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International Investment Positions and Risk Sharing: An Empirical Analysis on the Coordinated Portfolio Investment Survey

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Abstract

By using data from nine waves of the IMF Coordinated Portfolio Investment Survey, we explore the determinants of bilateral portfolio investments and their dynamics. The main goal of our analysis is that of understanding whether a diversification motive can be found, among the various determinants.We introduce a new diversification variable given by the correlation between the idiosyncratic components of GDP growth and first take into account unobserved heterogeneity by means of a country pair-fixed effect, panel estimation relaxing the more restrictive double fixed effects model due to Lane and Milesi-Ferretti (REStat 90:538-549, 2008).
We find strong evidence that a diversification motive is relevant to explain bilateral portfolio holdings. The same results cannot be obtained from cross section estimations as in previous literature. It also turns out that investing in stocks of less synchronised partner economies does not bring about a lot of income smoothing, as one might have expected.

Keywords: Coordinated Portfolio Investment Survey, risk sharing, gravity models
JEL codes: F210, F150, F410

1 Introduction

The objective of this work is to explore the determinants of cross country equity portfolio allocations, in particular, the role played by the diversification motive and its consequences in terms of risk sharing achieved. Applying a gravity model as in Lane and Milesi-Ferretti

(2008) on data from the Coordinated Portfolio Investment Survey by the IMF (which reports total bilateral portfolio investment assets), we investigate on whether investment decisions of source countries are inspired, among the others, by risk sharing objectives.
It is often claimed that the recent surge in globalisation opened up new and large opportunities for international risk sharing. The underlying idea is that under the hypothesis of complete markets (perfect risk sharing) agents could invest in foreign countries with a negatively correlated business cycle, or in those countries whose business cycles differ in volatility[1]. That this may or may not have occurred is a largely empirical matter, and evidence is far from unambiguous.
The explanatory variable we use to identify a diversification motive in this work is an original one, derived from the decomposition of GDP growth rates in an idiosyncratic and an aggregate component, by means of a simple OLS regression as in Pierucci and Ventura (2010). This decomposition guarantees orthogonality between the two components and eliminates possible omitted variable biases. The correlation in the idiosyncratic components of GDP growth will be used, as an alternative to other more standard variables[2] (such as correlation in GDP growth rates), to investigate the issue on hand.
If countries were willing to reap all the potential benefits from financial globalisation, we would expect a negative reaction of bilateral equity holdings to correlations between partner countries' idiosyncratic components of GDP. In order to diversify risk, agents within a country should invest in partner countries whose idiosyncratic GDP is negatively correlated with innovations to domestic income, which would provide the investing country with insurance against its own idiosyncratic risk. Moreover, even if this were the case, it should still be checked whether or not cross-ownership of equity does bring about the desired level of income smoothing; in fact, it might still be the case that the resulting portfolio allocations are not such to secure the desired level of diversification or that, even more likely, less idiosyncratic risk leaves room for more aggregate risk.
In this work we mainly focus on the first of the two issues, as we strive to check whether or not countries invest more in assets of less synchronised economies. This empirical question was also dealt with in some recent papers, namely a contribution by Portes and Rey (2005) and another by Lane and Milesi-Ferretti (2008); in the former, the authors analyse bilateral portfolio equity trades in the context of a gravitational model and find weak evidence for a diversification motive as an explanatory variable, after controlling for informational frictions. The diversification motive is captured in their model by such variables as the correlation in economies' growth rates, stock returns and growth rates and stock returns.
In Lane and Milesi-Ferretti (2008) the authors, always in the context of a gravitational model, analyse bilateral portfolio equity holdings, and conclude that cross country equity holdings do not seem to be driven by diversification purposes.
In order to explore this issue more thoroughly, along with the introduction of a new variable which captures the diversification motive, we extend these seminal works along several

[1] Even though business cycles were perfectly synchronised it would still be possible to pool risk exploiting differences in volatility of the business cycles.

[2] see appendix A for a detailed description of this variable.

other dimensions. On the one hand, we use the 2001-2009 waves of the Coordinated Portfolio Investment Survey (CPIS in the sequel) to perform a repeated cross section analysis, in search for time varying determinants of cross equity ownership positions. More importantly, we first use the available data to build a panel dataset in order to exploit both the cross section and longitudinal dimensions of data.This new empirical strategy helps control for individual (pair of countries) unobserved heterogeneity, which cannot be accounted for otherwise, and turns out to yield remarkably different results with respect to the previous literature. That this is indeed the case will be shown in section 4, where the main empirical findings are illustrated.

The paper also offers a partial answer to the second question, i.e. on whether or not this diversification motive does bring about some benefits in terms of income smoothing. By applying the methodology introduced in the seminal paper by Asdrubali et al. (1996) and its extension developed in a recent contribution due to Balli et al. (2011) we find some weak evidence that, indeed, countries holding equity positions in less synchronised host economies tend to enjoy more income smoothing by foreign assets income inflows. Moreover, income smoothing seems to be enhanced in the face of positive, rather than negative, shocks.

The rest of the paper is organized as follows. Section 2 frames our empirical question into the current literature, while section 3 presents the data and some descriptive statistics. Section 4 presents the main empirical findings, while section 5 contains some final comments. The detailed description of the variables used in the empirical analyses is relegated to the Appendix B.

2 Literature review

The issue of portfolio equity investments has been dealt with from a number of perspectives: financial market incompleteness, transactional frictions in asset markets, and frictions in goods markets. All of these perspectives have in common the fact that the mutual fund separation theorem does not hold, and that one normally sees a certain amount of home bias in domestic portfolio holdings. In addition, all of these theoretical models provide some insights for the construction of empirical models of portfolio equity investments.

Previous empirical works have dealt with the geography of investment flows, but always with some specific limits dictated by data availability. In particular, most contributions have studied the investment positions of a single country (most often, the United States), or of very few countries. In general, most such contributions have made use of gravity models, of the kind used in international trade analysis, to analyse foreign direct investments and banking flows. For example, Wei (2000) and Stein and Daude (2007) have analysed the geography of FDI, while Buch (2002) and Rose and Spiegel (2004) have concentrated on bank lending and borrowing. In all these papers the role of bilateral trade as a driver of investment and the role of bank lending have been singled out. There has also been a number of studies concentrating on bilateral equity investments, such as Ahearne et al.

(2004), Dahlquist et al. (2003), Yildrim (2003), most frequently dealing with the case of United States, and with the issue of portfolio home bias. Two remarkable exceptions stand out in the empirical literature on this topic, i.e. the seminal contributions by Portes and Rey (2005) and Lane and Milesi-Ferretti (2008), which we consider as the benchmarks for our analysis. In the seminal paper by Portes and Rey (2005), the authors build on the theoretical work by Martin and Rey (2004), where a model of general equilibrium with endogenous asset formation leads to a gravitational model empirical specification for assets trade. Portes and Rey (2005) estimate a gravitational model by using a novel dataset including 14 countries, for the period 1989-1996. The paper by Lane and Milesi-Ferretti (2008) applies a similar gravitational model to explain bilateral portfolio equity holdings among a very large number of source and host countries, using data from the Coordinated Portfolio Investment Survey (CPIS), run by the International Monetary Fund. In particular, the authors use data from the second wave of the CPIS relative to the year 2001, featuring data from 67 source and 218 host countries.

The analysis by Lane and Milesi-Ferretti (2008) departs from earlier contributions in several ways: by resorting to a very wide pool of source and host countries, it provides a better identification of the potential determinants of portfolio equity investments; by developing a double fixed effects empirical specification, i.e. adding to the empirical model two sets of country dummies, respectively for source and host countries, in order to isolate the relative contribution of countries' specific factors. Among the other factors whose relevance was tested in their empirical work, a diversification motive was also included, but results were mixed.

Risk sharing and home bias (and consequently portfolio investments) have recently been linked in the papers by Lewis (1999), and by Sørensen et al. (2007). Absence of international portfolio diversification and (international) risk sharing may be closely linked, as agents who diversify their portfolios internationally are more likely to obtain smoother income and consumption, as for example in the model by Heathcote and Perri (2004). Sørensen et al. (2007) find that home bias decreased while risk sharing increased during the 1990s. They measure risk sharing as the distance of consumption growth from a situation of perfect markets (perfect consumption risk sharing), and provide a measure of income risk sharing. Both measures show improvements, which would hint at a robust and positive correlation between level of foreign portfolio assets and income risk sharing, and between foreign direct investment (FDI) and consumption risk sharing.

This issue is clearly related to another very "hot" issue in the recent literature: whether or not the surge in financial liberalization that occurred in the last two decades has effectively improved on the risk sharing opportunities available to the economies involved. The economic literature is rather divided on this, and the empirical evidence is also quite ambiguous. For example, Giannone and Reichlin (2006) register an increase in risk sharing among European countries from the early 1990s when market integration significantly accelerated. They also warn, however, that estimates on selected subsamples may be affected by the subsample choice itself.

Kose et al. (2008) find very weak links between financial globalisation and risk sharing, over the period 1960-2004, and for the two subsamples 1960-1986 (pre-globalisation) and 1987-

2004 (globalisation). In particular, they find that although globalisation does not seem to have exerted any significant impact on risk sharing for the whole sample of countries and the whole period, it had a negative impact on risk sharing for emerging economies. For the shorter globalisation sample, only developed countries seem to have reaped some benefits from financial globalisation in term of risk sharing, whereas the subset of emerging economies does not seem to have been affected, at least in a statistically significant way. On the other hand, Kose et al. (2006) noticed that financial openness, as measured by gross capital flows as a ratio to GDP, is associated to an increase in the ratio of consumption volatility to income volatility, contrary to the notion of improved international risk sharing opportunities through financial integration.

