EFFECTS OF THE FINANCIAL CRISIS ON THE EUROPEAN INTEGRATION PROCESS: RELEVANCE OF EXCHANGE RATE, INFLATION AND DOMESTIC RISKS

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Alfredo J. Grau-Grau*

Abstract

The benefits of international diversification through financial integration are known to all investors, and manage their international portfolios is essential to know the risk factors that help explain the differences between the returns on financial assets in their own country and around the world. In this context, the financial crisis in 2008 has challenged all the concepts and theories in asset pricing. The aim of this paper is to quantify the influence of these events in the assessment considering the inflation, exchange rate and domestic risks. The economic impacts of these risk sources indicate that the risk of under/overestimation of European portfolios is much higher with the financial crisis. In addition, the measures taken in Europe to alleviate the effects of this crisis has been insufficient. The measures taken in Europe to alleviate the effects of this crisis has been insufficient.

Key words: European financial integration; Financial crisis; International asset pricing; Exchange rate risk; Inflation risk; Risk premiums and premias.

JEL Classification: C32, F31, F36, G12, G15

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1. Introduction

In January 1999, eleven European Union countries (Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Portugal and Spain) began using the euro currency, which became the common currency for all transactions in money and capital markets. In January 2001, Greece joined the group of countries meeting the convergence criteria for adopting the single currency. In January 2002, the twelve countries went a step further and introduced the euro as a fiduciary in all economic transactions. Subsequently, Slovenia (January 2007), Cyprus and Malta (January 2008), and Slovakia (January 2009) were incorporated, thereby completing the group of sixteen countries using the euro as their currency in 2010, and representing the final and most visible commitment to achieving European Monetary Union (EMU) and thus the financial integration of capital markets.

For decades the benefits of international diversification through financial integration have been known, but to enjoy these benefits and manage the risk of international portfolios, investors should understand the factors that explain the risk assessment differences between the returns on assets in their own country's financial markets and those in other jurisdictions around the world. This process that started within the EMU and led to a progressively integrated European market was becoming increasingly evident (see for example: Kim, Moshirian and Wu, 2005; Font and Grau, 2010; Morelli, 2010) until it was interrupted by the financial crisis whose seed was planted in the U.S. and soon spread to the other capital markets in the world.

This financial crisis that began in the final years of the first decade of this century placed a major burden on the economies of many countries and has challenged the concepts and theories in asset pricing. Among the various factors that led to it include the inability of the organs of government of financial services institutions to prevent the risky and mistaken decisions being taken that would endanger the interests of investors and trigger the crisis that turned into a global recession. Nor can we ignore the changes occurring in the macroeconomic environment (Conyon, Judge and Useem, 2011) and their devastating effects on the economy as a whole.

The most recent trigger of the most alarming financial panic situation of the last century has been, without any doubt, the bankruptcy in mid-September 2008 of Lehman Brothers, the fourth largest investment bank in the U.S. During the years of the construction boom, its assets exceeded its capital by thirty times and its high profitability was justified by its high level of indebtedness on par with its aggressive stance against the risks.

When Lehman collapsed, credit markets froze, liquidity disappeared (Aragon and Strahan, 2011) and trading volume declined drastically (Naes, Skjeltorp and Øbegaard, 2011). The market detected the traditional cash accumulation that occurs when the financial environment suddenly becomes very uncertain. At companies like Lehman, whose funding formula was basically the use of short-term loans, it was very difficult and expensive to refinance their maturing commercial paper. The risk premium built into the structure of interest rates grew, the interest rate on the interbank market increased considerably (Afonso, Kovner and Schoar, 2011) and interest rate risk bonds rose relative to the U.S. Treasury.

Consequently, as one would expect in a globalized environment, the crisis that erupted in the U.S. quickly contaminated the rest of the world´s economies, moving directly to capital markets, including the European financial market (Anaraki, 2010; Claessens, Dell'Ariccia, Igan and Laeven, 2010; Pisani and Sapir, 2010). *A priori,* it was expected that the whole cluster of news about the crisis that began with the collapse of Lehman Brothers, to the extent it affected the overall economy and the financial sector in particular, would impact on the performance of priced companies in stock markets.

Given these developments, Europe was slow to react and take measures[1] during 2008 to mitigate against the financial crisis. Its Member States used many instruments to articulate the recovery response to the joint policy, fiscal policy remains that plays a countercyclical role as interest rates fell to historic lows The governments provided massive aid to banks through guarantees, recapitalization or "cleansing" of toxic assets from financial statements, and other sectors of the economy were supported, exceptionally, through state aid.

According to the above arguments, we take as a starting point a review of the previous literature in two groups. The first group reviews the international valuation of European financial assets in the context of EMU, and the second analyzes the effect the financial crisis has had on capital markets as a whole. In the first group, the papers of Carrieri (2001) and De Santis, Gerard and Hillion (2003) study and economically quantify the assessment effects of international financial assets of market and exchange rate (currency) risks, estimating and analyzing the Solnik (1974) model. Hardouvelis, Malliaropulos and Priestley (2006), measure the relative influence of international risk on the EU market and the exchange rate risks on the domestic markets of each country in

[1] The Economic Recovery Plan was adopted on November 26, 2008 in order to boost demand and restore confidence to consumers. Europe's Strategic Plan 2020 on March 3, 2010 aims to provide urgent solutions to the crisis and establishes a strategy for medium-term planning to achieve growth that is "smart", "sustainable" and "inclusive". On June 9, 2009 within the EU and through the ECOFIN (Economic and Financial Affairs Council), a new structure of financial sector supervision was established.

European asset pricing, establishing a dynamic measure of the degree of integration of European markets. None of this work extends its analysis to the period after the adoption of the euro, and therefore do not consider the effect of the financial crisis. These authors based their study on country stock indices, and together ignored, despite the possible implications for assessment and hedging, a study of the effects of inflation risks and their relationship to the currency risks. On the other hand, Andren and Kjellsson (2005) studied the integration of the European market through the Adler and Dumas (1983) model, estimating and employing three models that consider the risk associated with inflation, separating the effect on the periods before and after the euro. Brooks, Zhang and Bheenick (2007)[2] studied the impact of the exchange rate on returns and analyze whether the local currency is potentially affected by the different inflation rates between countries. Finally, Font and Grau (2010) collect the evidence for the hypothesis of market integration in the euro zone plus the United Kingdom (UK), using the Adler and Dumas (1983) model with that proposed by Vassalou (2000).

The second research group analyzed the impact of the financial crisis whose epicenter was in the U.S. We find Ehrmann, Frazscher and Mehl (2009) warning that the country risk is a key factor explaining the overall transmission of the crisis. Anaraki (2010) suggests that in the contagion that went from the U.S. to the EU, domestic monetary policy neutralized the EU, and they argue that financial stability depends heavily on U.S. business cycles. Pisani and Sapir (2010) assert that many officials had warned that the EU was not prepared to deal with a financial storm as the integration of its market was still far from meeting the objectives in its treaties. On the other hand, we consider another extensive collection of papers that focus their attention on the effects of the bankruptcy of Lehman Brothers in the financial markets (see, e.g., Afonso, Kovner and Schoar, 2011; Aragon and Strahan, 2011; Didier, Love and Martinez, 2012) as a result of the financial crisis.

From our point of view, the revised financial literature suffers from a lack of depth on many issues that are key to quantifying the effects the U.S. financial crisis has had on the process of European integration. Based on the following reasons, the contribution of this paper is large: (i) we study the impact of adopting the euro, the financial crisis and the measures taken in Europe to alleviate this crisis, all within the context of the process of integration of the EMU (aspects which together have not been considered in the revised financial literature); (ii) we consider a fairly lengthy time period spanning January 1995 to December 2010 (many papers do not extend their investigations to the later date of the

[2] Their study includes 10 countries: Australia, Belgium, Denmark, France, Germany, Italy, Netherlands, Spain, Britain and the U.S.

adoption of the euro: see e.g. Carrieri, 2001; De Santis, Gerard and Hillion, 2003; and Hardouvelis, Malliaropulos and Priestley, 2006) and look at other research from the post-euro period (Hardouvelis *et al*., 1999; Fratzscher, 2002; Morana and Beltratti, 2002; Baele, 2005); (iii) in order to refine the consequences in the assessment, the sample is divided into three phases: January 1995 to December 1999 (adoption of the euro: "pre-euro"), January 2000 to December 2007 ("subprime" crisis and bankruptcy of Lehman Brothers: "post-euro/pre-crisis"), and January 2008 to December 2010 (Economic Recovery Plan adopted by Europe: "post-crisis/EERP"); (iv) we analyze the exchange rate, inflation and domestic risks in asset pricing to measure the degree of financial integration achieved (many papers consider these factors separately and many only implement the international *CAPM*: *ICAPM*); and finally, (v) the consequences of an exclusively international assessment of European assets through the study of the impact on economic premiums, an aspect which, to our knowledge, has not been looked at in the previous literature (except for Font and Grau, 2010, though for a period ending in 2004, and consequently they do not consider the effect of the financial crisis).

These arguments have led to the objective of this paper being directed at investigating the influence of these events in the context of EMU and the financial crisis. Hence we analyze and quantify the economic impact of currency, inflation and domestic risks through a model of international asset assessment. We use monthly returns of individual assets of the 16 EU countries plus the UK. Consideration of these risk factors (inflation and exchange rate) is driven by four international models of asset pricing: the international *CAPM* (*ICAPM*), Grauer, Litzenberger and Stehle (1976)'s model, Solnik (1974)'s model (reviewed by Sercu, 1980) and the model proposed by Adler and Dumas (1983). As well, we look at empirical evidence provided in the estimation of these models and, especially, Vassalou (2000) concerning the significant risk premium for the type of exchange rate and inflation on the monthly performance of cross section.

The results can be summarized as follows: (i) currency and inflation risk premiums, in general terms, are significant in all periods and therefore their contribution to the formation of European financial asset prices is relevant; (ii) there is a significant domestic risk premium for all periods except post-euro/pre-crisis, which indicates, therefore, that the process of European integration has been reversed with the arrival of the financial crisis; (iii) economic premiums associated with the exchange rate €/£ and inflation are significant for most of the portfolios and periods and, therefore, we quantified the impact of the economic magnitude by omitting these sources of risk in the assessment; (iv) these results are maintained when a domestic risk factor for controlling the lack of financial integration in the EMU is included in the study; and (v) the adoption of the euro facilitated

European financial markets moving towards financial integration, though with the arrival of the financial crisis a significant decline was experienced with insufficient measures taken in Europe to mitigate its effects.

The remainder of the article is organized as follow: The second section details the international assessment model selected and the methodology that allows us to estimate the model and the hypothesis of financial integration. In the third section we present the data, the portfolios of financial assets that we use and the risk factors. The fourth section presents the empirical results and, finally, we offer our conclusions in the fifth section.

2. International asset pricing model and methodology

In this section we study a set of methodologies aimed at testing the hypothesis of international market integration, through the review of the highlighted literature. We present the methodology the we have selected to carry out our empirical study and the econometric approach will serve to analyze the degree of integration of the European capital market plus the United Kingdom. The model to which we refer is Adler and Dumas (1983)'s model, as amended by Vassalou (2000), which nationalized it by incorporating the domestic risk.

2.1. Methodology of testing the hypothesis of financial integration

In reviewing the financial literature, we found an extensive collection of papers, both theoretical and empirical, that devote their efforts to studying the degree of European integration achieved. Next we will detail those which, in our opinion, are most relevant and allow us to refine our line of work.

First, there is a group of papers with the common objective of studying joint dynamics of returns using representative indices of the various markets that make up their studies. These works are led by King and Wadhwani (1990), Koch and Koch (1993), Eun and Shim (1989) and Fernandez and Matallin (2000) and focus on analyzing the level of market integration using VAR statistical models. Another group of studies, Lin and Ito (1994), Koutmos and Booth (1995), and Baele and Soriano (2010) focuses on European integration quantified using the methodology of estimation by GARCH models. Other authors prefer to use theoretical models to study whether or not it meets the "principle of parity". Along these lines, Frankel and MacArthur (1988) study European integration with a single parameter, the interest rates. By contrast, Fratzscher (2002) brings this same concept to the capital market through the "principle of parity in the returns of financial assets".

The second line of research focuses primarily on analyzing the degree of European integration through the international asset pricing models. Dumas and Solnik (1995),

Ferson and Harvey (1991) and Vassalou (2000), develop a procedure that involves testing, through an assessment model, whether the premiums associated with the risks considered in the assessment model are assumed the same for all countries under study. Hardouvelis, Malliaropulos and Priestley (2006), however, estimate the assessment models and estimate the variable weights needed to quantify the degree of integration achieved. Finally, Solnik (1974), Stehle (1977), Jorion and Schwartz (1986), Mitoo (1992) and Font and Grau (2010), nationalized the international asset pricing model and tested the hypothesis of integration through the significance tests premium associated with the domestic risk factor.

2.2. Test of the hypothesis of market integration

Continuing with our study and based on the revised financial literature to measure the degree of European integration achieved in the context of EMU, and the effects of the financial crisis, we opted for the second group of studies that focus on the estimation and comparison of different international models of asset pricing. Along these lines, we developed an international pricing model for assets priced in the euro zone plus the UK. We consider the UK as our reference country in the international assessment for two reasons: firstly, it has a European character and, secondly, it represents a considerable market in the world capital market (see, e.g., Hardouvelis, Malliaropulos and Priestley, 2006 and Font and Grau, 2010).

As a starting point, we focus our attention on the original model of Adler and Dumas (1983) (*AD*), which assumes that investors in *M* countries have preferences over consumption that are potentially different, and thus they measure inflation with different price indices. In its original state it is defined by the following expression:

$$E\left(r_{jt}/\Omega_{t-1}\right)=\sum_{i=1}^{M}\lambda_{i,t-1}\operatorname{cov}\left(r_{jt},r_{n+i,t}/\Omega_{t-1}\right)+\lambda_{m,t-1}\operatorname{cov}\left(r_{jt},r_{mt}/\Omega_{t-1}\right) \quad (1)$$

where $E\left(r_{jt}/\Omega_{t-1}\right)$ is the expected excess returns of asset *j*, *j*=1,2, …, *m*, considering all available information at *t*, with respect to the currency in which returns are quantified; r_{mt} is the excess of the global portfolio returns; Ω_{t-1} and is a term representing all available information used by investors to choose their portfolios. The conditional coefficients that integrate all available information $\lambda_{i,t-1}$, *i =1, 2, …, M*, represent the price paid for the risk of exchange rate support (inflation risk premium in country *i*) and finally, $\lambda_{m,t-1}$ is the price paid by the world market risk (market risk premium).

