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Re-examining the impact of housing wealth and stock wealth on retail sales: Does persistence in wealth changes matter? ☆



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ABSTRACT

Case, Quigley and Shiller (2005, 2013) quantified stock versus housing wealth effects on quarterly state-level retail sales, which they interpret as an approximate measure of household consumption spending. We investigate the variation of these wealth effects with the persistence of each kind of wealth fluctuation in an estimated linear dynamic fixed-effects model, allowing for both cointegration and endogeneity. Retail sales respond most strongly to housing wealth fluctuations which persist for one to four years, whereas the response to stock wealth fluctuations is smaller and is concentrated on fluctuations with a persistence of either less than a year or more than four years. These differential persistence effects point to a need for a richer theoretical formulation in this area.

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1. Introduction

A substantial literature has arisen that compares the wealth effect due to housing wealth fluctuations with the wealth effect due to financial wealth fluctuations (E.g., see Edison and Sløk (2001), Case et al. (2005) and Shirvani and Wilbratte (2011)). This issue is important because both of these kinds of wealth fluctuations have played major (albeit likely intertwined) roles in triggering and/or extending major macroeconomic episodes in the last few decades and because a fluctuation in each of these household wealth variables calls out for a different set of preventive and/or reactive government policies. Some studies argue that the transitory nature of the changes in stock prices causes them to have a

smaller impact on consumption than changes of similar size in the value of other assets – e.g., Benjamin et al. (2004); Case et al. (2013). However, Dvornak and Kohler (2007) find opposite results in modeling the seven provinces of the Australian economy, where fluctuations in financial wealth appear to have larger impacts than fluctuations in housing wealth. Belsky (2010) found similar consumption effects from real estate and corporate equity fluctuations, both at a magnitude of 5.5 cents on the dollar. Similarly, Carroll et al. (2011) find that the financial wealth effects grows to be more than four-to-ten cents on the dollar over the years following a shock. Their results also suggested that about 80% of the housing wealth effect is realized in one year, whereas a long run effect from the stock market takes five years to approach 80%. Engelhardt (1996) finds asymmetric wealth effects: changes in consumption are significantly associated only with drops in housing values. Case et al. (2005, 2013) used state-level panel data on retail sales, household financial wealth, and

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household housing wealth to analyze the differential impacts of these two kinds of household wealth on household consumption, the latter of which is in these studies (and here) approximated at the state level by total retail sales.¹

Considering the contradictions in the literature about the different types of wealth effect, the main contributions of the present study are to extend the wealth effect analysis in two ways. First, we estimate a single model for the Case et al. (2005, 2013) data using a standard dynamic panel framework, including both of the two kinds of household wealth effects, and also simultaneously allowing for both endogeneity in the two household wealth growth rates (i.e., financial and housing) and also allowing for cointegration amongst the concomitant key levels variables.² This allows us to compare the relative consumption impact of financial wealth fluctuations versus housing wealth fluctuations in a single model accounting all at once for all of the major econometric features of their data set. Our results are therefore both more economically coherent and statistically more valid than those obtained previously.

Second, and most crucially, we use a recently developed econometric method, due to Ashley and Verbrugge (2006, 2009), and Ashley et al. (2014) – which enables us to examine how the relationship between the growth rate of retail sales varies with the *persistence* of each of these kinds of household wealth fluctuations. This method employs one-sided Fourier filtering to decompose each of the two wealth growth rates into several persistence level components; these components are in each case constructed so as to add up to the original wealth series. This decomposition is described in Section 3 and in Appendix C; it is there contrasted to alternatives, such as HP filtering.

Why is it important to analyze the manner in which the consumption impact of fluctuations in these two household wealth varies with the persistence level of the fluctuations? First, note that the ‘persistence’ referred to here is the persistence of the recent fluctuations in the stationary – i.e., $I(0)$ – growth rates of the these two household wealth time series. For example, a positive fluctuation in the growth rate of housing wealth in a particular state which is a part of recent pattern of positive fluctuations is what we are terming a persistent fluctuation in this kind of wealth, whereas an isolated positive fluctuation in housing wealth is what we are referring to as a less persistent fluctuation. Since we find that each of the two wealth effects does in fact depend on the persistence level of the wealth fluctuation, any model which does not account for this persistence-variation is providing a single, inconsistent

estimate of the wealth effect, averaged over all persistent levels.³

In addition – beyond simply finding persistence dependence in both the stock wealth and housing wealth coefficients – the dependence on persistence level which we find in these coefficients is economically interesting in form. For one thing, this dependence is quite different for each of these two kinds of household wealth. For another, our results with regard to the form of the persistence dependence are in each case a bit surprising. In particular, while there is no existing theory available to predict this form, an informal appeal to the Permanent Income Hypothesis would at least suggest that these wealth effects on consumption would both be monotonically increasing in the persistence level of the wealth fluctuations. Such is not the case, as discussed below.

We note that this is fundamentally an empirical paper: we do not provide a new theory of household consumption predicting the pattern of wealth-persistence effects which we find. Rather, we hope that our intriguing empirical results will motivate the development of such theories. It is reasonable to speculate in that direction, however, and we do so in our concluding section.

The rest of this paper is organized as following: Section 2 summarizes the Case et al. (2013) data; Section 3 briefly discusses our econometric terminology and empirical model; Section 4 presents the results, and Section 5 concludes.

2. Data

We use state-level per capita owner-occupied housing wealth, per capita financial wealth and per capita household consumption, as imputed in Case et al. (2005, 2013). This is virtually the only data set that has both the financial wealth and housing wealth disaggregated to the state level; the imputation covers a significant period of time, from the first quarter of 1978 to the fourth quarter of 2012. This data set offers several advantages for our persistence decomposition analysis: (1) The increase in both forms of wealth has been quite unequally distributed across geographic units; this panel offers the advantage that the variable definitions are uniform across different states. (2) This data set also makes it possible to define an error correction term based on the relationships between the level variables for each state. (3) The sample spans over thirty years of US economic history, with a total of 135 quarterly observations per state. This long panel allows us to easily specify windows 16 quarters in length for the Fourier analysis, so that only fluctuations with a

¹ Despite omitting important components, such as services, etc., retail sales have been argued by Case et al. (2005, 2013) and Elbourne (2008) to be a reasonable proxy for household consumption spending at the state level. In particular, Elbourne (2008) finds a sample correlation of 0.95 between retail sales and consumption at the national level.

² The models in Case et al. (2005, 2013) are not able to deal with all of these econometric features at once in a single model.

³ Our analysis is thus analogous to estimating the marginal propensity (MPC) out of ‘temporary’ income and comparing this to an estimate of the MPC out of ‘permanent’ income – as in Permanent Income Hypothesis analyses, such as Campbell and Mankiw (1990) – rather than only estimating an average of these two MPC values. Previous work in the wealth impact area – per this analogy – has only analyzed the average MPC, comparing the average MPC out of financial wealth to the average MPC out of housing wealth, ignoring the fact that – as we uncover – the consumption impact of a fluctuation in either kind of wealth depends on the persistence of this fluctuation.

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