Kaminsky et al. (2005) investigate over the relationship of net income flows and GDP, and find that net capital flows are procyclical in most OECD and developing countries, i.e. countries tend to borrow in good times and repay in bad times, which would suggest that these flows may play a destabilising role. On the other hand, Bai and Zhang (2004) conduct a regression analysis (both panel and cross section) dividing their whole sample (1973-1998) in two distinct sub-samples (1973-1985; 1986-1998) and conducting separate tests for 19 developed countries, for 21 developing countries and for the whole set of countries. Their study shows that, although the degree of financial integration doubles from the first to the second sub-period, there is no substantial improvement in international risk sharing. Moreover, they claim that international risk sharing is not sensitive to the increase in financial integration.

That the need or possibility for diversification of idiosyncratic risks may also be a determinant for bilateral portfolio positions has surfaced in other recent contributions, but only very few have attempted to perform an empirical verification. An interesting work, in this field, is that by Bracke and Schmitz (2008) who try to understand whether portfolio equity investments play a role in consumption risk sharing both via net investment income and via capital gains. To do so, they analyse a dataset comprising 35 industrial and emerging market economies.

Our work is also closely related to some recent papers dealing with the issue of understanding whether stronger economic linkages among countries are associated to more or less synchronised business cycles. Here, too, the empirical evidence is not unambiguous. Recent works by Imbs (2006), Kose et al. (2004) and Otto and Willard (2001) show that more bilateral portfolio equity flows bring about more correlated business cycles. On the other hand, Kalemli-Ozcan et al. (2012) show that when fixed pair and time effects are properly taken into account, the empirical relationship between international banking integration and business cycles synchronisation becomes negative. In this respect, our findings are similar, as regards bilateral portfolio equity holdings. Indeed, we find that the empirical relationship between cross country equity portfolio holdings and some measure of (idiosyncratic) output correlation (our diversification motive variable) switches from positive to negative as we move from a cross section (double fixed effects model à la Lane and Milesi-Ferretti (2008)) to a fixed effects, panel specification. Accounting for unobserved heterogeneity seems therefore crucial in correctly assessing the impact of less correlated cycles onto cross country equity holdings, and vice versa.

3 Data

Data on bilateral equity holdings for years 2001 up to 2009 come from nine waves of the Coordinated Portfolio Investment Survey (CPIS) by the International Monetary Fund (IMF). For each reporting country and for each year, the survey reports the year-end value of the stock of cross-border equity holdings disaggregated by issuer country. Lane and Milesi-Ferretti (2008) recognize that the main limitations of the 2001 survey originate from the following facts: incomplete source/host country coverage, heterogeneity of collection methods, underreporting of assets and biases induced by third-party holdings. In our analysis problems arising from collection methods are attenuated by using nine waves of the CPIS survey, as the quality of data collected by source countries increases after the first participation to the survey (Warnock (2006)). Moreover, in order to reduce the relevance of the last two limitations of the dataset and in particular biases originated by the mutual funds industry (Felettigh and Monti (2008)), we have excluded offshore countries from the analysis.

For comparative purposes we included 67 source countries[3] and 218 host countries[4] as in Lane and Milesi-Ferretti (2008). Original data are expressed in current US dollars. As we are interested in the real changes of cross country holdings (actual purchases or sales of assets over time), and since the value of asset holdings may also change because prices (both of stock and of currencies) do, we need to offset these nominal changes, by deflating data on equity holdings using a Morgan Stanley Capital International (MSCI) price index (period average, base year 2001), and by using an index number of bilateral exchange rate between US dollars and the currency of the host country (base year 2001). By the same token, bilateral trade across countries has been adjusted for exchange rate fluctuations. As a result of all these adjustments, equity values are expressed in 2001 current US dollars, at 2001 stock prices. Most covariates have been computed following Lane and Milesi-Ferretti (2008).[5]

In tables 1 and 2 we report percentage shares and the growth rates of bilateral equity asset holdings (weighted by period average shares) aggregating over 6 major areas. Data are expressed, as explained in the previous section, at "constant, 2001 prices", since they are adjusted for exchange rate fluctuations and for valuation effects. Offshore centres have been removed, to avoid distortions. Thus, statistics in table 1 and 2 refer to the dependent variable of our regression analyses.

Over the period 2001-2009, the weight of OECD countries is dominant (table 1), since around 74 percent of the total amount of equity asset holdings is due to U.S., UK and Euro Area; however, their role is becoming less important over the observed period of

[3]See appendix A for a complete list of source and host countries included in the analysis.

[4]Source refers to countries undertaking an investment, i.e. purchasing equities in a foreign country, while hosts refers to countries receiving the investment.

[5]For a detailed description of data see appendix B.

time. In particular, the U.S. and the Euro Area lost respectively about 5 and 2.5 percent of their shares, while UK just lost 0.9 percent. On the contrary, Japan gained one percentage point, "other OECD" countries and Emerging markets registered a remarkable increase of their weight (around 4 percent).
Unweighted rates of growth of equity asset holdings[6] reveal how Emerging markets quadrupled their international portfolio size, "other OECD countries" and Japan doubled, whereas U.S., UK and the Euro Area have been growing below average, increasing their equity asset positions by around 50 percent.
If we now look at weighted[7] rates of growth (table 2), about half of the increase in total investment can be attributed to emerging markets and to "other OECD countries".
Summing up, total growth of equity asset holdings amounts to 76.2 percent and the increasing role of emerging economies and the attractiveness of U.S. and European markets for these countries become quite evident. Moreover, the persistence of bilateral investment patterns decreased somehow over the whole time horizon in comparison to what was detected by Lane and Milesi-Ferretti (2008) between 2001 and 2005.[8] It seems fair to say that, looking at data, we find evidence of an ongoing change of the international investment patterns, calling for a deeper investigation over the entire available time horizon.

4 Empirical findings

This section describes the way we used CPIS data for our empirical analyses (cross section and panel estimations). First, cross section regressions, as in Lane and Milesi-Ferretti (2008), have been estimated for all available waves, controlling for countries' characteristics by the inclusion of "double fixed effects" for source and host countries. Secondly, in order to properly account for unobserved heterogeneity, we exploit the time dimension of the data estimating a panel regression model which includes individual fixed effects for each pair of source-host countries. This new approach is less restrictive, since it allows controlling for specific "pair" effects. The combination of any two countries, in fact, might be influenced by a fixed factor, potentially different from the linear combination of the two individual countries effects.
Following Lane and Milesi-Ferretti (2008), the estimated model for our cross section regressions is:

$$\log(x_{ij}) = \phi_i + \phi_j + \beta Z_{ij} + \epsilon_{ij} \tag{1}$$

where x_{ij} is the portfolio equity holdings of country i in country j; Z_{ij} is a vector of covariates; ϕ_i and ϕ_j are dummy variables for source and host countries, respectively. This

[6]Not reported. Available upon request.

[7]By the corresponding percentage shares of the total.

[8]If one regresses, as in Lane and Milesi-Ferretti (2008), the log of equity positions in 2001 on the log of equity positions in 2005, one obtains an elasticity of 0.84, while the same exercise between 2001 and 2009 yields an elasticity of about 0.73.

model includes a dummy variable for each source and each host country, so that the constant term is the sum of ϕ_i and ϕ_j, capturing individual heterogeneity of countries i and j. This approach allows exploiting the bilateral dimension of the data to take into account nationals' characteristics.
However, since our dataset comprises several cross sections, corresponding to various time periods, the time dimension can also be used, allowing for the inclusion of standard individual fixed effects, i.e. source-host pairs dummies. The inclusion of "country pairs fixed effects" allows to capture the unobserved heterogeneity which characterizes any bilateral portfolio equity allocations. This is more general than the "double fixed effects" model (eq. 1 as in Lane and Milesi-Ferretti (2008)), which imposes each country's fixed effect to be identical irrespective of the partner country (host or source). In terms of the number of dummy variables to be estimated, in the more restrictive model a total of i+j individual dummies is to be estimated, while in the panel estimation $i \cdot j$ individual fixed effects are included.
Therefore, for the panel analysis we adopt the following original fixed effects model specification:

$$\log(x_{ijt}) = \phi_{ij} + \nu_t + \beta Z_{ijt} + \epsilon_{ijt} \tag{2}$$

where ϕ_{ij} are individual intercepts and ν_t are time fixed effects.

