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Value at Risk of the main stock market indexes in the European Union (2000–2012)☆

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Abstract

We analyze extreme movements of the main stocks market indexes in the European Union. We find that the Sweden and UK markets are the preferred ones for risk averse investors since they present the best risk-return performance. Moreover, the UK market is found to have a very low dependence with the rest of the European financial cycles, being the best one (in terms of risk-return) available for investors among the ones studied in this paper. Greece and Holland have the worst performance in terms of risk-return. Austria has the highest average return although the VaR is also high. Moreover, all markets are found to be linked: Austria, Belgium, Germany, Ireland and UK are the markets that are less dependent; while France, Greece, Holland, Italy, Spain and Sweden are more dependent on the rest of the European financial cycles. We find a very strong dependence of France from Belgium. Our results have very important policy implications with respect to the appropriate monetary policy that countries should adopt. In special, countries that experience unstable financial markets should consider similar macroeconomic policies to the UK and Sweden.

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1. Introduction

In the last years, an increasing number of firms and countries have suffered important losses mainly while being exposed to extreme events. Although diversification in the portfolio is a well-known strategy to reduce risk, this is not a guarantee to avoid losses specially in crisis periods. All this motivates the need to have rigorous measures of risk, and in special, during extreme events. Many studies focus on studying different aspects of international stock market indexes. For example, Edwards, Gómez-Biscarri, and Pérez-de-Gracia (2003) focus on Latin American and Asian countries and how they have been affected by a specific event: the liberalization. Bessler and Yang (2003) search for interdependencies in international stock markets. Su (2011) looks for bidirectional non-linear causalities between the real state market and the stock market of western European countries and Diamandis and Drakos (2011) find multidirectional Granger-causalities between stock prices and exchange rates for four Latin-American countries. More recently Majumder (2013) studies efficiency issues in the Indian market and Cevik, Dibooglu, and Kenc (2013) measure the financial stress in Turkey. Our objective in this paper is to go further and to study in more detail the most representative European financial markets in the current crisis and which of them present the best risk-return performance from the investors point of view. Although knowledge of the past does not guarantee future events, we show the performance of average return versus Value at Risk (VaR) of the main European stock market indexes and this can help future investors to choose their portfolios in the Eurozone. Iglesias and Lagoa-Varela (2012) did not find significant differences by country when analyzing the companies included in the Eurostoxx50 in the 2000s decade. Our objective is to study now the most representative stock market indexes.

Both academics and practitioners have been trying to find determinants of extreme behaviors. For example, Cutler, Poterba, and Summers (1989) in fact conclude that extreme values for returns happen during periods where there are no news with special relevance. The concept of financial risk is directly linked with the one of losses; however, there are different measures of risk. VaR has its origin in Riskmetrics, that was developed in the 80 s and 90 s by JP Morgan. Moreover, VaR became a very important measure of risk since the Basel Committee on banking supervision declared that banks should be able to cover losses in their portfolios for horizons of 10 days with a confidence level of 99 per cent. We use several alternative estimators to provide a good estimate of the VaR in small samples. There are two distinct VaR measures, one dealing with the unconditional distribution and one with the conditional distribution. The former provides risk managers with information on different worst case scenarios dealing with market risk occurring over long periods, for example ten years. In contrast, the latter measure details the present risk facing investment managers conditional on the present risk and return environment of a futures contract. In this paper we are interested in providing measures of unconditional risk, and moreover, since we have a not very large sample size, we need a method that can provide reasonable VaR estimates (see Jansen and de Vries, 1991; Kearns and Pagan, 1997; Iglesias and Linton, 2009; Iglesias, 2012 as empirical examples where unconditional VaR estimates are provided).

Many alternative estimators of unconditional VaR can be found. The most traditional one was proposed by Hill (1975), where the existence of generalized autoregressive and conditional heteroskedastic (GARCH) effects (very important when modelling financial returns; see e.g. Engle (1982) and Bollerslev (1986) for more details) can be implicitly acknowledged. Hill (2010) has

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