing up, our results show that the two stylised facts in the era of financialisation impact the total private consumption (and its corresponding components) in the EU countries in the pre-crisis period, in the crisis and post-crisis periods and in the full period as a whole. The positive impact of labour income and the statistical insignificance of housing wealth do not vary across time, contrary to what happens with financial wealth, whose positive impact only occurs in the pre-crisis period where we observe a general trend of financial asset price inflation.

Table 4 shows the economic significance of our statistically significant estimates (McCloskey and Ziliak, 1996; Ziliak and McCloskey, 2004) in order to correctly identify the drivers of private consumption and the role of the two stylised facts in the era of financialisation in its evolution in the EU countries.

[Table 4 around here]

Taking into account the full period and the evolution of total private consumption in all EU countries as a whole, we conclude that debt contributed positively to total private consumption, while labour income, the long-term interest rate, and the inflation rate had a negative effect on total private consumption. The global net effect on total private consumption of the two stylised facts in the era of financialisation was detrimental to the evolution of total private consumption, however, because the increase in household debt was not sufficient to compensate for the fall in household

labour income. Effectively, the increase in debt favoured an acceleration of total private consumption by 0.2%, whilst the fall in labour income contributed to a decline in total private consumption of around 8.8%.[10] This was also true for the consumption of services. There are two important results with regard to the different groups of similar countries. Firstly, the two stylised facts in the era of financialisation supported the growth of total private consumption in the 'bank-based' countries and in the Eastern European countries. In fact, the rise in both debt and housing wealth were responsible for an increase in total private consumption by around 2.4% and 26.3%, respectively, in the 'bank-based' countries. In Eastern European countries, the rise in household debt implied an acceleration of total private consumption by around 285.2%, which more than compensated for the negative effect caused by financial wealth, which implied a deceleration in total private consumption by about 27.9%. The two stylised facts in the era of financialisation also favoured a decline in total private consumption in the 'market-based' countries, Euro area countries, and non-Euro area countries. In the 'market-based' countries, the rise in debt favoured a fall in private consumption by around 115.5% due to the aforementioned costs of debt service. This negative debt effect was more pronounced than the positive effect caused by the increase in financial wealth, which only boosted total private consumption by around 13.2%. In the Euro area countries, the fall in labour income and financial wealth had the worst effect on total private consumption, curbing it by around 10.8% and 0.4%, respectively. In the non-Euro area countries, the decline in household labour income also constrained the acceleration of total private consumption. In fact, total private consumption would have been 1.4% higher without the fall in labour income. Until the Great Recession, the decrease in the unemployment rate and the fall in labour income were also prejudicial to total private consumption in all EU countries. In fact, the decrease in the unemployment

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[10] Please note that the contributions of the long-term interest rate and the inflation rate are greater than the contribution of the labour income to the decline in private consumption in all EU countries as a whole, because the former are expressed as growth rates and the latter is expressed as a ratio. This implies that the actual cumulative changes (annual growth rates) of the former are higher than the actual cumulative change (annual growth rate) of the latter. Moreover, it is worth noting that this increasing trend of the inflation rate was not visible in all EU countries but only in the case of Eastern European countries. In the remaining groups of countries, the inflation rate has effectively exhibited as a general decreasing trend (Table 4). The strong growth of the inflation rate in Eastern European countries more than compensated for the fall of the inflation rate in the remaining groups of countries, which explains why we observe a positive actual accumulative change of the inflation rate in all EU countries as a whole, and a corresponding negative effect on the evolution of private consumption. These higher inflation pressures in Eastern European countries are particularly explained by the capital inflows associated with the current account deficits (Staehr, 2010) due to the catching-up process through foreign direct investment from northern European countries after opening up to the West since the mid 1990s and the privatisation of formerly public corporations (Stockhammer and Kohler, 2019).