4.1 Cross section analysis

For comparative purposes, the first step of our analysis consisted in replicating the empirical evidence offered by Lane and Milesi-Ferretti (2008) for the year 2001 and its extension for the whole available sampling period, i.e. 2002-2009, in order to assess possible changes over time in the determinants of international asset allocation choices of responding countries. This preliminary analysis (not reported, available upon request) highlights that the main conclusions achieved for year 2001 remain valid also in subsequent years (2002-2009). However, a relevant change in the estimated coefficients has been detected, revealing variability over time and the need to investigate on the bilateral investment pattern over the widest available time horizon.
As a second step of our cross section analysis, we estimated the model proposed by Lane and Milesi-Ferretti (2008) for all available waves (2001-2009) by introducing some additional explanatory variables. In particular, we replaced the variable expressing the correlation between GDP growths (a diversification motive variable) with a different one, containing the correlation among the idiosyncratic components of GDP growth. Details about the computation of this variable can be found in the data appendix. It is worth mentioning one more new explanatory variable included: the overall score of freedom in the host country, produced by The Heritage Foundation[9].
The estimation results, presented in tables 3-5 for the whole sample and for two subsamples (OECD and emerging economies), essentially confirm those presented in Lane and

[9] http://www.heritage.org/

Milesi-Ferretti (2008): throughout the years, bilateral trade is the single most important explanatory variable of cross country portfolio holdings, though its relevance is larger in the first years of the sample for OECD countries, whereas the contrary is true for emerging market economies.
Other variables proxying for information asymmetries and sociocultural proximity are more or less significant in explaining portfolio holdings over the years: the logarithm of distance among countries, the logarithm of time difference, as well as various dummies for common language, for colonial past and for being party in a tax treaty or in a currency union.
To identify a diversification motive for portfolio cross holdings three variables have been included in the regressions: correlations in idiosyncratic GDPs; correlations between growth and stock returns; correlations in stock returns. The estimated coefficient of the first variable often displays the "right" negative sign but it is always non-significant. Correlations between growth and stock returns are never significant except for the years 2004-2006 and for the OECD subsample (table 4) where this variable enters with a negative sign. The last diversification motive variable is almost always significant on the full sample (table 3) with a positive sign, indicating that agents seem to hold portfolios in countries which are rather similar, in terms of stock markets returns.
The overall score of freedom always enters with a positive and significant coefficient across all estimation periods for the full sample and the OECD, while it gains importance and significance for emerging economies as we move towards the end of the time horizon (2009, though, seems to be an exception). Tables 3-5 give an idea of the variability across years of estimated coefficients; a cursory reading of these tables show that, for the whole sample of countries, the coefficients of the most important explanatory variable, bilateral trade, increases in magnitude over the whole sample, though non monotonically.
The relevance of the other significant variables, i.e. time difference, common language, colonial past, common legal origin and the overall score of freedom in the host country, significantly varies across periods, but at the end of the time horizon is not very different from what it was at the beginning. As for the OECD countries, the relevance of the bilateral trade variable has an opposite behaviour (i.e. decreases over time). The estimated models for the emerging countries are the ones yielding the less satisfactory results, with many explanatory variables being only occasionally significant.

4.2 Panel analysis

The estimation results change in a remarkable way as we move to a panel estimation. As it is well known, in the context of panel estimations it is possible to properly assess the relevance of fixed effects, i.e. the impact of factors which are peculiar to the individual observations. In our case each observation concerns a pair (source-host) of countries, and the fixed effect refers to some factor which plays a role for this couple, but not necessarily for each economy in isolation. Therefore, any fixed effect is likely to capture the (possibly stable) effect of variables which are specific to the interaction between those economies, and which cannot be observed or are difficult to quantify. It is highly plausible that such unaccounted factors be correlated with our proxies for a diversification motive (correlation

between idiosyncratic components of GDP, correlations between stock market returns or correlations between GDP growth and stock returns). If these unobserved factors become part of the disturbance term, as it is likely to be the case in purely cross sectional estimations, the sign and significance of the estimated coefficients of diversification motive variables may be biased. As already suggested above, simple source and host country effects, included in the cross section estimations, may not adequately account for such factors.

On the other hand, endogeneity of our diversification proxies may also be an issue. Endogeneity may come in as reverse causation, going from cross country equity positions to correlation in stock returns or in the idiosyncratic components of GDP growth. We do not take a specific (theoretical or empirical) stance on this issue, which should constitute the topic of further work. However, we adopt an instrumental variable, fixed effect panel estimation methodology, which guarantees consistency of our coefficients' estimates. This has been done only for estimations in levels, as for log difference estimations we did not find adequate instruments (but we also believe that the case for endogeneity is less compelling for log differences). The instruments used (lags of the proxies for diversification and lags of bilateral trade) satisfactorily pass both the Sargan test for overidentifying restrictions and a simple F test of joint significance (in explaining the endogenous variables).

All models are estimated using heteroscedasticity-consistent standard errors White (1980). As robustness check we also use Driscoll and Kraay standard errors, where the error structure is assumed to be heteroscedastic, autocorrelated of order one, and possibly correlated between the groups (panels) (Driscoll and Kraay (1998)). Though the Driscoll Kraay standard error correction relies on large T asymptotics, it performs satisfactorily for large N and small T[10] as in our case (for details see Hoechle (2007)). Moreover, since we introduce a variable to account for the overall degree of economic freedom in the host country, we estimate each model with and without this variable in order to assess the impact of this variable on the remaining coefficients. We report in table 6 panel estimates over the period 2001-2009 for the whole sample and the two subsamples (OECD countries and emerging economies). We may immediately observe that all the time invariant variables cannot be included, their effect being somehow summarized in the cross section fixed effects.

While the effect of bilateral trade is almost always strong and positive, and the overall level of freedom in the host country is always positively significant, as it was the case in the cross section estimations, our original research question receives a completely different answer from the panel analysis with respect to the previous cross section estimates. For the full sample, both the correlation between the idiosyncratic components of GDP and the correlation in stock returns turn out to be significantly negative in the linear specification (columns 1 and 2 in table 6). Interestingly, even in the face of a positive correlation between the two variables, they are both significant, suggesting that the co-movements between the idiosyncratic components of GDP are significant even if one controls for the correlation between stock returns in the two economies. This is true both for the linear and the Tobit specifications. However, for the Tobit model, the correlation in the idiosyn-

[10] for T=5 and T=10

cratic components of GDP still remains negatively significant whereas correlations in stock returns turn up to be positively significant meaning that the probability of investing in a foreign country is positively affected by similarities in stock markets dynamics of the partner countries. This result is also confirmed by a Probit model.
When we look at the results for the two subsamples, however, the diversification motive expressed by the correlation in stock returns is supported by the linear specification, but not by the Tobit model. On the other hand, the estimated coefficient of our new diversification motive variable (i.e. the correlations in idiosyncratic GDP) is significantly negative for the Tobit model. This suggests that the decision to engage in portfolio investments, and the decision about the size of the investment, might have different determinants relative to the subsamples. In particular, it turns out that the former depends more on the closeness and similarity of the pair of economies, although it may well be the case that once the decision to hold an equity position in a country is taken, the investment size may also be determined by diversification motives. This is confirmed by the regression results of the corresponding Probit models (column 6 of table 6), where one of the diversification variables, namely the correlation in stock returns, has a positive and significant coefficient.
We get a different result with the tax treaty variable. The fact that a pair of countries engage in a tax treaty appears to be significant in determining the choice of investing, but it does not seem to have an impact upon the relative dimension of portfolio investments.
That diversification may have opposite effects on the choice of investing and on the corresponding amounts is somehow reminiscent of the discussion of the empirical results in Portes and Rey (2005), where the authors observe that the variables proxying for a diversification motive enter with a positive sign if one does not control for information frictions (above all, distance), whereas the sign becomes (weakly) negative when such factors are controlled for. In our panel estimations information frictions should be captured by the pair fixed effects, and the larger dataset (and possibly the different estimation horizon) allows us to better identify a diversification motive at work.
Table 7 reports results for log differenced data and previous results on log levels are confirmed with respect to the existence of a diversification motive driving the amount of investing in equity holdings in foreign countries.
Our diversification motive variable is, indeed, always negative and highly significant for the full sample and the OECD sub sample.

4.3 Business cycle desynchronisation and risk sharing

The existence of differences among national business cycles opens the way to insurance possibilities which can be exploited to reduce the longitudinal variance of national income, thus increasing national welfare.
Up to this point we have been able to identify a diversification motive as a determinant of portfolio choices. In the previous paragraph, we found that the correlation between the idiosyncratic components of GDP growth (and in stock returns) plays a non-negligible role in driving the cross-border allocation of investments in the global stock market. Does this necessarily entail that portfolio allocations have been effective in insuring countries against

bad states of nature?
To deal with this matter, we measure the degree of risk sharing achieved through equity purchases on foreign stock markets. Foreign equities held by residents generate an income that adds to their disposable income and is recorded in the current account of the balance of payments. Following the methodology first introduced by Asdrubali et al. (1996) and later developed by Balli et al. (2011) we assess the degree of income smoothing brought about by income inflows generated by holdings of foreign equities (for a detailed explanation of the methodology see Appendix C).
The analysis has been conducted separately for the set of countries adhering to the European Monetary Union (EMU) and for the set of OECD countries. Firstly, we have computed a measure of lack of (potentially exploitable) risk sharing opportunities, given by the (weighted[11]) mean correlations of idiosyncratic GDP growth of a given source country with idiosyncratic GDP growth of all its host countries. This indicator is, by construction, inversely related to risk sharing opportunities. Indeed, the higher the correlation among idiosyncratic GDP components, the lower should be the cross-country insurance opportunities.
Secondly, we have computed, for each country of the group, the degree of risk sharing achieved through inflows deriving from foreign equity holdings, following a rather standard approach. [12]
Lastly we compared the two measures. Indeed, if financial assets holdings are effective in smoothing income across states of nature, we should observe an inverse relationship between weighted average correlations in idiosyncratic GDP's and the degree of risk sharing achieved by each country.
Table 8 contains the values taken by these two variables for the various countries, as well as various indices of correlations among them. The same analysis has been repeated by allowing for the possibility of asymmetric responses of income inflows to idiosyncratic shock to GDP, that is a degree of risk sharing is assumed to depend on the state of the business cycle. To do so, we have divided shock variable into positive and negative realisations identified by positive and negative output gap respectively computed isolating the long run component of GDP applying a standard Hodrick and Prescott (1997) filter[13]. All in all, if we consider all (positive and negative) shocks, our priors are weakly confirmed in the case of EMU countries (significance values of correlations in the range 0.20-0.25), while they should be strongly rejected for the set of OECD countries.
Once we distinguish among positive and negative shocks, we obtain a somewhat neater picture. Indeed, for EMU countries correlations are strongly significant (significance values in the range 0.01-0.02) in the case of positive shocks, while they are not significant at all in the case of negative shocks.
In other words, equity holdings in less "synchronised" economies help smooth income peaks associated to favourable states of nature, while they do not seem effective in smoothing

[11] weights are the shares of equity holdings of a country in a given host country
[12] see Balli et al. (2011)
[13] see details in appendix C.

income troughs experienced during bad states of nature. Moreover, by directly looking at the values of mean correlations and percentages of income smoothing for the various countries we realize that, despite a non-significant negative correlation, in two remarkable cases, namely the Netherlands and Great Britain, featuring a low (under 0.20) mean correlation in the dynamics of idiosyncratic GDP growth, negative shocks are smoothed via portfolio equity holdings (24.69 and 17.73 percent, respectively).

