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Factor reversal in the euro zone stock returns: Evidence from the crisis period

Hsin-I Chou[a], Jing Zhao[a], Sandy Suardi[b,*]

[a] *Department of Finance, La Trobe University, Bundoora, Melbourne 3086, VIC, Australia*
[b] *School of Economics, La Trobe University, Bundoora, Melbourne 3086, VIC, Australia*

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ABSTRACT

The adoption of the euro led to a shift in importance from country to industry effects in euro zone stock returns. For the first time, this paper shows that country effects have regained importance in the recent spate of crises. This euro-wide factor reversal is driven by countries with poor economic fundamentals, comprising Portugal, Italy, Ireland, Greece, and Spain (PIIGS). The results imply that a more traditional country portfolio approach provides greater diversification benefits during crisis periods and the minimum-variance frontier of industry portfolios in PIIGS countries can be improved by adjusting country weights.

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1. Introduction

One of the critical issues portfolio managers and investors must address is whether to focus their diversification efforts across countries or across industries in international equity markets. While a dearth of studies (e.g., Griffin and Karolyi, 1998) have shown that country effects continue to dominate industry effects, a consensus has emerged that industry effects have grown in importance relative

* Corresponding author. Tel.: +61 3 9479 2318; fax: +61 3 9479 1654.
E-mail addresses: H.Chou@latrobe.edu.au (H.-I. Chou), J.Zhao@latrobe.edu.au (J. Zhao), s.suardi@latrobe.edu.au (S. Suardi).

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to country effects since the late 1990s in developed markets (Baca et al., 2000; Cavaglia et al., 2000; Phylaktis and Xia, 2006), with similar evidence for emerging Asian markets (Wang et al., 2003). The rising importance of industry effects in explaining equity market comovement has been partly attributed to the globalization of the world economy, financial market integration (Campa and Fernandes, 2006), and the dominant role played by the information technology bubble in the 1990s (Brooks and Del Negro, 2004). In the euro zone countries, the rise in industry effect dominance over country effects is a result of Europe's economic and financial integration (Flavin, 2004; Ferreira and Ferreira, 2006).

A plethora of empirical studies have attempted to validate the predicted increase in industry effects in the euro area. The earliest study, that of Rouwenhorst (1999), who investigates the relative importance of country and industry effects in European Monetary Union (EMU) countries during 1993–1998, finds that the former effects dominated the latter despite the convergence of interest rates and the harmonization of fiscal and monetary policies following the Maastricht Treaty of 1992. Since then, studies by Flavin (2004) and Ferreira and Ferreira (2006) have documented the increasing importance of industry effects relative to country effects in the 1990s, with industry effects reaching a similar magnitude as country effects in the post-euro period. In particular, Ferreira and Ferreira (2006) show that the rising trend in industry effects is caused by nominal convergence in interest rates across EMU countries. Moerman (2008), using a mean–variance approach and a longer data set spanning the period 1995–2004, finds that a pure industry investment strategy yielded better diversification opportunities than a pure country strategy during the post-euro period 1999–2004, thus supporting the view that industry effects have gained greater importance than country effects in the euro area. A more recent study by Eiling et al. (2012), using returns-based style regressions, finds a surge in the importance of industry effects in the nine years since the introduction of the euro. Their analysis shows that for the group of countries with the strongest pre-euro linkages (Germany, France, the Netherlands, Belgium, Austria, and Finland), industry effects have dominated since 1990 but have further strengthened since the introduction of the euro. On the contrary, for the group of countries with the weakest pre-euro linkages (Portugal, Italy, Ireland, Greece and Spain, also known as PIIGS), there has been a shift in factor importance from country to industry effects since 1999. Despite extensive literature documenting an increase in industry effects and the shift in factor importance from country to industry effects governing euro zone equity returns in the post-euro period, no study has investigated whether these phenomena have persisted in the recent period during which a spate of crises occurred. The present paper shows for the first time that a factor reversal has taken place since the onset of the subprime crisis, returning to the rising importance of country effects. This factor reversal continued during the global financial crisis and right through the euro debt crisis.

Since different conclusions can be reached depending on, among other things, the sample period and methodology, our study uses a long span of stock return time-series data between 1992 and 2011, comprising more than a decade of post-euro data. Unlike previous studies relying on only one specific methodology, we adopt three different prevailing approaches to investigate whether euro zone equity returns are driven by country or industry effects. In particular, we start with the methodology developed by Heston and Rouwenhorst (1994) and widely followed in other studies, which is essentially a dummy variable factor model. To relax the assumption of unit factor exposures of the Heston–Rouwenhorst model, we also perform returns-based style regressions following Eiling et al. (2012) to estimate country- and industry-specific variances. The mean–variance spanning and intersection tests of Huberman and Kandel (1987) are further adopted to directly examine the diversification opportunities contained in country- and industry-based investment strategies. All three sets of results unanimously provide evidence that industry effects gained greater importance in characterizing euro zone equity returns in the post-euro period before the onset of crises, which supports the myriad arguments explaining the dominance of industry effects since the adoption of the single currency[1]. However, in contrast to previous studies, we demonstrate for the first time that the increasing relative importance of industry effects appears to have been temporary. There is, in fact,

[1] Given the real and nominal convergence of economic structures in the euro zone member countries it is predicted that euro zone equity returns would exhibit diminishing country effects. Griffin and Karolyi (1998) and Griffin and Stulz (2001) argue that industry-specific shocks may have a greater impact on industries that produce internationally traded goods. With greater trade being advocated as a benefit of the single-currency zone, it may therefore raise the sensitivity of certain stocks to

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