rate and the decline of the labour income instigated a deceleration of total private consumption by 12.0% and 2.3%, respectively. The increase in financial wealth was marginally beneficial for total private consumption by contributing to its acceleration by 0.1%. The increase in financial wealth was in fact one of the main drivers of total private consumption, and of the consumption of durable goods in the pre-crisis period. Nevertheless, the global net effect on the total private consumption of the two stylised facts in the era of financialisation was also negative until the crisis, particularly due to the fall in labour income that overlapped the positive role played by the rise in financial wealth. During and after the crisis, total private consumption was again negatively squeezed by the increase in the inflation rate and by the decrease in labour income. The two stylised facts in the era financialisation have thus had a harmful effect on the evolution of total private consumption in the EU countries since the emergence of the Great Recession, which is particularly due to the fall in labour income, which implied a deceleration in total private consumption by around 3.1%. The only exception is the consumption of non-durable goods and durable goods, where the two stylised facts in the era of financialisation had a beneficial effect due to the increases in financial wealth and housing wealth, respectively.

All in all, our results show that the two stylised facts in the era of financialisation have been prejudicial to private consumption in the EU countries as a whole in the pre-crisis period, in the crisis and post-crisis periods and in the full period as a whole, particularly due to the fall of labour income. These two stylised facts have also been detrimental to private consumption in the euro area countries and in the 'market-based' countries due to the fall in labour income and the rise of household debt, respectively.

7. CONCLUSION

This paper examined the role played by the two stylised facts in the era of financialisation in the evolution of private consumption in the EU countries by reporting on a panel data econometric analysis for all 28 EU countries from 1995 to 2019.

Scholars of financialisation, adopting a post-Keynesian perspective, note that there are two stylised facts in the era of financialisation which impact private consumption through two conflicting effects (Stockhammer, 2009; Onaran et al., 2011;

Hein, 2012): the fall in household labour income impairs private consumption, and the growth in both household debt and household financial and housing wealth spurs private consumption.

A post-Keynesian private consumption equation was estimated using the LSDVC estimator due to the dynamic panel data model, an unbalanced panel, and a macro panel. Our private consumption equation included four variables linked to the two stylised facts in the era of financialisation (household labour income, household debt, household financial wealth, and household housing wealth) and five additional control variables (lagged private consumption, short-term interest rate, long-term interest rate, inflation rate, and unemployment rate).

The paper shows that the fall in household labour income and the rise in both household debt and household financial and housing wealth were stylised facts in the EU countries before, during, and after the Great Recession. Household debt is the only exception, due to the deleverage process since the Great Recession. This confirms that these stylised facts are important drivers of private consumption in these countries in the era of financialisation, although their effects differ across time, and, more specifically, across space. Before the Great Recession, these stylised facts restrained total private consumption in the EU countries as a whole because the negative labour income effect surpassed the positive financial wealth effect. During and after the Great Recession, they also impaired total private consumption (and particularly the consumption of services) in the EU countries as a whole, due to the decline in labour income. Over the whole period they also had a prejudicial effect on total private consumption in the EU countries as a whole, because the positive debt effect did not counteract the negative effect of labour income. This also happened in Euro area countries and in non-Euro area countries. In 'market-based' countries, they also curbed total private consumption due to the negative effect of household debt. The two stylised effects only favoured an increase in total private consumption in 'bank-based' countries and Eastern European countries due to the positive housing wealth effect and the positive debt effect, respectively.

Our results suggest that the global effect of these two stylised facts on total private consumption was negative in the EU countries because neither the increase in household debt nor the rise of household financial and housing wealth has been sufficient to compensate for the fall in household labour income on total private consumption. This implies the need to engage with policies to contain the decrease, or

even to increase, household labour income in the future. This will be crucial in order to sustain total private consumption, support economic growth, and avoid a new 'secular stagnation' in the current age of financialisation, and is relevant in the EU countries because the majority follow 'wage-led growth models' (Onaran and Obst, 2016).

Further research should assess the effects of these two stylised facts in the era of financialisation on private consumption in the EU countries using household-level data, which would allow a determination of whether these effects depend on certain household characteristics, such as size, age, qualifications, occupation, and social stratum. The availability of data for this could be the biggest hindrance to such a project.

