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journal homepage: [www.elsevier.com/locate/jmacro](http://www.elsevier.com/locate/jmacro)Causality, real estate prices, and the current account <sup>☆</sup>Yothin Jinjarak <sup>a,\*</sup>, Steven M. Sheffrin <sup>b</sup><sup>a</sup> Department of Financial and Management Studies, 534 College Buildings, SOAS, University of London, WC1H 0XG, United Kingdom<sup>b</sup> Murphy Institute and Department of Economics, 108 Tilton Hall, Tulane University, New Orleans, LA 70115, United States

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## ABSTRACT

This paper explores the causal relations between real estate prices and the current account using recently developed econometric methods for recursive systems. Using a variety of high-quality real estate indices, we find little evidence that current account deficits (capital account surpluses) directly drove real estate prices in the United States, Spain, and Ireland. There is some evidence for this linkage in England; however it is transitory and not persistent. There is also strong evidence that current account surpluses have direct impacts on mortgage rates in the United States, providing an indirect channel for stimulating the real estate market mediated through the financial markets.

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## 1. Introduction

“There are some encouraging signs coming from the feeble British housing market, where prices are down on average 15 percent from their 2007 peak. . . . New buyer inquiries also rose – many of them from apparently wealthy non-Britons looking to snap bargains. . . . In a further indication of an incipient recovery, foreign lenders like the Bank of China also have started to expand their mortgage offerings in Britain. . . . The increase in housing prices, helped by purchases in prime areas of London like Chelsea and Knightsbridge, is mainly the result of a shortage of properties. . . . A relatively high proportion of people in Britain own houses, and, unlike Americans, we mainly have variable rate mortgages, which means that income flows vary and there’s a more direct link to consumption levels, . . .”

International Herald Tribune, August 6, 2009.

The world financial crisis in 2007 and 2008 was characterized by capital flows, housing meltdown, credit freeze, stock market crash and economic slump. As research by [Aizenman and Jinjarak \(2009\)](#) reveals, this linkage is not new, particularly the close ties between movements in the real estate markets and capital flows. But the interpretation of the linkages between real estate prices and capital flows is subject to considerable debate, even in the most recent crisis.

<sup>☆</sup> We have benefited from the comments of seminar participants at the IMF European Department and the Federal Reserve Bank of Dallas.

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One school of thought suggests that capital inflows to the United States were the ultimate driver of the real estate bubble and ultimate financial crisis. Federal Chairman Ben Bernanke provided the intellectual roots for this idea several years ago when he talked about a “global savings glut” stemming primarily from Asia.<sup>1</sup> The savings glut, of course, was the mirror image of the US current account deficits, but Bernanke’s choice of term suggested causality from the high savings countries to the US. It is a short step from there to recognize that this will appreciate assets with relatively fixed supplies, including real estate. Of course, the Asian countries had little to do with the intricacies of failed securitization schemes, but under Bernanke’s view, their savings behavior was the ultimate cause of the recent crisis.

Bernanke’s primacy of capital flows ties in closely to previous work on financial crises, particularly in developing countries with fixed exchange rates. Although they differed in precise form, both Mexico and Asian countries during the 1997 crisis initially experienced capital inflows, appreciating real estate, and sharp increases in the real exchange rate. Ultimately, these patterns were not sustainable and these economies experienced financial meltdowns and severe recessions. [Reinhart and Rogoff \(2008\)](#) explore the pattern of recessions generated by banking and financial crises across countries and suggest similarities in economic outcomes following the crisis across a wide array of countries. By focusing on a recessions caused by banking and financial crises, they implicitly imposed a causal framework related to Bernanke’s, although perhaps not directly tied to the current account.

An alternative view, however, would suggest that the causality between real estate price increases and the current account would run the other way. Optimism or animal spirits could drive individuals to purchase assets and appreciation of assets would spur further purchases. As perceived wealth increases from asset appreciation—perhaps fueled by sophisticated financial intermediation—households would decrease their savings, and business might be led to make increased investments. With increased absorption, the current account would deteriorate and capital flows would provide the financing for the additional consumption and investment. Here the causality runs from speculation and real estate prices increases to the current account. With a different ultimate causal impulse for the recession, the effects on the economy over time may differ from recessions whose origin was primarily from capital inflows. At the macro level, increases in equity prices are often closely related to short-run appreciation in real estate prices and subsequently, income and economic growth. Since the dynamics in real estate markets are slower than that in the equity markets [[Case and Shiller \(2005\)](#), [Glaeser and Gyourko \(2007\)](#)], causality may run from equity price appreciation to current real estate valuation.

Another possibility is that capital account surpluses could lead to lower domestic interest rates, which in turn influence both equity prices and housing prices. In this case, the links between the current account and real estate prices would be indirect and mediated through financial market channels.

Micro-level studies have established links between housing prices, financial market conditions, and consumption behavior, but have not resolved the causality issue. For the US, much of the empirical evidence is based on the PSID household level data. [Yamashita \(2007\)](#) finds that the use of home equity for consumption in response to house price appreciation is negatively associated with homeowner’s ration of wealth to income. [Engelhardt \(1996\)](#) finds a low marginal propensity to consume out of real housing capital gains. In England, micro data show the effect of house prices on consumption increases with age and borrowing constraint, driven by national rather than regional house prices, suggesting that house prices are correlated with aggregate financial market conditions ([Campbell and Cocco, 2007](#)).

How can the causal relations between real estate movements and the current account be untangled in dynamic economic systems? Economists have taken a number of different approaches to determining causal structure in multivariate time series settings. The first approach is just to assume one—either through a priori restrictions in the Cowles Foundation approach applied to structural VARs or through the choice of a specific recursive ordering or Cholesky factorization chosen by the investigator. Once a causal structure has been chosen, it is possible to derive impulse response function and variance decompositions, but ultimately these results are all based on the a priori assumptions that went into the choice of causal model.

Other approaches rely on some external information. [Hoover and Sheffrin \(1992\)](#) show how structural breaks coupled with some a priori information can be used in some circumstances to identify causal structures. This approach depends on determining structural breaks in time series (additional information) but is applicable only in bivariate settings. [Romer and Romer \(2010\)](#) attempt to read the historical record (another source of a priori information) to try to adduce “policy shocks”. But their work is at best limited to analyzing policy interventions and not useful for general causal inference.

What about approaches that rely simply on the time series themselves? Granger causality or, more precisely, Granger “incremental predictability” is used frequently by economists. But it is well known that in intertemporal models, Granger causality can give the incorrect answer to casual ordering. Since both consumption and investment behavior are, in part, forward looking, this method is not appropriate for our task.

There is one additional method for helping to determine causal structure using solely the underlying data that is increasingly being used in the econometric literature. This is the approach based on the insights of graph theory due to [Pearl \(2009\)](#) and [Spirtes et al. \(2000\)](#) and used in economic applications by [Sheffrin and Triest \(1995\)](#), [Granger and Swanson \(1997\)](#), [Demiralp and Hoover \(2003\)](#), [Perez and Siegler \(2006\)](#), and [Hoover et al. \(2009\)](#). This approach restricts the class of models to recursive models, just as in the original VAR literature. It uses some results from graph theory to reduce the set of possible causal structures by examining correlations and conditional correlations in the data—in our model, the residuals from an

<sup>1</sup> See [Bosworth and Flaaen \(2009\)](#) for useful background information on both capital flows and financial intermediation and comments on his paper by Steven Sheffrin in that volume.

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