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INTERNATIONAL PORTFOLIO INVESTMENTS
AND THE INFORMATIONAL VALUE OF TRADE

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International Portfolio Investments and the Informational Value of Trade

Key words: Information Asymmetry, International Portfolio Investments

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International Portfolio Investments

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The Informational Value of Trade

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Abstract

A large volume of literature suggests that information asymmetry resulting from the spatial separation between investors and investments have a significant impact on the composition of investors' domestic and international portfolios. I show that institutional factors affecting trading in tangible goods help explain a substantial portion of investors' spatial bias. More importantly, I demonstrate that an information flow medium with breadth and richness directly linked to the bilateral commitment of resources between countries, that I measure by their trading intensity in tangible goods, is consistent with the prevailing country allocation in investors' international portfolios.

Key words: Information Asymmetry; International Portfolio Investments.

JEL Classification Codes: F10; G10.

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I. Introduction

A growing volume of theoretical and empirical literature suggests that the spatial separation between investors and investments strongly influence the composition of investors' portfolios. Recent studies document that this observation prevails for domestic portfolios as well as international portfolios.¹ For example, French and Poterba (1991) and Tesar and Werner (1995) show that the proportion of international investments in national equity portfolios of investors is substantially less than the predictions of the standard international finance models. Coval and Moskowitz (1999), and Grinblatt and Keloharju (2001) show that domestic portfolio of investors exhibit strong bias towards near-by stocks. These studies suggest that informational asymmetries between the local and non-local investors constitute an important indirect barrier that prohibits investment patterns conforming to modern finance theory.² Portes and Rey (1999) provide evidence that information flow proxies, such as telephone traffic between countries, are important determinants of international equity transactions and investments.³

In this study, I show that institutional factors affecting trading in tangible goods, helps explain a substantial amount of the country allocation in international investment portfolios. Information, knowledge, and experience gained through the interactions of trading in tangible goods have a significant impact on reducing the wedge of information asymmetry between countries. International trade requires effective channels of communication that provides reliable cross border transmission of asset specific information, information on the market conditions as well as the functioning of organizations and institutions that facilitate the trading activity. Therefore, the trading relationships between two countries imply commitment of resources, financial and otherwise to activities that require transmission of information.

¹ This phenomena, usually dubbed "home bias" runs counter intuitive to the potential benefits of international diversification documented by Grubel (1968), Levy and Sarnat (1970), Grubel and Fadner (1971), Solnik (1974a, 1974b), and more recently by Grauer and Hakansson (1987), Harvey (1991), and De Santis and Gerard (1997).

² Also see Gehrig (1993), Brennan and Cao (1997), Kang and Stulz (1997), and Huberman (2001).

³ A number of other explanations have been put forward in the financial literature. Inflation hedging motives ((Adler and Dumas (1983), and Cooper and Kaplanis (1994)), taxation and transaction costs ((Black (1974), Stulz (1981), and Cooper and Kaplanis (1986)), human capital Hedging (Baxter and Jermann (1997), and a number of other explanations are unable to reconcile the magnitude of the observed "home bias"(Uppal (1992), (Lewis (1999), and Bartram and Dufey (2001)).

Merton (1987) notes that “Although the types of costs underlying the signaling and differential information models would surely be an important part of a more-detailed information-cost structure..., there is another type of cost that logically proceeds them: namely, the cost of making investors aware of the firm. That is for party A to convey useful information to party B, requires not only that Party A has a transmitter and sends an accurate message, but also that Party B has a receiver.” Using this terminology an expansion of international trade between two countries usually imply the establishing of new active receivers on both sides of the transaction.

The information flow in connection to trade in tangible goods also includes information on potential investment objects in the other country. The experience gained through trade allows for proper calibration of individual pieces of information, e.g. which pieces of information can be considered trustworthy and which not. The higher the intensity of trade between two countries, the more intense is the day to day information flow between them and the more will the relative local information advantage be decimated. Increased information flow will also expose the foreign investor to a larger pool of potential investment opportunities. Other things equal, more trade should thus lead to an increased weight for that country in the foreign investor’s international portfolio allocation.

To elaborate on this hypothesis, I bring together two strands of the economic literature – that on finance and that on economics to model the characteristics of international financial markets influencing the patterns of international portfolio flows. I formulate a regression model that controls for the influences of geography, financial market size and other institutional variables that have an influence on the manner by which investors formulate the country allocations in their international portfolios.

Economists have long been aware of the impact of geography on the patterns of international trade. Gravity models that depicts bilateral trade between countries as directly related to their respective income levels and inversely related to the distance that separates them, has produced one of the most robust empirical findings in economics.^{4,5} In these models distance proxy transaction costs encompassing the

⁴ Leamer and Levinsohn (1995), page 44.

effects of transportation cost, tariff, and non-tariff barriers as well as other factors such as the geographically induced costs on information gathering to find reliable trading partners. Deardorff (1995), noting the empirical success of the gravity model and its apparent conciliation with a number of popular trade theories concludes: “I suspect that just about any plausible model of trade would yield something very like the gravity equation, whose empirical success is therefore not evidence of anything, but just a fact of life”.

Martin and Rey (1999) reconfirmed this conclusion. They show that in a model where it is assumed that assets are imperfect substitutes, the presence of cross border transaction cost and some assumptions of the risk behavior of traders will lead to a gravity like formulation. They show that even though trade in their model is initiated for the purpose of diversification, a large enough friction can have an influence on shaping the geographical distribution of equity flows. Portes and Rey (1999) present support for the gravity model in explaining the bilateral equity flows between 14 countries. They find a highly significant coefficient for distance in addition to obvious controlling variables like market capitalization of the receiving country. Since distance at least to some extent measures information costs this finding tends to support an explanation based on asymmetric information. Further support for the asymmetric information explanation is obtained from the fact that the variable "distance" in their regression drops in magnitude and significance with the addition of other information related variables, like telephone traffic volume to the gravity model formulation. Aba Al-Khail (1999) provides evidence of the success of this formulation in studying the international country allocation of Finnish investors.