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8. APPENDIX

[Table A1 around here]

[Table A2 around here]

[Figure A1 around here]

Figure 1 –The contradictory effects of the two stylized facts in the era of financialisation on private consumption

	Decrease of household labour income in the era of financialisation	Technological progress Globalization Financialisation Neoliberalism
Private consumption in the era of financialisation ('credit-financed consumption-led booms' and 'debt-driven demand regimes')	**Increase of household debt and household financial and housing wealth in the era of financialisation**	Debt securitization 'Originate to distribute' strategies of banks Low interest rates Easier access to the risk of potential borrowers More aggressive banking credit policies Higher competition among banks New financial instruments Conspicuous consumption Consumption imitation 'Keeping up with the Joneses' Availability of new goods and services Advertising, marketing and mass media Stagnant real wages Rise of personal inequalities Welfare state retrenchment Lesser risk aversion to incur into debt by baby-boomers Stock market and housing price booms Incentive pay through stock options

Source: Authors' representation based on Stockhammer (2009a), Onaran *et al*. (2011) and Hein (2012)

Table 1 – Sample composition

Country	Period	Observations	Missing
Austria	2001-2018	18	7
Belgium	1995-2018	24	1
Bulgaria	2006-2018	13	12
Croatia	2011-2018	8	17
Cyprus	2003-2018	16	9
Czechia	2009-2019	11	14
Denmark	1995-2018	24	1
Estonia	2006-2010	5	20
Finland	1995-2019	25	0
France	1995-2018	24	1
Germany	1995-2019	25	0
Greece	1998-2018	21	4
Hungary	2008-2019	12	13
Ireland	2001-2018	18	7
Italy	1995-2018	24	1
Latvia	2007-2018	12	13
Lithuania	2001-2018	18	7
Luxembourg	2008-2018	11	14
Malta	2006-2018	13	12
Netherlands	1995-2018	24	1
Poland	2006-2019	14	11
Portugal	1995-2019	25	0
Romania	2010-2019	10	15
Slovakia	2006-2019	14	11
Slovenia	2008-2018	11	14
Spain	1995-2018	24	1
Sweden	1995-2019	25	0
United Kingdom	1995-2018	24	1

Table 2 – Estimates of total private consumption by different groups of countries for full period (1995-2019)

Variable	All Countries	'Market-based' Countries	'Bank-based' Countries	Eastern European Countries	Outliers Countries	Euro Area Countries	Non-Euro Area Countries
C_{t-1}	0.929***	0.985***	0.815***	0.690***	0.696***	0.921***	0.706***
	(0.031)	(0.061)	(0.062)	(0.092)	(0.161)	(0.034)	(0.093)
	[30.28]	[16.23]	[13.25]	[7.47]	[4.33]	[27.45]	[7.58]
LI_t	0.062***	0.041	0.020	0.104	0.117	0.093***	-0.080*
	(0.023)	(0.044)	(0.051)	(0.065)	(0.271)	(0.034)	(0.049)
	[2.71]	[0.93]	[0.40]	[1.60]	[0.43]	[2.73]	[-1.62]
D_t	0.013*	-0.025***	0.016*	0.072**	0.058	0.009	-0.016
	(0.008)	(0.010)	(0.009)	(0.032)	(0.052)	(0.008)	(0.022)
	[1.66]	[-2.56]	[1.81]	[2.29]	[1.10]	[1.15]	[-0.71]
FW_t	0.003	0.006*	-0.003	-0.059***	-0.060	0.009**	0.001
	(0.003)	(0.003)	(0.005)	(0.021)	(0.046)	(0.004)	(0.006)
	[0.94]	[1.92]	[-0.75]	[-2.87]	[-1.31]	[2.06]	[0.24]
HW_t	-0.001	0.005	0.031*	-0.006	0.034	0.008	0.010
	(0.010)	(0.015)	(0.019)	(0.023)	(0.081)	(0.011)	(0.016)
	[-0.11]	[0.36]	[1.62]	[-0.29]	[0.42]	[0.69]	[0.62]
SIR_t	-0.021	0.112	-0.037	-0.412***	-1.553	-0.075	0.075
	(0.052)	(0.109)	(0.094)	(0.142)	(1.513)	(0.064)	(0.148)
	[-0.41]	[1.03]	[-0.39]	[-2.91]	[-1.03]	[-1.17]	[0.51]
LIR_t	0.075*	-0.059	-0.010	0.192	-0.360	0.069	0.053
	(0.044)	(0.184)	(0.043)	(0.128)	(0.473)	(0.048)	(0.245)
	[1.69]	[-0.32]	[-0.23]	[1.49]	[-0.76]	[1.44]	[0.22]
INF_t	-0.050**	0.002	-0.209**	-0.236***	-0.294	-0.239***	-0.001
	(0.020)	(0.013)	(0.087)	(0.085)	(0.193)	(0.045)	(0.025)
	[-2.53]	[0.14]	[-2.40]	[-2.78]	[-1.53]	[-5.27]	[-0.04]
UR_t	-0.001	-0.141**	0.037	-0.063	0.407	-0.037	0.148*
	(0.027)	(0.056)	(0.040)	(0.082)	(0.288)	(0.034)	(0.079)
	[-0.05]	[-2.53]	[0.91]	[-0.77]	[1.41]	[-1.11]	[1.88]
Observations	437	134	147	106	50	314	123
Groups (Countries)	28	6	7	11	4	19	9
Time Effects	Yes	Yes	No	Yes	Yes	Yes	Yes
P-value Wald Test	0.012**	0.000***	0.325	0.251	0.089*	0.031**	0.220