5 Conclusions

The recent surge in financial globalisation opened up many investment opportunities for the countries involved. One possible outcome of this process is an increase in portfolio diversification, if bilateral holdings are also driven by diversification motives. Whether or not this has been the case is the research question addressed in this paper, where we extend the analysis proposed by Lane and Milesi-Ferretti (2008) to the 2001-2009 waves of the IMF Coordinated Investment Portfolio Survey; this question is addressed by means of both cross section and panel methodologies. The main empirical result of our analysis is that, indeed, a diversification motive emerges from the data, which mainly concerns the relative size of portfolio holdings. It also turns out, however, that the decision to open portfolio positions in a country depends more on symmetries, rather than differences, in the two countries' cycles.
Our empirical results also shed some light upon the issue of business cycle desynchronisation among portfolio partner countries and the corresponding capabilities of income risk sharing.

6 Appendix A

List of source countries excluding offshore centres:
Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Chile, Colombia, Costa Rica, Czech Republic, Denmark, Egypt, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, Indonesia, Ireland, Israel, Italy, Japan, Kazakhstan, Korea (Republic of), Malaysia, Netherlands, New Zealand, Norway, Panama, Philippines, Poland, Portugal, Romania, Russian Federation, Singapore, Slovak Republic, South Africa, Spain, Sweden, Switzerland, Thailand, Turkey, Ukraine, United Kingdom, United States, Uruguay, Venezuela.
List of host countries excluding offshore centres:
Albania, Algeria, American Samoa, Angola, Argentina, Armenia, Australia, Austria, Azerbaijan, Bangladesh, Belarus, Belgium, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Brunei Darussalam, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Canada, Cape Verde, Central African Republic, Chad, Chile, China, Colombia, Comoros, Congo (Democratic Republic of), Congo (Republic of), Costa Rica, Côte d'Ivoire, Croatia, Czech Republic, Denmark, Djibouti, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Faroe Islands, Fiji, Finland, France,

French Guiana, French Polynesia, French Southern Territories, Gabon, Gambia, Georgia, Germany, Ghana, Greece, Greenland, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Iran, Iraq, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Korea (Democratic People's Republic of), Korea (Republic of), Kuwait, Kyrgyz Republic, Lao, Latvia, Lesotho, Liberia, Libya, Lithuania, Macedonia, Madagascar, Malawi, Malaysia, Maldives, Mali, Mauritania, Mexico, Micronesia, Moldova, Mongolia, Montserrat, Morocco, Mozambique, Myanmar, Namibia, Nepal, Netherlands, New Caledonia, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Puerto Rico, Qatar, Romania, Russian Federation, Rwanda, San Marino, São Tomè and Prìncipe, Saudi Arabia, Senegal, Sierra Leone, Singapore, Slovak Republic, Slovenia, Solomon Islands, Somalia, South Africa, Spain, Sri Lanka, St. Helena, Sudan, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, United Arab Emirates, United Kingdom, United States, United States Minor Outlying Islands, Uruguay, Uzbekistan, Vatican City State, Venezuela, Vietnam, Virgin Islands (United States), Wallis and Futuna Islands, West Bank and Gaza Strip, Yemen, Zambia, Zimbabwe.

7 Appendix B

Bilateral portfolio equity holdings:
millions of U.S. dollar of portfolio equity holdings issued by host countries and held by source country. Source: 2001-2009 Coordinated Portfolio Investment Survey.
Bilateral trade:
five-year backward looking moving average of imports plus exports over the period 2001-2009. Source: United Nations Commodity Trade Statistics Database.
Colony dummy:
dummy taking the value 1 if source and host country ever had a colonial relationship and zero otherwise. Source Rose and Spiegel (2004).
Common language:
dummy variable taking value 1 if host and source countries share the same language and zero otherwise. Source: Rose and Spiegel (2004) and Lane and Milesi-Ferretti (2008).
Common legal origin:
dummy variable taking the value 1 if the source and and host countries have a legal system with a common origin (common law, French, German or Scandinavian) and 0 otherwise. Source: Porta et al. (2005) and Lane and Milesi-Ferretti (2008).
Correlation between growth-stock returns:
twenty one-year backward looking moving average correlation between annual GDP growth rates in the source country and real stock returns in the host country over the period 2001-2009. For instruments used in the IV estimation the aforementioned backward looking moving average has been restricted to just ten years. Source: authors' calculation based

on Morgan Stanley Capital International (Datastream) and World Bank (on-line database World Development Indicators).

Correlation in idiosyncratic GDP:

twenty one-year backward looking moving average correlation between the annual idiosyncratic GDP growth rate of source and host countries over the period 2001-2009. For instruments used in the IV estimation the aforementioned backward looking moving average has been restricted to just ten years. As in Pierucci and Ventura (2010), the idiosyncratic component of GDP growth is computed as the estimated residuals of the following regression $\Delta \log(GDP_{it}) = \beta \Delta \log(GDP_{at}) + \epsilon_{it}$. Where $\Delta \log(GDP_{it})$ is the country i GDP rate of growth and $\Delta \log(GDP_{at})$ represents the average rate of growth of the reference group (in our case: all countries; OECD countries and Emerging Markets). The GDP growth rate of a given country is therefore decomposed in two orthogonal components: in fact, $\Delta \log(GDP_{it}) = \widehat{\beta} \Delta \log(GDP_{at}) + e_{it}$, thus the idiosyncratic GDP growth will be orthogonal to the aggregate (group average) GDP growth by construction: $e_{it} \perp \widehat{\beta} \Delta \log(GDP_{at})$. The more standard practice (e.g. Asdrubali et al. (1996)) consists in simply subtracting the group average GDP growth to each country' s GDP rate of growth. However, this practice does not guarantee orthogonality between aggregate and idiosyncratic GDP growth and may generate serious omitted variable bias if one of the regressors strongly correlates with the aggregate GDP growth. Moreover the standard decomposition restricts the coefficient attached to aggregate GDP to be equal to 1, while the empirical evidence contradicts this assumption.

Correlation in stock returns:

eleven-year backward looking moving average correlation between the monthly stock market returns of the host and source country, expressed in U.S. dollars over the period 2001-2009. For instruments used in the IV estimation the aforementioned backward looking moving average has been restricted to just five years. Source: authors' calculations based on returns data from Morgan Stanley Capital International (Datastream).

Currency Union dummy:

dummy variable taking value 1 if source and host countries are in a currency union and zero otherwise. Source Lane and Milesi-Ferretti (2008) and Rose and Spiegel (2004).

Log distance:

logarithm of Great Circle distance in miles between the capital cities of source and host country. Source: Rose and Spiegel (2004).

Overall score of freedom in the host country:

overall freedom score ranging from zero to 100 given by the average of ten component scores: business freedom; trade freedom; fiscal freedom; Government spending; monetary freedom; investment freedom; financial freedom; property rights; freedom from corruption; labour freedom. All 10 components are weighted equally. Source: The Heritage Foundation (http://www.heritage.org/)

Tax treaty:

dummy variable taking value 1 if source and host countries enacted a double taxation agreement prior to 1999. Agreements considered are: Capital, Income and Capital, Income and

Inheritance. Double taxation agreements on Air, Land and Sea Transport have been excluded. Source: Authors' elaborations on DTT (Double Taxation Treaties) database from www.unctad.org.

Time difference:

absolute value of of time difference between host and source country (from 1 to 12). Source: Lane and Milesi-Ferretti (2008) and Rose and Spiegel (2004).

8 Appendix C

In the analysis reported in table 8, applying a time series counterpart of the variance decomposition first introduced by Asdrubali et al. (1996), we computed the percentage of risk sharing achieved through financial asset income inflows (sub-component of the factor income) as in Balli et al. (2011). Thus, for each country of the two groups considered (OECD and EMU countries), we estimated the following equation obtaining the percentage of income smoothing achieved by income inflows deriving from financial assets holding by each single country.

$$\Delta \log \widetilde{GDPIN}_t = \beta_f^+ \Delta \log \widetilde{GDP}_t + \epsilon_t$$

where:

$GDPIN_t$ = (GDP+financial assets income inflows);

$\Delta \log \widetilde{GDPIN}_t = (\Delta \log GDPIN_t - \Delta \log GDPIN_t^a)$;

$\Delta \log \widetilde{GDP}_t = (\Delta \log GDP_t - \Delta \log GDP_t^a)$;

$\Delta \log GDPIN_t^a$ and $\Delta \log GDP_t^a$ are group averages. $1 - \beta_f^+$ is the percentage of income smoothing achieved through the portfolio equity holdings channel (inflows). We then distinguished between positive and negative idiosyncratic shocks, identifying positive shocks as those corresponding to periods of positive output gap[14]. This allows to estimate the smoothing role of assets income inflows in the face of asymmetries in shocks.

$$\Delta \log \widetilde{GDPIN}_t = \beta_{f1}^+ \Delta \log \widetilde{GDP}_t^{\,+} + \beta_{f2}^+ \Delta \log \widetilde{GDP}_t^{\,-} + \epsilon_t$$

where $1 - \beta_{f1}^+$ is the percentage of risk sharing with respect to positive shocks, while $1 - \beta_{f2}^+$ is the same measure in response to negative shocks. The data span is from 1980 to 2009 (annual frequency). Source: International Monetary Fund (Balance of Payments Statistics).

