



Financial market impact on the real economy: An assessment of asymmetries and volatility linkages between the stock market and unemployment rate[☆]



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ABSTRACT

Using a GARCH-in-mean VAR procedure applied to US data, we find that stock market volatility impacts positively on the unemployment rate. We further identify asymmetries insofar as positive and negative shocks to stock market returns give rise to contrasting responses in unemployment consistent with both short-run complementarity and substitutability between capital and labour. Moreover, the impact from a negative shock is consistent with complementarity. The impact from a positive stock market shock is also consistent with complementarity albeit in the very short-run, whereas evidence consistent with substitutability between capital and labour predominates soon after thereby increasing the unemployment rate.

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1. Introduction

The events surrounding the global financial crisis and its aftermath have brought into sharp focus the relationships between financial markets and the real economy. One such linkage concerns the performance of equity markets and the impact on unemployment rates. Expectations of future economic conditions have an important influence on the stock market, and hence market returns have long been recognized as a reliable predictor of the business cycle. Numerous studies have found that the stock market is an indicator of future economic activity, and an increase in stock market returns is indicative of a decline in the unemployment rate. For example, the work of [Phelps \(1994, 1999\)](#), [Hoon and Phelps \(1992\)](#) and [Phelps and Zoega \(2001\)](#) explain the connection between the stock market and unemployment rate using a range of arguments that draw on expectations of future profits and the impact on employment.

The recent events surrounding the global financial and debt crises and fall in stock market valuation have been

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accompanied by an increase in the unemployment rate whereas a number of economic and financial downturns prior to this have not caused such a large decline. In assessing this linkage, little is understood about the impact of stock market volatility on the unemployment rate, or about asymmetries in terms of the impacts from positive and negative stock market shocks. In an attempt at addressing these shortcomings in the existing literature, our investigation offers new insights into the relationship between the stock market and unemployment rate. Using a GARCH-in-mean VAR procedure advocated by [Elder and Serletis \(2010\)](#) applied to US data over the study period 1948–2014, we show that the unemployment rate is adversely affected by stock market volatility. Further to this, we also find that positive and negative stock market shocks have asymmetric short-run impacts on the unemployment rate. We also briefly reflect on what policy prescriptions can be drawn from these empirical results.

2. Literature

The literature suggests that expectations of future economic conditions exert an important influence on asset valuation, and thus stock market returns should forecast changes in economic activity. For example, [Phelps \(1999\)](#) and [Hoon and Phelps \(1992\)](#) explain the connection between the stock market and unemployment rate using the [Phelps \(1994\)](#) structuralist model of the natural rate of unemployment. In Phelps' model, expectations of future profits cause firms to invest in customer relationships and employee training. Further to this, [Phelps and Zoega \(2001\)](#) propose an interpretation of long swings in economic activity. Instead of deviations from a trend growth path explained by misperceptions, long swings are seen as detours in the path itself provoked by rare and deep changes in expectations of future productivity that are captured by swings in stock markets. [Zoega \(2012\)](#) argues that a relationship between share prices and unemployment is consistent with models of the equilibrium unemployment rate that explain deviations from equilibrium by changes in economic performance, such as the current and expected rate of productivity growth, as well as current and future real interest rates.

In this respect, the level of share prices captures the influence of these economic variables and should hence be negatively correlated with unemployment. [Feldmann \(2011\)](#) points to four channels that run from an active and liquid stock market to unemployment. These channels include facilitating investment in long-term projects, helping to fund business formation, providing incentives to invest in research firms, and helping monitor firms where the threat of takeovers acts as a monitoring device. Following [Mollick and Faria \(2010\)](#), one can refer to Tobin's Q theory, which is based on the ratio between the stock market valuation of existing capital assets and their current replacement cost.

The theory put forward by [Tobin \(1969, 1998\)](#) proposes that a firm invests in capital when Q is above its par value. One might then consider the impact of Tobin's Q on employment. If capital and labour are complements in the production function, then [Mollick and Faria \(2010\)](#) argue that a Q value above par resulting from stock market appreciation will lead to an increase in the capital stock along with higher labour demand and employment. However, if one assumes, that technical progress is primarily labour saving and that new capital will reduce the demand for labour permanently, one must expect a negative relationship between Tobin's Q and employment. Therefore, if Tobin's Q affects the stock of capital, it must influence labour employment and then the unemployment rate as well. If capital and labour are complements (substitutes), a higher Q leads to more capital, and to more (less) labour and less (more) unemployment.

[Rahman \(2009\)](#) points out that a causal link between asset return volatility and real economic activity can be inferred from recent theoretical advances in the investment and option pricing literature. There are three important characteristics of investment decisions which interact to determine the optimal decisions of investors. First, the investment is partially or completely irreversible. Second, there is uncertainty over the future payoffs from the investment. Third and finally, the investment expenditure can be delayed until a future time by comparing the value of the option of investing today with the present value of investment undertaken in future periods.

In terms of empirical investigation, [Greasley and Madsen \(2006\)](#) note the severe collapse of fixed capital formation that distinguished the onset of the Great Depression from other investment downturns between the world wars. Using a model estimated for the period 1890–2000, they show that the expected profitability of capital measured by Tobin's Q , and the uncertainty surrounding expected profits indicated by share price volatility, were the chief influences on investment levels, and that heightened share price volatility played the dominant role in the crucial investment collapse in 1930. The connection between stock market wealth and unemployment was recognized by [Phelps \(1999\)](#) who pointed out that the stock market boom of the 1990s was accompanied by a reduction in the unemployment rate. [Fitoussi, Jestaz, Phelps, and Zoega \(2000\)](#) found a similar correlation between the stock market and unemployment for a sample of European countries.

The above mentioned study by [Mollick and Faria \(2010\)](#) assesses the relationship between different measures of Tobin's Q and the US labour market over the period 1948–2002. They find a negative long-run relationship between the unemployment rate and Tobin's Q , which they argue is consistent with capital and labor being complements in production. Moreover, applying the [Pesaran, Shin, and Smith \(2001\)](#) bounds testing methodology to the unemployment rate and Tobin's Q , a long-run and negative relationship is found for the US, which is consistent with capital and labour being complements in production. Using data on 20 industrial countries for the period 1982–2003, [Feldmann \(2011\)](#) finds that a more active stock market is likely to lower the unemployment rate, though the magnitude of the effect detected appears to be modest but noticeable. [Zoega \(2012\)](#) finds evidence that a medium-term relationship exists between share prices, normalized by labour productivity, and the rate of unemployment in the Organization for Economic Co-operation and Development countries. It is argued that this helps explain decadal changes in mean unemployment, such as the shift to higher mean

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