In finance, there is mounting empirical evidence that investors exhibit a strong bias towards domestic and near-by stocks. For example, most recently, Coval and Moskowitz (1999) show that domestic portfolios of U.S. based mutual funds are skewed towards near-by firms. They further find that this bias is larger for smaller, more leveraged and more localized firms. Grinblatt and Keloharju (2001) show that in addition to distance, the language of the annual reports and the culture of the CEO's

⁵ The gravity model formulation has been successfully reconciled with the generalized expenditure share model (Anderson 1979), differentiated products models of trade (Helpman 1984 and Bergstrand

of Finnish corporations play an important role in the equity selection of Finnish investors. These studies suggest that informational asymmetries between the local and non-local investors constitute an important indirect barrier that distorts investment patterns away from what is predicted by modern finance theory.

There is also some evidence showing that geographic proximity seems to imply an informational advantage that show up in returns. Coval and Moskowitz (2001) examining U.S. mutual funds show that fund managers' bias their investments towards nearby equities and in the process earn substantial abnormal returns. Hau (2001) analyzing data from the electronic trading system Xetra of the German Security Exchange show that German professional traders obtain a significantly higher return than foreign traders do.

In addition to geographical distance, the model in this paper also incorporates two sets of variables: country specific variables and information variables that concern the bilateral relationship between two countries. The country specific variables are financial development, corporate governance and openness, financial performance and cultural factors. The bilaterally determined variable, as measured by the relative intensity of trading in tangible goods, measures the information flow between a specific pair of countries.

Using a new and comprehensive data set on international portfolio investments, I show that bilateral trading intensity as well as export and import intensities in tangible goods apparently contribute to a substantial reduction in information asymmetries that will reduce the transaction costs of portfolio investing between countries. I also demonstrate that our findings are robust against well-documented as well as newly established international trade empirical regularities. I show that the information encoded in the bilateral trade intensity variables is unrelated to the industrial structure of countries and does not depend on the technology content of trade. The results thus suggest that intensity of trade between countries does provide an important medium of access to information also on equities of the foreign trading partner.

1985), and within the context of the classical framework coupled with the assumption that countries

Exhibit A International Portfolio (Equity) Investment, end 1997.

Investment Sending Countries			Investment Receiving Countries		
<i>Developed Economies:</i>			<i>Developed Economies:</i>		
Australia	Iceland	Portugal	Australia	Germany	Norway
Austria	Ireland	Spain	Austria	Greece	Portugal
Belgium	Italy	Sweden	Belgium	Ireland	Spain
Canada	Japan	UK	Canada	Italy	Sweden
Denmark	Netherlands	USA	Denmark	Japan	Switzerland
Finland	New Zealand		Finland	Netherlands	UK
France	Norway		France	New Zealand	USA
<i>Developing Economies:</i>			<i>Developing Economies:</i>		
Argentina			Argentina	Indonesia	Poland
Chile			Brazil	Israel	S. Africa
Indonesia			Chile	Korea	Singapore
Israel			China	Malaysia	Taiwan
Korea			China, HK	Mexico	Thailand
Malaysia			Colombia	Morocco	Turkey
Singapore			Ecuador	Pakistan	Venezuela
Thailand			Hungary	Peru	
Venezuela			India	Philippines	
Total Portfolio Investment: US\$ 2,305,655 millions					

The remainder of this paper is organized as follows. In section II, I present a brief description of the data and acknowledge their sources. Section III motivates and presents a simple model for international portfolio (equity) investment that accounts for the role of geography as well as the symmetrically observed country specific variables. In section IV, I construct information variables on bilateral trade between pairs of countries. I demonstrate that they have a substantial impact on the reduction of transaction costs associated with portfolio investment. Section V presents some robustness analysis. Finally, section VI provides a summary of the results.

II. Data Description

The data for the international portfolio (equity) investment positions for twenty-nine countries is from the International Momentary Fund.⁶ With the exception of Germany, the data covers outward portfolio (equity) investment of investors residing in all the

produce differentiated goods (Deardorff 1995).

⁶ IMF (1999 a).

major financial centers and nineteen (19) industrialized countries⁷ as of 31 December 1997. Exhibit A presents the countries included in our data set.

The bilateral tangible goods (merchandise) export and import data are from the Center for International data. From the same data set, I extract SITC 7XXX exports and imports as representing technology based bilateral trade flows.⁸ Country total merchandise exports and imports data are from The World Trade Organization. Market capitalization and other financial figures are from the International Monetary Fund publications, Datastream[®], and World Bank publications. Cities latitudes and longitudes are from the CIA web site. Linguistic tie dummies are from the NBER and Professor Shang-Jin Wei's, Harvard University web site.

III. The Modeling of International Portfolio Investment and Transaction Cost

In this section, I will present a simple model for international portfolio investment.

I measure portfolio investments as the share of portfolio (equity) investment of the sending country [s] to the receiving country [r] as a percentage of the total international portfolio investment of the sending country [s], in natural logarithmic form. In addition to reducing wealth effects and heteroscedasticity, this formulation allows more focus on the drivers behind the observed relative differences in the international portfolio investment pattern.

I use the natural logarithm of the distance as a proxy for transaction costs arising from geographically induced information asymmetry. Portes and Rey (1999) and Aba Al-Khail (1999) show that distance perform as a reasonable proxy for transaction costs in modeling international portfolio investments. Coval and Moskowitz (1999) and Grinblatt and Keloharju (2001) find distance, under national setting, to play an important role in equity investing and thus in information asymmetry between the near-by investor and the distant investor.

⁷ We use the IMF (1999b) industrialized country classification.

