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# Assessing financial and housing wealth effects through the lens of a nonlinear framework

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### ABSTRACT

This paper examines the effects of wealth on consumption for the US, the UK and the Euro area using a smooth-transition regression (STR) model. We find evidence of an asymmetric and time-varying relationship between consumption and wealth. Additionally, our model tracks consumption patterns reasonably well during periods of economic downturn, financial instability and housing market corrections. While wealth effects are not significant in the Euro area, they are statistically significant and time-varying in the US and the UK. Interestingly, changes in housing wealth are source of switching between regimes in the US.

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## 1. Introduction

Research on the relationship between consumption, asset wealth and labour income is not new and has been explored in several consumption theories. From a theoretical point of view, the permanent

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income hypothesis (Friedman, 1957) and the life-cycle model of consumption (Modigliani, 1976; Deaton, 1987) highlight a substantial wealth or income effect on household consumption. From an empirical perspective, changes in consumption expenditure are associated with variations in wealth and income (Sousa, 2010, 2012a). Thus, consumption responds to the dynamics of these variables (Chauvin and Damette, 2011), even though they may also depend either directly or indirectly on a number of economic variables such as the unemployment rate (Skalin and Teräsvirta, 2002), gross national product (Van Dijk et al., 2002), interest term structures (Floden, 2001), and changes in monetary policy (Aftalion, 1997). Furthermore, slow macroeconomic fluctuations and the presence of liquidity constraints (Hall and Mishkin, 1982; Jaffee and Stiglitz, 1990) can also affect consumption behaviour.

As Jawadi (2008) and Jawadi and Léoni (2012) pointed out, several authors have attempted to model consumption and have investigated its relationship with wealth and income using linear econometric frameworks in particular. However, there are no unanimous conclusions, which can be explained by the lack of consensus regarding the definition of wealth and the fact that empirical evidence varies across the countries and periods under consideration (Jawadi and Sousa, 2014).

Our contribution to the existing literature is threefold. First, we quantify wealth effects on consumption for three economies (i.e. the US, the UK and the Euro area). This provides a particularly interesting international comparison as the wealth effect is frequently considered to be more significant in the US and the UK than in the Euro area.

Second, we test wealth effects using aggregate and disaggregate wealth data in order to better capture the effects of different wealth components on household consumption. We do so by decomposing asset wealth into housing wealth and financial wealth. When compared to the work of Jawadi and Sousa (2014), we go one step further, in that we investigate both asymmetry and time-variation in wealth effects on consumption.

Third, we use nonlinear tests and switching models to assess the existence of asymmetry in the linkage between consumption and asset wealth. Thus, unlike previous studies, our paper allows this relationship to be time-varying and asymmetric. Consequently, we use a nonlinear approach based on the estimation of a smooth-transition regression (STR) by Granger and Teräsvirta (1993). We rely on this nonlinear model for the consumption–wealth relationship, because: (i) it takes into account different types of consumption reactions following lower, higher, negative and positive wealth variations; (ii) it is able to capture instability and asymmetry in wealth effects; and (iii) it allows us to understand the consumption dynamics according to the phase of the business cycle.

While providing valuable information about the relationship between consumption and asset wealth, our work attempts to answer two major questions.

Why would wealth effects be asymmetric? It is well known that consumers typically value more falls in their wealth than rises in their net worth. This can reflect features of liquidity constraints (Mankiw, 1986; Mankiw and Zeldes, 1991), but also behaviours that are consistent with loss aversion or disappointment aversion preferences (Kahneman and Tversky, 1979; Gul, 1991; Tversky and Kahneman, 1979; Barberis et al., 2001), habit-formation utility functions (Constantinides, 1990; Campbell and Cochrane, 1999) or direct preferences over wealth (Robson, 1992; Bakshi and Chen, 1996). As a result, one would expect changes in asset wealth to have an asymmetric effect on consumption.

Why would wealth effects be time-varying? Changes in consumption decisions largely reflect changes in consumer expectations regarding their permanent income (where asset wealth is included in this definition). During periods of financial instability or asset bubbles such as stock market crashes and real estate collapses, variations in asset wealth can be substantial but they are also perceived as temporary (Sousa, 2010; Agnello et al., 2012; Castro and Sousa, 2012). As a result, changes in asset wealth are less prone to affect permanent income. By contrast, when economic fundamentals are stable and sustainable, variations in asset wealth are more likely to be seen as persistent and, thus, to lead to an adjustment in the consumption pattern. Consequently, wealth effects on consumption are better characterized as time-varying rather than static.

The rest of the paper is organized as follows. Section 2 describes previous studies. Section 3 presents the econometric methodology. The data and empirical results are discussed in Section 4, and Section 5 concludes.

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