Note: Standard errors in ( ), z-statistics in [], *** indicates statistical significance at 1% level, ** indicates statistical significance at 5% level and * indicates statistical significance at 10% level. Coefficients, standard errors and z-statistics for the year dummies are not reported. *C*, *LI*, *D*, *FW* and *UR* are expressed as ratios; *HW* and *INF* are expressed as growth rates; and *SIR* and *LIR* are expressed as a percentage

Table 3 – Estimates of private consumption by durability for all countries for full period (1995-2019), pre-crisis period (1995-2007) and crisis and post-crisis periods (2008-2019)

Variable	Full Period					Pre-Crisis Period					Crisis and Post-Crisis Periods				
	Total	Services	Non-Durable	Semi-Durable	Durable	Total	Services	Non-Durable	Semi-Durable	Durable	Total	Services	Non-Durable	Semi-Durable	Durable
C_{t-1}	0.929***	0.917***	0.837***	0.857***	0.824***	0.741***	0.731***	0.818***	0.869***	0.645***	0.888***	0.829***	0.780***	0.818***	0.749***
	(0.031)	(0.032)	(0.034)	(0.031)	(0.038)	(0.055)	(0.080)	(0.071)	(0.046)	(0.082)	(0.062)	(0.065)	(0.058)	(0.062)	(0.049)
	[30.28]	[28.29]	[24.83]	[27.82]	[21.56]	[13.36]	[9.15]	[11.55]	[18.89]	[7.83]	[14.39]	[12.84]	[13.53]	[13.18]	[15.45]
LI_t	0.062***	0.044***	0.024*	0.006	-0.001	0.069*	0.012	-0.005	0.030*	0.022	0.086*	0.068***	0.030	0.004	-0.002
	(0.023)	(0.015)	(0.014)	(0.005)	(0.007)	(0.043)	(0.045)	(0.032)	(0.018)	(0.023)	(0.045)	(0.024)	(0.023)	(0.008)	(0.010)
	[2.71]	[2.96]	[1.76]	[1.08]	[-0.11]	[1.62]	[0.27]	[-0.16]	[1.65]	[0.96]	[1.92]	[2.83]	[1.29]	[0.48]	[-0.19]
D_t	0.013*	0.009*	0.004	0.003*	-0.002	0.010	0.008	-0.002	0.006	-0.0001	-0.005	0.005	-0.002	0.001	-0.001
	(0.008)	(0.005)	(0.005)	(0.002)	(0.002)	(0.010)	(0.011)	(0.008)	(0.004)	(0.005)	(0.015)	(0.008)	(0.008)	(0.003)	(0.004)
	[1.66]	[1.89]	[0.93]	[1.70]	[-0.83]	[1.03]	[0.78]	[-0.20]	[1.55]	[-0.03]	[-0.30]	[0.62]	[-0.31]	[0.25]	[-0.42]
FW_t	0.003	0.0001	0.002	0.0001	0.001	0.011**	0.005	0.003	-0.002	0.004*	0.008	-0.002	0.008*	0.0003	0.002
	(0.003)	(0.002)	(0.002)	(0.001)	(0.001)	(0.004)	(0.005)	(0.003)	(0.002)	(0.002)	(0.009)	(0.004)	(0.004)	(0.001)	(0.002)