⁸ Feenstra (2000) provides a comprehensive description of this data.

I include the equity market size of the investment receiving country [r] as a proxy for the available portfolio investment mass and its level of development. Portes and Rey (1999) and Aba Al-Khail (1999) show that the equity market size of the investment receiving country is an important determinant of gross flows and stocks of international portfolio investments. In addition, recent research shows that larger markets have more informative prices, i.e. less price synchronicity relative to other stocks in the market, implying more company specific news are reflected in the prices of the individual equities listed in those markets.⁹ This feature allows more informed investment decisions for a wider base of investors and lessens the level of information asymmetries between the local and the foreign investors.¹⁰

I include per capita GDP, in natural logarithmic form, as a control variable for the rule of law, law enforcement and quality of accounting influence on the share of portfolio (equity) investment of the sending country [s] to the receiving country [r].¹¹ In addition, Morck et al. (2000) show that the per capita GDP is highly correlated with their proxy measuring government respect for private property. They show that government respect for private property is the main driver of the more asynchronous stock prices observed in higher income countries. Also, similarly to the equity market size variable, per capita GDP is inversely linked with the extent of information asymmetry between the local and the foreign investors.¹²

The model also controls for the size of the economy for both the investment sending country [s] and the investment receiving country [r] by including the product of their respective GDP, in natural logarithmic form. The inclusion of this variable

⁹ See Morck et al. (2000). Also, Brennan and Cao (1997) find that foreign investors do not appear to face any informational disadvantage when investing in a large capital market such as that of the United States.

¹⁰ On a national level, Falkenstein (1996) using data on the holdings of US mutual funds finds that in addition to conventional risk proxies, funds prefer liquid and large stocks. He equates these preferences with information availability asymmetry between the large stocks and small stocks. Merton (1987) argues that investors hold shares in firms in which they are more familiar and investors are more likely to be familiar with large firms. Kang and Stulz (1997) find market value to be an important determinant of foreign holdings of Japanese firms.

¹¹ La Porta et al. (1997) report that the correlation between the per capita GDP and their measure of rule of law is 0.87. Also, La Porta et al. (1998) report that per capita GDP accounts for more than half the variation in their law enforcement and accounting standards measures.

¹² Per capita GDP is often used as a measure of market development and as a proxy for the level of intra-industry trade between countries.

complements the equity market size variable allowing for the interaction of the macroeconomic size and financial market size in the investing decision.

The model also includes ex-post GDP growth (1990 – 1997) since growth is likely to have had an effect on valuation (exogenously and endogenously) and market breadth.¹³

I include a linguistic tie dummy to control for the fact that common language pick up cultural and political factors that may reduce transaction costs and encourage bilateral trading and information flows.¹⁴ Also, since language is not independent of culture, nations that share a common language often share, to some extent, common history, institutions, and values. Platteau (1994) argues that shared values and institutions are likely to reduce the cost of making and enforcing contracts. Grinblatt and Keloharju (2001) show that culture and language are important factors in investors' selection of equities even within national boundaries.

I also allow for performance-induced allocation of the international portfolio investment by controlling for the performance of the receiving country [r] equity markets. The data, stock positions, as well as the ability of the market participants' ability to adjust positions in a relatively short period of time, I opt to only include the annualized monthly returns of the market equity index of the receiving country [r] during 1997 measured in US dollars.¹⁵

I include the volatility of the market returns, measured in US dollars, of the investment receiving country [r] as a control for portfolio investment levels that may be influenced by aversion to risk.

The model also controls for the interdependence of the equity markets between the investment sending country [s] and the investment receiving country [r] by including the correlation between their monthly returns, measured in US dollars, for the period 1993 – 1997.

¹³ For example, see La Porta et al. (1997) page 1139. The association between financial development and economic growth has been suggested by a number of authors, for example, Goldsmith (1975) and Greenwood and Jovanovic (1990).

¹⁴ For example see Frankel and Wei (1993).

¹⁵ We cannot make any inference on the actual stock portfolio investments prior to December 31, 1997.

With all variables included our regression model is as follows:

$$\begin{aligned}
 &Ln([\text{RELATIVE PORTFOLIO INVESTMENT}]_{sr}) = \\
 &\beta_1 + \beta_2 Ln([\text{DISTNACE}]_{sr}) + \beta_3 Ln([\text{EQUITY MARKET SIZE}]_r) \\
 &+ \beta_4 Ln([\text{per capita GDP}]_r) + \beta_5 Ln([\text{GDP GROWTH}]_r) \\
 &+ \beta_6 Ln([\text{TRADE OPENNESS}]_r) + \beta_7 [\text{MARKET RETURN "1997"}]_r \\
 &+ \beta_8 [\text{VOLATILITY OF MARKET RETURNS "1993 -1997"}]_r \\
 &+ \beta_9 Ln([\text{GDP}_s \times \text{GDP}_r]) + \beta_{10} [\text{CORRELATION OF MARKET RETURNS} \\
 &\text{"1993 - 1997"}]_{sr} + \beta_{11} [\text{LINGUSTIC TIE}]_{sr} + \text{error term}
 \end{aligned}$$

