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Theory of financial integration and achievements in the European Union

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Abstract

Financial integration is the process that has been occurring in the European Union for many years and that intensified after adoption of the common currency in 1999. This paper discusses the theoretical framework of financial integration, particularly the definition, typology, benefits and drawbacks. More opportunities for risk sharing and diversification, better allocation of capital among investment opportunities, and potential for higher economic growth were identified as the crucial benefits of financial integration. By contrast, we consider increased vulnerability to external macroeconomic shocks and financial crises transmitted to higher output and consumption volatility as the most serious drawbacks of financial integration. The paper also summarizes the progress in financial integration that has been achieved in individual segments of the European Union financial sector. It is evident that the most integrated are the euro area money market and the government bonds markets. The remaining financial markets are still rather fragmented.

Key words: financial integration, financial markets, European Union, euro area

JEL codes: F33, F36, G15, G21

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INTRODUCTION

Financial integration in Europe began several decades ago, in 1957, with the Treaty of Rome, which already contained the basic principles for the creation of single European market for financial services. The adoption of the common currency in 1999 was a major impetus for further financial integration in the European Union (Liebscher et al., 2006). With all the theoretical and empirical evidences, the issue of the euro undoubtedly offered a strong motivation for the procedure because a single currency is an important component of a common financial system and a strong promoter of financial integration (Jikang and Xinhui, 2004).

The aim of this paper is to describe the concept of financial integration, compare the benefits and risks of financial integration and summarize the progress in financial integration in the European Union. The paper is structured as follows. The first section defines financial integration, in the second section we introduce types of financial integration, the third section describes benefits and the fourth section the risks of financial integration. The fifth section presents measures of financial integration and the sixth section reports and discusses progress in financial integration in the EU.

DEFINITION OF FINANCIAL INTEGRATION

The literature provides various alternative definitions of financial integration. Here, we present and discuss only definitions that have attracted attention in the subsequent research. Baele et al. (2004) assume that the market for a given set of financial instruments and/or services is fully integrated if all potential market participants have the same relevant characteristics:

1. They face a single set of rules when they decide to deal with those financial instruments and/or services.
2. They have equal access to the same set of financial instruments and/or services.
3. They are treated equally when they are active in the market.

This definition of financial market integration contains three important features. First, it is independent of the financial structures within regions. Financial structures encompass all financial intermediaries – institutions or markets – and how they relate to each other with respect to the flow of funds to and from households, governments and corporations. Second, frictions in the process of intermediation – i.e. the access to or investment of capital either through institutions or markets – can persist after financial integration is completed. Financial integration is concerned with the symmetric or asymmetric effects of existing frictions on different areas. Even in the presence of frictions, several areas can be financially integrated as long as frictions affect these areas symmetrically. However, if the frictions have asymmetric effects on the areas, the process of financial integration cannot reach the completion point. Third, definition of financial integration separates the two constituents of a financial market,

namely the supply of and the demand for investment opportunities. Full integration requires the same access to banks or trading, clearing and settlement platforms for both investors (demand for investment opportunities) and firms (supply of investment opportunities, e.g. listings), regardless of their region of origin. In addition, once access has been granted, full integration requires that there is no discrimination among comparable market participants based solely on their location of origin. When a structure systematically discriminates against foreign investment opportunities due to national legal restrictions, then the area is not financially integrated. An area can also be partially financially integrated.

The definition of financial market integration is closely linked to the law of one price. The law of one price states that if assets have identical risks and returns, then they should be priced identically regardless of where they are transacted. In other words, if a firm issues bonds in two countries or regions, it must pay the same interest rate to both sets of bondholders (Jappelli and Pagano, 2008). If the law of one price does not hold, then there is room for arbitrage opportunities. However, if the investment of capital is non-discriminatory, then any investors will be free to exploit any arbitrage opportunities, which will then cease to exist, thereby restoring the validity of the law of one price.