	[0.94]	[0.06]	[1.03]	[0.10]	[1.39]	[2.52]	[1.07]	[0.89]	[-0.97]	[1.65]	[0.89]	[-0.43]	[1.95]	[0.23]	[0.94]
HW_t	-0.001	-0.004	-0.012**	0.010***	0.008***	0.010	0.001	-0.024***	0.024***	0.009	-0.008	-0.010	-0.017	0.005	0.016***
	(0.010)	(0.006)	(0.006)	(0.002)	(0.003)	(0.011)	(0.005)	(0.008)	(0.004)	(0.006)	(0.022)	(0.012)	(0.011)	(0.004)	(0.005)
	[-0.11]	[-0.70]	[-2.06]	[4.67]	[2.72]	[0.90]	[1.07]	[-3.11]	[5.38]	[1.59]	[-0.35]	[-0.87]	[-1.50]	[1.31]	[3.10]
SIR_t	-0.021	-0.046	0.039	0.011	-0.002	-0.083	-0.046	-0.202**	0.155***	-0.013	0.019	-0.059	0.114**	-0.006	-0.029
	(0.052)	(0.033)	(0.032)	(0.012)	(0.016)	(0.127)	(0.123)	(0.084)	(0.053)	(0.063)	(0.089)	(0.047)	(0.044)	(0.015)	(0.021)
	[-0.41]	[-1.37]	[1.21]	[0.95]	[-1.34]	[-0.65]	[-0.37]	[-2.40]	[2.94	[-0.21]	[0.22]	[-1.25]	[2.56]	[-0.41]	[-1.37]
LIR_t	0.075*	0.054*	0.077***	-0.010	-0.045***	-0.055	0.047	0.322*	-0.379***	-0.028	0.022	0.031	0.038	-0.010	-0.044***
	(0.044)	(0.028)	(0.027)	(0.010)	(0.014)	(0.298)	(0.286)	(0.197)	(0.117)	(0.150)	(0.064)	(0.034)	(0.033)	(0.011)	(0.015)
	[1.69]	[1.92]	[2.80]	[-1.02]	[-3.23]	[-0.18]	[0.16]	[1.64]	[-3.24]	[-0.18]	[0.35]	[0.92]	[1.15]	[-0.97]	[-2.93]
INF_t	-0.050**	-0.017	-0.020*	-0.012**	0.003	0.017	0.011	-0.007	0.007	0.002	-0.106***	-0.034*	-0.037**	-0.017***	-0.007
	(0.020)	(0.013)	(0.012)	(0.005)	(0.006)	(0.024)	(0.024)	(0.016)	(0.010)	(0.012)	(0.035)	(0.019)	(0.018)	(0.006)	(0.008)
	[-2.53]	[-1.35]	[-1.67]	[-2.53]	[0.46]	[0.71]	[0.45]	[-0.42]	[0.78]	[0.16]	[-2.99]	[-1.83]	[-2.02]	[-2.97]	[-0.83]
UR_t	-0.001	-0.015	0.013	-0.005	0.011	0.076**	0.021	0.032	0.015	0.007	0.026	-0.003	0.023	-0.005	0.025**
	(0.027)	(0.017)	(0.017)	(0.006)	(0.008)	(0.037)	(0.039)	(0.031)	(0.016)	(0.021)	(0.048)	(0.028)	(0.025)	(0.008)	(0.012)
	[-0.05]	[-0.84]	[0.76]	[-0.89]	[1.31]	[2.06]	[0.53]	[1.05]	[0.96]	[0.34]	[0.54]	[-0.12]	[0.95]	[-0.58]	[2.14]
Observations	437	437	437	437	437	147	147	147	147	147	247	247	247	247	247
Groups (Countries)	28	28	28	28	28	16	16	16	16	16	28	28	28	28	28
Time Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
P-value Wald Test	0.012**	0.202	0.000***	0.028**	0.000***	0.064*	0.209	0.152	0.131	0.061*	0.000***	0.634	0.000***	0.000***	0.000***