where, $[\text{RELATIVE PORTFOLIO INVESTMENT}]_{sr}$ is the share of portfolio (equity) investment of the sending country [s] to the receiving country [r] as a percentage of the total international portfolio investment of the sending country [s], in natural logarithmic form, $[\text{DISTANCE}]_{sr}$ is the direct (great circle) distance between the economic centers of the sending country [s] and the receiving country [r], in natural logarithmic form, $[\text{EQUITY MARKET SIZE}]_r$ is the market capitalization of the receiving country [r] at the end of 1996, in natural logarithmic form, $[\text{per capita GDP}]_r$ is per capita gross domestic product of the receiving country [r] for 1997, in natural logarithmic form, $[\text{GDP GROWTH}]_r$ is average growth of the gross domestic product of the receiving country [r] during 1990-1997, $[\text{TRADE OPENNESS}]_r$ is the receiving country [r] total trade with the world divided by it'd GDP for 1997, in natural logarithmic form, $[\text{MARKET RETURN "1997"}]_r$ is the annualized monthly returns of the equity market index of the receiving country [r] during 1997 measured in US dollars, $[\text{VOLATILITY OF MARKET RETURNS "1993 -1997"}]_r$ is the volatility of the monthly market returns of the investment receiving country measured in US dollars, $[\text{GDP}_s \times \text{GDP}_r]$ is the gross domestic product of the investment sending country [s] and the gross domestic product of the investment receiving country [r], for 1997, $[\text{CORRELATION OF MARKET RETURNS "1993- 1997"}]_{sr}$ is the 5-year, 1993-1997, monthly correlation between the monthly returns of the equity market indices of the sending country [s] and the receiving country [r], measured in US dollars, and $[\text{LINGUSTIC TIE}]_{sr}$ is a dummy variable that equals 1 if the sending country [s] and the receiving country [r] share a common language, and 0 otherwise.

Column 1 of table 1 presents the results of the above regression. The distance elasticity, the proxy of the impact of distance related transaction costs, is negative and highly statistically significant. This means that portfolio investments in a nearby country [j] tend to be much larger than that in a far away country [k], after adjusting for size and other institutional factors. Our results indicate that a 10% decrease in the distance between the capitals of the investment sending and receiving countries, holding other variable constant, will increase the portfolio investment share of the former in the latter by about 5.4%. It is also interesting to note that the magnitude of the distance elasticity falls within the range found for bilateral trade flow.¹⁶ Market size, per capita GDP and the openness coefficient estimates have the expected sign, are of sizable magnitude and are statistically significant.¹⁷ These results indicate that a 10% increase in Market size, holding other variable constant, will increase the portfolio investment share of a country in the assets of another country by about 7%. Similarly a 10% increase in per capita GDP (our proxy for the quality and enforceability of laws), holding other variable constant, will increase the portfolio investment share of that country by 2%.

Similarly to other studies, the international portfolio investment pattern reflects factors other than pure diversification of risk.¹⁸ Both volatility and correlation of the investment receiving country enter the regression with a positive sign in contradiction to standard portfolio theory. Still, the volatility coefficient is rather small and is only statistically significant at the 10 percent level. On the other hand, the correlation coefficient is quite large and highly statistically significant.

¹⁶ Learner and Levinsohn (1994) report that gravity based international trade empirical studies find an average value of about -0.6 for the elasticity of distance.

¹⁷ Market size and per capita GDP are significant at the 1% level and the openness parameter is significant at the 10% level.

¹⁸ See Tesar and Werner (1995) for an example of similar findings.

Table 1 International portfolio (equity) investments: The basic model

	(1)	(2)	(3)
Constant	-23.229 *** (1.386)	-19.717 *** (2.162)	-28.095 *** (3.388)
$Ln([DISTANCE]_{sr})$	-0.544 *** (0.051)	-0.717 *** (0.120)	-0.467 *** (0.055)
$Ln([EQUITY MARKET SIZE]_r)$	0.718 *** (0.040)	0.680 *** (0.060)	0.912 *** (0.059)
$Ln([per\ capita\ GDP]_r)$	0.208 *** (0.073)	0.209 ** (0.103)	0.106 (0.193)
$Ln([GDP\ GROWTH]_r)$	-0.038 (0.026)	-0.062 ** (0.028)	0.245 *** (0.061)
$Ln([TRADE\ OPENNESS]_r)$	0.155 * (0.090)	0.011 (0.125)	0.543 *** (0.171)
$[MARKET\ RETURN]_r$	0.009 *** (0.003)	0.003 (0.004)	0.038 *** (0.009)
$[VOLATILITY\ OF\ MARKET\ RETURNS]_r$	0.026 * (0.013)	0.051 *** (0.016)	0.079 ** (0.036)
$Ln([GDP_s \times GDP_r])$	0.127 *** (0.029)	0.076 (0.053)	0.173 *** (0.033)
$[CORRELATION\ OF\ MARKET\ RETURNS]_{sr}$	1.056 *** (0.363)	1.747 *** (0.567)	0.141 (0.393)
$[LINGUISTIC\ TIE]_{sr}$	0.779 *** (0.156)	1.009 *** (0.212)	0.331 * (0.200)
# Observations	850	406	444
Adjusted R ²	0.643	0.513	0.652

***, **, * Significant at the 1, 5, and 10 percent level

This table reports parameter coefficients, white corrected standard errors (in parenthesis) and adjusted R² for the regression in which the dependent variable is $[RELATIVE\ PORTFOLIO\ INVESTMENT]_{sr}$ the share of portfolio (equity) investment of the sending country [s] to the receiving country [r] as a percentage of the total international portfolio investment of the sending country [s] in natural logarithmic form. The independent variables are a constant, $[DISTANCE]_{sr}$ the direct (great circle) distance between the economic centers of the sending country [s] and the receiving country [r], in natural logarithmic form, $[EQUITY\ MARKET\ SIZE]_r$ the market capitalization of the receiving country [r] at the end of 1996, in natural logarithmic form, $[per\ capita\ GDP]_r$ per capita gross domestic product of the receiving country [r] for 1997, in natural logarithmic form, $[GDP\ GROWTH]_r$ average growth

of the gross domestic product of the receiving country [r] during 1990-1997, [TRADE OPENNESS]_r the receiving country [r] total trade with the world divided by its GDP for 1997, in natural logarithmic form, [MARKET RETURN]_r the annualized monthly returns of the equity market index of the receiving country [r] during 1997 measured in US dollars, [VOLATILITY OF MARKET RETURNS]_r the volatility of the monthly market returns, for the period between 1993 and 1997, of the investment receiving country measured in US dollars, [GDP_s x GDP_r] the gross domestic product of the investment sending country [s] and the gross domestic product of the investment receiving country [r], for 1997, [CORRELATION OF MARKET RETURNS]_{sr} the 5-year, 1993-1997, monthly correlation between the monthly returns of the equity market indices of the sending country [s] and the receiving country [r], measured in US dollars, and [LINGUISTIC TIE]_{sr} a dummy variable that equals 1 if the sending country [s] and the receiving country [r] share a common language, and 0 otherwise. Column (1): reports the result for full data set, column (2) reports the result for investments from all countries to non-industrialized countries, and column (3) reports the result for investments from all countries to industrialized countries.

