



Do asset price drops foreshadow recessions?



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ABSTRACT

This paper examines the usefulness of asset prices in predicting the beginnings of recessions in the G-7 countries. It finds that equity/house price drops have a substantial marginal effect on the likelihood of a new recession. Increased market uncertainty, which is a second-moment variable associated with equity price changes, is also a useful predictor of new recessions in these countries. These findings are robust to the inclusion of the term spread and oil prices. The new recession forecasting performance of our baseline model is superior to that of a similar model estimated over all recession and expansion periods, highlighting a difference between the probabilities of a new recession versus a continuing recession.

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1. Introduction

Many observers have noted that asset price drops are often followed by recessions. Historical examples of this regularity include the 1929 stock market crash and the Great Depression; the sharp decline in asset values in 1973–74 and the ensuing economic downturn in the United States and the United Kingdom; the early 1990s' asset price collapse and recession in Japan; the stock market downturn in the early 2000s and the 2001 recession in the United States; and the 2008 global crash in asset prices and the Great Recession. In all of these episodes, equity and/or house prices fell sharply prior to or coincident with an economic downturn.

Other observers, however, have argued that asset price declines do not always precede or coincide with economic contractions. The sharp decline in the stock market in 1962, for instance, did little to unsettle the economic recovery process in the United States. Likewise, the stock market crash of October 1987 did not have any significantly

effect on economic activity in the United States, despite predictions of a severe recession in 1988. The August 2011 stock market collapse in the United States and Asia was not followed by a recession in these economies either. These observers assert that asset prices (and equity prices in particular) are poor indicators of forthcoming recessions because they are inherently volatile. Samuelson's (1966) famous epigram that "the stock market has forecast nine of the last five recessions" summarizes this view cleverly.

In this study, we examine whether there is any link between asset price drops and the starts of recessions in the G-7 countries. Specifically, we assess whether equity and house price drops are reliable predictors of new recessions. As large drops in equity prices and increases in financial market uncertainty are often associated with major economic and political shocks, we also evaluate the extent to which the implied stock market volatility, a proxy for uncertainty, predicts new recessions.

We explicitly exclude from the estimation sample periods in which the economy is already in a recession. This is a key departure from the previous literature, which has tended to pool information across both expansions and recessions, opting to estimate the probability of being in a recession at any given point in time. An important problem with this approach is that it can give a false impression of

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success in predicting new recessions. In most cases, these studies are actually reporting the probability of continuing in a recession, conditional on the economy already being in a recession.

The results from our baseline logistic regression model indicate that asset prices are significantly related to the beginnings of new recessions in the G-7 economies. There is also evidence that the relationship between asset prices and recession starts is highly asymmetric—the average marginal effect of a large decline in equity/house prices on the probability of a new recession is much larger in absolute value than that of an equivalent increase. Market uncertainty is found to be a useful predictor of new recessions, highlighting its possible role in the business cycle. The term spread and oil price growth, proxying for bond and commodity market conditions, are also included in the baseline model. Confirming the literature's findings, the term spread does help to predict new recessions. However, we show that equity price movements have a better in-sample forecasting performance than the term spread. Lastly, oil price changes do not appear to be particularly useful in predicting new recessions. These new results suggest that the early pessimistic assessment of the ability of asset prices to help in forecasting new recessions needs to be revised.

The remainder of this paper is structured as follows. In Section 2, we briefly introduce our model specification and describe our data and econometric methodology. In Section 3, we report the main empirical findings of this paper. We conclude in Section 4 with a brief summary of our main results and a discussion of avenues for future research.

2. Model motivation, data, and econometric methodology

Why might asset price changes be useful for predicting new recessions? Two main reasons have been put forward in the literature. First, asset price declines could actually cause a downturn in economic activity through their negative effects on the net wealth, balance sheets, and confidence of both households and firms.¹ Second, an asset price drop could signal a weakening of the economic outlook, to the extent that asset prices are forward-looking. These two elements have led many observers to treat asset prices, and equity prices in particular, as harbingers of the business cycle. However, early empirical studies found asset prices to be of only limited use for forecasting economic downturns.²

In addition, a new body of literature postulates that market uncertainty can be an important driver of the business cycle (Bloom, 2009). When faced with high levels of uncertainty, firms reduce their investment demand and

delay their projects while they gather new information, as investment can be costly to reverse (Bernanke, 1983; Dixit & Pindyck, 1994). Market uncertainty, which is typically proxied by stock market volatility, may also respond to major economic and political shocks.

Beyond these asset price and financial market indicators, a well-established body of literature has found that the term spread and oil price changes can help predict recessions in advanced economies. Narrowings or inversions of the term spread have been found to be associated positively with recessions,³ while other work has shown that sharp rises in oil prices or persistently high oil prices have often preceded recessions.⁴

We investigate the predictive abilities of these five variables for new recessions at a quarterly frequency using a logistic regression model. The dependent variable is a binary variable that takes the value of 1 if a country has reached its cyclical peak in quarter t , indicating the end of an expansion, and 0 otherwise. The cyclical peaks and troughs for the G-7 countries are obtained from Claessens, Kose, and Terrones (2012). These cyclical turning points are identified using the algorithm introduced by Harding and Pagan (2002), which generalizes the algorithm developed by Bry and Boschan (1971) for the United States.⁵ Cyclical peaks or beginnings of recessions are rare events, with just 44 occurring in the G-7 countries over the period 1970:Q1–2011:Q4. This means that the probability of a recession starting in the next quarter, conditional on the economy being in expansion, is about 4.7%. In contrast, over the same period, these economies spent some 18% of their time in a recession.

Equity price growth is the log difference of the country's main stock market index, where each listing's equity price is weighted by the market value of outstanding shares. The house price measure is an index of house or land prices, depending on the country. These variables have been converted to real terms using the corresponding national consumer price indices (CPI). The implied or realized volatility of the S&P 500 index comes from Bloom (2009), spliced with the Chicago Board of Options' VXO index from 2006 to 2011. Lastly, the term spread is calculated as the difference between the 10-year government bond

¹ Recent studies have found that the asset price movements that affect households' net wealth are associated with significant changes in their spending (Carroll, Otsuka, & Slacalek, 2011; Case, Quigley, & Shiller, 2013).

² Stock and Watson (2003) report that equity prices are generally poor predictors of output growth. In contrast, virtually no study has examined the predictive content of housing prices for economic growth and recessions, which partly reflects data limitations.

³ For instance, Estrella and Mishkin (1998) examine the performance of the term spread, which is a proxy for the stance of monetary policy, as a predictor of a binary recession indicator for the United States. They find that a narrowing of the term spread helps to predict recessions in the US for horizons of longer than one quarter. This finding has also been confirmed for other economies. For instance, Duarte, Venetis, and Paya (2005) report that EMU and US yield spreads are associated with EMU recessions. For a more recent contribution, see Christiansen (2013).

⁴ Hamilton (2011) found that 10 of the last 11 recessions that the US has experienced were associated with increases in oil prices (with the exception being the mild recession of 1960–1961). This result seems to hold for other economies as well. For instance, Engemann, Kliesen, and Owyang (2011) report that oil price shocks, in addition to the term spread, help to predict recessions in seven advanced economies.

⁵ This algorithm first searches for local maxima and minima of the log-level of output (y), then makes sure that the sequence of identified maxima and minima alternates between peaks and troughs. Furthermore, the identified sequence of peaks and troughs must satisfy censoring rules which require a certain minimum duration for each cyclical phase and cycle.

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