US share prices and real supply and demand shocks

Patricia Fraser [a,*], Nicolaas Groenewold [b]

[a] *Department of Accountancy and Finance, University of Aberdeen Business School,
University of Aberdeen, Edward Wright Building, Dunbar Street,
Aberdeen AB24 3QY, Scotland, UK*
[b] *University of Western Australia, Australia*

Abstract

Demand and supply sources of output movement are distinguished and the effects of shocks on stock prices are analysed. The real economy has a more pronounced effect on the stock market than vice versa and the influence from the real economy to the stock market is less important than shocks that are peculiar to the market itself. Supply and demand shocks have a greater impact on stock prices than they do on real economy variables and the sensitivity of real stock prices to supply fluctuations has waned while the sensitivity of real stock prices to demand-driven output fluctuations has increased.
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1. Introduction

The interaction between the stock market and aggregate economic activity has been the subject of considerable interest in the past decade. The relationship has traditionally been one in which the economy affects the stock market, usually based on the common text-book model of share prices as the discounted present value of expected future dividends. In

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* Corresponding author. Tel.: +44 1224 272210; fax: +44 1224 272214.
E-mail address: prof.p.fraser@abdn.ac.uk (P. Fraser).

this framework, share prices are influenced both by output (via profits and dividends) and interest rates (via the rate at which future dividends are discounted).

More recently, attention has also been focussed on effects in the opposite direction, that is, from the stock market to the economy, no doubt influenced by the strong stock market performance in the 1990s and the sharp "corrections" in 2001 following the long bull market. The extant literature has identified two principal channels of influence, the first from stock prices to consumption via a wealth effect and the second from stock prices to investment via cost of capital and other influences.[1]

The vector autoregressive (VAR) model has been a popular one for the analysis of the intertemporal relationships between macro variables and stock prices; it requires little by way of prior theoretical structure and the tools for the estimation and analysis of the dynamic behaviour of such models are widely available. An early VAR analysis in this area is the one by Lee (1992) and more recent ones are by Cheung and Ng (1998) and Gjerde and Saettem (1999). One of the costs of the atheoretical nature of the VAR is that the shocks in the model are difficult to interpret in economic terms. Indeed, if we view the VAR as a reduced form of a structural model, its error terms will be linear combinations of various structural errors. Thus, in a reduced-form VAR real output innovations will generally be combinations of supply and demand shocks that are not distinguished even though theory predicts that they may well have quite different effects on stock prices.

A recent strand of VAR models has imposed extra structure on the VAR in an attempt to overcome the difficulty in the interpretation of the shocks. Starting with Bernanke (1986), Sims (1986), Blanchard (1989a) and Blanchard and Quah (1989), methods were devised to restrict the generality of the VAR by imposing restrictions based on prior theorising, thus enabling the interpretation of the shocks in terms of the theoretical priors. Sims, Bernanke and Blanchard, all used short-run restrictions while Blanchard and Quah based their restrictions on the long-run relations between the variables. Subsequent work such as that by Gali (1992) has combined these two types of restrictions.

While original applications of these structural VARs (SVARs) were in the area of macroeconomics (and this continues to be a focus, see e.g. Rapach, 1998), in recent years applications have also been to financial economics. In a series of papers, Lee et al. have applied SVAR models to the analysis of stock markets. In Lee (1995), Lee (1998) and Chung and Lee (1998) the focus was on the decomposition of stock prices into temporary and permanent components using models including financial variables, such as dividends, earnings and interest rates. In Hess and Lee (1999), the same technique was applied to address the puzzle that stock returns are generally found to be negatively related to inflation, a puzzle which is at least partially resolved by using the model to distinguish between demand and supply shocks. All of the Lee et al. papers use the Blanchard and Quah identification procedure based on long-run restrictions.

Another series of papers by Gallagher and Taylor also focus largely on the decomposition of stock prices into temporary and permanent components using the Blanchard–Quah identification scheme, although, in contrast to the Lee et al. papers, the identification pro-

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[1] See Mullins and Wadhwani (1989), Barro (1990), Morck, Schleifer, and Vishny (1999), Blanchard, Rhee, and Summers (1993), and Chirinko and Schaller (1996) on the investment effect, and Romer (1990), Poterba and Samwick (1995), Parker (1999), Poterba (2000) and Starr-McCluer (2002) on the consumption effect.