Since the main motivation of this model is to simulate transaction cost, I still need to verify the adequacy of using the bilateral distance as its proxy. For this purpose, I will run the same regression for two additional cases: case A: Investments from all countries to non-industrialized countries, and case B: Investments from all countries to industrialized countries. According to the evidence presented earlier on the influence of market size and development on the extent of information asymmetries between foreign and domestic investors, we expect to see a decrease in the transaction costs of investing as one moves from case A to case B.

Columns 2 & 3 of table 1 clearly show that the distance parameter is related to the development level of the investment receiving country. This is inline with the empirical findings cited above and conforms to well-documented characteristics of developed countries financial markets dynamics relating to information availability and corporate governance. In developing markets information is scarce and when available is difficult to evaluate and interpret correctly.¹⁹ The model displays a number of other performance signs. For example, the elasticity of the market size increases substantially for investments directed towards developed markets. This is in line with the empirical evidence that larger markets have more informative prices (Morck et al. 2000). Further the coefficient estimate of per capita GDP become

¹⁹ For example, Harvey (1995) finds that local information has a higher influence on returns in emerging markets than developed markets.

statistical insignificant reflecting more uniformity in the quality and enforceability of laws in developed markets sub-sample relative to the full sample.

IV. The Informational Value of Trade

In this paper I single out international trade in tangible goods as a significant medium for information transfer between countries. By definition, the intensity of tangible goods trading between two countries is a proxy for the level of commitment of resources, financial and otherwise to activities that requires transmission of information. Trade influences the mode, intensity, and richness of information transfer between trading partners in a number of ways.

First, Banks and financial institutions play a vital role in supporting the flow of international trade. Empirical research on the determinants of foreign banking location documents a significant link between foreign location expansion and trade (and exports) between the home country and the host country. Grosse and Goldberg (1991) study foreign bank activity in the United States and find that foreign investment in the U.S., foreign trade with U.S., and the size of the banking sector in the foreign country are positively correlated with that country's bank presence in the U.S. On the international level, Brealey and Kaplanis (1996) using branches location data of the top 100 banks in the world find that foreign branch location of banks is closely linked to the trade and foreign direct investment of the home country, implying that banks follow their customers. They also document a parallel between the rapid increase of banks foreign expansion during the 1960s to the 1980s and the substantial growth of international trade and foreign direct investment. Buch (2000) studying the determinants of German banks foreign activities finds that foreign trade and foreign direct investments of German companies exhibit a strong and positive correlation to the foreign branch pattern. She also concludes that the German banks follow their customers' abroad. These results point towards the importance of trade in directing the real activity, strength, and experience of the local banks towards their customers (exporters and importers) foreign markets. In addition to the physical presence in the foreign markets, the volume and frequency of trade transactions

creates foreign information gathering opportunities for banks through correspondence agreements and other arrangements.²⁰ Furthermore the complex procedures of purchasing and trading foreign securities present several advantages, in absolute and relative terms, for a well-developed banking and financial linkages between the investment sending and investment receiving country.²¹

Second, recent research establishes a direct linkage between trade volumes and institutional quality of the trading partners. For example, Anderson and Marcouiller (1999), using data on institutional quality compiled by the world economic forum provide strong empirical evidence that “transaction costs associated with insecure exchange significantly impede international trade”. Anderson and Marcouiller (1999) show that insecurity arising from imperfect contract enforcement exposes exporters to the holdup problem²², leading to price markup that translates into reduced exports and lower import demand. They also show that cross-country variations in the effectiveness of institutions offer a simple explanation to the observed pattern of trade, in which high-income capital-abundant countries trade disproportionately with one another. These results indicate that trade volume reveals important information concerning the institutional efficiency of the exporting and importing country.

Third, potential problems encountered in search for and deliberation of new trading partners will offer information advantages to more established bilateral social and business networks.²³ This should also translate into an advantage in identifying and assessing the potential profitability of portfolio investments. The slow and incremental development of trust is what above all makes finding and evaluating exchange partners (i.e. foreign markets analysts, foreign country fund investment managers) so costly. Therefore it is reasonable to assume that the progress of a country in resolving the search and deliberation problems with its trading partners,

²⁰ Portes and Rey use the number and location of foreign branching as a proxy of the banking activities. This proxy does not provide any dimension of the level of activity or the type of services offered by the foreign branch. Examples of these activities are letters of credits, bank guarantees, and performance bonds.

²¹ For example Callaghan, Kleinman and Sahu (1996) outline a number of problems associated with owning a foreign security. These include inefficient and unreliable settlement procedures, complex rules, and restrictions on foreign investments and withholding taxes and others.

²² The holdup problem arises when fixed costs are associated with entry into the international market and contract enforcement is random.

²³ Rangan and Lawrence (1999).

which is reflected in the growth of bilateral trading volumes, will serve a similar purpose when applied to portfolio investment decisions.

Fourth, the nature of the role of investment banks, the analysts in the sending country in tracking of the sending country equities gather information that is related to the sending country exports and imports from the investment receiving country. In order to assess the development of future export demand, macroeconomic and institutional factors of the receiving country are also of interest for these analysts.