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List of Tables

Table 1: International Equity Asset Holdings
(% shares over the year-total)

Source / Host	Usa	Uk	Euro	Japan	Other OECD	Emerging markets	Total
				2001-2009			
United States	0.0	7.3	9.4	5.7	5.4	5.5	33.4
United Kingdom	4.7	0.0	3.7	1.6	1.0	1.4	12.5
Euro area	9.2	3.8	9.9	1.5	1.7	1.1	27.3
Japan	3.5	0.6	0.8	0.0	0.4	0.3	5.6
Other OECD Countries	8.9	1.8	3.1	1.2	1.0	0.7	16.7
Emerging markets	1.4	1.2	0.4	0.2	0.1	1.2	4.5
Total	27.8	14.7	27.3	10.3	9.6	10.3	100.0
				2001			
United States	-	8.8	11.5	4.3	6.2	5.0	35.7
United Kingdom	3.2	-	5.6	1.3	1.4	1.3	12.9
Euro area	8.1	4.2	11.2	1.1	2.2	1.1	27.9
Japan	3.1	0.7	0.9	-	0.4	0.2	5.3
Other OECD Countries	7.2	1.8	3.5	0.9	1.0	0.7	15.2
Emerging markets	0.8	1.1	0.2	0.1	0.1	0.7	3.0
Total	22.4	16.6	32.9	7.7	11.3	9.1	100.0
				2002			
United States	-	8.2	10.6	4.9	6.1	4.7	34.5
United Kingdom	4.0	-	4.4	1.6	1.5	1.4	12.8
Euro area	8.2	4.5	11.2	1.3	2.2	0.9	28.3
Japan	3.2	0.7	0.9	-	0.4	0.2	5.4
Other OECD Countries	7.8	1.9	3.3	1.1	1.1	0.6	15.8
Emerging markets	0.8	1.1	0.4	0.1	0.1	0.7	3.1
Total	24.0	16.4	30.7	9.0	11.4	8.4	100.0
				2003			
United States	-	8.1	10.0	5.6	5.9	5.6	35.3
United Kingdom	3.9	-	3.6	1.6	1.0	1.5	11.5
Euro area	9.1	4.1	11.3	1.6	1.9	1.2	29.0
Japan	3.2	0.6	0.8	-	0.3	0.2	5.2
Other OECD Countries	7.9	1.8	3.3	1.1	0.9	0.7	15.8
Emerging Countries	0.8	1.1	0.3	0.2	0.1	0.8	3.2
Total	24.9	15.7	29.3	10.0	10.2	10.0	100.0
				2004			
United States	-	6.8	10.1	5.6	5.5	5.5	33.4
United Kingdom	4.5	-	4.2	1.6	0.8	1.6	12.7
Euro area	9.6	3.7	11.0	1.7	1.7	1.1	28.8
Japan	3.7	0.7	0.8	-	0.4	0.3	5.8
Other OECD Countries	8.4	1.6	3.1	1.1	0.8	0.7	15.8
Emerging markets	1.0	1.2	0.2	0.2	0.1	0.9	3.6
Total	27.1	14.0	29.4	10.2	9.3	10.0	100.0
				2005			
United States	-	6.7	9.3	7.3	5.5	5.8	34.7
United Kingdom	5.0	-	3.5	2.1	1.0	1.4	13.1
Euro area	9.4	3.5	9.7	2.0	1.7	1.2	27.4
Japan	3.6	0.5	0.7	-	0.3	0.3	5.4
Other OECD Countries	8.3	1.6	2.8	1.4	0.8	0.6	15.5
Emerging markets	1.1	1.2	0.3	0.2	0.1	1.1	3.9
Total	27.3	13.5	26.4	13.1	9.3	10.4	100.0
				2006			
United States	-	6.5	9.3	6.2	5.1	6.0	33.1
United Kingdom	5.4	-	3.3	1.9	0.9	1.4	13.0
Euro area	10.0	3.6	9.9	2.0	1.6	1.3	28.5
Japan	3.4	0.5	0.7	-	0.3	0.4	5.3
Other OECD Countries	8.4	1.6	2.9	1.2	0.9	0.8	15.8
Emerging markets	1.4	0.9	0.3	0.2	0.1	1.5	4.3
Total	28.7	13.1	26.4	11.5	8.9	11.4	100.0
				2007			
United States	-	6.0	9.0	6.5	5.1	6.3	32.9
United Kingdom	5.4	-	2.8	1.8	0.8	1.5	12.4
Euro area	9.8	3.2	8.5	1.8	1.5	1.4	26.1
Japan	3.3	0.4	0.7	-	0.3	0.4	5.2
Other OECD Countries	9.9	1.6	3.1	1.4	0.9	0.9	17.8
Emerging markets	1.9	0.9	0.4	0.3	0.1	1.8	5.6
Total	30.4	12.1	24.4	11.9	8.8	12.4	100.0
				2008			
United States	-	6.4	7.9	6.8	4.7	5.0	30.8
United Kingdom	5.9	-	2.9	1.6	0.7	1.2	12.2
Euro area	10.1	3.4	8.1	0.9	1.4	0.8	24.7
Japan	4.2	0.6	0.7	-	0.3	0.4	6.2
Other OECD Countries	11.3	2.0	2.9	1.5	1.0	0.8	19.5
Emerging markets	2.5	1.4	0.4	0.5	0.1	1.7	6.6
Total	34.0	13.8	22.8	11.3	8.2	9.8	100.0
				2009			
United States	-	8.2	7.4	4.3	4.9	5.8	30.6
United Kingdom	5.3	-	3.1	1.3	1.1	1.2	12.0
Euro area	8.9	3.9	8.4	0.9	1.3	1.3	24.7
Japan	4.1	0.7	0.7	-	0.4	0.4	6.3
Other OECD Countries	10.5	2.6	3.1	1.1	1.2	0.9	19.5
Emerging markets	2.4	2.0	0.7	0.3	0.1	1.4	6.9
Total	31.3	17.5	23.4	7.9	9.0	11.0	100.0

Table 2: International Equity Asset Holdings
(annual % changes weighted by the share)

Source / Host	Usa	Uk	Euro	Japan	Other OECD	Emerging markets	Total
				2001/2009			
United States	-	5.7	1.4	3.3	2.5	5.2	18.1
United Kingdom	6.1	-	-0.2	0.9	0.6	0.8	8.2
Euro area	7.7	2.7	3.6	0.5	0.0	1.1	15.6
Japan	4.1	0.5	0.4	-	0.3	0.5	5.9
Other OECD Countries	11.3	2.8	2.0	1.0	1.1	0.9	19.1
Emerging Countries	3.5	2.5	1.0	0.4	0.1	1.8	9.3
Total	32.7	14.2	8.3	6.1	4.6	10.3	76.2
				2001/2002			
United States	-	-0.4	-0.7	0.7	0.1	-0.2	-0.5
United Kingdom	0.8	-	-1.1	0.3	0.1	0.0	0.2
Euro area	0.3	0.4	0.3	0.2	0.0	-0.2	0.9
Japan	0.2	0.0	0.0	-	0.0	0.0	0.2
Other OECD Countries	0.7	0.1	-0.2	0.2	0.1	-0.1	0.9
Emerging Countries	0.0	0.1	0.1	0.0	0.0	0.0	0.2
Total	2.0	0.1	-1.6	1.5	0.3	-0.5	1.9
				2002/2003			
United States	-	2.7	2.9	2.6	1.9	2.9	12.9
United Kingdom	1.3	-	0.3	0.5	-0.1	0.6	2.7
Euro area	4.0	1.0	4.0	0.8	0.3	0.7	10.8
Japan	1.1	0.1	0.2	-	0.1	0.1	1.6
Other OECD Countries	2.8	0.5	1.2	0.4	0.2	0.3	5.5
Emerging Countries	0.3	0.4	0.0	0.1	0.0	0.4	1.2
Total	9.5	4.6	8.7	4.4	2.3	5.0	34.6
				2003/2004			
United States	-	-1.8	-0.8	-0.4	-0.9	-0.6	-4.5
United Kingdom	0.2	-	0.3	-0.1	-0.3	0.0	0.1
Euro area	-0.3	-0.6	-1.2	0.0	-0.3	-0.2	-2.5
Japan	0.2	0.0	0.0	-	0.0	0.0	0.2
Other OECD Countries	-0.2	-0.3	-0.4	-0.1	-0.2	-0.1	-1.3
Emerging Countries	0.1	0.0	-0.1	0.0	0.0	0.0	0.1
Total	0.0	-2.8	-2.2	-0.6	-1.6	-0.8	-8.0
				2004/2005			
United States	-	0.4	-0.2	2.2	0.3	0.7	3.4
United Kingdom	0.8	-	-0.4	0.7	0.2	-0.1	1.2
Euro area	0.4	0.0	-0.7	0.5	0.0	0.1	0.3
Japan	0.1	-0.1	0.0	-	0.0	0.0	-0.1
Other OECD Countries	0.4	0.1	-0.2	0.3	0.0	0.0	0.7
Emerging Countries	0.2	0.0	0.1	0.1	0.0	0.3	0.6
Total	1.9	0.3	-1.4	3.7	0.6	1.1	6.2
				2005/2006			
United States	-	0.5	1.0	-0.5	0.1	0.8	2.0
United Kingdom	1.0	-	0.1	0.0	0.0	0.2	1.4
Euro area	1.7	0.5	1.3	0.2	0.1	0.3	4.1
Japan	0.2	0.1	0.0	-	0.0	0.1	0.5
Other OECD Countries	1.0	0.2	0.4	0.0	0.2	0.2	2.0
Emerging Countries	0.4	-0.2	0.0	0.0	0.0	0.5	0.8
Total	4.4	1.0	2.9	-0.4	0.5	2.2	10.7
				2006/2007			
United States	-	-1.1	-1.2	-0.3	-0.5	-0.3	-3.4
United Kingdom	-0.5	-	-0.8	-0.3	-0.2	0.0	-1.8
Euro area	-1.2	-0.7	-2.3	-0.4	-0.3	0.0	-4.9
Japan	-0.4	-0.1	-0.1	-	0.0	0.0	-0.6
Other OECD Countries	0.6	-0.1	-0.1	0.0	-0.1	0.0	0.3
Emerging Countries	0.4	0.0	0.1	0.1	0.0	0.1	0.8
Total	-1.1	-2.1	-4.4	-0.8	-1.0	-0.2	-9.6
				2007/2008			
United States	-	-1.6	-3.6	-1.9	-1.9	-2.9	-11.7
United Kingdom	-1.4	-	-0.8	-0.7	-0.3	-0.7	-4.0
Euro area	-2.9	-0.8	-2.9	-1.1	-0.5	-0.9	-9.2
Japan	-0.5	0.0	-0.2	-	-0.1	-0.2	-1.0
Other OECD Countries	-2.1	-0.3	-1.1	-0.3	-0.3	-0.3	-4.4
Emerging Countries	-0.2	0.0	-0.1	0.0	0.0	-0.6	-1.0
Total	-7.1	-2.6	-8.8	-4.1	-3.1	-5.6	-31.3
				2008/2009			
United States	-	9.3	6.2	1.4	4.7	6.0	27.6
United Kingdom	4.3	-	3.1	0.8	1.4	1.1	10.7
Euro area	7.0	4.1	7.9	0.9	1.1	1.7	22.6
Japan	3.6	0.7	0.7	-	0.4	0.4	5.9
Other OECD Countries	8.8	3.0	3.1	0.5	1.3	1.0	17.7
Emerging Countries	2.1	2.4	0.9	0.1	0.1	1.0	6.7
Total	25.8	19.6	21.9	3.7	9.0	11.2	91.2