There are papers that find currency risk premiums significant in asset pricing in an international context (see, e.g., De Santis and Gerard, 1998) and, on the other hand, there are other references associated with a significant premium for inflation (see, e.g., Vassalou, 2000). Based on these previous studies as well as the results obtained when considering the European market (Carrieri, 2001; De Santis, Gerard and Hillion, 2003; Font and Grau, 2010) and by following the objective of trying to measure the relative importance of the exchange rate and inflation as sources of risk, we propose and estimate the international pricing model of Adler and Dumas (1983) (see Eq. (1) and Appendix 1 in the version proposed in Vassalou, 2000) as amended and incorporating conditional recommendations to reduce the dimensionality[3] of the factors (denoted by *ADV*). Our adaptation *ADV* model in the conditional version, is given by:

$$\begin{aligned} E\left(r_{jt}/\Omega_{t-1}\right) = {} & \gamma_0/\Omega_{t-1} + \gamma^{EU}\beta_j^{EU}/\Omega_{t-1} + \gamma^{UK}\beta_j^{UK}/\Omega_{t-1} + \gamma^{n\text{-}UK}\beta_j^{n\text{-}UK}/\Omega_{t-1} \\ & + \gamma^{C}\beta_j^{C}/\Omega_{t-1} + \gamma^{E}\beta_j^{E}/\Omega_{t-1} \end{aligned} \tag{2}$$

where $E\left(r_{jt}/\Omega_{t-1}\right)$ is the expected excess returns of asset *j*, *j=1,2, …, S+1*, at time *t* over the risk-free asset in the international market conditioned on information available at that instant of time; γ^{UE} is the market premium risk (EU plus UK) conditional on information available at *t*; γ^{UK}, $\gamma^{n\text{-}UK}$, γ^{C} and γ^{E} are the risk premiums associated with risk factors for inflation in the United Kingdom (*UK*), inflation excluding the United Kingdom (*n-UK*), common exchange rate (*C*) and residual (*E*), all measured in the currency of the reference country conditional on information available at *t*; β_j^m is the beta risk of the asset/portfolio *j* on the market portfolio (EU plus UK) conditioned on information available at *t*; and β_j^{UK}, $\beta_j^{n\text{-}UK}$, β_j^{C} and β_j^{E} are beta risks associated with risk factors for inflation in the United Kingdom (*UK*), inflation excluding the United Kingdom (*n-UK*), common exchange rate (*C*) and residual (*E*), also conditional on all available information in *t* (see section 3.3 for the construction of these factors).

The *ADV* model incorporates parameters in its structure parameters define separate, different assessment models (see Appendix 1), namely: Adler and Dumas (1983)'s model (see Eq. (1)) in the conditional version (*AD*) if, $\gamma^{C} = \gamma^{E} = 0$, $\forall t$; Solnik (1974) and Sercu

[3] The inclusion of these recommendations is justified, as in Vassalou (2000), by the risks of multicollinearity due to the natural co-evolution of the risks associated with exchange rate and the risks associated with inflation.

(1980)'s model in the conditional version (*SS*) if $\gamma^{UK} = \gamma^{n\text{-}UK} = 0, \ \forall t$; Grauer, Litzenberg and Stehle (1976)'s model in the conditional version (*GLS*) if $\gamma^{n\text{-}UK} = \gamma_1^C = \gamma^E = 0, \ \forall t$; and the *CAPM* international model in the conditional version (*ICAPM*) if $\gamma^{UE} = \gamma^{n\text{-}UK} = \gamma^C = \gamma^E = 0, \ \forall t$.

From the perspective of an international assessment, the *ADV* model provides an adequate representation of the asset returns to measure the impact of market risks, inflation and exchange rates, but cannot quantify whether the market risk is paying for a domestic risk. Therefore, and in order to fill this gap, we need to assess whether the international market made up of the EU countries plus the UK is more integrated or not. This way we can measure the impact on what would be incurred in the case of assuming a strictly international pricing model for financial assets, by omitting the effects of the entry of the euro and the financial crisis. We adopt the methodology proposed by Stehle (1977), estimating and testing the conditional *ADV* model in the nationalized version (*ADV(n)*). The *ADV(n)*[4] model we express as follows:

$$E_{t\text{-}1}\left(r_{jt}\right) = \gamma_{0,t\text{-}1} + \gamma_{t\text{-}1}^{EU}\beta_{j,t\text{-}1}^{EU} + \gamma_{t\text{-}1}^{N}\beta_{j,t\text{-}1}^{N} + \gamma_{t\text{-}1}^{UK}\beta_{j,t\text{-}1}^{UK} + \gamma_{t\text{-}1}^{n\text{-}UK}\beta_{j,t\text{-}1}^{n\text{-}UK} + \gamma_{t\text{-}1}^{C}\beta_{j,t\text{-}1}^{C} + \gamma_{t\text{-}1}^{E}\beta_{j,t\text{-}1}^{E} \qquad (3)$$

where $\gamma_{t\text{-}1}^{N}$ is the premium associated with domestic risk factor orthogonal to the international market (domestic risk premium) and $\beta_{j,t\text{-}1}^{N}$, is the beta risk of the asset/portfolio *j* respect to domestic factor, both parameters conditional on all information available at time *t*.

Thus, we can interpret γ_{t-1}^{N} as the compensation expected by investors, a risk that is diversifiable domestically but not internationally, if $\gamma_{t\text{-}1}^{N}$ is non zero $\forall t$ says that the market is "not integrated" and otherwise (that is, if there is sufficient evidence to reject the null hypothesis = 0) that it is "integrated".

[4] Obviously, the *ADV(n)* model includes as a particular case the *ADV* model (if $\gamma_{t\text{-}1}^{N} = 0, \ \forall t$) and other international models. Furthermore, and to simplify the expression, it is indicated in the subscripts to the parameters incorporating all available information at *t*, namely, Ω_{t-1}.

2.3. Econometric approach and economic impact of various risks: market, exchange rate, inflation and domestic

The conditional model proposed in section 2.2. is estimated in marginal terms and is obtained by applying the scaling procedure proposed in Cochrane (1996) with scaling factors that quantify the European business cycle (EU plus UK) (explained in section 3.1): the *dividend yield* (*dipre*) and *UK term spread* (*diftip*). In particular the model structure *ADV(n)* marginal version is:

$$
\begin{aligned}
E\left(r_{jt}\right) = {} & \gamma_0 + \gamma^{EU}\beta^{EU} + \gamma^{N}\beta^{N} + \gamma^{UK}\beta_j^{UK} + \gamma^{n\text{-}UK}\beta_j^{n\text{-}UK} + \gamma^{C}\beta_j^{C} + \gamma^{E}\beta_j^{E} \\
& + \gamma^{EU\cdot dipre}\beta_j^{EU\cdot dipre} + \gamma^{N\cdot dipre}\beta_j^{N\cdot dipre} + \gamma^{UK\cdot dipre}\beta_j^{UK\cdot dipre} + \gamma^{n\text{-}UK\cdot dipre}\beta_j^{n\text{-}UK\cdot dipre} \\
& + \gamma^{C\cdot dipre}\beta_j^{C\cdot dipre} + \gamma^{E\cdot dipre}\beta_j^{E\cdot dipre} + \gamma^{EU\cdot diftip}\beta_j^{EU\cdot diftip} + \gamma^{N\cdot diftip}\beta_j^{N\cdot diftip} \\
& + \gamma^{UK\cdot diftip}\beta_j^{UK\cdot diftip} + \gamma^{n\text{-}UK\cdot diftip}\beta_j^{n\text{-}UK\cdot diftip} + \gamma^{C\cdot diftip}\beta_j^{C\cdot diftip} + \gamma^{E\cdot diftip}\beta_j^{E\cdot diftip} \\
& + \gamma^{dipre}\beta_j^{dipre} + \gamma^{diftip}\beta_j^{diftip}
\end{aligned}
\tag{4}
$$

where $E\left(r_{jt}\right)$ is the expected value of excess returns of an asset/portfolio *j* over the risk-free asset in the international market in the currency of reference; γ^{EU} is the domestic risk premium; γ^{UK}, $\gamma^{n\text{-}UK}$, γ^{C} and γ^{E} are risk premiums associated with market (EU plus UK), inflation of United Kingdom (UK), inflation excluding the United Kingdom (*n-UK*), common exchange rate (*C*) and residual (*E*) risk factors; β_j^{EU} is the beta risk of the asset/portfolio *j* on the market portfolio (EU plus UK); β_j^{EU}, $\beta_j^{n\text{-}UK}$, β_j^{C} and β_j^{E} are beta risks associated with risk factors for inflation in the United Kingdom (*UK*), inflation excluding the United Kingdom (*n-UK*), common exchange rate (*C*) and residual (*E*); $\gamma^{F\cdot T}$ and $\beta_j^{F\cdot T}$, *F=EU*, *UK*, *n-UK*, *C*, *E*, *T=dipre*, *diftip* have the same interpretation but for the cross effects of risk factors with the scaled variables lagged one month; and, γ^{T} and β_j^{T}, *T=dipre*, *diftip* are premium and risks associated with the variation of the economic cycle of the EU plus UK predicted by the scaled variables lagged one month.

In estimating our European pricing model, we apply a *rolling beta* version of the methodology proposed in Fama and MacBeth (1973) and in the case of international models, we assume that premiums are estimated in common in all countries. This methodology has been widely applied for estimating the assessment models and analyzing the structure of a cross section of asset returns, and consists of a two-step process that, when applied using data from an observation window that moves month to

month, allows us to obtain the conditional series of risks and risk premiums associated with each factor (see Ferson and Harvey, 1991 and 1999). Both this aforementioned characteristic and the flexibility granted by this alternative procedure to gradually incorporate the changes that are produced in the market, have led us to prefer this method compared to the joint estimation of both sets of parameters using the full sample (see Gibbons, 1982) and the *GMM* method proposed in Cochrane (1996). We also prefer this procedure to the multivariate *GARCH* methodology proposed in De Santis and Gerard (1997) because, although the latter methodology for calculating the series conditional risk premiums to risk (absolute) of each factor assumes a dynamic *GARCH* structure on excess returns, it is not adequate to explain our monthly series (see the results contrast Lung-Box Q in Table 1).

The estimation process in two stages is implemented as follows: In the first phase, for each *t* (*t=1, ..., 192*) we use *OLS* to estimate the betas of all the factors through a regression of the excesses over the corresponding factor using the 48 previous observations. In the second phase we use *SUR* to jointly estimate (with a simultaneous estimation of the coefficients of risk premium and the variance-covariance matrix of the model) the premiums for each *t* back together excess returns of the portfolios of each group on the corresponding betas (estimated in the first phase) of the 48 previous observations. From the results of the second phase estimator, we calculate the premiums for the overall period considered (estimates are calculated for the overall period and for various periods) and tests are made individually and jointly of the model´s parameters. As products of the estimate obtained in the first phase of the series conditional beta risk for each factor, and the second phase of the series conditional risk premium for each factor, the results of the individual and joint tests evaluate the parameters of the model and the estimate of economic premiums associated with all risk factors.

The fact that risk premiums for currency and inflation are significant (see section 4.1) has important implications for the assessment of financial assets and hedging, but the economic impact of this situation depends on the level of active exposure to these risks. To quantify this impact (see, in particular, De Santis, Gerard and Hillion, 2003) we break down the excess of the estimated total returns for each portfolio from the *ADV(n)* model, in marginal format. First, for the market economic premium (*MEP*), we have:

$$\gamma^{EU}\beta_j^{EU} + \gamma^{EU\cdot dipre}\beta_j^{EU\cdot dipre} + \gamma^{EU\cdot diftip}\beta_j^{EU\cdot diftip} \qquad (5)$$

the domestic economic premium (*NEP*) is:

$$\gamma^{N}\beta_{j}^{N} + \gamma^{N\cdot dipre}\beta_{j}^{N\cdot dipre} + \gamma^{N\cdot diftip}\beta_{j}^{N\cdot diftip} \tag{6}$$

the economic inflation premium (*IEP*) has the following structure:

$$\begin{aligned}&\gamma^{UK}\beta_{jk}^{UK} + \gamma^{n\text{-}UK}\beta_{jk}^{n\text{-}UK} + \gamma^{UK\cdot dipre}\beta_{jk}^{UK\cdot dipre} + \gamma^{n\text{-}UK\cdot dipre}\beta_{jk}^{n\text{-}UK\cdot dipre}\\&+ \gamma^{UK\cdot diftip}\beta_{jk}^{UK\cdot diftip} + \gamma^{n\text{-}UK\cdot diftip}\beta_{jk}^{n\text{-}UK\cdot diftip}\end{aligned} \tag{7}$$

the economic premium associated with the currency (*CEP*)[5] would be:

$$\gamma^{C}\beta_{jk}^{C} + \gamma^{E}\beta_{jk}^{E} + \gamma^{C\cdot dipre}\beta_{jk}^{C\cdot dipre} + \gamma^{E\cdot dipre}\beta_{jk}^{E\cdot dipre} + \gamma^{C\cdot diftip}\beta_{jk}^{C\cdot diftip} + \gamma^{E\cdot diftip}\beta_{jk}^{E\cdot diftip} \tag{8}$$

and finally, the economic premium that analyzes the total effect (*TEP*)[6]:

$$\begin{aligned}&\gamma_{0} + \gamma^{EU}\beta^{EU} + \gamma^{N}\beta_{j}^{N} + \gamma^{UK}\beta_{j}^{UK} + \gamma^{n\text{-}UK}\beta_{j}^{n\text{-}UK} + \gamma^{C}\beta_{j}^{C} + \gamma^{E}\beta_{j}^{E}\\&+ \gamma^{EU\cdot dipre}\beta_{j}^{EU\cdot dipre} + \gamma^{N\cdot dipre}\beta_{j}^{N\cdot dipre} + \gamma^{UK\cdot dipre}\beta_{j}^{UK\cdot dipre} + \gamma^{n\text{-}UK\cdot dipre}\beta_{j}^{n\text{-}UK\cdot dipre}\\&+ \gamma^{C\cdot dipre}\beta_{j}^{C\cdot dipre} + \gamma^{E\cdot dipre}\beta_{j}^{E\cdot dipre} + \gamma^{EU\cdot diftip}\beta_{j}^{EU\cdot diftip} + \gamma^{N\cdot diftip}\beta_{j}^{N\cdot diftip}\\&+ \gamma^{UK\cdot diftip}\beta_{j}^{UK\cdot diftip} + \gamma^{n\text{-}UK\cdot diftip}\beta_{j}^{n\text{-}UK\cdot diftip} + \gamma^{C\cdot diftip}\beta_{j}^{C\cdot diftip} + \gamma^{E\cdot diftip}\beta_{j}^{E\cdot diftip}\\&+ \gamma^{dipre}\beta_{j}^{dipre} + \gamma^{diftip}\beta_{j}^{diftip}\end{aligned} \tag{9}$$

Economic premiums associated with each risk factor are computed from the conditional series of risks and premiums associated with such risks and premiums factor, and are then crossed with the two scaled variables associated with that factor. We apply the methodology of Fama and MacBeth (1973) for the *ADV* model and then the average of these economic premiums are calculated, depending on the objectives of the study, for the overall period and/or all three periods examined in the process of European Monetary Union (EMU) and the financial crisis. Next, we regress the premiums on a series of constant, three dummy variables indicating the periods considered, respectively, and corrected for heteroscedasticity and autocorrelation using Newey and West (1987).