Fifth, the information contained in bilateral trade variables, such as historical linkages, industrial structure and similarity in tastes between the investment sending country and the investment receiving country will have an important effect on reducing frictions (transaction cost) that are captured by the distance parameter. One role of bilateral trade is thus to increase the awareness of investors in the sending country with the equity assets and the cultural, financial, political, legal environment and the institutions of the investment receiving country.²⁴

Sixth, it is also possible that the trading sector acts as a source of superior and specific knowledge transfer to the investing sector. The information screening through the frequency of trade contacts, the expertise of the local import and export sectors, each in their respective business area, is a potential important source of information to the financial community. The knowledge about the asset(s) of a foreign country, gained through trading ties and contacts, that is available to the business community spills over to the financial community and becomes an important component of the foreign asset information gathering and selection process. Thus bilateral trade can convey potential equity investing information on both the individual equity asset level and on a countrywide level.

The information flow in connection to trade in tangible goods provides a medium for information on potential investment objects in the other country. The experience gained through trade also allows for proper calibration of individual pieces of information, e.g. which pieces of information can be considered trustworthy and which are not. Specifically, the intensity of the bilateral trading relationship provides

a measure of the breadth and the richness of the information. The higher the intensity of trade flows between two countries, the more intensive is the day to day information flow between them and the more will the relative level of the local information advantage be decimated. Increased information flow exposes the foreign investor in the counter part to a larger pool of potential investment opportunities leading to an increased weight for this country in the investor's international portfolio allocation.

To capture the relative level of information transfer between countries, I construct three trade variables. These measures are:

1. Total merchandize trade between the investment sending and the investment receiving countries [$\text{Trade}_{sr} / (\text{Total Trade}_s + \text{Total Trade}_r)$]. This variable provides an aggregate measure of trade driven information flow as a percentage of the total trade driven information flows of the sending and receiving country trade with the world.
2. Exports of the investment sending country to the investment receiving country calculated as the share of the merchandize exports of the sending country to the receiving country as a percentage of the total exports of the sending country [$\text{Export}_{sr} / \text{Total Export}_s$]. This variable provides a direct measure of the trade driven information flow as a percentage of the total information flows resulting from the sending country total exports to the world. Therefore it is institutive to expect this variable to capture the component of the relative informational advantages resulting from the investing country banks' and financial institutions' activity level in the investment receiving country.²⁵
3. Imports of the investment sending country from the investment receiving country calculated as the share of the merchandize imports of the receiving country from the sending country [$\text{Export}_{rs} / \text{Total Import}_s$]. This variable provides a direct measure of trade driven information flow as a percentage of the total information flows resulting from the sending country total imports to

²⁴ For example, Bartram and Dufey (2001) note, "Sometimes existing or perceived cultural differences represent more of a psychological barrier than a barrier of a real nature."

²⁵ This is in line with the empirical evidence that banks follow their customers.

the world. I associate this measure with information flows that increase the awareness in the investment receiving country.

All these variables provide a good proxy for the level of commitment of informational resources, and provide a measure of the breadth and the richness of information flow between the trading country pairs.

Table 2 reports the regression of our model (column 1 of table 1) augmented with the trade driven informational variables. These regressions reveal a number of interesting features. First, the coefficient estimate of the elasticity of the distance parameter drops significantly in magnitude. Since distance at least to some extent measures information costs this finding tend to support the informational content of the trade intensity variables. Further, the results show that these trade variables have very limited effects on the coefficient estimates, sign and statistical significance of the other variables in the regressions. Financial market size and per capita GDP, our proxy for the quality and enforceability of laws, continue to provide similar level of influence on the observed structure of international portfolios.

V. Robustness of the Results

At this point I cannot exclude the possibility that some other regularities in the international trade pattern that I haven't discussed yet, are the real drivers behind the results. For instance, international trade flows exhibit a large volume of intra-industry trade, resulting from product differentiation, economies of scale, and other factors, between industrialized (rich) countries.²⁶ This sector is generally perceived as one with high entry barriers resulting from technology, economies of scale in manufacturing, branding, distribution, and marketing.

²⁶ Helpman (1998) provides a brief summary of international trade theory and empirical findings.

Table 2 Trade (aggregate trade) based informational variables

	(1)	(2)	(3)
Constant	-23.229 *** (1.883)	-17.616 *** (1.567)	-15.837 *** (1.596)
$Ln([DISTANCE]_{sr})$	-0.299 *** (0.078)	-0.182 ** (0.074)	-0.158 ** (0.065)
$Ln([EQUITY MARKET SIZE]_r)$	0.680 *** (0.042)	0.519 *** (0.052)	0.489 *** (0.048)
$Ln([per\ capita\ GDP]_r)$	0.176 ** (0.070)	0.121 * (0.067)	0.067 (0.070)
$Ln([GDP\ GROWTH]_r)$	-0.065 ** (0.027)	-0.064 ** (0.026)	-0.072 *** (0.025)
$Ln([TRADE\ OPENNESS]_r)$	0.145 * (0.088)	0.212 ** (0.086)	0.174 ** (0.087)
$[MARKET\ RETURN]_r$	0.010 *** (0.003)	0.011 *** (0.003)	0.010 *** (0.003)
$[VOLATILITY\ OF\ MARKET\ RETURNS]_r$	0.020 (0.013)	0.012 (0.013)	0.010 (0.013)
$Ln([GDP_s \times GDP_r])$	0.020 (0.040)	0.080 *** (0.028)	0.072 *** (0.028)
$[CORRELATION\ OF\ MARKET\ RETURNS]_{sr}$	0.855 ** (0.360)	1.220 *** (0.320)	1.146 *** (0.328)
$[LINGUISTIC\ TIE]_{sr}$	0.604 *** (0.152)	0.550 *** (0.149)	0.547 *** (0.146)
$Ln [Trade_{sr} / Total\ Trade_s + Total\ Trade_r]$	0.311 *** (0.080)		
$Ln [Export_{sr} / Total\ Export_s]$		0.405 *** (0.063)	
$Ln ([Export_{rs} / Total\ Import_s])$			0.448 *** (0.052)
# Observations	850	850	850
Adjusted R ²	0.652	0.664	0.673