Table 3: Cross section estimates with double fixed effects (à la Lane and Milesi-Ferretti (2008)) - Full Sample

VARIABLES	2001	2002	2003	2004	2005	2006	2007	2008	2009
Log bilateral trade	0.3306***	0.4162***	0.4661***	0.3584***	0.2899***	0.2701***	0.3839***	0.2984***	0.4026***
	(0.099)	(0.104)	(0.095)	(0.090)	(0.090)	(0.085)	(0.085)	(0.098)	(0.102)
Correl. in idiosyncratic GDP	0.1896	0.2530	0.0541	0.0645	−0.1402	−0.2073	−0.1140	−0.0737	−0.2455
	(0.207)	(0.197)	(0.163)	(0.161)	(0.168)	(0.156)	(0.157)	(0.174)	(0.178)
Correl. in stock returns	2.6284***	1.6040**	1.5809**	1.4197**	1.0510*	1.0020	1.1834*	1.1128	3.2647***
	(0.593)	(0.665)	(0.650)	(0.620)	(0.627)	(0.618)	(0.615)	(0.784)	(0.860)
Correl. Growth-stock ret.	0.5543**	0.3043	0.2876	−0.0170	−0.1126	0.0300	0.0863	0.2344	0.3918
	(0.221)	(0.237)	(0.237)	(0.231)	(0.240)	(0.237)	(0.242)	(0.299)	(0.359)
Log distance	−0.1734	−0.1174	−0.0598	0.0585	−0.1441	−0.3527***	−0.0112	−0.2819*	−0.1423
	(0.150)	(0.155)	(0.146)	(0.139)	(0.141)	(0.133)	(0.134)	(0.150)	(0.148)
Time difference	−0.0502*	−0.0774***	−0.0468*	−0.0981***	−0.0982***	−0.0756***	−0.1112***	−0.0805***	−0.0560**
	(0.028)	(0.028)	(0.026)	(0.024)	(0.025)	(0.024)	(0.024)	(0.027)	(0.028)
Common language	0.3713**	0.3106*	0.2598*	0.3553**	0.3058*	0.1607	0.4859***	0.0797	0.2519
	(0.174)	(0.175)	(0.157)	(0.153)	(0.158)	(0.151)	(0.153)	(0.172)	(0.169)
Colony dummy	0.4653*	0.5999**	0.2819	0.5243**	0.3310	0.5546**	0.6103**	0.5036*	0.7584**
	(0.267)	(0.269)	(0.252)	(0.242)	(0.253)	(0.243)	(0.242)	(0.269)	(0.298)
Tax treaty	0.0335	−0.0048	0.0504	0.0794	0.4234***	0.4189***	0.4028***	0.2702	0.2371
	(0.132)	(0.139)	(0.138)	(0.136)	(0.141)	(0.135)	(0.137)	(0.166)	(0.167)
Currency union dummy	0.1190	0.1851	0.2962	0.3882*	0.4500**	0.5070**	0.4241**	0.4657**	0.6166***
	(0.224)	(0.221)	(0.203)	(0.199)	(0.206)	(0.199)	(0.203)	(0.224)	(0.219)
Common legal origin	0.2208*	0.4004***	0.3640***	0.3646***	0.5060***	0.3467***	0.1288	0.3440***	0.1094
	(0.129)	(0.130)	(0.118)	(0.113)	(0.117)	(0.111)	(0.112)	(0.127)	(0.128)
Overall score of freedom in the host country	0.1574***	0.3800***	0.1796***	0.2098***	0.2169***	0.2165***	0.2399***	0.2419***	0.1631***
	(0.019)	(0.035)	(0.021)	(0.018)	(0.016)	(0.015)	(0.018)	(0.020)	(0.020)
Constant	−9.3853***	−27.3493***	−12.4329***	−14.6276***	−13.1043***	−11.1202***	−17.1033***	−14.3707***	−11.2190***
	(1.521)	(1.902)	(1.392)	(1.346)	(1.401)	(1.362)	(1.515)	(1.572)	(1.712)
Observations	861	838	945	1,009	1,020	1,061	1,098	915	863
R-squared	0.878	0.874	0.887	0.880	0.880	0.883	0.879	0.882	0.883

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Dependent variable: equity holdings of source country i in host country j (x_{ij}) measured in tens of billion of U.S. dollars
Estimated equation: $\log(x_{ij}) = \phi_i + \phi_j + \beta Z_{ij} + \epsilon_{ij}$

Table 4: Cross section estimates with double fixed effects (à la Lane and Milesi-Ferretti (2008)) - Oecd Countries

VARIABLES	2001	2002	2003	2004	2005	2006	2007	2008	2009
Log bilateral trade	0.4168***	0.4859***	0.4434***	0.2929***	0.2907***	0.3752***	0.3780***	0.1534	0.3049***
	(0.094)	(0.098)	(0.089)	(0.087)	(0.094)	(0.083)	(0.080)	(0.098)	(0.089)
Correl. in idiosyncratic GDP	−0.1890	−0.0461	−0.0894	−0.0769	−0.2318	−0.1220	−0.1108	−0.0985	−0.1693
	(0.199)	(0.182)	(0.150)	(0.153)	(0.172)	(0.151)	(0.149)	(0.180)	(0.159)
Correl. in stock returns	0.9410	−0.2876	−0.0720	0.1782	−0.3084	−0.0349	0.6675	0.0875	2.2800***
	(0.599)	(0.646)	(0.643)	(0.629)	(0.672)	(0.607)	(0.590)	(0.860)	(0.785)
Correl. Growth-stock ret.	0.1632	0.0474	−0.3616	−0.7894***	−0.9122***	−0.6767***	−0.3428	−0.3838	0.1290
	(0.220)	(0.228)	(0.231)	(0.233)	(0.263)	(0.238)	(0.235)	(0.312)	(0.362)
Log distance	0.1051	0.0126	0.0940	0.0638	−0.0667	−0.1558	−0.0779	−0.4442***	−0.1439
	(0.146)	(0.145)	(0.136)	(0.132)	(0.146)	(0.128)	(0.123)	(0.156)	(0.129)
Time difference	−0.0229	−0.0363	−0.0357	−0.0598**	−0.0504*	0.0010	0.0132	0.0222	0.0398
	(0.027)	(0.027)	(0.025)	(0.024)	(0.028)	(0.025)	(0.024)	(0.030)	(0.027)
Common language	0.4734***	0.4397***	0.3057**	0.4159***	0.3186**	0.1822	0.4197***	0.1660	0.2195
	(0.166)	(0.161)	(0.144)	(0.144)	(0.160)	(0.141)	(0.138)	(0.175)	(0.146)
Colony dummy	0.0609	0.1751	−0.0515	0.0820	−0.0060	0.2538	0.1914	−0.0463	0.0828
	(0.251)	(0.241)	(0.226)	(0.219)	(0.245)	(0.214)	(0.207)	(0.257)	(0.244)
Tax treaty	−0.1320	−0.1124	−0.1486	−0.0442	0.1148	0.1654	0.0854	0.0126	0.0535
	(0.127)	(0.127)	(0.127)	(0.130)	(0.145)	(0.130)	(0.129)	(0.181)	(0.157)
Currency union dummy	0.5246***	0.6704***	0.5137***	0.6319***	0.7537***	0.7763***	0.7553***	0.7972***	0.8581***
	(0.201)	(0.192)	(0.177)	(0.176)	(0.193)	(0.171)	(0.168)	(0.201)	(0.173)
Common legal origin	0.2363*	0.2752**	0.3512***	0.3834***	0.3892***	0.1917*	0.0897	0.2658**	0.1342
	(0.122)	(0.119)	(0.107)	(0.106)	(0.117)	(0.103)	(0.101)	(0.127)	(0.110)
Overall score of freedom in the host country	0.2143***	0.3329***	0.4690***	0.2467***	0.2507***	0.2341***	0.2417***	0.2625***	0.1634***
	(0.018)	(0.026)	(0.031)	(0.017)	(0.017)	(0.014)	(0.016)	(0.020)	(0.017)
Constant	−16.4221***	−24.3458***	−34.9817***	−16.4351***	−15.5273***	−14.9243***	−16.9970***	−13.2398***	−10.7404***
	(1.542)	(1.440)	(1.543)	(1.274)	(1.431)	(1.315)	(1.325)	(1.572)	(1.458)
Observations	685	653	737	754	751	778	791	652	626
R-squared	0.906	0.912	0.921	0.912	0.904	0.918	0.921	0.911	0.923