3. Data, portfolio construction and risk factors

We dedicate this section to presenting the data used and the sources from which it was obtained. European assets are grouped into three portfolios: by country, sector and size-

[5] For periods post-euro/pre-crisis and post-crisis/EERP, the currency premium is reduced to: $\gamma^{C}\beta_{jk}^{C} + \gamma^{C\cdot dipre}\beta_{jk}^{\lambda\cdot dipre} + \gamma^{C\cdot diftip}\beta_{jk}^{C\cdot diftip}$

[6] For the case of *ADV* model in Eq. (9) we remove the term that refers to domestic risk.

BM, as is usual in the financial literature reviewed. Finally, it details how the risk factors (market, inflation, exchange rate and domestic) that make up the econometric model selected (*ADV(n)*) have been developed.

3.1. Data

The sample starts in January 1995 and ends in December 2010, throughout which relevant events are recorded such as the adoption and consolidation process of the euro, the "subprime" crisis including the bankruptcy of Lehman Brothers, and the Economic Recovery Plan adopted by Europe to tackle the financial crisis. We distinguish several periods: January 1995 to December 1999 (pre-euro period), January 2000 to December 2007 (post-euro and pre-crisis periods) and, finally, January 2008 to December 2010 (post-crisis and European Economic Recovery Plan: EERP periods), in order to study the process of market integration more deeply.

We use an international sample comprised of countries[7] that were using the single[8] currency until 2010, plus the UK (reference country). Trade data for financial assets are taken from ECOWIN and THOMSON ONE BANKER, for each of the stock exchanges of the countries studied. We calculate monthly returns incorporating after-tax dividends by applying the correction proposed by Stoxx for each country in pounds sterling. Of the total financial assets in our sample, we eliminated those that did not provide information on dividends, and therefore our base is ultimately composed of 1,898 priced assets.

To estimate our model, we have chosen as a proxy for the market portfolio, the Dow Jones Stoxx Broad Europe 600 downloaded from the Stoxx website. All the excess returns are calculated in excess of the 3-month UK spot interest rate (based on GP repo dates) provided by the Bank of England. The series for inflation, exchange rate and GDP of each country have been downloaded from the Eurostat database. The scaled variables *dividend yield* (*dipre*) and *UK term spread* (*diftip*) are obtained from the series of monthly prices of the Dow Jones Stoxx-600 index with and without dividend adjustments facilitated by Stoxx and the spot 1-year and 4-year zero coupon UK Treasury bond returns from the Bank of England, respectively. Finally, the remaining data to compute the size-BM portfolios are also extracted from the files of ECOWIN and THOMSON ONE BANKER.

[7] Our database does not distinguish between Belgium and Luxembourg as these two stock markets are considered one. In June 2008 the Vienna Stock Exchange accounted for 81% of the Slovenian stock market, therefore it was considered desirable to use the Austrian stock exchange for both countries.

[8] Germany, Austria, Belgium, Cyprus, Slovakia, Slovenia, Spain, Finland, France, Greece, Ireland, Italy, Malta, Luxembourg, the Netherlands and Portugal.

3.2. Portfolio construction

We consider three asset sets of international portfolios grouped by country, sector and size-BM, which are constructed as follows: The *country set* consists of 12 portfolios equally weighted, obtained by grouping 1,898 assets for each country. Recall that the main objective of this paper is to analyze to what extent the factors proposed (European market, inflation and currency risks) are able to explain the differences between the returns of the assets of each country and the rest of the countries under study.

With this in mind, a study that only considers portfolios composed of a set of countries[9] is insufficient to explain the differences between the returns in cross section. In the literature review, it can be seen in many papers that risk premiums are not the same depending on the sector[10] studied, and are not equal in size depending on the companies and their *book-to-market ratio*[11]. These arguments justify the portfolios of countries but do not provide sufficient results to quantify the economic significance of the factors that we analyze. Therefore, we consider two groups that should allow us to deepen this study: groupings by sector and *size-book-to-market ratio* (size-BM).

The *sector set* consists of ten equally weighted industry portfolios obtained by grouping the assets of ten RBSS Economic Sector codes according to data provided by Reuters. The *size-BM set*, nine equally weighted portfolios is obtained by sorting in ascending order the average capitalization and *book-to-market ratio* from 31 December 1994 to 2009 into three classes: low (L), medium (M) and high (H).

The results in Table 1 (Panel A), as shown in the financial literature, reject the J-B test of normality for the three sets (except for Belgium, Slovakia and Greece in the portfolios by country, Energy and Telecommunications for the portfolios by sector, and LM for the size-BM portfolios). Through the Q statistical Lung-Box, we appreciate the limited use of dynamic structures as well as means which justifies variances has not been chosen *GARCH* methodology to estimate the returns of portfolios. Finally the average excess returns test are significant (5%) and positive for some portfolios (France, Ireland and the United Kingdom for the country portfolios; Cyclical, Energy, Financial, Non Cyclical, Health and Utilities for portfolios by sector; and ML, HL and HM for size-BM portfolios).

[9] See, e.g. Carrieri (2001), De Santis, Gerard and Hillion (2003) and Hardouvelis, Malliaropulos and Priestley (2006).

[10] See, e.g., Jorion (1991), Moskowiz and Grinblatt (1999) and Dahlquist and Sällström (2002).

[11] See, e.g., Conrad, Gultekin and Kaul (1991) and Fama and French (1998).

3.3. Risk factors construction

We then calculate the risk factors that constitute the *ADV(n)* model (see Eq. (3)): market factor (λ^{UE}), domestic factor (λ^{N}), inflation the United Kingdom factor (λ^{UK}), inflation excluding the United Kingdom factor ($\lambda^{n\text{-}UK}$), common exchange rate (λ^{C}) and residual factors (λ^{E}).

The *risk factor associated with the European market* (λ^{UE}) in the international model is obtained by subtracting the total monthly returns of the market portfolio (Dow Jones Stoxx-600 denominated in pounds sterling) from the international risk-free assets (3-month UK spot interest rate).

The *domestic risk factor* (λ^{N}) is obtained from the portfolio equally weighted innovations $\left(\lambda^{d} \equiv \sum e_k^{d-w} / (K+1)\right)$ of the regressions $\lambda_k = \alpha_k^{d\text{-}w} + \beta_k^{d\text{-}w} r_w + e_k^{d-w},\ k = 1,..., K+1$ with r_k and r_w excess returns of the market portfolio of country *k* (the corresponding portfolio of the country set denominated in pounds sterling) and the international market portfolio (Dow Jones Stoxx-600 denominated in pounds sterling) from the free asset UK (risk 3-month UK spot interest rate), respectively.

The risk factors associated with inflation and exchange rate are obtained by adapting the market proposal of Vassalou (2000) consisting of the countries of the EU plus UK. The *risk factor associated with United Kingdom inflation* (λ^{UK}) is measured by the series of innovations (residuals) of the monthly UK inflation as adjusted by an *ARIMA (0,1,1)* to avoid problems with efficiency in the estimates that would occur in the case of directly using the non-stationarity of the series. The *risk factor associated with inflation excluding the United Kingdom* ($\lambda^{n\text{-}UK}$) through the residues are obtained after calculating the portfolio weighted[12] by GDP (in pounds) of residues from the series of innovations in inflation from other countries on the inflation risk factor in the UK.

Moreover, to obtain the *factors associated with common exchange rate* (λ^{C}) and *residual* (λ^{E}) for the period before EMU, we estimate the following regressions for *k = 1, ..., 16*: $\lambda_k^f = \delta_{0k} + \sum_{j \neq k} \delta_{jl} \lambda_j^f + e_k$ where: λ_k^f is the logarithmic variation of the currency of country

[12] The correct interpretation of the AD model requires that the inflation factor is weighted by a measure that represents the wealth of each country. GDP is an indicator of the wealth. (see footnote 6 of article Vassalou, 2000).

k against the pound expressed in pounds. We define for each country *k* the common component $\nu_k = r_k^f - \delta_{0k} - e_k$, and the deviation of common component $n_k = \nu_k - \bar{\nu}$. We estimate the factors that represent the risk associated with *common component currency* (λ^C) and the *residual component* (λ^E) from the following expressions[13]: $\lambda^\theta = 1/11 \sum_{k=1}^{11} n_k$ y $\lambda^e = 1/11 \sum_{k=1}^{11} e_k$. For the period after the EU $\lambda^\theta = \lambda_{euro}^f$ and considering $\lambda^e = 0$, where λ_{euro}^f is the logarithmic variation of the euro exchange rate against the pound sterling expressed.

In Panel B of Table 1 it shows that we can reject the J-B normality test (5%) for all factors except the common exchange rate. The average excess returns is only significant (10%) and positive for the market and inflation excluding the United Kingdom risks. The results obtained for the scaled variables confirm the previously reviewed literature, indicating that there is high persistence in serial autocorrelation for these variables, and that is also true for our study. In particular, our parameters (*dipre* and *diftip*) comply with this condition and we further observe that the level of autocorrelation is more pronounced for *dividend-yield ratio*.

4. Empirical results

In this section we present the empirical results related to the study of the effects on the European Union plus the United Kingdom, produced by the exchange rate and inflation risks on European stock returns. Our study period covers the whole process from the adoption of the euro to the effects of the financial crisis and the measures taken in Europe to alleviate this crisis.

The study is separated into two blocks: The first estimates the *ADV*[14] model (see the conditional version of Eq. (3) in Appendix 1) to quantify the relevance of risk factors linked to the European market and the risks for inflation and exchange rate. The second block estimates the *ADV(n)* model (see Eq. (4)), and complements the previous model by adding the effect of the domestic risk in order to analyze the level of integration of the European market plus the United Kingdom. While the impacts of economic premiums are analyzed in both blocks, the second block indicates the direct consequences on the assessment, by using an exclusively international model that ignores the domestic risk factor.

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[13] Note that, $E(n_k) = 0$ and $Cov(n_k, e_k) = 0, \forall k$ and therefore, the two risk factors are mutually orthogonal.

[14] Although Eq. (3) corresponds to the theoretical model, its econometric approach is equivalent to Eq. (4) but without considering the domestic risk.

4.1. Effects of market, inflation and exchange rate risks

The results of Table 2 (Panel B) are consistent with the conditional approximation that is assumed in this paper. We reject (1%) the joint hypothesis that the scaled variables are zero for each of the three periods considered and thus the relevance of estimating and comparing our returns with conditional[15] and non-static models is more than justified. If we deepen our analysis, we can also reject (1%) the joint hypothesis that all risks are equal to each other and equal to zero at the crossover effect and also with the scaled variables. The joint tests for exchange rate and inflation risks, determines their importance in the process of assessing our actions, and they are simultaneously rejected for significance at 1%. But this contrast is insufficient to thoroughly examine each of its components. Therefore, we separate this effect into two tests. The test for inflation risks in the UK, and excluding the UK, rejects (1%) the null hypothesis. Similarly, we also reject (1%) that common exchange rates and residual risks are equal to each other and equal to zero. These results are generalized for the three sets of portfolios. Thus the explanatory power of the risks for inflation and exchange rate is proved and, therefore, we confirm their relevance in the process of assessing the performance of European financial assets.

In Panel A of Table 2, we find individual tests for risk factors of our model and show, for each country set, that the risks associated with the European market, the risks for inflation excluding the United Kingdom, and the common and residual exchange rate risks are significant (5%) for the pre-euro period (and also with the cross-effects with the scaled variables). For the period post-euro/pre-crisis, the number of significant parameters are reduced mainly due to the marginal effects (cross-effects) of this deteriorating situation when we reduce the significance of the post-crisis/EERP period (from 10%) risk inflation excluding the United Kingdom. Consequently, the risk associated with inflation in the countries under study (except the UK) reduces its explanatory power and thus its relevance.

For the other two sets, sector and size-BM, the results are similar. The most notable difference is associated, firstly, with portfolios by sector where the common currency risks are no longer significant after the adoption of the euro and beyond. Secondly, for the size-BM portfolios, the risks associated with inflation excluding the UK and common currency, are no longer significant in the three periods considered.

If we analyze these first results, we find some very revealing nuances. As for the inflation risk, it can be said that European investors are rewarded for the risk exposure of the UK and also the rest of the countries comprising the sample (this effect is smaller in size-BM

[15] Note that we are analyzing a process of change and that the use of conditional models makes sense at the time that the stated variables are significantly nonzero.

portfolios). This has been overlooked by previous studies and its relevance to portfolio assessment is beyond doubt. With regard to currency risk in the pre-euro period, its common or residual components are significant, which therefore indicates that European investors were rewarded when their currency was exposed to the currency of the United Kingdom, and also for their exposure to other currency risks between the countries of the European Union. Brooks, Zhang and Bheenick (2007) argue that a local investor who consumes local currency, is clearly more interested in returns in local currency to an international investor who consumes in your home currency and would be interested in international comparison yields a common currency.