***, **, * Significant at the 1, 5, and 10 percent level

This table reports parameter coefficients, white corrected standard errors (in parenthesis) and adjusted R² for the regression in which the dependent variable is $[RELATIVE\ PORTFOLIO\ INVESTMENT]_{sr}$ the share of portfolio (equity) investment of the sending country [s] to the receiving country [r] as a percentage of

the total international portfolio investment of the sending country [s] in natural logarithmic form. The independent variables are a constant, [DISTANCE]_{sr}, [EQUITY MARKET SIZE]_r, [per capita GDP]_r, [GDP GROWTH]_r, [TRADE OPENNESS]_r, [MARKET RETURN “1997”]_r, [VOLATILITY OF MARKET RETURNS]_r, [GDP_s x GDP_r], [CORRELATION OF MARKET RETURNS]_{sr}, and [LINGUISTIC TIE]_{sr} as defined in Table 1. Column (1) reports the result for the total merchandise trade between the investment sending and the investment receiving countries [Trade_{sr}/(Total Trade_s + Total Trade_r)], column (2) reports the result for the exports of the investment sending country to the investment receiving country calculated as the share of the merchandise exports of the sending country to the receiving country as a percentage of the total exports of the sending country [Export_{sr}/Total Export_s], and column (3) reports the result for the imports of the investment sending country from the investment receiving country calculated as the share of the merchandise imports of the receiving country from the sending country [Export_{rs} / Total Import_s].

Further, international trade pattern shows persistence in bilateral trade relationships. For example, even when the relative exchange rates cause large and permanent shifts in relative prices, bilateral trade volume changes very slowly and with long lags. Rangan and Lawrence (1999) show that information asymmetries arising from identifying potential exchange partners “search” and the process of assessing their reliability and trustworthiness “deliberation” plays an important role in the empirically observed stickiness of bilateral trade.

In addition, there is empirical support showing that production of capital goods, a technology based differentiated product, is highly concentrated in a small group of R&D intensive countries with trade following a highly regional pattern. The developing countries import much of their equipment, each relying on a few large exporters.²⁷ In addition to the other barriers for differentiated products, this sectors also entails added entry barriers arising from a more intensive exporter involvement in terms of adapting goods to foreign conditions, training foreign workers to use the equipment and provide continuous after sales service. Therefore the nature of this trade elevates the problem of search and deliberation. When buyers and sellers think that deliberation is important but problematic, they will tend to act reluctantly and progressively. In such circumstances economic actions are unlikely to be influenced by relative prices alone.²⁸

²⁷ See Eaton and Kortum (2001).

²⁸ See Rangan and Lawrence (1999).

One can argue that technology based product flows (lets say capital equipment) will necessary afford the exporter (with an increasing return to the intensity of trade) a relative informational advantage on the financial health, growth potential and strategies of the exporting and importing partners.²⁹ Further, the nature of technology products, especially capital goods, entails and requires a larger amount of monitoring and evaluation of the financing banks to insure the viability of the investment. In contrast, low-technology products are usually commodity classified, standardized, and have large homogeneous aspects. The standardization and the availability aspects of the products results in relatively low switching costs, insuring price competitiveness and flexibility in sourcing.³⁰

Therefore, it is possible that industrial structure and regional trade purely drive the significance of the intensity variable patterns. As a robustness check for the information content validity of the trade intensity variables, I will segregate bilateral trade into two components: the first component will measure the intensity of technology based bilateral trade (level 7)³¹, and the second will be the low-technology bilateral trade measured as the aggregate trade less (level 7) trade.

The results for technology and low-technology trade variables are presented in table 3. The results reveal that low-technology trade (table 3 panel B) seems to have a somewhat higher impact on reducing transaction costs relative to the impact of technology trade (table 3 panel A). This result is more pronounced for the intensity of imports from the target country than for the other trade intensity variables. The coefficient estimate of this variable is statistically higher in magnitude for the low-technology trade than for the technology trade. These results are not in line with the hypothesis that the observed contribution of bilateral trade, export and import intensities to the reduction of transaction costs is the result of differences in the industry composition of foreign trade for different countries.

²⁹ For example, financing, purchase scheduling and implementation can reveal very important information on a number of organizational, strategic and financial aspect of both trading organizations.

³⁰ The standardization of the product substantially reduces, but does not eliminate the search and deliberation problem and the insecurity arising from contract enforcement.

³¹ Level 7 trade is described in the data section.

