Do stock prices reflect their fundamentals? New evidence in the aftermath of the financial crisis

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ABSTRACT

We re-examine the dynamic relations between stock prices and macroeconomic fundamentals for six major industrialized countries in the wake of the recent financial crisis. Our analysis is based on a structural vector autoregressive (SVAR) model, which relies on a long-run restriction to identify fundamental and non-fundamental shocks to stock prices. This paper is the first in this line of literature to formally test the identifying restriction. We do so by means of a Markov switching-SVAR (MS-SVAR) model in heteroskedasticity. We generally find that it is supported by the data. Our structural analysis shows that after the 2008 financial crisis, stock prices tend to fall in line with their fundamentals for all six countries investigated. In general, we observe a self-correction of stock prices towards their fundamental values.

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1. Introduction

Theoretically, it is considered that equity prices follow movements in macroeconomic variables since firm expected dividends are closely related to projected economic conditions. In other words,

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the fundamental value of stock prices should be based on macroeconomic activities. After the outbreak of the 2008 financial crisis, the question of whether stock prices are in line with their fundamentals is especially intriguing for both practitioners and researchers. In this paper we therefore, re-examine the role of macroeconomic fundamentals in relation to stock prices for six major industrialized countries using data from 1960 to 2013.

Whether equity prices reflect fundamentals has been a contested issue already for several decades. Early seminal papers tend to deliver conflicting conclusions: On the one hand, LeRoy and Porter (1981), Shiller (1981) and Summers (1986) argue that stock price movements cannot be fully accounted for by fundamentals, while Fama (1990), Barro (1990), and Schwert (1990) find evidence of strong correlation between stock returns and macroeconomic fundamentals.

This debate continues to persist. More recently, Black, Fraser, and Groenewold (2003), Laopodis (2006, 2011) and Becchetti, Rocci, and Trovato (2007) among others, conclude that equity prices tend to (persistently) deviate from their fundamental values. Other studies, such as Coakley and Fuertes (2006), Boucher (2007) and Manzan (2007) claim that stock prices deviate from fundamentals in the short-run, however in the long-run they revert back to their fundamental values. Finally, Pan (2007), Balke and Wohar (2009), Chen and Fraser (2010) and Yuhn, Kim, and Nam (2015) find evidence mainly in support of stocks being priced according to their fundamentals.

In this paper we investigate this issue by means of a structural vector autoregressive (SVAR) model. Such models are popularly used in this field of literature (see Section 2) since they are capable of capturing the dynamic relationships between stock prices and the economy. In order to identify the SVAR model parameters we use the common method of long-run restrictions proposed by Blanchard and Quah (1989). However, imposing such restrictions can be problematic, as noted by Faust and Leeper (1997). In addition, any types of restrictions are usually not testable in a conventional framework, as it is typically the case that SVAR models are exactly identified. This leads Rigobon (2003) and Gospodinov (2010) to argue that, aside from identification assumptions, statistical information should also be considered for shock verification. Therefore, to verify whether our long-run restrictions are supported by the data we make use of the novel testing approach employing a Markov switching SVAR (MS-SVAR) in heteroskedasticity model as in Lanne, Lütkepohl, and Maciejowska (2010) and Herwartz and Lütkepohl (2014) among others.

This paper therefore, firstly contributes to the existing literature by testing whether the long-run Blanchard and Quah (1989) structural identification scheme is supported by the data. Such restrictions allow for the distinction of fundamental and non-fundamental shocks to stock prices (see Section 3.1) and as such are crucial to the whole analysis. If they were to be incorrectly assumed then all consequent results would be inaccurate and inconclusive. Our paper is the first in this line of literature to formally test the long-run identification scheme popularly used.

Secondly, our study covers the recent financial crisis period, which allows us to better analyse whether there was indeed an overvaluation of stock prices prior to that event, as claimed by some earlier studies (see for instance, Louis and Eldomiaty (2010)). Our findings show that the steep rise in equity prices, mainly throughout the mid-1990s, was the result of a correction of an undervaluation. After this correction, we find that stock prices even became slightly overvalued with respect to their fundamentals. However, since the financial crisis of 2008, we tend to observe that, for all countries investigated, equity prices fall in line with their fundamentals. In general, we find a self-correction of stock prices towards their fundamental values.

We conduct our analysis in two steps: First, in order to correctly identify structural shocks, we test the validity of our identification restriction by means of a MS-SVAR model in heteroskedasticity. Second, based on the results of the first step, we conduct standard SVAR simulations to further investigate whether we have indeed identified the shocks that we are interested in and to answer our question of whether stock prices reflect their fundamentals.

This paper is structured as follows: Section 2 gives a brief discussion of identification issues in SVAR models. Section 3 introduces the SVAR and the MS-SVAR model. Section 4 discusses the test results of the restrictions and whether they are robust. Section 5 deals with the empirical results of the SVAR model to determine whether the shocks have been properly identified and whether equities are priced in accordance with their fundamentals. Finally, Section 6 concludes.