Note: Standard errors in ( ), z-statistics in [], *** indicates statistical significance at 1% level, ** indicates statistical significance at 5% level and * indicates statistical significance at 10% level. Coefficients, standard errors and z-statistics for the year dummies are not reported. *C*, *LI*, *D*, *FW* and *UR* are expressed as ratios; *HW* and *INF* are expressed as growth rates; and *SIR* and *LIR* are expressed as a percentage

Table 4 – Economic significance of our statistically significant estimates

Period	Private Consumption	Countries	Variable	Short-term Coefficient	Long-term Coefficient	Actual Cumulative Change	Economic Effect
Full Period	Total	All Countries	LI_t	0.062	0.873	-0.101	-0.088
			D_t	0.013	0.183	0.012	0.002
			LIR_t	0.075	1.056	-0.855	-0.903
			INF_t	-0.050	-0.704	5.087	-3.581
		'Market-based' Countries	D_t	-0.025	-1.667	0.693	-1.155
			FW_t	0.006	0.400	0.329	0.132
			UR_t	-0.141	-9.400	-0.325	3.055
		'Bank-based' Countries	D_t	0.016	0.086	0.284	0.024
			HW_t	0.031	0.168	1.567	0.263
			INF_t	-0.209	1.130	-0.500	-0.565
		Eastern European Countries	D_t	0.072	0.232	12.292	2.852
			FW_t	-0.059	-0.190	1.467	-0.279
			SIR_t	-0.412	-1.329	-0.763	1.014
			INF_t	-0.236	-0.761	80.333	-61.133
		Euro Area Countries	LI_t	0.093	1.177	-0.092	-0.108
			FW_t	0.009	0.114	-0.033	-0.004
			INF_t	-0.239	-3.025	-0.364	1.101
		Non-Euro Area Countries	LI_t	-0.080	0.272	-0.050	-0.014
			UR_t	0.148	0.503	-0.530	-0.267
	Services	All Countries	LI_t	0.044	0.530	-0.101	-0.053
			D_t	0.009	0.108	0.012	0.001
			LIR_t	0.054	0.651	-0.855	-0.557
	Non-Durable	All Countries	LI_t	0.024	0.147	-0.101	-0.015
			HW_t	-0.012	-0.074	2.550	-0.189
			LIR_t	0.077	0.472	-0.855	-0.404
			$INFt$	-0.020	-0.123	5.087	-0.626
	Semi-Durable	All Countries	D_t	0.003	0.021	0.012	0.0003
			HW_t	0.010	0.070	2.550	0.179
			INF_t	-0.012	-0.084	5.087	-0.427
	Durable	All Countries	HW_t	0.008	0.045	2.550	0.115
			LIR_t	-0.045	-0.256	-0.855	0.219
Pre-Crisis Period	Total	All Countries	LI_t	0.069	0.266	-0.087	-0.023
			FW_t	0.011	0.042	0.023	0.001
			UR_t	0.076	0.293	-0.411	-0.120
	Non-Durable	All Countries	HW_t	-0.024	-0.132	5.750	-0.759
			SIR_t	-0.202	-1.110	-0.329	0.365
			LIR_t	0.322	1.769	-0.489	-0.865
	Semi-Durable	All Countries	LI_t	0.030	0.229	-0.087	-0.002
			HW_t	0.024	0.183	5.750	1.052
			SIR_t	0.155	1.183	-0.329	-0.389
			LIR_t	-0.379	-2.893	-0.489	1.415
	Durable	All Countries	FW_t	0.004	0.011	0.023	0.0003
Crisis and Post-Crisis Periods	Total	All Countries	LI_t	0.086	0.768	-0.041	-0.031
			INF_t	-0.106	-0.946	3.375	-3.193
	Services	All Countries	LI_t	0.068	0.398	-0.041	-0.016
			INF_t	-0.034	-0.199	3.375	-0.672
	Non-Durable	All Countries	FW_t	0.008	0.036	0.014	0.001
			SIR_t	0.114	0.518	-0.887	-0.459
			INF_t	-0.037	-0.168	3.375	-0.567
	Semi-Durable	All Countries	INF_t	-0.017	-0.093	3.375	-0.314
	Durable	All Countries	HW_t	0.016	0.064	1.840	0.118
			LIR_t	-0.044	-0.175	-0.740	0.130
			UR_t	0.025	0.100	-0.355	-0.036