In summary, we obtain results consistent with the evidence presented by Carrieri (2001) and inconsistent with that presented by De Santis, Gerard and Hillion (2003) where premiums obtained for the currency risk are insignificant, comparable to the pre-euro period. Based on the results provided, we conclude by expressing the importance of inflation and currency risks in explaining the returns of financial assets for the European market plus the United Kingdom. Having identified the relevancy of the risks, the next step would be economically quantify it through the impact it has, ignoring inflation and exchange rate risks, which we proceed to do in the next section.

4.2. Economic relevance of the European market, inflation and exchange rate risks

As we have seen in the previous section, the significance of inflation and exchange rate risks indicate their active participation in the formation of asset prices. This leads us to think that omitting the asset pricing models would have severe implications and, therefore, would indicate that financial assets would not be properly assessed. Previous studies (see, in particular, De Santis, Gerard and Hillion, 2003) quantify the economic magnitude of economic premiums and consequently their impact on an exclusively international assessment of portfolios. This economic impact depends on the sensitivity of each portfolio to the various sources of risk.

We propose in this section to quantify the effects that an asset pricing model would have if it consisted exclusively of the international market risk and did not consider the factors for inflation and exchange rate through the impact of these economic premiums (see econometric procedure in section 2.3). We analyzed the results presented in Table 3 for the portfolios by country, sector and size-BM, and overall period and periods examined. In general terms, the relevance of the risk factors taken together differs by total economic premiums (*TEP*), but we must go much deeper in this analysis to make a diagnosis that contains more detailed information. First, we analyze the economic premium for the risk of the European market (*MEP*) and observe, by country set (see Panel A), that the majority

are significant (5%) in the overall period and periods, except for portfolios for Cyprus, Slovakia, Greece and Malta, which are not significant in either case. The same applies by sector set (see Panel B) except for the portfolios: Energy, Industry, Non-Cyclical, Healthcare, Telecommunications and Utilities. Finally, by size-BM set (see Panel C) all portfolios are significant (5%) for almost all periods studied.

The results associated with the risks for inflation and exchange rate are quite small since significant economic premiums were few prior to the adoption of the euro (pre-euro). Since the adoption of the single currency (post-euro/pre-crisis), a greater number of significant economic premiums have been recorded, and these have increased much more since the financial crisis (post-crisis/EERP). We separate these effects and start with the inflation risk. Indeed, for the portfolio by country, the economic impacts of inflation (*IEP*) were non-existent until the financial crisis arrived, with the countries most exposed to this risk being: Cyprus, Finland, France, Ireland and the UK, with positive (underestimated) signs. For the sector set, the results are similar, but more significant (10%) economic premiums are anticipated and begin to be recorded after the adoption of the euro for sectors: Basic, Cyclical, Financial, Industrial, Non-Cyclical, Health, Technology and Utilities; with the peculiarity that for the period post-crisis/EERP these sectors remain significant but moving to a higher level of significance (5%), and in both cases show the danger of underestimating (given the positive sign) in the returns of their portfolios. The size-BM portfolios show quite distinct behavior. The economic impacts are nonexistent for the overall period and the pre-euro period. For post-euro/pre-crisis period, MH and HH portfolios are significant (10%) and positive (underestimated), while for post-crisis/EERP period, these same portfolios raise their level of significance (5%) and reverse their sign that from now on is overestimated. These results reveal that the reaction of the portfolio against the risks for inflation are quite different and more pronounced in the case of size-BM portfolios, as they show greater sensitivity to the financial crisis over the country and sector portfolios.

The contribution of currency risk (*CEP*) is more prominent on the risk for inflation. By country set, Belgium, Spain and Portugal are economically significant (5%) and positive (underestimated) for the overall and pre-euro period. After the adoption of the euro (post-euro/pre-crisis) no significant portfolios are registered, and after the financial crisis (post-crisis/EERP) the number of significant portfolios (5%) and mostly positive (underestimated) rises to five, with France and Greece joining the above countries. The behavior of portfolios by size-BM is similar to the country portfolios. No significant economic premiums are recorded in any period up to the post-euro/pre-crisis period, MH and HH portfolios are significant (10%) and positive (underestimated). Since the financial

crisis (post-crisis/EERP) these same portfolios are much more significant (5%) and the sign changes, becoming negative (overestimated). The sector set is what makes the difference because in the overall and pre-euro period, there is practically no significant premium (only Industrial Portfolio at 5%). In the portfolios for post-euro/pre-crisis period: Basic, Financial, Non-Cyclical, Health and Technology is significant (5%) and negative (overestimated). The post-crisis/EERP period causes an increase in the number of portfolios with significant economic premiums. Specifically, in addition to the above, the Industrial and Utilities portfolios become overestimated.

Note that these results contrast with those obtained by Carrieri (2001) and De Santis, Gerard and Hillion (2003), about the significance of economic premiums to the currency on assets by country set. We obtain economically significant and negative evidence for the currency (common) for most of the portfolios by sector for the post-euro period, which is comparable to the economic and negative currency non-EMU provided by De Santis, Gerard and Hillion (2003) for the 1974-1997 period.

In summary, the arrival of the financial crisis has increased the exposure to risk by the investor against a set of risk factors analyzed. Moreover, it should be noted that measures taken in Europe to deal with this financial crisis were not sufficient to soften the economic impact (of over/underestimation) of inflation and currency risks, at least until 2010 (which is where the sample ends).

4.3. Domestic risk and economic impact in asset pricing

The joint contrast of Wald in Table 4 (Panel B) for the *ADV(n)* model (see Eq. (4)) allows us to reject the hypothesis that domestic risks are equal and equal to zero[16] for country, sector and size-BM set, and for the overall period and periods. Moreover, the results provided by the *ADV(n)* model for the overall period indicates that domestic individual risk factors (see Panel A) are also significant (1%) by sector and size-BM portfolios and only 5% for portfolios by country. These overall results warn that the process of market integration is not yet complete. We need to analyze for sub-periods to further analyze the extent to which events studied have contributed to a greater or lesser extent in this process. The behavior for the three portfolios in the periods is quite homogeneous. Until the adoption of the single currency (pre-euro) domestic premiums are significant (1%). Once the euro is in circulation and beyond (post-euro/pre-crisis), domestic risks are no longer significant (except for the portfolio by sector, but for 10% significance). After the arrival of the financial crisis (post-crisis/EERP) economic premiums are significant (1%) and have an absolute value much higher compared to the pre-euro period. Consequently,

[16] The degree of integration is determined by the importance of risk factors at the European level in relation to the risk factors specific to each country (Baele and Vander 2001).

this initial analysis reveals two issues: first, that the adoption of the euro has allowed the European market to move forward in its integration process; and second, that the process stopped once the magnitude of the financial crisis in the capital market was known, causing a setback in the process of integration in the European market.

By introducing the risk factor associated with the domestic risk to the *ADV* model (*ADV(n)*), the explanatory power of inflation and exchange rate risks have undergone substantial changes. The results presented in Panel A of Table 4 indicate that the risks of inflation have been significantly reduced (in number and level of significance) for the three categories of portfolios. Portfolios that demonstrate increased sensitivity are the portfolios by country and size-BM, where the UK inflation risks and excluding the UK risks are practically no longer significant in all sub-periods, except for the period post-crisis/EERP where reported results are similar to the *ADV* model (review results in Panel A of Table 2). Thus, both before and after entering the domestic risk assessment, the financial crisis has caused the explanatory power of inflation to remain relevant. The behavior of the portfolio by sector shows little chance domestic risk to enter. So, basically maintaining the same significant factors, the *ADV* and *ADV(n)* models provide similar results. Again, we provide evidence for the hypothesis (see De Santis, Gerard and Hillion, 2003) which states that depending on how assets are grouped into portfolios, the sensitivity to sources of risk will be different.

In addition, specification tests (see Table 4: Panel B) can verify again that the explanatory power of inflation and the exchange rate jointly, are zero (all tests are rejected for a 1% significance), although in some cases, in individual terms, their explanatory power is low as just noted in the statistical results presented.

We discuss the effects of the exchange rate in both its common and residual component. We review the data in Table 4: Panel A and note that the impacts on the assessment using the *ADV(n)* model are quite similar to those analyzed with the *ADV* model, and since the response from the portfolios is the same, we will generalize the results for the three categories. Indeed, the risk associated with the common exchange rate maintains its significant values in all periods. The only change is observed for the portfolios of the country where the common exchange rate post-euro/pre-crisis period shows a significant reduction of significance (passing from 1% to 10%). As for the residual component of currency, the only difference is again associated with the country set, which is significant for the pre-euro period. In this case, the risks associated with the exchange rate are studied jointly with the domestic risk (*ADV(n)* model), showing a similar pattern to the model that does not include it (*ADV* model). The only difference is due to the country set reducing the number of significant premiums.

In summary, a consideration of the domestic risk factor in European financial asset pricing alters the behavior of the risks associated with inflation (reducing its explanatory power) and leaves the risks associated with currency practically unchanged.

Until now, and through the estimation and testing of the *ADV(n)* model, we have shown that the domestic risk factor (on individuals) is relevant in the assessment process of our European assets. Then, we analyze the economic impacts measured by the economic premiums for domestic risk and are thus able to quantify its impact on the assessment of portfolios. That is, any effects of over/underestimation that would be recorded in the expected returns of our portfolios should ignore this source of risk.

The results in Panel A of Table 5 indicate that, for the country set, the economic premiums for domestic risk in the overall period and pre-euro are significant at 1% and negative (overestimated) for some portfolios: Germany, Finland, France, Netherlands and United Kingdom; for the period post-euro/pre-crisis there is only one economic premium significant at 5% and negative (overrated): Belgium; and for the period post-crisis/EERP there are portfolios significant at 5% and negative (overestimated): Germany, Finland, France, Netherlands and United Kingdom. Therefore, after the adoption of the euro, the number of significant portfolios is greatly reduced. Indeed, we had five portfolios with significant domestic economic premiums (overall and pre-euro periods) and now only one (post-euro/pre-crisis period), which is indicative that the market is being integrated. This had been confirmed by the results obtained of the *ADV(n)* model where the domestic premium is no longer significant, in individual terms, in the period post-euro/pre-crisis. When the financial crisis is known, the risk of overvaluation in all portfolios increases and thus a decline in the level of market integration manifested.

For the sector set (see Panel B of Table 5) the pattern is similar for the overall period, pre-euro and post-crisis/EERP periods. We observed significant economic premiums at 5% and negative (overestimated) for portfolios: Basic, Cyclical, Financial and Utilities. For the period post-euro/pre-crisis economic premiums is significant at 5% for portfolios: Finance and Health; and at 10% for portfolios: Cyclic and Technology, all with negative values (overestimated). The behavior of domestic economic premiums for this set has been quite similar for all sub-periods studied and therefore shows more moderate behavior. Practically all reports for periods overestimated portfolios, but not always the same and not always maintaining the same level of significance. Therefore, the sector category has remained sensitive to the effect of the adoption of the euro and the alarming financial crisis, as has the country set.

Finally, size-BM set (see Panel C: Table 5) registers economic domestic as follows: Both for the overall period as well as the pre-euro period, we observed significant (1%) economic premiums and negative (overestimated) for portfolios: MH, HL and HM; for the post-euro/pre-crisis period there are significant premiums at 5% and negative (overestimated) for portfolios: LH, ML, MM, MH, and 10% and negative (overestimated) for portfolios LM, HL, HM and HH; for the post-crisis/EERP period there is significant premium at 5% and negative (overestimated) for portfolios: LH, ML, MH, HL and HM. Unlike the two previous sets, the size-BM category shows the most significant domestic economic premium in the post-euro/pre-crisis period. Interestingly the number of portfolios is reduced significantly after the financial crisis and expressly coincides with larger portfolios.

Our results are quite similar to those obtained by Font and Grau (2010) regarding the significance of domestic economic premiums and the impact of over/underestimation (1993-2004).

4.4. Degree of integration of European capital market. Effects of adopting the euro, the financial crisis and the Economic Recovery Plan in Europe

The results of the research papers published in recent years have shown that the efforts of the EU countries were moving together towards European integration. The integration of European capital markets meant that the various capital markets moved frequently in the same direction, thus implying that the benefit from international diversification was gradually being reduced. And so, countries increasingly raised their level of financial integration, which became more visible after the adoption of the euro (see, e.g., Beine, Cosma and Vermeulen, 2009; Morelli, 2010). The increase recorded in both the stock market integration regionally and globally was driven primarily by macroeconomic convergence associated with the introduction of EMU and, secondly, by the levels of financial development achieved (Baele and Sell, 2001[17]).

To examine the influence of the EMU in the dynamic process of integration of the stock market becomes a common denominator in this extensive collection of papers. In many of them, it is confirmed that the change of policy on European integration of the stock market has favored this integration process (Kim, Moshirian and Wu, 2005). EMU thus becomes an essential engine for achieving full financial integration.

Many of the results provided by the financial literature are confirmed in our empirical study. Indeed, our findings indicate that for post-euro/pre-crisis period both the exchange

[17] The main factor of increased European integration of the stock exchange market is to reduce the volatility of the currency. In addition, monetary integration seems to be particularly important for countries facing a particularly strong convergence in inflation rates.

rate risk as well as the risk associated with inflation, countries reduce their explanatory power and therefore their relevance in the pricing process in European assets (see Tables 2 and 4: Panel A), agreeing[18] with Carrieri (2001); De Santis, Gerard and Hillion (2003); Hardouvelis, Malliaropulos and Priestley (2006); Hardouvelis *et al*. (1999); Fratzscher (2002); Beltratti Morana (2002); Baele (2005), but when trying to explain why European stock markets have changed with the introduction of the euro, their results are contradictory, especially as regards the reduction in currency risk. In parallel, our results on the impacts of economic premiums for inflation and exchange rates reveal that the consequences of over/underestimation are considerably reduced (see results in Tables 3 and 5 and sections 4.2 and 4.3).

The main objective of our study was to measure the degree of European integration, and recent results do not offer a clear view of the level of integration achieved until 2010. Consequently, and according to the results of Table 4: Panel A, we see that the domestic risk also remains significant prior to the adoption of the euro. For the post-euro/pre-crisis period, the domestic premium is no longer significant (for all our sets of portfolios) and therefore this would be the first indication that the European market is being integrated, in agreement with much of the opinions expressed in the financial literature.

