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Downside risk, portfolio diversification and the financial crisis in the euro-zone

Soodabeh Sarafrazi [a], Shawkat Hammoudeh [a,b,*], Paulo AraújoSantos [c]

[a] LeBow College of Business, Drexel University, 3141 Chestnut Street, Philadelphia, PA 19104, United States
[b] IPAG Lab, IPAG Business School, Paris, France
[c] School of Management and Technology of Santarém and Center of Statistics and Applications, University of Lisbon, ComplexoAndaluz, Apartado 295, 2001-904 Santarém, Portugal

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ABSTRACT

This paper evaluates the value at risk for individual sovereign bond and national equity markets for 10 member countries in the euro-zone, using four estimation models and three accuracy criteria in addition to the daily capital requirements, for the full sample period and a subperiod that marks the beginning of the recent global financial crisis. The results show that the conditional extreme value theory model under both the normal and Student-*t* distributions satisfies the four accuracy criteria the best and gives the least capital charges for both periods, while the RiskMetrics gives the worst results. These euro-zone bond and equity markets are also classified into two groups: the PIIGS (Portugal, Italy, Ireland, Greece and Spain) and the Core (Germany, France, Austria, The Netherlands and Finland), and optimal portfolios are constructed for these two groups as well as for the ten euro area as a whole. Given the sample periods, the results show no strong diversification for any of the two groups or for the whole area in any of the bond and equity asset classes or both. The bond and equity portfolios are augmented with commodities and the best grand portfolio is the one that is diversified with the commodities gold, silver and oil, particularly for the subperiod.

* Corresponding author at: Drexel University, LeBow College of Business, 3200 Market Street, Philadelphia, PA 19104, United States. Tel.: +1 610 949 0133; fax: +1 215 895 6975.
E-mail address: shawkat.hammoudeh@gmail.com (S. Hammoudeh).

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1. Introduction

The euro-zone has been in a sovereign debt crisis and at the risk of a catastrophic breakup since 2009. The crisis has affected its capital markets and economies, leading to mass joblessness and a severe debt predicament. The euro-zone capital markets are highly correlated because of increasing integration and harmonization in this area over time. Thus, the mounting risk and uncertainty have confounded investors, portfolio managers and policy-makers across the euro-zone as well as in other countries of the world.

However, the euro-zone countries are dissimilar. In some countries the problem resulted from bubbles in the real estate markets, while in others it had to do with severe budget deficits or troubles in the banking sector. Some countries have slipped into a severe recession, while others have suffered from sluggish growth. The same comparison applies to their capital markets, particularly the sovereign bond markets. We follow the literature on the classification of the euro-zone member countries and divide those countries into two groups: the Core and the PIIGS. The Core includes Germany, France, Austria, The Netherlands and Finland, while the PIIGS consists of Portugal, Italy, Ireland, Greece and Spain. Different levels of interest rates and budget deficit- and debt-to-GDP ratios among the euro-zone countries figure highly in this classification.

More recently, there are encouraging signs of change in this area, showing strengthening euro, improvements in its capital markets and stabilization in its economies.[1] It seems that the survival of the euro-zone is likely and opportunities are looming after these positive developments. If the euro-zone survives, it will not be long before investors and portfolio managers will again search the euro-zone's capital markets seeking new investment opportunities.

In the meantime, the deterioration in government finances in the euro-zone and the global financial markets has led investors and portfolio managers to look for other asset classes, particularly commodities as return enhancers and safe havens in their flight to safety. Commodities are real assets and possess intrinsic values that reflect changes in the price level. However, commodities are not income-producing assets as they do not yield an ongoing stream of cash flows as stocks do. There also exists a high degree of heterogeneity among individual commodities (Fabozzi et al., 2008; Erb and Harvey, 2006; Kat and Oomen, 2007a,b). On the other hand, similar to stocks, most commodities have positive excess kurtosis which implies a leptokurtic return distribution. This distribution has fatter tails with the higher probability for extreme events, compared to normally distributed returns. However, in contrast to stocks most commodities are positively skewed. This characteristic is beneficial to investors because it implies a lower downside risk and an upward return bias of an investment portfolio. These characteristics distinguish commodities from stocks, particularly from the integrated euro-zone's individual country stock market indices, and give rise to expectations of low correlations with those stock indices.

Researchers, such as McCown and Zimmerman (2006), show that gold has the characteristics of a zero-beta asset that enables investors to hedge against inflation and crises. Capie et al. (2005) also demonstrate that gold protects investors and show that this yellow metal protects investors' wealth against depreciation in the value of the dollar. Baur and McDermott (2010) also suggest that gold protects investors' equity wealth against shocks in adverse stock markets in major European countries and the United States. Erb and Harvey (2006), Roache and Rossi (2010) and Elder et al. (2012) also find that silver is counter-cyclical, implying that precious metals other than gold may also protect investors' wealth in the events of adverse conditions in stock markets. Industrial metals may also serve as safe havens, portfolio diversifiers and return enhancers in the events of negative economic conditions that affect bond and equity markets. Hammoudeh et al. (2011, 2013) also find oil to be a return enhancer and risk reducer when combined in a diversified portfolio with precious metals.

In such a developing environment, it will be interesting and useful to examine the downside risk in the euro-zone sovereign bond and stock markets and figure out ways to construct portfolios that diversify away risks, protect wealth and augment the risk-adjusted returns in these capital markets

[1] We should also caution that there is still the possibility that the austerity policies can lead to a severe deterioration of the economic and political situation, and consequently may cause a social rupture between European countries.