Note: The long-term coefficient is obtained through the ratio between the short-term coefficient (estimated coefficient) and one minus the coefficient of the autoregressive estimation (estimated lagged consumption coefficient). The actual cumulative change corresponds to the annual growth rate of the correspondent variable.[1] The economic effect is the multiplication of the long-term coefficient by the actual cumulative change. *C*, *LI*, *D*, *FW* and *UR* are expressed as ratios; *HW* and *INF* are expressed as growth rates; and *SIR* and *LIR* are expressed as a percentage

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[1] Note that the actual cumulative change for the Eastern European countries corresponds to the annual growth rate of the correspondent variable from 2001 to 2019 due to the existence of missing values until 2000 in these countries (Table 1).

Table A1 – The descriptive statistics

	C	LI	D	FW	HW	SIR	LIR	INF	UR
Mean	0.559	0.533	0.614	1.763	0.042	0.023	0.041	0.040	0.084
Median	0.544	0.538	0.550	1.724	0.039	0.020	0.042	0.018	0.076
Maximum	0.750	0.638	1.502	3.453	0.488	0.140	0.225	1.069	0.275
Minimum	0.293	0.340	0.024	0.418	-0.373	-0.005	-0.003	-0.116	0.003
Standard Deviation	0.091	0.049	0.303	0.703	0.087	0.023	0.025	0.147	0.043
Skewness	-0.073	-0.437	0.818	0.237	0.686	1.136	1.518	6.445	1.629
Kurtosis	2.545	3.235	3.119	2.096	9.827	4.887	10.512	44.126	6.512
Observations	493	493	493	493	493	493	493	493	493

Note: *C*, *LI*, *D*, *FW* and *UR* are expressed as ratios; *HW* and *INF* are expressed as growth rates; and *SIR* and *LIR* are expressed as a percentage

Table A2 – The correlation matrix

	C	LI	D	FW	HW	SIR	LIR	INF	UR
C	1.000								
LI	0.020	1.000							
D	-0.152***	0.288***	1.000						
FW	-0.135***	0.461***	0.656***	1.000					
HW	-0.055	-0.148***	-0.158***	-0.016	1.000				
SIR	0.118***	0.028	-0.194***	-0.173***	0.074*	1.000			
LIR	0.334***	0.004	-0.101**	-0.228***	-0.216***	0.658***	1.000		
INF	0.095**	-0.153***	-0.208***	-0.251***	-0.001	0.109**	0.073	1.000	
UR	0.386***	0.005	-0.050	-0.144***	-0.313***	-0.001	0.431***	-0.111**	1.000

Note: *** indicates statistical significance at 1% level, ** indicates statistical significance at 5% level and * indicates statistical significance at 10% level. *C*, *LI*, *D*, *FW* and *UR* are expressed as ratios; *HW* and *INF* are expressed as growth rates; and *SIR* and *LIR* are expressed as a percentage

Figure A1 – Plots of the variables (unweighted averages)