On the other hand, consideration of this domestic risk factor in the assessment of financial assets in Europe alters the behavior of the risks associated with inflation (reducing its explanatory power) and leaves the risks associated with currency practically unchanged. Instead, the pattern of behavior of the domestic economic premium is relatively stable after adoption of the euro (Table 5: Panels A, B and C), indicating that the component associated with country risk is relevant (agreeing with Chambet and Gibson 2003[19]). Although diversification benefits have decreased[20], the process of financial integration remains incomplete among Member States and can only speak of a partial integration (see, among others, Chambet and Gibson, 2003; Kim, Moshirian and Wu, 2005; Beine, Cosma and Vermeulen, 2009).

While the level of integration achieved until the end of the post-euro/pre-crisis period was clearly rising, the public bankruptcy of Lehman Brothers caused a quite considerable turn. Indeed, the crisis in the U.S. moved to the EU and caused the domestic risk premium for

[18] Remember that these papers end their analysis with the adoption of the euro.

[19] Ensuring that national market risk remains significant after the introduction of the euro and the country risk is not an insignificant component of the expected return required to invest in the EMU.

[20] Vo and Daly (2005) examine whether the convergence in the EMU is caused by the increase in correlations due to the EMU in the stock market, subsequently leading to a reduction in benefits for investors in these markets. They focus their study on whether foreign investors (U.S.) may benefit from investing in European equity markets considering the events caused by the EMU.

the post-crisis/EERP period to become significant again (see Table 4: Panel A). In turn, the magnitude of the impact of the domestic economic premium also grew by increasing the number of significant portfolios (for all three sets) and therefore the danger of overestimation rose (see Table 5: Panels A, B and C).

This evidence leading to the arrival of the financial crisis has increased the exposure to risk by the investor against a set of analyzed risk factors. These results confirmed the decline in the European integration process and therefore, as indicated by Anaraki (2010), we cannot ignore the direct influence of the U.S. on the long-term evolution of the European market. They note that the contagion from the U.S. to the EU neutralized the EU's financial stability, and therefore its financial stability is highly dependent on U.S. business cycles. Pisani and Sapir (2010) are more categorical in their conclusions and indicate that, for over a decade, many officials had warned that, contrary to many forecasts, the EU was not prepared for a possible financial storm because the integration of its market was still far from complete. Claessens, Dell'Ariccia, Igan and Laeven (2010) argue that factors such as increased financial integration and dependence on financing, explain the amplification and propagation of the global financial crisis.

Specifically, Didier, Love and Martinez (2012), in their analysis, distinguish the periods before and after the collapse of Lehman Brothers. Their results reveal the dark side of financial integration as countries that were more integrated and had more liquid markets experienced parallel developments with the U.S.[21]. Consequently, this indicates the need for countries to know how to contain their banking sector and understand the vulnerabilities of companies, in order to limit the transmission of this financial crisis.

After Lehman Brothers collapsed, the magnitude and the deterioration of the financial situation increased, thus precipitating the search for cooperative solutions by international authorities for economic, financial and monetary policies around the world. The European Union and individual governments of Member States, established agreements to address the crisis during this period of extreme uncertainty produced after the bankruptcy of Lehman Brothers. During those months, the priority of international economic policy was to stabilize financial markets and stop the deterioration of economic activity and job destruction. Europe has developing the Economic Recovery Plan (EERP) to cope with the devastating consequences of this recent crisis.

[21] Ehrmann, Frazscher and Mehl (2009) note that portfolios with a high degree of integration with the U.S. market before the crisis were more strongly affected compared to non-integrated ones. By contrast, the risks at the micro level, where the most exposed financial firms are most affected, do not seem to have played an important role in the global transmission of the crisis. The results suggest that country risk is a second key factor that explains the global transmission of the crisis.

In our paper, the last period, post-crisis/EERP, quantifies two elements that are analyzed jointly, the financial crisis and the Economic Recovery Plan for Europe. As we have seen, there has been a decline in the level of integration and therefore it is clear that the measures taken in the recovery plan are not entirely sufficient and/or effective, at least not until December 2010, which is where our sample ends. It is expected that measures will not be successful in the short term and, therefore, potential remedial effects may appear in successive years.

5. Conclusions

In this study, our objective is to measure the degree of financial integration achieved within the EU for the period from January 1995 to December 2010. This period has recorded significant events such as the adoption of the single currency, the financial crisis (whose epicenter lay in the U.S. and then quickly infected economies around the world), and the measures taken in Europe to alleviate this crisis (Economic European Recovery Plan). The 16 countries involved in the study are those which formed the euro zone, plus the United Kingdom, in December 2010 (Austria, Belgium, Cyprus, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, Netherlands, Portugal, Slovakia, Slovenia and Spain).

In this context, we intend to see to what extent international investors are compensated for their exposure to risks associated with inflation, exchange rate and domestic risk, specifically, and, therefore, to verify to what degree EU financial integration was achieved. To quantify the economic impact of these risks in international pricing models, we analyze the economic premiums and then check to what extent the returns of European financial assets are not properly estimated (over/underestimated). Our findings can be summarized as follows:

- Inflation and currency risks are jointly significant and therefore investors are being compensated for their exposure to them. This is true both for the United Kingdom as well as excluding the United Kingdom, as well as for common and residual components of the exchange rate. Consequently, these risks cannot be omitted from the asset pricing models and our results summarize their explanatory power in the returns of financial assets in Europe.
- The impact of economic premiums associated with the inflation risk (excluding UK and the UK) are as follows: there are few significant economic premiums until the post-crisis/EERP beginning of the period, when the number of significant economic premiums increases in number, indicating the danger of overestimation (for portfolios by country: Cyprus, Finland, France, Ireland and the UK). However, for the

post-crisis/EERP post-euro/pre-crisis periods, all portfolios by sector are underestimated except Energy and Telecommunications. For the size-BM set there are no significant values.

- Regarding the impact of economic premiums associated with currency risks (common and residual) we conclude that significant economic premiums, in number, are similar to the inflation risk, although their behavior is quite different. For portfolios by country, and only for the overall period and pre-euro period, we find some underestimated portfolios (Belgium, Spain and Portugal). For portfolios by sector, from the post-euro/pre-crisis period, economic premiums (overestimated) increased significantly compared to the previous period (Basic, Financial, Non-Cyclical, Health and Technology). Since the crisis (post-crisis/EERP) the increase is more significant for higher portfolios, with Industrial and Utilities being further overestimated portfolios. Finally, for the size-BM set, practically no significant economic premiums are recorded, except for the post-crisis/EERP period, although the presence of these premiums (overestimated) is not very large (MH and HH).
- Investors are compensated for both the inflation exposure of individual countries and for the currency. We provide evidence not only of the contribution of these risks to the process of asset pricing but also their direct impact on measuring the returns of European financial assets. Most of the portfolios would be over/underestimated if the assessment model chosen only considered the international market risk (*ICAPM*).
- With the arrival of the financial crisis (post-crisis/EERP period), exposure to inflation and currency risk by investors increased considerably. While economic premiums were generally reduced in the post-euro/pre-crisis period, once the financial crisis was made public, the markets reacted and the dangers of over/underestimation increased considerably. Therefore, the measures taken by Europe through their recovery plans have not been fully effective and it is expected that the positive results will only be obtained in the longer term.
- The domestic risk is significant for the overall period and periods, except for the post-euro/pre-crisis period. International investors are exposed to this risk and therefore receive compensation. We confirm the relevance of significant economic premiums for domestic factors in the assessment of our European assets and that it should be omitted in our models to estimate the large numbers of portfolios would be overestimated.
- The market consisting of the eurozone countries plus the UK had achieved a significant level of integration with the adoption of the euro. This process shows a significant

decline after contagion from the U.S. financial crisis arrived in the European market. The domestic premium has become more significant and the danger that our portfolios are largely over/underestimated has grown sharply.

In summary, all measures taken within Europe were designed so that the eurozone countries were moving together towards European integration through the creation of the single financial market. One of the most visible results to be reached was the adoption of the euro and, with its arrival, the benefits associated with international diversification gradually started to fade and the first levels of financial integration began to be seen. In September 2008 the bankruptcy of Lehman Brothers gave way to the U.S. financial crisis which soon moved to the capital markets of all countries, and particularly to Europe. Europe began to appreciate that the level of integration achieved since the arrival of the euro was experiencing a significant decline, and thus measures for economic recovery have been taken since December 2010, which thus far have not been successful. As a result of these developments, the risks associated with inflation, exchange rate and domestic market, though they were relevant in the assessment process of European financial assets when Europe was being integrated with the financial crisis in a greater degree. Future studies could continue this line of study and might consider a sample that extended to the present in order to observe whether these measures taken by Europe have been successful and, on the other hand, if the recovery in the first quarter of 2012 by the Lehman group has had a positive effect on the process of European integration.

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Panel A. Descriptive statistics for portfolios

Country set	Mean	SD	J-B	Q(6)	$Q^2(6)$	H_0: ER=0
Germany	0.01809	0.07645	214.541**	9.002	1.093	0.983
Austria	0.00038	0.04971	71.874**	9.751	5.021	-0.098
Belgium	0.00854	0.03946	41.783**	3.057	1.924	1.621
Cyprus	0.00108	0.09574	1.085	6.174	2.014	1.792
Slovakia	0.00354	0.07644	2.986	9.661	3.611	0.645
Spain	0.00986	0.06179	35.028**	8.687	1.108	0.933
Finland	0.01192	0.06094	109.099**	6.032	2.915	1.138
France	0.02078	0.06431	17643.662**	5.612	0.573	3.003*
Greece	0.00196	0.08753	0.5908	9.305	2.113	-0.105
Ireland	0.02103	0.04831	98.087**	19.571**	6.129	2.046*
Italy	0.01307	0.06086	709.045**	7.112	2.163	1.901
Malta	0.00065	0.08247	32.817**	8.113	7.356	1.613
Netherlands	0.00593	0.05301	76.804**	8.835	8.015	1.001
Portugal	0.00974	0.07242	976.507**	7.077	2.073	1.275
United Kingdom	0.02671	0.05307	315.903**	6.614	4.982	4.063**

Sector set	Mean	SD	J-B	Q(6)	$Q^2(6)$	H_0: ER=0
Basic	0.00951	0.03867	49.087**	5.612	2.976	0.861
Cyclical	0.01973	0.04189	9.874*	3.791	4.029	4.512**
Energy	0.02754	0.09874	0.056	0.998	0.541	1.969*
Financial	0.01076	0.05178	115.803**	5.614	3.099	3.174**
Industrial	0.02031	0.05177	3771.077**	1.975	0.974	1.178
Non-Cyclical	0.01495	0.06763	4767.552**	6.731	1.006	2.934**
Health	0.01249	0.06172	379.175**	8.962	1.672	4.006**
Technology	0.00867	0.10874	54.874**	5.902	13.096**	0.641
Telecommunications	0.06734	0.32771	8.145E-03	1.734	0.006	1.572
Utilities	0.00862	0.03876	59.757**	21.083**	12.006*	2.192*

Tam-BM set	Mean	SD	J-B	Q(6)	$Q^2(6)$	H_0: ER=0
LL	0.02608	0.13487	2574.023**	34.057**	6.011	1.633
LM	0.01137	0.04974	2.006	7.521	3.088	1.457
LH	0.00596	0.05262	54.871**	2.305	2.698	0.186
ML	0.01933	0.07125	9.874**	31.941**	49.108**	6.102**
MM	0.01261	0.04397	29.141**	12.671*	6.015	1.614
MH	0.00894	0.05389	1015.368**	3.754	0.963	0.766
HL	0.02999	0.08178	3701.011**	41.974**	7.237	5.109**
HM	0.02697	0.06894	976.107**	19.973**	8.074	2.861**
HH	0.01085	0.06797	62.782**	0.863	6.962	1.957^

Panel B. Descriptive statistics for risk factors and scaled variables

Risk factors	Mean	SD	J-B	Q(6)	$Q^2(6)$	H_0: ER=0
Market (UE)	0.00328	0.05271	31.874**	0.745	11.614	28.612^
Domestic	-0.00028	0.03184	721.021**	-1.761	69.387**	12.961
UK inflation	-0.00030	0.99923	41781.099**	-0.0964	13.863	1.874
Inflation exclud UK	0.00004	0.41089	21.605**	4.55E-08	59.125**	31.641^
Common currency	1.04E-04	0.01752	0.009	0.091	11.048	19.325
Residual currency	1.62E-09	0.00109	31.574**	11.057	12.001	7.975

Scaled variables	Mean	SD	J-B	Q(6)	$Q^2(6)$
dipre	0.190482	0.09057	11.047**	30.091**	1742.705*
diftip	0.00029	0.00064	0.634	13.047*	814.021**

The Table presented in panels A and B the following descriptive statistics: the average of returns (Mean), standard deviation (SD) and Jarque-Bera's test (H_0: normality). Q-test of Ljung-Box for 6 lags to study the dynamics of the mean (Q(6)) and to study the dynamics of variances ($Q^2(6)$). Finally, for all cases, it makes the test of zero mean for excess returns. (H_0: ER=0).

Significant at the: 10% (^), 5% (*) and 1% (**).