Table 3 “Technology” and “Low Technology” trade informational variables

Panel A: “Technology” trade

	(1)	(2)	(3)
Constant	-23.229 *** (1.930)	-18.602 *** (1.627)	-15.139 *** (1.721)
$Ln([DISTNACE]_{sr})$	-0.427 *** (0.068)	-0.279 *** (0.071)	-0.289 *** (0.059)
$Ln([EQUITY MARKET SIZE]_r)$	0.697 *** (0.043)	0.584 *** (0.051)	0.507 *** (0.051)
$Ln([per\ capita\ GDP]_r)$	0.178 ** (0.070)	0.158 ** (0.068)	0.014 (0.070)
$Ln([GDP\ GROWTH]_r)$	-0.051 * (0.027)	-0.068 ** (0.026)	-0.032 (0.025)
$Ln ([TRADE\ OPENNESS]_r)$	0.130 (0.090)	0.183 ** (0.085)	0.017 (0.090)
$[MARKET\ RETURN]_r$	0.010 *** (0.003)	0.011 *** (0.003)	0.013 *** (0.003)
$[VOLATILITY\ OF\ MARKET\ RETURNS]_r$	0.021 (0.013)	0.016 (0.013)	-0.008 (0.014)
$Ln([GDP_s \times GDP_r])$	0.067 * (0.038)	0.080 *** (0.029)	0.088 *** (0.027)
$[CORRELATION\ OF\ MARKET\ RETURNS]_{sr}$	0.944 *** (0.365)	1.013 *** (0.327)	0.958 *** (0.336)
$[LINGUISTIC\ TIE]_{sr}$	0.715 *** (0.151)	0.604 *** (0.144)	0.660 *** (0.150)
$Ln [Trade_{sr} / Total\ Trade_s + Total\ Trade_r]$	0.151 ** (0.064)		
$Ln [Export_{sr} / Total\ Export_s]$		0.306 *** (0.060)	
$Ln ([Export_{rs} / Total\ Import_s])$			0.240 *** (0.033)
# Observations	850	850	850
Adjusted R ²	0.646	0.660	0.669

***, **, * Significant at the 1, 5, and 10 percent level

Table 3 (continued) “Technology” and “Low Technology” trade informational variables

Panel B: “Low Technology” trade

	(1)	(2)	(3)
Constant	-23.229 *** (1.891)	-17.553 *** (1.613)	-16.296 *** (1.537)
$Ln([DISTANCE]_{sr})$	-0.265 *** (0.077)	-0.222 *** (0.072)	-0.152 ** (0.064)
$Ln([EQUITY MARKET SIZE]_r)$	0.676 *** (0.042)	0.556 *** (0.050)	0.485 *** (0.047)
$Ln([per\ capita\ GDP]_r)$	0.171 ** (0.069)	0.132 * (0.068)	0.073 (0.069)
$Ln([GDP\ GROWTH]_r)$	-0.070 ** (0.027)	-0.060 ** (0.026)	-0.073 *** (0.025)
$Ln ([TRADE\ OPENNESS]_r)$	0.141 (0.088)	0.185 ** (0.087)	0.195 ** (0.087)
$[MARKET\ RETURN]_r$	0.011 *** (0.003)	0.011 *** (0.003)	0.010 *** (0.003)
$[VOLATILITY\ OF\ MARKET\ RETURNS]_r$	0.019 (0.013)	0.014 (0.013)	0.009 (0.013)
$Ln([GDP_s \times GDP_r])$	-0.002 (0.041)	0.056 * (0.030)	0.080 *** (0.027)
$[CORRELATION\ OF\ MARKET\ RETURNS]_{sr}$	0.839 ** (0.357)	1.220 *** (0.327)	1.100 *** (0.327)
$[LINGUISTIC\ TIE]_{sr}$	0.556 *** (0.153)	0.551 *** (0.151)	0.494 *** (0.146)
$Ln [Trade_{sr} / Total\ Trade_s + Total\ Trade_r]$	0.356 *** (0.079)		
$Ln [Export_{sr} / Total\ Export_s]$		0.360 *** (0.060)	
$Ln ([Export_{rs} / Total\ Import_s])$			0.464 *** (0.052)
# Observations	850	850	850
Adjusted R ²	0.655	0.661	0.676

***, **, * Significant at the 1, 5, and 10 percent level

This table reports parameter coefficients, white corrected standard errors (in parenthesis) and adjusted R2 for the regression in which the dependent variable is

[RELATIVE PORTFOLIO INVESTMENT] s_r the share of portfolio (equity) investment of the sending country [s] to the receiving country [r] as a percentage of the total international portfolio investment of the sending country [s] in natural logarithmic form. The independent variables are a constant, [DISTANCE] s_r , [EQUITY MARKET SIZE] r , [per capita GDP] r , [GDP GROWTH] r , [TRADE OPENNESS] r , [MARKET RETURN “1997”] r , [VOLATILITY OF MARKET RETURNS] r , [GDPs x GDP] r , [CORRELATION OF MARKET RETURNS] s_r , [LINGUISTIC TIE] s_r , [Trade s_r / (Total Trade s + Total Trade r)], [Export s_r / Total Export s], and [Export r_s / Total Import s] as defined in Table 1. Panel A reports the result for “technology” trade, and Panel B reports the result for “low technology” trade.

VI. Summary

This study provides evidence that institutional factors affecting trading in tangible goods, helps explain a substantial amount of the country allocation in international investment portfolios. I explain that tangible goods bilateral trading intensity as well as export and import intensities between countries provide good proxies for the intensity of the information flow channel of cross border equity investing.

International trade requires effective channels of communication that will enhance cross border learning of asset specific information, market conditions as well as the functioning of organizations and institutions of the trading (investing) partners. This demand for and analysis of information that effective trading requires leads to a substantial impact on the level of commitment of resources, financial and otherwise, to activities that require transmission of information. I hypothesize that information channeled through this medium helps explain a large portion of the spatial bias documented in the empirical literature.

To elaborate on this hypothesis I bring together two strands of the economic literature – that on finance and that on economics to model the characteristics of international financial markets influencing the patterns of international portfolio flows. I construct a model that controls for the influences and geography, financial market size and other institutional variables that have an influence on the manner by which investors formulate the country allocation in their international portfolios.

Using a new and comprehensive data set on international portfolio investments, I show that bilateral trading intensity as well as export and import intensities in tangible goods apparently contribute to a substantial reduction in information asymmetries in which will reduce the transaction costs of portfolio investing between countries. Furthermore, I demonstrate that the results are robust against well-documented as well as newly established international trade empirical regularities. I show that the information encoded in the bilateral trade intensity variables is unrelated to the industrial structure of countries and does not depend on the technology content of trade. Our findings thus suggest that intensity of trade between countries does provide an important medium of access to information also on equities of the foreign trading partner.

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