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Does the stock market reward innovation? European stock index reaction to negative news during the global financial crisis

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This study uses data on 27 European stock indices over the period from January 2007 to December 2012 to investigate the relationship between innovations and the market reaction to negative news during the financial crisis. We use the bivariate BEKK-GARCH approach to estimate time-varying betas and abnormal returns. We show that index prices of countries in the high (low) innovation groups experience significantly positive (negative) abnormal returns on and following the negative news announcement dates. We also find that index beta changes following the arrival of bad news is negatively associated with a country's innovativeness. This finding suggests that innovations promote economic stability and enhance investors' confidence in a country's ability to cope during difficult times. Thus, policy makers who are concerned with sustainable growth should encourage R&D investments by adopting effective policies and avoid unnecessary cuts in R&D expenditures even during times of crisis. A study of the pre-crisis period from January 2001 to December 2006, using the same methods, indicates that investors value innovation more during difficult times.

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1. Introduction

A recent [OECD \(2009\)](#) report suggests that the recession, which began with the financial crisis of 2007, has impacted research and development (R&D) in OECD countries. In the fourth quarter of 2008, a decline in R&D expenditure, or at best slower growth, was apparent. Moreover, R&D expenditure declined by a record 4.5% in 2009 across the OECD, with falls in all major OECD countries except South Korea and France. However, as is shown in this paper, the performance of stock markets in OECD countries during the crisis period has exhibited heterogeneity. The study reported in this paper sheds light on the role of innovation in building investor confidence and in stimulating economic recovery. The argument that motivates this work is that if innovation improves profitability and reduces investment costs, it should also increase investors' confidence in a country's ability to withstand the effect of difficult economic conditions. More specifically, if investors' confidence increases with innovation, the stock markets of innovation-intensive countries would be less adversely affected by negative news about the global economy. We investigate this issue by examining the reaction of European stock market indices to the arrival of major negative news during the recent global financial crisis. We choose to focus our analysis on European markets for several reasons. First, Europe is a significant player in the global economy, with the GDP of the euro-zone area (\$13 trillion) being almost equal to that of the US (\$15 trillion). Secondly, whilst the financial crisis started in the US, its impact was greater and it lasted longer in Europe ([Weisbrot, 2014](#)). Thirdly, the European sovereign debt crisis had a significant effect on investors' confidence and was blamed for the slow recovery in the US and the global economy. Finally, the considerable variations in European countries' commitments to innovations and the fact that these countries are not affected in the same way by the financial crisis make Europe a perfect environment to study the link between innovation and a county's ability to cope during difficult times.

This paper is motivated both by theoretical literature and empirical evidence at firm and country level. [Chen and Zhang \(2010\)](#) develop a model in which firms with higher expected profitability and lower investment costs provide higher expected returns. To test whether the market rewards innovation, existing empirical studies focus almost exclusively on the impact of R&D investments and patents on firm value (see for example [Griliches, 1981](#); [Jaffe, 1986](#); [Hall et al., 2005](#)), the short-term stock price reaction to R&D announcements (for example [Chan et al., 1990](#); [Saad and Zantout, 2009](#)) and the long-term stock returns associated with past R&D investment (for example [Chan et al., 2001](#); [Eberhart et al., 2004](#)). However, the results of these studies are far from conclusive. For example, [Chan et al. \(2001\)](#) find firms with higher R&D investment experience no better long-term risk-adjusted excess returns than the rest of their sample firms. However, [Porter \(1992\)](#), [Hall \(1993\)](#) and [Hall and Hall \(1993\)](#) show that investors fail to foresee the rewards from long-term R&D investments and thus undervalue R&D-intensive stocks. [Eberhart et al. \(2004\)](#) show that firms exhibit significant positive risk-adjusted excess returns for the five-year period following R&D expenditure increases. They interpret it as an evidence of investors' under reaction to the benefit of R&D increases.

While several studies show that innovations stimulate economic growth ([Aghion and Howitt, 1992](#); [Grossman and Helpman, 1991](#); [Solow, 1956](#)) and promote nations' competitive advantage ([Porter, 1998](#)), evidence on the relationship between innovations and aggregate stock market returns is relatively scarce. [Hsu \(2009\)](#) argues that if innovation raises the expected productivity and profitability of the representative firm, it should also improve the overall efficiency and reduce investment costs at the aggregate level. Consistent with this prediction, Hsu finds that innovations have positive and distinct predictive power for U.S. and other countries market returns and premiums. The study in this paper also uses country level data to investigate the relationship between innovation and market returns and premiums. However, unlike [Hsu \(2009\)](#), who attempts to explain the time series of market returns using innovation shocks, we investigate the behaviour of market returns and betas following the arrival of negative news about the global economy. This leads to new insights about the relationship between innovation and investor confidence in a country's ability to cope during difficult economic climates. We argue that the productivity and efficiency benefits associated with innovations are likely to be even more crucial during crisis periods, particularly as customers switch to lower-priced products/services providers in order to reduce their expenditure.

This argument suggests that firms and economies with continued investments in innovations are more likely to survive the recession and position themselves well for the recovery periods, whereas

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