Table 1. Descriptive statistics for portfolios, risk premiums and scaled variables

Panel A. Risk premiums estimate for the ADV model

	Country portfolios			Sector portfolios			Size-BM portfolios		
	pre-euro	post- / pre-crisis	post- / EERP	pre-euro	post- / pre-crisis	post- / EERP	pre-euro	post / pre-crisis	post- / EERP
γ_0	0.00845**	0.00106	0.00471	0.00676**	0.00841**	0.00084*	0.04186**	0.00541*	0.0091**
γ^{EU}	0.00087**	0.00761**	0.00512*	0.00009	0.02781**	0.0012**	-0.001087	-0.00414	-0.00047*
γ^{UK}	-0.0009**	0.21748**	0.08741**	0.00020**	-0.67413**	-0.6421**	-0.0007**	-0.5547**	-0.0036**
γ^{n-UK}	-0.0902**	-0.00861*	-0.00082^	0.00048**	-0.2145**	-0.0964**	-0.000415	-0.00974*	-0.00041
γ^{C}	0.00046**	0.00617**	0.01008*	0.0005**	0.000812	0.006037	0.000403	0.00461	0.000871
γ^{E}	3.01E-06*			7.5E-06**			6.1E-06**		
$\gamma^{EU \cdot dipre}$	-8.6E-04**	-0.94741*	-3.1E-03*	-0.0094**	-0.00974**	-2.7E-03*	-0.0009**	8.74E-05	0.000005
$\gamma^{UK \cdot dipre}$	0.00096*	-0.0096**	0.00471*	0.00101**	0.09874**	0.00515*	0.00063**	1.02774**	0.0479**
$\gamma^{n-UK \cdot dipre}$	0.00040**	-0.00513	0.00107	3.01E-05	0.06247**	0.000045	-2.1E-05	0.03147*	0.000001
$\gamma^{C \cdot dipre}$	7.14E-06*	-0.0009**	0.000096	5.6E-06**	-9.1E-04*	0.000006	-6.6E-6**	0.002478	4.77E-06
$\gamma^{E \cdot dipre}$	3.72E-07			1.35E-08			-5.7E-7**		
$\gamma^{EU \cdot diftip}$	-3.4E-07**	-3.02E-08	-2.6E-07	-3.01E-08	-7.7E-07*	-2.4E-07	3.3E-08	5.2E-07**	4.11E-07
$\gamma^{UK \cdot diftip}$	-2.2E-07**	-0.87E-06	-1.98E-07	0.9E-05**	-2.6E-05**	0.0005**	4.7E-06**	-4.02E-06	0.00093*
$\gamma^{n-UK \cdot difti}$	-5.3E-07**	2.6E-08	3.47E-08	-7.1E-07*	-0.9E-05**	-1.7E-05*	-0.97E-6*	6.15E-07	3.66E-07
$\gamma^{C \cdot diftip}$	1.9E-07**	-0.83E-07	3.2E-08	2.9E-07**	-2.1E-06**	3.4E-08**	2.5E-07**	1.84E-08	-1.1E-08
$\gamma^{E \cdot diftip}$	6.13E-08**			0.8E-08**			4.1E-09**		
γ^{dipre}	-0.00039**	-0.0007**	-0.00099*	-0.0007**	-0.00094**	-0.0008**	-0.0004**	-0.00067*	-0.00027*
γ^{diftip}	3.01E-06**	-6.43E-07	0.9E-07**	9.1E-06**	-3.1E-06	0.2E-06**	1.8E-05**	2.04E-06	1.1E-06**

Panel B. Specification tests for ADV model

Panel B.1. Country portflios

Null hypothesis	pre-euro	post euro / pre-crisis	post-crisis / EERP
$\gamma_0 = \gamma^{EU} = \ldots = \gamma^{E} = \gamma^{EU \cdot dipre} = \ldots = \gamma^{E \cdot dipre} = \gamma^{EU \cdot diftip} = \ldots = \gamma^{E \cdot diftip} = \gamma^{dipre} = \gamma^{diftip} = 0$	9784.124**	3714.605**	3.915.145**
$\gamma^{EU} = \gamma^{EU \cdot dipre} = \gamma^{EU \cdot diftip} = 0$	741.562**	108.417**	165.739**
$\gamma^{UK} = \gamma^{UK \cdot dipre} = \gamma^{UK \cdot diftip} = \gamma^{n-UK} = \gamma^{n-UK \cdot dipre} = \gamma^{n-UK \cdot diftip} = 0$	2147.269**	33.874**	37.541**
$\gamma^{C} = \gamma^{C \cdot dipre} = \gamma^{C \cdot diftip} = \gamma^{E} = \gamma^{E \cdot dipre} = \gamma^{E \cdot diftip} = 0$ (pre-euro) / $\gamma^{C} = \gamma^{C \cdot dipre} = \gamma^{C \cdot diftip} = 0$ (post-euro)	3147.087**	41.724**	71.005**
$\gamma^{dipre} = \gamma^{diftip} = 0$	672.541**	517.096**	519.874**

Panel A describes the coefficients of the risk premiums (including cross-effects with the state variables) in the *ADV* model estimation conditionally (by Wald's test) for each of all periods studied. The regression model is:

$$E(r_{jt}) = \gamma_0 + \gamma^{EU}\beta^{EU} + \gamma^{UK}\beta_j^{UK} + \gamma^{n\text{-}UK}\beta_j^{n\text{-}UK} + \gamma^{C}\beta_j^{C} + \gamma^{E}\beta_j^{E} + \gamma^{EU \cdot dipre}\beta_j^{EU \cdot dipre} + \gamma^{UK \cdot dipre}\beta_j^{UK \cdot dipre} + \gamma^{n\text{-}UK \cdot dipre}\beta_j^{n\text{-}UK \cdot dipre} + \gamma^{C \cdot dipre}\beta_j^{C \cdot dipre} + \gamma^{E \cdot dipre}\beta_j^{E \cdot dipre} + \gamma^{EU \cdot diftip}\beta_j^{EU \cdot diftip} + \gamma^{UK \cdot diftip}\beta_j^{UK \cdot diftip} + \gamma^{n\text{-}UK \cdot diftip}\beta_j^{n\text{-}UK \cdot diftip} + \gamma^{C \cdot diftip}\beta_j^{C \cdot diftip} + \gamma^{E \cdot diftip}\beta_j^{E \cdot diftip} + \gamma^{dipre}\beta_j^{dipre} + \gamma^{diftip}\beta_j^{diftip}$$

Panel B provides the results of the Wald joint statistic for multiple tests set for each of the periods considered.

Significant at the: 10% (^), 5% (*) and 1% (**).

Table 2. Estimate and testing the ADV model

Panel B.2. Sector portfolios

Null hypothesis	pre-euro	post euro / pre-crisis	post-crisis / EERP
$\gamma_0 = \gamma^{EU} = \ldots = \gamma^{E} = \gamma^{EU \cdot dipre} = \ldots = \gamma^{E \cdot dipre} = \gamma^{EU \cdot diftip} = \ldots = \gamma^{E \cdot diftip} = \gamma^{dipre} = \gamma^{diftip} = 0$	5471.204**	4315.579**	5154.860**
$\gamma^{EU} = \gamma^{EU \cdot dipre} = \gamma^{EU \cdot diftip} = 0$	201.115**	165.259**	202.974**
$\gamma^{UK} = \gamma^{UK \cdot dipre} = \gamma^{UK \cdot diftip} = \gamma^{n-UK} = \gamma^{n-UK \cdot dipre} = \gamma^{n-UK \cdot diftip} = 0$	946.732**	109.541**	168.914**
$\gamma^{C} = \gamma^{C \cdot dipre} = \gamma^{C \cdot diftip} = \gamma^{E} = \gamma^{E \cdot dipre} = \gamma^{E \cdot diftip} = 0$ (pre-euro) / $\gamma^{C} = \gamma^{C \cdot dipre} = \gamma^{C \cdot diftip} = 0$ (post-euro)	601.821**	63.314**	81.874**
$\gamma^{dipre} = \gamma^{diftip} = 0$	631.594**	28.745**	31.005**

Panel B.3. Size-BM portfolios

Null hypothesis	pre-euro	post euro / pre-crisis	post-crisis / EERP
$\gamma_0 = \gamma^{EU} = \ldots = \gamma^{E} = \gamma^{EU \cdot dipre} = \ldots = \gamma^{E \cdot dipre} = \gamma^{EU \cdot diftip} = \ldots = \gamma^{E \cdot diftip} = \gamma^{dipre} = \gamma^{diftip} = 0$	6651.890**	389.214**	565.241**
$\gamma^{EU} = \gamma^{EU \cdot dipre} = \gamma^{EU \cdot diftip} = 0$	312.784**	74.642**	132.784**
$\gamma^{UK} = \gamma^{UK \cdot dipre} = \gamma^{UK \cdot diftip} = \gamma^{n-UK} = \gamma^{n-UK \cdot dipre} = \gamma^{n-UK \cdot diftip} = 0$	679.305**	32.938**	58.961**
$\gamma^{C} = \gamma^{C \cdot dipre} = \gamma^{C \cdot diftip} = \gamma^{E} = \gamma^{E \cdot dipre} = \gamma^{E \cdot diftip} = 0$ (pre-euro) / $\gamma^{C} = \gamma^{C \cdot dipre} = \gamma^{C \cdot diftip} = 0$ (post-euro)	479.057**	29.756**	41.985**
$\gamma^{dipre} = \gamma^{diftip} = 0$	289.574**	43.605**	88.512**

Table 2. Continued

Panel A. Economic premiums for country portfolios

	MEP	IEP	CEP	TEP	MEP	IEP	CEP	TEP
Panel A.1. overall					*Panel A.2. pre-euro period*			
Germany	-0.03705**	0.000980	0.000071	-0.00875*	-0.06173**	0.003874	-0.001089	-0.0456**
Austria	-0.000498	-0.000293	-0.000898	0.003941	-0.002408	-0.000508	-0.002161	0.006003
Belgium	0.068784	0.000402	0.000712*	0.097642	0.217417	0.000054	0.000702*	0.187451
Cyprus	0.010578	0.000045	0.001087	0.008741	0.009748	0.000109	0.008457	0.006751
Slovakia	-0.008746	0.007814	0.010042	-0.004151	-0.020745	0.017058	0.000246	-0.000571
Spain	0.278451	0.000987	0.000596**	0.400872	0.418795	0.003874	0.001147**	0.418529
Finland	-0.07451**	0.005902	-0.001009	-0.0734**	-0.14087**	0.007687	-0.001974	-0.0987**
France	-0.03057**	0.002078	0.000193	-0.00578*	-0.05178**	0.003075	-0.000964	-0.0401**
Greece	0.006308	0.098451	0.021487	0.420871	-0.00517**	0.003109	0.004865	0.002238
Ireland	-0.005647	0.002087	0.042108	0.018751	-0.001864*	-0.00678*	0.098745	0.118741
Italy	-0.018745	0.000573	0.000912	-0.006387	-0.037854	0.000864	0.002047	-0.022574
Malta	-0.064087	0.004754	0.000208^	0.007413	-0.008761	0.003399	0.000106	0.008004
Netherlands	-0.00894**	0.002008	-0.000174	-0.01708*	-0.05174**	0.002874	-0.001085	-0.0335**
Portugal	0.270576	0.001084	0.000931**	0.204223	0.305873	0.000705	0.000903**	0.418746
United K.	-0.01409**	0.000961	-0.000507	-0.005076	-0.024961	0.003087	-0.000816	-0.02008*
Panel A.3. post-euro / pre-crisis period					*Panel A.4. post-crisis / EERP period*			
Germany	0.005748**	0.0000672	0.000825	0.00679**	-0.01874**	-0.000547	0.001574	-0.0875**
Austria	0.000978**	-0.000002	0.000971	0.003087	-0.006474*	0.003079	-0.874073	-0.057671
Belgium	0.003087**	0.000315	0.000309	0.004186	-0.146712*	0.008506	0.010267*	0.367415*
Cyprus	0.000571*	0.030784	0.074007	0.000916	0.067025	0.00058*	0.104861	0.030057
Slovakia	-0.011836	0.006012	0.000098	-0.02008	-0.580573	-0.044057	0.004017	-0005715
Spain	0.002671**	-0.000062	0.000381	0.004028*	0.010893*	0.004091	0.000631*	0.030945*
Finland	0.003074**	0.000205	0.000932	0.004072*	-0.00507**	0.00063*	-0.107846	-0.00675*
France	0.002873**	-0.000402	0.002064^	0.004297*	-0.00674**	0.01574*	-0.060043*	-0.00821*
Greece	0.008027	0.297413	0.017841	0.410874	0.070778	0.315745	0.067451**	0.052689*
Ireland	-0.018974	0.004387	0.006108	-0.006784	-0.001024*	-0.07457*	0.002478	0.005741
Italy	0.004084**	0.000501	0.000206	0.00527**	0.006784*	0.001089	0.006784	0.001008*
Malta	-0.000671	0.000039	0.009064	0.003376	-0.005411	0.009073	0.147902^	0.000889
Netherlands	0.003427**	-0.000401	0.000724	0.003805*	-0.000892*	0.064057	0.040178	-0.00109*
Portugal	0.002874**	0.000225	0.000815	0.005007*	0.006074*	0.000455	0.001083**	0.000334*
United K.	0.002789**	0.00108*	0.000208	0.004068*	0.006798**	0.00541*	0.001187	0.054144*

In this table we provide the coefficients to estimate the economic premium for the market (MEP: see equation (5)), for inflation (IEP: see equation (7)), for currency (CEP: see equation (8)) and total (TEP: see equation (9) and footnote number 6). The estimation errors are computed using the correction of heteroskedasticity and autocorrelation of Newey and West (1987).

Significant at the: 10% (^), 5% (*) and 1% (**).