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Dependent variable: equity holdings of source country i in host country j (x_{ij}) measured in tens of billion of U.S. dollars
Estimated equation: $\log(x_{ij}) = \phi_i + \phi_j + \beta Z_{ij} + \epsilon_{ij}$

Table 5: Cross section estimates with double fixed effects (à la Lane and Milesi-Ferretti (2008)) - Emerging Markets

VARIABLES	2001	2002	2003	2004	2005	2006	2007	2008	2009
Log bilateral trade	−0.0234	0.1912	0.0291	0.1738	0.1318	0.0539	0.3442	0.5672**	0.7951***
	(0.345)	(0.348)	(0.310)	(0.247)	(0.204)	(0.220)	(0.235)	(0.264)	(0.291)
Correl. in idiosyncratic GDP	−0.0747	1.0727	−0.1632	0.4821	−0.0879	0.0510	0.0710	−0.2785	0.2792
	(0.831)	(0.883)	(0.771)	(0.543)	(0.477)	(0.494)	(0.529)	(0.609)	(0.583)
Correl. in stock returns	0.5822	1.3908	−0.0536	1.2298	1.3068	1.7714	0.9361	0.6321	4.3541*
	(1.806)	(2.293)	(2.128)	(1.676)	(1.397)	(1.583)	(1.692)	(1.834)	(2.331)
Correl. Growth-stock ret.	−1.5347	−0.8449	0.5129	1.1885	0.3780	0.5338	0.2058	0.6639	−1.5450
	(0.979)	(0.956)	(1.004)	(0.795)	(0.690)	(0.732)	(0.868)	(1.007)	(1.198)
Log distance	−1.5258***	−1.1795**	−0.9311*	−0.3992	−0.9979**	−1.3600***	−0.6778	−0.4292	−0.6409
	(0.549)	(0.586)	(0.531)	(0.470)	(0.391)	(0.397)	(0.417)	(0.409)	(0.475)
Time difference	−0.0966	−0.1137	−0.1581*	−0.1665**	−0.0824	−0.0780	−0.1800***	−0.1473**	−0.0403
	(0.086)	(0.096)	(0.087)	(0.069)	(0.058)	(0.062)	(0.066)	(0.071)	(0.076)
Common language	0.4079	0.6224	0.7849	0.5741	0.2822	0.1129	0.8659**	−0.3748	0.2017
	(0.511)	(0.531)	(0.496)	(0.433)	(0.388)	(0.411)	(0.431)	(0.418)	(0.480)
Colony dummy	1.8632**	2.1015**	1.9949**	2.1697***	1.8029***	1.7502**	1.9580***	2.1288***	2.6578***
	(0.818)	(0.861)	(0.791)	(0.723)	(0.628)	(0.729)	(0.724)	(0.692)	(0.875)
Tax treaty	0.5327	0.0304	0.5127	0.4310	1.0901***	1.0340***	0.6330*	0.3625	0.1666
	(0.402)	(0.451)	(0.437)	(0.365)	(0.318)	(0.333)	(0.351)	(0.394)	(0.414)
Currency union dummy	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Common legal origin	0.6566	0.5086	0.4880	0.3057	0.6823**	0.3758	−0.0021	0.3638	−0.3528
	(0.405)	(0.417)	(0.382)	(0.310)	(0.276)	(0.292)	(0.299)	(0.311)	(0.356)
Overall score of freedom in the host country	0.1352**	0.2462***	0.3232***	0.1904***	0.1788***	0.1705***	0.2332***	0.2574***	0.1741***
	(0.067)	(0.091)	(0.087)	(0.048)	(0.036)	(0.040)	(0.067)	(0.065)	(0.065)
Constant	−1.9341	−12.1723*	−23.0263***	−17.2515***	−10.4018***	−9.0083***	−21.4053***	−22.3106***	−17.9775***
	(5.566)	(6.652)	(6.513)	(3.563)	(2.955)	(3.365)	(5.220)	(4.760)	(5.087)
Observations	176	185	208	255	269	283	307	263	237
R-squared	0.830	0.796	0.802	0.802	0.839	0.805	0.791	0.808	0.797

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Dependent variable: equity holdings of source country i in host country j (x_{ij}) measured in tens of billion of U.S. dollars
Estimated equation: $\log(x_{ij}) = \phi_i + \phi_j + \beta Z_{ij} + \epsilon_{ij}$

Table 6: 2001-2009 Panel estimates with pair fixed effects

VARIABLES	(1) Panel FE IV	(2) Panel FE IV	(3) Panel FE IV	(4) Panel FE IV	(5) Tobit	(6) Tobit	(7) Probit	(8) Probit
				Full Sample				
Log bilateral trade	0.3183***	0.3183	0.3362***	0.3362	0.7586***	0.7754***	0.0457***	0.0469***
	(0.066)	(0.213)	(0.066)	(0.215)	(0.010)	(0.011)	(0.002)	(0.002)
Corr. idiosync. GDP	−0.3009**	−0.3009**	−0.3302***	−0.3302***	−0.2715***	−0.1924***	−0.0073	−0.0011
	(0.121)	(0.133)	(0.121)	(0.115)	(0.051)	(0.052)	(0.009)	(0.009)
Correl. in stock returns	−2.2683***	−2.2683***	−2.2229***	−2.2229***	5.1106***	4.3438***	0.4401***	0.3837***
	(0.567)	(0.746)	(0.563)	(0.727)	(0.096)	(0.099)	(0.016)	(0.016)
Correl. growth-stock return	−0.0430	−0.0430	−0.0235	−0.0235	0.1051*	0.1910***	−0.0300***	−0.0252***
	(0.321)	(0.424)	(0.321)	(0.407)	(0.055)	(0.054)	(0.007)	(0.007)
Tax treaty	−0.0519	−0.0519	−0.0573	−0.0573	0.2949***	0.3860***	0.0987***	0.1004***
	(0.105)	(0.093)	(0.105)	(0.092)	(0.038)	(0.037)	(0.006)	(0.006)
Freedom in host country			0.0344***	0.0344***		0.0327***		0.0024***
			(0.008)	(0.013)		(0.002)		(0.000)
Constant					−8.5580***	−10.4575***		
					(0.065)	(0.137)		
Observations	9267	9267	9267	9267	13229	13229	13438	13438
R-squared	0.089	0.089	0.092	0.092	0.219	0.225	0.343	0.348
				OECD countries				
Log bilateral trade	0.3385***	0.3385*	0.3472***	0.3472**	0.7664***	0.7945***	0.0217***	0.0220***
	(0.074)	(0.174)	(0.074)	(0.175)	(0.011)	(0.011)	(0.001)	(0.001)
Corr. idiosync. GDP	−0.0753	−0.0753	−0.1036	−0.1036	−0.1492***	−0.0666	0.0020	0.0032
	(0.110)	(0.116)	(0.111)	(0.119)	(0.058)	(0.056)	(0.007)	(0.007)
Correl. in stock returns	−2.9379***	−2.9379***	−2.8842***	−2.8842***	5.3078***	4.0995***	0.2869***	0.2623***
	(0.526)	(0.307)	(0.525)	(0.307)	(0.105)	(0.116)	(0.012)	(0.013)
Correl. growth-stock return	−0.0600	−0.0600	−0.0406	−0.0406	0.4185***	0.4714***	−0.0235***	−0.0229***
	(0.348)	(0.320)	(0.348)	(0.306)	(0.059)	(0.058)	(0.005)	(0.005)
Tax treaty	0.0612	0.0612	0.0540	0.0540	0.0750	0.2750***	0.0446***	0.0469***
	(0.110)	(0.098)	(0.110)	(0.099)	(0.046)	(0.046)	(0.005)	(0.005)
Freedom in host country			0.0200**	0.0200*		0.0433***		0.0008***
			(0.008)	(0.011)		(0.002)		(0.000)
Constant					−7.9142***	−10.6443***		
					(0.071)	(0.146)		
Observations	6495	6495	6495	6495	8623	8623	8766	8766
R-squared	0.103	0.103	0.105	0.105	0.253	0.264	0.363	0.364
				Emerging countries				
Log bilateral trade	0.1733	0.1733	0.2074	0.2074	0.6061***	0.6114***	0.0967***	0.1003***
	(0.132)	(0.226)	(0.131)	(0.230)	(0.013)	(0.013)	(0.004)	(0.004)
Corr. idiosync. GDP	−0.1331	−0.1331	−0.0048	−0.0048	−0.5364***	−0.4206***	−0.0336	−0.0063
	(0.559)	(0.917)	(0.563)	(0.926)	(0.067)	(0.066)	(0.022)	(0.022)
Correl. in stock returns	1.2633	1.2633	0.9501	0.9501	2.7916***	2.2589***	0.6493***	0.5280***
	(1.458)	(1.364)	(1.468)	(1.394)	(0.143)	(0.145)	(0.044)	(0.045)
Correl. growth-stock return	−0.9500	−0.9500	−1.1560	−1.1560*	−0.1713**	−0.0042	−0.0126	0.0189
	(0.893)	(0.618)	(0.916)	(0.664)	(0.080)	(0.080)	(0.021)	(0.021)
Tax treaty	−0.3032	−0.3032*	−0.2879	−0.2879**	−0.1162**	−0.1291***	0.1720***	0.1558***
	(0.232)	(0.155)	(0.229)	(0.144)	(0.047)	(0.046)	(0.014)	(0.014)
Freedom in host country			0.0628***	0.0628**		0.0325***		0.0075***
			(0.020)	(0.028)		(0.002)		(0.001)
Constant					−8.4242***	−10.7188***		
					(0.096)	(0.183)		
Observations	2772	2772	2772	2772	4606	4606	4672	4672
R-squared	0.136	0.136	0.140	0.140	0.195	0.207	0.332	0.349

