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Does the stock market really cause unemployment? A cross-country analysis



Wei-Fong Pan

Research Institute, First Capital Securities Co., Ltd., Shenzhen, China

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ABSTRACT

This study examines the relationship between the stock market and unemployment in 30 advanced and 11 developing and emerging countries. The results show that the unemployment rate and stock prices are cointegrated in all country groups; further, the causality between stock prices and unemployment appears in all country groups. Specifically, I found a particularly strong and one-way causal direction from stock prices to the unemployment rate in G7 countries. There is a strong bilateral causal relationship between stock prices and unemployment for other advanced countries. However, in the 11 developing and emerging countries, the causality test results indicate a strong Granger causality from unemployment to stock prices. The results for developing and emerging countries suggest that the unemployment rate can help forecast stock prices, but not vice versa. These findings complement existing studies and deliver useful implications for investors and policymakers, and suggest some new lines for future research.

1. Introduction

The US housing market experienced a boom coincident with the expansionary monetary policy in the 2000s. Cheap money and the housing boom encouraged banks to engage in more risky lending practices, including subprime mortgages. The surge in subprime mortgages and the housing market finally melted down in 2007 and led to spillovers into the broader credit market and fear spilled over into other asset markets. Asset and credit market collapses are associated with a steep decline in output and protracted recessions (Jordà, Schularick & Taylor, 2015; Reinhart & Rogoff, 2009). The recent Great Recession is not a special case and inevitably caused a decline in output in world economies.

Labour market deterioration is another consequence of a collapse in asset markets. The unemployment rate rose by 5.7 percentage points during the recent Great Recession, which is the largest post-war upswing in the unemployment rate in the US. Pissarides (2013) observed a similar uptrend in other OECD and European countries. This phenomenon motivated researchers to examine the connection between the financial and labour market. In a recent series of papers, Farmer (2012, 2013, 2015) highlights the role of animal spirits and argued that the stock market did cause unemployment. He used data from the US to derive empirical evidence to support his theoretical model. Using German data, Fritsche and Pierdzioch (2016) provide empirical evidence for Farmers view. Hansen and Phan (2017) show that the collapse of asset bubbles would lead to labour market deterioration using observations in Japan and Spain. However, would that be the case in other countries? Since most works examined advanced countries, is this still valid in developing countries?

This study aims to answer these questions by examining the relationship between the stock market and unemployment in 30 advanced and 11 developing countries from October 2001 to January 2017. I first conduct cross-sectional dependence, panel unit root tests to check properties of the data. Then, I use the Westerlund (2007) panel cointegration test to test the long-term relationship

E-mail addresses: weifongpan@gmail.com, panweifeng@fsc.com.

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between the unemployment rate and stock prices. Finally, I apply the panel Granger causality test proposed by Dumitrescu and Hurlin (2012) to check the causal relationship between the stock market and unemployment.

The rest of this paper is organised as follows. Section 2 reviews the related literature and identifies the limitations in the existing literature. Section 3 describes the econometric methods and data sources. Section 4 reports the empirical evidence. Section 5 concludes the paper.

2. Literature review

Several theories depict a link between stock market activity and unemployment, whether directly or indirectly. On the one hand, Blanchard (1981) develops an IS-LM model showing that macroeconomic news can be good or bad for assets depending on the state of the economy. Cutler et al. (1988), McQueen and Roley (1993), Veronesi (1999), Boyd, Hu, and Jagannathan (2005), Krueger and Fortson (2011) all deal with how stock markets react to macroeconomic news. McQueen and Roley (1993) find a strong relationship between stock prices and macroeconomic news, including unemployment rate news, pointing out that these relationships depend on the state of economy. Based on rational expectations equilibrium model, Veronesi (1999), shows that bad news in good times and good news in bad times (higher uncertainty) would enable investor to react more swiftly to news and hence affects stock returns. By investigating the US, Boyd et al. (2005) conclude that an increase in unemployment is good news for the stock market when the economy expands, while it is bad news when the economy contracts. Chen (2009) finds that the unemployment rate can be a good predictor of stock markets in the short-run, but its significance decreases within a year.

However, some studies use the Diamond-Mortensen-Pissarides (DMP) model proposed by Diamond (1982), Pissarides (1985), and Mortensen and Pissarides (1994), which relates unemployment to job-creation incentives, to demonstrate the effects of unemployment on the stock market. For instance, Kuehn, Petrosky-Nadeau, and Zhang (2012) build a model that combines a DMP labour market with full treatment of financial markets and demonstrates that the equity premium is countercyclical and can be predicted by labour market tightness. Based on the DMP model, Hall (2017) shows that the discount rate is a driver of unemployment and the stock market falls during recessionary periods due to the higher discount rate. Furthermore, Kilic and Wachter (2015) develop a business cycle model with a DMP labour market and observe that stock markets and unemployment are highly correlated due to the risk of an economic disaster, and such risk is higher during the recession period. Miao, Wang, and Xu (2016) introduce credit constraints within a DMP labour market and show the existence of a bubble in the stock market that relaxes credit constraints and allows firms to increase investment and hire more workers. When the bubble collapses, credit constraints tighten, causing firms to decrease investment and cut workers, thus creating unemployment.

Instead of searching for a fundamental explanation to close an indeterminate model of the labour market, Farmer (2012, 2013) proposes a model that replaces the wage bargaining equation with the assumption that employment is demand determined. In particular, Farmer assumes that demand depends on market participants' beliefs about the future value of assets. Farmer (2012) shows that the unemployment rate can be explained as a steady-state equilibrium, where assuming that market participants' beliefs are self-fulfilling resolves the indeterminacy of the equilibrium. The belief function is

$$E_t \left[\frac{P_{k,t+1}}{P_{t+1}} \right] = X_t, \tag{1}$$

where $P_{k,t+1}$ is the value of stock market and X_t is a process that represents beliefs about the future value of the stock market. The belief is determined by the function

$$X_t = \frac{P_{k,t}}{P_t} \exp(s_t^b), \tag{2}$$

where s_t^b are belief shocks with $s_t^b \sim D(0, \sigma_s^2)$. The employment in his model is driven by

$$L_t = \frac{1}{s_t^p} \left[\frac{P_{k,t}}{\wp P_t} \exp(s_t^b) \right]^{1/b}, \tag{3}$$

where s_t^p denotes the productivity shocks. Farmer (2013, 2015) adopts this model and provides empirical evidence on how stock prices could predict the unemployment rate in the US since WWII. Others also find this relationship in Germany (Fritsche & Pierdzioch, 2016). Arestis, Baddeley, and Sawyer (2007) similarly find that the stock market is an important determinant of unemployment and wages. Feldmann (2010) studies 20 industrial countries and finds that more active stock markets tend to reduce unemployment. Farsio and Fazel (2013) conclude that no causal relationship exists between unemployment and the stock market in China, the US, and Japan.

However, empirical findings on developing and transition economies are very scarce. Exceptions include Tapa, Tom, Lekoma, Ebersohn, and Phiri (2016) for South Africa and Bamidele (2015) for Nigeria. The relationship between financial markets and labour markets might be distinct in developing countries compared to developed countries. Labour markets in developing countries are characterised by an absence of unemployment insurance, very limited access to social protection, and lower income levels (Fields, 2011; Lee & Parasnis, 2014). These institutional factors would influence the unemployment and participation outcomes of labour markets. For example, based on the standard search model, an increase in unemployment benefits reduces job search incentives, which can thus prolong unemployment spells. On the other hand, if unemployment benefits allow better matching in the labour market, the unemployment rate would decrease (Lee & Parasnis, 2014).

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