Table 3. Economic premiums impact for ADV model

Panel B. Economic premiums for sector portfolios

	MEP	IEP	CEP	TEP	MEP	IEP	CEP	TEP
Panel B.1. overall					*Panel B.2. pre-euro period*			
Basic	-0.19457**	0.000502	-0.00062	-0.007603	-0.03286**	-0.000765	0.001827	-0.02786**
Cyclical	-0.00942**	-0.000164	-0.000611	-0.001726	-0.01874**	-0.002687	0.000362	-0.01408*
Energy	0.001578	-0.002007	-0.00401^	0.000861	-0.010815	-0.006452	-0.008641	-0.017258
Financial	-0.05278**	0.00073	0.001582	-0.0405**	-0.09554**	-0.001121	0.005612	-0.09247**
Industrial	-0.026451	0.000603	-0.000273	-0.206745	-0.542874	-0.000356	0.001287*	-0.468741
Non-Cyclical	-0.002493	0.000494	-0.001087	0.024976	-0.003587	-0.000287	0.000942	0.036965
Health	0.120846	0.002308*	-0.00117^	0.138742	0.268745	0.000984	0.000311	0.280578
Technology	-0.02486**	0.003076	-0.006012	0.005111	-0.04128**	-0.002875	-0.012574	-0.001078
Telecom.	0.020487	-0.002863	-0.002461	0.009647	-0.028751^	-0.019364	-0.042574	-0.081468*
Utilities	0.158742	0.000612	-0.00123^	0.160876	0.298745	0.002048	0.000018	0.315784
Panel B.3. post-euro / pre-crisis period					*Panel B.4. post-crisis / EERP period*			
Basic	-0.004358	0.001609^	-0.00281*	0.01154**	-0.057412	0.000874*	-0.00387*	-0.01985**
Cyclical	-0.005784	0.002478*	-0.00162^	0.01108**	-0.003587	0.003476*	-0.00891^	-0.01289**
Energy	0.007341	0.000175	-0.001678	0.021482^	-0.011523*	-0.00785	-0.002178	0.028741**
Financial	-0.004057	0.002644^	-0.00245*	0.01214**	-0.067841	0.003364*	-0.00281*	-0.09254**
Industrial	-0.005108	0.001378^	-0.00187^	0.01247**	-0.057865	0.003715*	-0.01089*	-0.00348**
Non-Cyclical	-0.003287	0.001178^	-0.00268*	0.01254**	-0.004158	0.000984*	-0.00167*	-0.04187**
Health	-0.005678	0.003874^	-0.00249*	0.015874*	0.018741	0.002978*	-0.00311*	0.068076**
Technology	-0.008458	0.007982*	-0.00254*	0.009785	-0.037098	0.010897*	-0.06098*	0.018623
Telecom.	0.046521	0.006118	0.01796	0.068745^	0.006975	0.006029	0.025876	0.113284
Utilities	-0.002678	-0.00069^	-0.00231^	0.01108**	0.006043	-0.02603*	-0.00334*	-0.02471**

Panel C. Economic premiums for size-BM portfolios

	MEP	IEP	CEP	TEP	MEP	IEP	CEP	TEP
Panel C.1. overall					*Panel C.2. pre-euro period*			
LL	-0.012584	-0.004578	-0.008612	-0.014506	0.006687	0.008671	-0.040578	-0.015784
LM	-0.002873*	-0.001759	-0.000408	0.005173^	-0.008751*	-0.007623	-0.002045	0.007842
LH	0.257841	-0.000513	0.000048	0.287457	0.687412	-0.000973	-0.000281	0.615781
ML	-0.01176**	0.001508	-0.004953	0.009648	-0.02487**	0.000966	-0.000993	0.028471
MM	0.016587	0.000671	0.001974	0.029745^	0.046782	-0.001116	0.004678	0.081756*
MH	-0.11008**	0.008156	-0.002048	-0.0805**	-0.19875**	0.021789	-0.004963	-0.10974**
HL	-0.03781**	0.003452	-0.002185	-0.01874^	-0.07654**	0.004932	-0.005078	-0.051785*
HM	-0.02864**	0.004108	0.000098	-0.009751	-0.05978**	0.005907	-0.000405	-0.029745*
HH	0.058976	0.000855	0.000301	0.081478	0.125784	0.000508	0.000096	0.189745
Panel C.3. post-euro / pre-crisis period					*Panel C.4. post-crisis / EERP period*			
LL	-0.019575*	-0.007204	0.000306	-0.013724	0.005784	0.009473	-0.006873	-0.001573
LM	-0.001871*	0.000596	0.000405	0.005187*	0.754174*	-0.00975*	-0.000574	0.006478*
LH	-0.00086**	0.000816	0.000478	0.00496**	-0.589741	-0.00081*	0.000057	-0.00994**
ML	-0.02408**	0.000962	-0.008641	0.029742	-0.019644*	0.000861	-0.005743	-0.021787*
MM	-0.00179**	0.001758	0.000631	0.00607**	0.057487	-0.004571	0.000783	0.005547
MH	-0.00127**	0.000911	0.000573^	0.00644**	-0.21748**	0.034578	-0.00191*	-0.09787**
HL	-0.00094**	0.002086	0.000173	0.00607**	-0.00964**	0.005974	-0.003075	-0.01086**
HM	-0.00052**	0.002577	0.000603	0.00871**	-0.07621**	0.009735	0.000065	-0.05147**
HH	-0.00085**	0.001852	0.000633^	0.00488**	0.097454	0.000709	0.000476*	0.005471

Table 3. Continued

Panel A. Risk premium estimate for nationalized ADV model

	Country portfolios				Sector portfolios			
	overall	pre-euro	post-euro /pre-crisis	post-crisis / EERP	overall	pre-euro	post-euro /pre-crisis	post-crisis / EERP
γ^{EU}	0.006478*	0.000211	0.012743*	0.00587*	0.038741*	0.00131**	0.068751*	0.006173*
γ^{N}	-0.00671*	-0.0070**	-0.008648	-0.0193**	-0.0217**	-0.0216**	-0.02386^	-0.0315**
γ^{UK}	0.062875	-0.00053	0.157487	-0.08546*	-0.42487^	0.000109	-0.84845*	-0.09756*
γ^{n-UK}	-0.004058	-0.00207^	-0.005781	-0.00108^	-0.12548^	-0.0005**	-0.31784^	-0.0065**
γ^{C}	0.004087	0.00027**	0.006745^	0.000512*	0.001674	0.00006**	0.001687	0.005984
γ^{E}	-0.000003	-0.000003			0.000001*	0.000001*		

	Size-BM portfolios			
	overall	pre-euro	post-euro /pre-crisis	post-crisis / EERP
γ^{EU}	-0.003183	0.00065**	-0.00761^	-0.01189*
γ^{N}	-0.0166**	-0.0315**	-0.00217	-0.0149**
γ^{UK}	-0.214763	-0.000199	-0.501014	-0.03176*
γ^{n-UK}	-0.044872	-0.0012**	-0.094178	-0.003471
γ^{C}	0.001663	-0.0000005	0.004587	-0.000744
γ^{E}	-0.000008**	-0.000008**		

Panel B. Specification tests for nationalized ADV model

Panel B.1. Country portfolios

Null hypothesis	pre-euro	post-euro / pre-crisis	post-crisis / EERP
$\gamma_0 = \gamma^{EU} = \ldots = \gamma^{E} = \gamma^{EU\cdot dipre} = \ldots = \gamma^{E\cdot dipre} = \gamma^{EU\cdot diftip} = \ldots = \gamma^{E\cdot diftip} = \gamma^{dipre} = \gamma^{diftip} = 0$	25749.335**	1478.154**	17851.645**
$\gamma^{EU} = \gamma^{EU\cdot dipre} = \gamma^{EU\cdot diftip} = 0$	298.0578**	52.106**	108.561**
$\gamma^{N} = \gamma^{N\cdot dipre} = \gamma^{N\cdot diftip} = 0$	179.941**	15.641**	24.963**
$\gamma^{UK} = \gamma^{UK\cdot dipre} = \gamma^{UK\cdot diftip} = \gamma^{n-UK} = \gamma^{n-UK\cdot dipre} = \gamma^{n-UK\cdot diftip} = 0$	798.661**	28.543**	114.852**
$\gamma^{C} = \gamma^{C\cdot dipre} = \gamma^{C\cdot diftip} = \gamma^{E} = \gamma^{E\cdot dipre} = \gamma^{E\cdot diftip} = 0$ (pre-euro) / $\gamma^{C} = \gamma^{C\cdot dipre} = \gamma^{C\cdot diftip} = 0$ (post-euro)	617.058**	9.867**	41.874**
$\gamma^{dipre} = \gamma^{diftip} = 0$	109.822**	1012.511**	986.385**

Panel A provides the coefficients of the risk premium in the estimation of the nationalized *ADV(n)* model for all periods studied. The regression model is:

$$E(r_{jt}) = \gamma_0 + \gamma^{EU}\beta^{EU}\gamma^{N}\beta_j^{N} + +\gamma^{UK}\beta_j^{UK} + \gamma^{n\text{-}UK}\beta_j^{n\text{-}UK} + \gamma^{C}\beta_j^{C} + \gamma^{E}\beta_j^{E} + \gamma^{EU\cdot dipre}\beta_j^{EU\cdot dipre} + \gamma^{N\cdot dipre}\beta_j^{N\cdot dipre} + \gamma^{UK\cdot dipre}\beta_j^{UK\cdot dipre}$$
$$+ \gamma^{n\text{-}UK\cdot dipre}\beta_j^{n\text{-}UK\cdot dipre} + \gamma^{C\cdot dipre}\beta_j^{C\cdot dipre} + \gamma^{E\cdot dipre}\beta_j^{E\cdot dipre} + \gamma^{EU\cdot diftip}\beta_j^{EU\cdot diftip} + \gamma^{N\cdot diftip}\beta_j^{N\cdot diftip} + \gamma^{UK\cdot diftip}\beta_j^{UK\cdot diftip}$$
$$+ \gamma^{n\text{-}UK\cdot diftip}\beta_j^{n\text{-}UK\cdot diftip} + \gamma^{C\cdot diftip}\beta_j^{C\cdot diftip} + \gamma^{E\cdot diftip}\beta_j^{E\cdot diftip} + \gamma^{dipre}\beta_j^{dipre} + \gamma^{diftip}\beta_j^{diftip}$$

Panel B provides the results of the Wald joint statistic for multiple tests set for each of the three periods considered.

Significant at the: 10% (^), 5% (*) and 1% (**).

Table 4. Estimate and testing the nationalized ADV model

Panel B.2. Sector portfolios

Null hypothesis	pre-euro	post-euro /pre-crisis	post-crisis / EERP
$\gamma_0 = \gamma^{EU} = \ldots = \gamma^{E} = \gamma^{EU\cdot dipre} = \ldots = \gamma^{E\cdot dipre} = \gamma^{EU\cdot diftip} = \ldots = \gamma^{E\cdot diftip} = \gamma^{dipre} = \gamma^{diftip} = 0$	5824.358**	3086.244**	3987.586**
$\gamma^{EU} = \gamma^{EU\cdot dipre} = \gamma^{EU\cdot diftip} = 0$	205.966**	99.453**	106.762**
$\gamma^{N} = \gamma^{N\cdot dipre} = \gamma^{N\cdot diftip} = 0$	128.985**	69.666**	78.157**
$\gamma^{UK} = \gamma^{UK\cdot dipre} = \gamma^{UK\cdot diftip} = \gamma^{N-UK} = \gamma^{N-UK\cdot dipre} = \gamma^{N-UK\cdot diftip} = 0$	815.354**	62.634**	315.544**
$\gamma^{C} = \gamma^{C\cdot dipre} = \gamma^{C\cdot diftip} = \gamma^{E} = \gamma^{E\cdot dipre} = \gamma^{E\cdot diftip} = 0$ (pre-euro) / $\gamma^{C} = \gamma^{C\cdot dipre} = \gamma^{C\cdot diftip} = 0$ (post-euro)	402.831**	32.762**	69.577**
$\gamma^{dipre} = \gamma^{diftip} = 0$	196.073**	42.627**	85.762**

Panel B.3. Size-BM portfolios

Null hypothesis	pre-euro	post-euro /pre-crisis	post-crisis / EERP
$\gamma_0 = \gamma^{EU} = \ldots = \gamma^{E} = \gamma^{EU\cdot dipre} = \ldots = \gamma^{E\cdot dipre} = \gamma^{EU\cdot diftip} = \ldots = \gamma^{E\cdot diftip} = \gamma^{dipre} = \gamma^{diftip} = 0$	1975.321***	368.641**	1012.057**
$\gamma^{EU} = \gamma^{EU\cdot dipre} = \gamma^{EU\cdot diftip} = 0$	257.251**	53.961**	67.642**
$\gamma^{N} = \gamma^{N\cdot dipre} = \gamma^{N\cdot diftip} = 0$	169.541**	22.647**	45.925**
$\gamma^{UK} = \gamma^{UK\cdot dipre} = \gamma^{UK\cdot diftip} = \gamma^{N-UK} = \gamma^{N-UK\cdot dipre} = \gamma^{N-UK\cdot diftip} = 0$	1351.851**	29.305**	145.552**
$\gamma^{C} = \gamma^{C\cdot dipre} = \gamma^{C\cdot diftip} = \gamma^{E} = \gamma^{E\cdot dipre} = \gamma^{E\cdot diftip} = 0$ (pre-euro) / $\gamma^{C} = \gamma^{C\cdot dipre} = \gamma^{C\cdot diftip} = 0$ (post-euro)	457.251**	42.651**	117.623**
$\gamma^{dipre} = \gamma^{diftip} = 0$	82.647**	11.674**	41.554**

Table 4. Continued

Panel A. Economic premiums for country portfolios

	MEP	NEP	IEP	CEP	TEP	MEP	NEP	IEP	CEP	TEP
Panel A.1. overall						*Panel A.2. pre-euro period*				
Germany	-0.00089	-0.009**	-0.0006	0.00091	0.0021	-0.009**	-0.01**	-0.0025	0.0007	-0.0029
Austria	0.00086	-0.00176	0.0004*	-0.0009	0.009**	-0.00091	-0.0024	0.0008*	-0.0027	0.016**
Belgium	0.00676	-0.05187	0.00022	0.00015	-0.0329	0.01675	-0.0995	0.00002	0.0002	-0.0715
Cyprus	-0.00877	-0.00802	0.00021	0.00085	0.00763	-0.02007	-0.0060	0.00031	0.0027	0.00068
Slovakia	-0.01009	-0.01047	0.00094	0.01381	-0.0996	-0.00876	-0.0009	0.00375	0.0010	-0.00111
Spain	0.01974	-0.08157	0.00057	0.00009	-0.0578	0.03965	-0.2017	0.00052	-0.0009	-0.1895
Finland	-0.0061*	-0.016**	-0.0024	0.00073	-0.016*	-0.015**	-0.03**	-0.0047	0.0009	-0.03**
France	-0.00083	-0.006**	-0.0006	0.00083	0.00167	-0.003**	-0.02**	-0.0019	0.0002	-0.0018
Greece	0.03047	-0.00671	0.29748	0.00803	0.26871	-0.005**	-0.0019	0.00457	0.0049	0.00061
Ireland	-0.00965	0.01971	0.00157	0.03157	0.0559	-0.0021^	-0.0008	-0.007*	0.1248	0.09843
Italy	0.0041*	0.00344	0.00051	0.0015^	0.0197*	0.00815	0.01144	0.00007	0.0032	0.0376*
Malta	-0.00571	-0.04715	0.02048	0.08034	0.00687	-0.00008	-0.0067	0.00448	0.0036	0.00082
Netherlands	-0.00082	-0.004**	-0.0007	0.00017	0.00196	-0.006**	-0.03**	-0.0021	-0.0009	0.0004
Portugal	0.01688	-0.06175	0.00019	0.00067	-0.0278	0.00287	-0.1157	0.00008	0.0005	-0.0516
United K.	-0.00061	-0.007**	0.00024	0.00042	0.0049*	-0.004**	-0.009*	-0.0007	0.0004	0.0063^
Panel A.3. post-euro / pre-crisis period						*Panel A.4. post-crisis / EERP period*				
Germany	0.006**	-0.00484	0.00024	0.00091	0.0051*	-0.004**	-0.041*	-0.0037	0.0009	0.0108^
Austria	0.0023*	-0.00096	-0.0002	0.00055	0.0038^	0.00612*	-0.0049	0.0090*	-0.0043	0.0044**
Belgium	0.0031*	-0.0028*	0.00051	0.00026	0.0034*	0.00397*	-0.0578	0.00061	0.0003	-0.0249*
Cyprus	0.00306*	-0.00571	0.00089	0.03641	0.00102	-0.00761	-0.0042	0.0021^	0.0375	0.00101
Slovakia	-0.01836	-0.00086	0.00079	0.00012	-0.0334	-0.06421	-0.0001	-0.0037	0.0030	000605
Spain	0.0029*	-0.00168	0.00014	0.00028	0.0042*	0.00645	-0.0961	0.00487	0.0015	-0.0992*
Finland	0.0047*	-0.00461	0.00034	0.00031	0.0034^	-0.0052*	-0.071*	-0.0527	0.0008	-0.049**
France	0.004**	-0.00217	-0.0003	0.00217	0.0034*	-0.0035*	-0.05**	-0.0044	0.0005	0.0009*
Greece	0.00357	-0.00934	0.31896	0.00765	0.2978	-0.00514	-0.0024	0.00702	0.0925	0.00761
Ireland	-0.01279	0.02318	0.00496	0.00149	0.0517	-0.00903	-0.0066	-0.008*	0.0976	0.08614
Italy	0.0052*	-0.00642	0.00095	0.00042	0.00217	0.00145*	-0.0021	0.00061	0.009*	0.00857*
Malta	-0.00008	-0.00371	0.00057	0.00944	0.0108	-0.00917	-0.0049	0.00612	0.0187	0.00671
Netherlands	0.0032*	-0.00379	-0.0002	0.00049	0.0037*	-0.0036*	-0.009*	-0.0076	0.0478	0.00931
Portugal	0.0039*	-0.00531	0.00045	0.00062	0.0029	0.00478*	-0.0975	0.00075	0.0008	-0.06781
United K.	0.0021*	-0.00122	0.0009^	0.00009	0.0029^	-0.0008*	-0.011*	0.00607	0.0073	0.0053^