*** p<0.01, ** p<0.05, * p<0.1

Estimated equations: $\log(x_{ij}) = \phi_{ij} + \nu_t + \beta Z_{ij} + \epsilon_{ij}$.

All models include time dummies. Columns (1) and (3) report panel instrumental variable fixed effects estimate and White (1980) heteroscedasticity-consistent standard errors. Columns (2) and (4) report panel fixed effects instrumental variable estimate with Discroll and Kraay (1998) standard errors robust to cross sectional dependence, heteroscedasticity and first order autocorrelation. We have employed as excluded instruments lagged values of the following variables: correlation in stock returns, correlation in growth-stock return, correlation in idiosyncratic GDP and logged bilateral trade. Dependent variable in regressions (5) and (6) is: $\log(x_{ij} + 0.001)$. Dependent variable in regressions (7) and (8) is a binary variable taking value 1 if $x_{ij} > 0$ and zero otherwise. Columns (7) and (8) report marginal effects.

Table 7: 2001-2009 Panel estimates in log differences with pair fixed effects

VARIABLES	(1) Panel FE	(2) Panel FE	(3) Panel FE	(4) Panel FE
			Full Sample	
Δ log bilateral trade	0.7057***	0.7057***	0.7061***	0.7061***
	(0.057)	(0.035)	(0.057)	(0.035)
ΔCorrel. in idiosyncratic GDP	−0.3484***	−0.3484***	−0.3457***	−0.3457***
	(0.111)	(0.093)	(0.111)	(0.092)
ΔCorrel. in stock returns	1.6643***	1.6643	1.6635***	1.6635
	(0.499)	(1.167)	(0.499)	(1.169)
ΔCorrel. growth-stock return	0.9695***	0.9695***	0.9679***	0.9679***
	(0.125)	(0.225)	(0.125)	(0.225)
Tax treaty	−0.0934***	−0.0934	−0.0923***	−0.0923
	(0.032)	(0.083)	(0.032)	(0.083)
Freedom in the host country			−0.0018*	−0.0018
			(0.001)	(0.001)
Constant	0.0527***	0.0527	0.1781**	0.0000
	(0.017)	(0.039)	(0.072)	(0.000)
Observations	8722	8722	8722	8722
R-squared	0.484	0.484	0.484	0.484
			OECD countries	
Δ log bilateral trade	0.6891***	0.6891***	0.6896***	0.6896***
	(0.064)	(0.038)	(0.064)	(0.039)
ΔCorrel. in idiosyncratic GDP	−0.3445***	−0.3445***	−0.3412***	−0.3412***
	(0.112)	(0.094)	(0.112)	(0.093)
ΔCorrel. in stock returns	1.6373***	1.6373	1.6358***	1.6358
	(0.517)	(1.161)	(0.516)	(1.165)
ΔCorrel. growth-stock return	0.9788***	0.9788***	0.9771***	0.9771***
	(0.127)	(0.237)	(0.127)	(0.237)
Tax treaty	−0.0820**	−0.0820	−0.0806**	−0.0806
	(0.036)	(0.085)	(0.036)	(0.084)
Freedom in the host country			−0.0021*	−0.0021
			(0.001)	(0.001)
Constant	0.0115	0.0115	0.2852***	0.2234*
	(0.020)	(0.036)	(0.091)	(0.115)
Observations	6222	6222	6222	6222
R-squared	0.515	0.515	0.515	0.515
			Emerging countries	
Δ log bilateral trade	0.6262***	0.6262***	0.6273***	0.6273***
	(0.104)	(0.054)	(0.104)	(0.054)
ΔCorrel. in idiosyncratic GDP	−0.0687	−0.0687	−0.0661	−0.0661
	(0.380)	(0.535)	(0.380)	(0.535)
ΔCorrel. in stock returns	1.3992	1.3992	1.3982	1.3982
	(1.403)	(1.537)	(1.401)	(1.533)
ΔCorrel. growth-stock return	−0.4162	−0.4162***	−0.4204	−0.4204***
	(0.328)	(0.120)	(0.327)	(0.119)
Tax treaty	−0.3450***	−0.3450***	−0.3466***	−0.3466***
	(0.064)	(0.094)	(0.064)	(0.095)
Freedom in the host country			−0.0018	−0.0018
			(0.001)	(0.001)
Constant	0.0570***	0.0570***	0.1799*	0.0000
	(0.010)	(0.005)	(0.105)	(0.000)
Observations	2500	2500	2500	2500
R-squared	0.201	0.201	0.201	0.201

*** p<0.01, ** p<0.05, * p<0.1

Estimated equations: $\Delta \log(x_{ij}) = \phi_{ij} + \nu_t + \beta \Delta Z_{ij} + \epsilon_{ij}$

Estimates are weighted by the average amount (over time) of equity investments of country i in country j. All models includes time dummies. Columns (1) and (3) report panel fixed effects estimate and White (1980) heteroscedasticity-consistent standard errors. Columns (2) and (4) report panel fixed effects instrumental variable estimate with Discroll and Kraay (1998) standard errors robust to cross sectional dependence, heteroscedasticity and first order autocorrelation.

Table 8: Degree of risk sharing versus correlation of idiosyncratic GDP

		A) All shocks **OECD** Inflows	B) Positive shocks **OECD** Inflows	C) Negative shocks **OECD** Inflows
Correlation coefficient		−0.07	−0.05	−0.01
		[0.76]	[0.82]	[0.95]
Spearman's rank correlation coefficient		−0.03	−0.05	−0.18
		[0.91]	[0.82]	[0.42]
Kendall's tau rank correlation coefficient		−0.03	−0.04	−0.11
		[0.87]	[0.82]	[0.50]
country	weighted avg corr GDP^{id}	%risk shared	%risk shared	%risk shared
TUR	−0.13	5.16	12.10	2.40
CHL	−0.07	−0.10	4.57	−2.59
ISR	−0.03	−0.95	0.02	−1.58
ISL	0.05	−15.32	−19.67	−11.19
US	0.09	−5.89	−3.30	−7.99
CHE	0.10	−5.67	−9.89	−3.27
AUS	0.12	−8.44	−41.06	−1.30
KOR	0.13	0.29	2.17	−0.58
IRL	0.15	−19.79	20.14	−80.91
NLD	0.17	16.14	9.48	24.69
GBR	0.19	19.33	24.69	17.73
SWE	0.19	−11.60	1.22	−18.64
FIN	0.20	−3.47	4.32	−6.19
NOR	0.25	−6.91	−13.88	−3.66
DNK	0.28	−0.21	1.78	−1.55
AUT	0.34	3.88	1.33	5.31
GER	0.36	−0.47	4.22	−6.23
CAN	0.36	−4.61	−10.72	−0.71
ITA	0.40	−1.41	5.75	−6.26
FRA	0.40	−14.70	−14.98	−14.58
PRT	0.43	0.11	6.91	−5.26
ESP	0.48	−5.27	−5.18	−5.33
		A) All shocks **EMU** Inflows	B) Positive shocks **EMU** Inflows	C) Negative shocks **EMU** Inflows
Correlation coefficient		−0.47	−0.75	0.19
		[0.20]	[0.02]	[0.62]
Spearman's rank correlation coefficient		−0.43	−0.83	−0.07
		[0.24]	[0.01]	[0.86]
Kendall's tau rank correlation coefficient		−0.33	−0.67	−0.11
		[0.25]	[0.02]	[0.75]
country	weighted avg corr GDP^{id}	%risk shared	%risk shared	%risk shared
IRL	0.15	−13.38	20.71	−61.61
NLD	0.17	26.62	66.82	1.69
FIN	0.20	−1.28	12.27	−4.87
AUT	0.34	10.78	24.22	−5.11
GER	0.36	−2.43	14.37	−23.15
ITA	0.40	−20.78	−21.59	−20.43
FRA	0.40	−34.77	−24.79	−39.99
PRT	0.43	0.78	11.20	−5.10
ESP	0.48	−15.83	−35.81	−7.99

Significance values in parentheses.
The degree of risk sharing is estimated according to the methodology explained in appendix C and it refers only to income inflows from abroad. A negative sign for % risk shared means a dis-smoothing effect of asset income inflows from abroad. GDP^{id} stands for idiosyncratic GDP growth rate calculated as explained in appendix B.