In this table we provide the coefficients to estimate the economic premium for the market (MEP: see equation (5)), domestic (NEP: see equation (6)), for inflation (IEP: see equation (7)), for currency (CEP: see equation (8)) and total (TEP: see equation (9)). The estimation errors are computed using the correction of heteroskedasticity and autocorrelation of Newey and West (1987).

Significant at the: 10% (^), 5% (*) and 1% (**).

Table 5. Economic premiums impact for nationalized ADV model

Panel B. Economic premiums for sector portfolios

	MP	NP	IP	CP	TP	MP	NP	IP	CP	TP
	Panel B.1. overall					*Panel B.2. pre-euro period*				
Basic	-0.0028*	-0.016**	0.00413	-0.0019	0.007**	-0.002*	-0.023**	0.0031	-0.0003	0.00521
Cyclical	-0.0032*	-0.008**	0.0051^	-0.002^	0.024**	-0.001*	-0.014**	0.0025	-0.0009	0.014**
Energy	0.00646	-0.00241	-0.0019	-0.004^	0.01495	-0.0007	0.00345	-0.008	-0.0061	0.00594
Financial	-0.0046*	-0.035**	0.00691	-0.0007	-0.00831	-0.004^	-0.061**	0.0053	0.00092	-0.041*
Industrial	-0.04543	0.05975	0.0026^	-0.0006	0.03784	-0.0814	0.14587	6.2E-5	0.0005**	0.0752
Non-Cycl.	-0.003**	-0.49512	0.0025*	-0.0009	-0.49576	-0.002^	-1.10787	0.0004	0.00164	-1.1148
Health	0.02457	-0.05187	0.0051*	-0.001^	-0.00424	0.0564	-0.09641	0.0040	0.0004*	-0.0246
Technology	-0.00493	-0.48745	0.0097*	-0.0026	-0.58741	-0.002*	-8.45877	0.0007	-0.00275	-8.3574
Telecom.	0.04517	-0.00534	0.00171	0.00239	0.04549	0.0076	0.01458	-0.018	-0.03014	-0.0096
Utilities	0.02978	-0.2476*	0.00042	-0.0011	-0.15877	0.0591	-0.4255^	0.0009	0.00031	-0.3187
	Panel B.3. post-euro / pre-crisis period					*Panel B.4. post-crisis / EERP period*				
Basic	-0.0041^	-0.00187	0.0061*	-0.003*	0.0098**	-0.004**	-0.008**	0.00474	-0.0037*	0.003**
Cyclical	-0.00454	-0.0021^	0.0065*	-0.002*	0.0124**	-0.0061*	-0.025**	0.0108*	-0.0015*	0.052**
Energy	0.00976	-0.00343	0.00157	-0.0018	0.01794	0.0011	-0.00016	-0.0043	-0.0041	0.00672
Financial	-0.0044^	-0.0034*	0.0066*	-0.005*	0.0146**	-0.0054*	-0.049**	0.0071	-0.0006*	-0.07**
Industrial	-0.0052^	-0.00314	0.0056*	-0.003*	0.0098**	-0.0768	0.10974	0.0003*	-0.0001*	0.0573*
Non-Cycl.	-0.0038*	-0.00168	0.0034*	-0.003*	0.0112**	-0.0042*	-0.97415	0.0005*	0.00617	-0.9754
Health	-0.00467	-0.0041*	0.0086*	-0.003*	0.0118*	0.0395	-0.02797	0.0033*	-0.00108*	-0.009*
Technology	-0.00799	-0.0058^	0.0173*	-0.004*	0.00824	-0.0009	-1.97414	0.0087*	-0.00705	-0.7847
Telecom.	0.04961	-0.01567	0.01179	0.01987	0.061782	0.00697	-0.00861	0.00401	0.0762	0.05781
Utilities	-0.0026*	-0.00051	-0.001^	-0.002^	0.0089**	0.06896	-0.3794*	0.00034	-0.0063*	-0.002*

Panel C. Economic premiums for size-BM portfolios

	MP	NP	IP	CP	TP	MP	NP	IP	CP	TP
	Panel C.1. overall					*Panel C.2. pre-euro period*				
LL	-0.0197^	0.00856	-0.005	-0.0086	-0.00726	0.0052	0.0497	0.00167	-0.035	0.03487
LM	-0.0039*	-0.02145	0.0003	-0.0006	-0.01547	-0.0024	-0.0915	-0.0004	-0.002	-0.05647
LH	0.02397	-0.19433	-0.001	0.00067	-0.15378	0.0487	-0.3674	-0.0017	0.0012	-0.31587
ML	-0.004**	-1.87578	-0.001	-0.0026	-1.94157	-0.016*	-4.1478	-0.0029	-0.006	-3.87454
MM	-0.00141	-0.02897	0.0001	0.00178	-0.01794	0.0018	-0.0654	-0.0019	0.0034	-0.04974
MH	-0.0067^	-0.125**	0.0071	-0.0035	-0.112**	-0.0124	-0.25**	0.01458	-0.008	-0.245**
HL	-0.003**	-0.049**	0.0031	-0.0023	-0.035**	-0.005*	-0.09**	0.00457	-0.005	-0.078**
HM	-0.0029*	-0.034**	0.0038	-0.0006	-0.024**	-0.003^	-0.07**	0.00516	-0.002	-0.055**
HH	0.00494	-0.15414	0.0008	0.0005^	-0.16547	0.0129	-0.2674	0.00056	0.0005	-0.24574
	Panel C.3. post-euro / pre-crisis period					*Panel C.4. post-crisis / EERP period*				
LL	-0.0247^	-0.00348	-0.008	0.00031	-0.02145	-0.00324	0.0308	-0.0061	-0.0481	-0.0096
LM	-0.003**	-0.0004^	0.0061	0.00054	0.0003^	-0.0057*	-0.0061	0.0001	-0.0006	-0.0667
LH	-0.002**	-0.0004*	0.0005	0.0004^	0.0039*	0.0096*	-0.527*	-0.0022	0.0024	-0.5201
ML	-0.004**	-0.0005*	0.0016	0.00005	0.00264	-0.008**	-1.085*	-0.0074	-0.0038	-1.6714
MM	-0.003**	-0.0003*	0.0015	0.0007^	0.0045*	-0.0009*	-0.0308	-0.0464	0.0042	-0.009*
MH	-0.002**	-0.0003*	0.0007	0.0009*	0.0043*	-0.0067*	-0.391*	0.043^	-0.006*	-0.33**
HL	-0.0019**	-0.0011^	0.0018	0.00006	0.0045*	-0.001**	-0.080*	0.0076	-0.0082	-0.06**
HM	-0.0014**	-0.0005^	0.0017	0.00052	0.0051**	-0.004*	-0.088*	0.0093	-0.0067	-0.05**
HH	-0.0029**	-0.0003^	0.0011	0.0006^	0.0047*	0.0063*	-0.3647	0.0055^	0.0007	-0.374*

Table 5. Continued

APPENDIX 1

Theoretical models and econometric approaches

Theoretical models	Econometric models
ICAMP model	
$E(r_{jk}) = \gamma_0 + \gamma^{EU}\beta_j^{EU}$	$E(r_{jt}) = \gamma_0 + \gamma^{EU}\beta_j^{EU} + \gamma^{EU\cdot dipre}\beta_j^{EU\cdot dipre} + \gamma^{EU\cdot diftip}\beta_j^{EU\cdot diftip} + \gamma^{dipre}\beta_j^{dipre} + \gamma^{diftip}\beta_j^{diftip}$
GLS model *(Grauer, Litzemberger and Stehle, 1976)*	
$E(r_{jk}) = \gamma_0 + \gamma^{EU}\beta_j^{EU} + \gamma_{K+1}^{\pi}\beta_{jk}^{\pi}$	$E(r_{jt}) = \gamma_0 + \gamma^{EU}\beta_j^{EU} + \gamma^{UK}\beta_{jk}^{UK} + \gamma^{EU\cdot dipre}\beta_j^{EU\cdot dipre} + \gamma^{UK\cdot dipre}\beta_{jk}^{UK\cdot dipre} + \gamma^{EU\cdot diftip}\beta_j^{EU\cdot diftip} + \gamma^{UK\cdot diftip}\beta_{jk}^{UK\cdot diftip} + \gamma^{dipre}\beta_j^{dipre} + \gamma^{diftip}\beta_j^{diftip}$
SS model *(Solnik, 1974 reviewed by Sercu, 1980)*	
$E(r_{jk}) = \gamma_0 + \gamma^{EU}\beta_j^{EU} + \sum_{k=1}^{K}\gamma_k^f\beta_{jk}^f$	$E(r_{jt}) = \gamma_0 + \gamma^{EU}\beta_j^{EU} + \gamma^{C}\beta_{jk}^{C} + \gamma^{E}\beta_{jk}^{E} + \gamma^{EU\cdot dipre}\beta_j^{EU\cdot dipre} + \gamma^{C\cdot dipre}\beta_{jk}^{C\cdot dipre} + \gamma^{E\cdot dipre}\beta_{jk}^{E\cdot dipre} + \gamma^{EU\cdot diftip}\beta_j^{EU\cdot diftip} + \gamma^{C\cdot diftip}\beta_{jk}^{C\cdot diftip} + \gamma^{E\cdot diftip}\beta_{jk}^{E\cdot diftip} + \gamma^{dipre}\beta_j^{dipre} + \gamma^{diftip}\beta_j^{diftip}$
ADV model *(Adler and Dumas, 1983* ***in the Vassalou's version****, 2000)*	
$E(r_{jk}) = \gamma_0 + \gamma^{EU}\beta_j^{EU} + \sum_{k=1}^{K}\gamma_k^{\pi}\beta_{jk}^{\pi} + \sum_{k=1}^{K}\gamma_k^f\beta_{jk}^f$	$E(r_{jt}) = \gamma_0 + \gamma^{EU}\beta_j^{EU} + \gamma^{UK}\beta_{jk}^{UK} + \gamma^{n\text{-}UK}\beta_{jk}^{n\text{-}UK} + \gamma^{C}\beta_{jk}^{C} + \gamma^{E}\beta_{jk}^{E} + \gamma^{EU\cdot dipre}\beta_j^{EU\cdot dipre} + \gamma^{UK\cdot dipre}\beta_j^{UK\cdot dipre} + \gamma^{n\text{-}UK\cdot dipre}\beta_j^{n\text{-}UK\cdot dipre} + \gamma^{C\cdot dipre}\beta_{jk}^{C\cdot dipre} + \gamma^{E\cdot dipre}\beta_{jk}^{E\cdot dipre} + \gamma^{EU\cdot diftip}\beta_j^{EU\cdot diftip} + \gamma^{UK\cdot diftip}\beta_j^{UK\cdot diftip} + \gamma^{n\text{-}UK\cdot diftip}\beta_j^{n\text{-}UK\cdot diftip} + \gamma^{C\cdot diftip}\beta_{jk}^{C\cdot diftip} + \gamma^{E\cdot diftip}\beta_{jk}^{E\cdot diftip} + \gamma^{dipre}\beta_j^{dipre} + \gamma^{diftip}\beta_j^{diftip}$

$E(r_{jk})$ is the marginal expected value of excess returns of asset *j* traded in country *k* (*k=1, …, K+1*) on the expected risk-free interest in sterling (the reference country is UK and is represented by the index *K +1*); γ^F, *F=EU, UK, n-UK, C, E* are the market risk premium international, UK inflation, inflation excluding the UK, common and residual components of the currency risk (in theoretical models γ_k^{π} is the expected value of the excesses of a portfolio as possible correlated with the inflation in terms of the reference country and γ_k^f is the expected value of the excesses of a portfolio perfectly correlated with the bond's interest rate in country *k* in the currency of reference; β_j^{EU}, β_{jk}^F, *F=EU, UK, n-UK, C, E* are the beta risk (marginal) asset *j* respect to market, UK inflation, inflation excluding UK, common and residual components of currency (in the theoretical models: β_{jk}^{π} and β_{jk}^f are the risks regarding the portfolio beta correlated with inflation and bond in country *k* respectively); γ^{FT} and $\beta_j^{EU\cdot T}$, $\beta_{jk}^{F\cdot T}$, *F=EU, UK, n-UK, C, E, T=dipre, diftip* have the same interpretation but for the cross effects of risk factors with the scaled variables lagged one period.

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