Baltzer et al. (2008) show it is easy to see that the law of one price is in fact an implication of the above definition. If all agents face the same rules, have equal access and are treated equally, any price difference between two identical assets will be immediately arbitrated away. Still, there are cases where the law of one price is not directly applicable. For instance, an asset may not be allowed to be listed on another region's exchange, which according to our definition would constitute an obstacle to financial integration. Another example is represented by assets such as equities or corporate bonds. These securities are characterized by different cash flows and very heterogeneous sources of risk, and as such their prices are not directly comparable. Therefore, alternative measures based on stocks and flows of assets (quantity-based measures) as well as those investigating the impact of common shocks on prices (news-based measures) may usefully complement measures relying on price comparisons (price-based measures). All the approaches to the financial integration measurement are described in detail in the fifth section of this paper.

Brouwer (2005) argues that financial market integration is the process through which financial markets in an economy become more closely integrated with those in other economies or with those in the rest of the world. This implies an increase in capital flows and a tendency for prices and returns on traded financial assets in different countries to equalise. Economic Commission for Africa (2008) confirm that this requires the elimination of some or all restrictions on foreign financial institutions from some (or all) countries. Ideally, financial institutions would be able to operate or offer cross-border financial services, as well as establish links between banking, equity and other types of financial markets. Financial integration could also arise even in the absence of explicit agreements. Such forms of integration could include entry of foreign banks into domestic markets, foreign participation in insurance markets and pension funds, securities trading abroad and direct borrowing by domestic firms in international markets.

Ho (2009) shows that financial market integration could proceed with enforcement of a formal international treaty. This refers to two distinct elements. One is the provision for concerted or cooperative policy responses to financial disturbances. The other is the elimination of restrictions on cross-border financial operations by member economies including harmonisation of regulations of financial systems. Both elements are necessary to achieve full unification of regional financial markets, and taxes and regulations between member economies.

TYPES OF FINANCIAL INTEGRATION

The literature, e.g. Oxelheim (1990) or Guha et al. (2004), distinguishes between total, direct and indirect financial integration. The total financial integration thus embraces direct and indirect integration. Total (perfect) integration means that expected real interest rates are the same on the markets concerned. Where total financial integration is not perfect, the reason may be imperfect direct and/or indirect financial integration.

Direct financial integration, which is also called capital market integration, is expressed in deviations from the law of one price for financial securities. Under perfect direct financial integration this law obtains, and an investor can expect, the same return on investments from different markets (and borrower the same loan costs), after the requisite adjustment has been made for risk. If the differential in expected risk-adjusted returns is greater than zero but less than or the same as the transaction cost, we can say that markets are disintegrated but are nonetheless efficient.

Financial integration can also vary in strength from perfect integration to perfect disintegration or segmentation (Oxelheim, 1990). When expected real interest rates are not the same in the markets in question (not perfect integration), then the markets are said to be segmented. Segmentation is a result of lack of integration and this can happen due to high transaction costs involved in arbitrage or market inefficiency (Guha et al., 2004).

Financial integration includes not only integration of financial markets or services but can take other forms as well. These forms need not be interconnected nor are they advanced forms (stages) of the integration process. Liebscher et al. (2006) show that integration can take many forms and present various aspects:

- Monetary integration, either through currency unions (Europe, Western and Central Africa) or through dollarization, such as in Latin America and the Caribbean.
- Liberalization of the capital account.
- Subcontracting abroad of financial services or infrastructure, such as in the case of listing of securities on foreign stock exchanges.
- Foreign entry.
- Regulatory convergence and harmonization.

BENEFITS OF FINANCIAL INTEGRATION

Baele et al. (2004) or Economic Commission for Africa (2008) consider three widely accepted interrelated benefits of financial integration: more opportunities for risk sharing and risk diversification, better allocation of capital among investment opportunities and potential for higher growth. Some studies also consider financial development as a beneficial consequence of financial integration (Figure 1).

Figure 1 Benefits of financial integration



Source: Authors' compilation

Risk sharing

Economic theory predicts that financial integration should have an effect on facilitating risk sharing (Jappelli and Pagano, 2008). The integration into larger markets or even the formation of larger markets is beneficial to both firms and financial markets and institutions.

According to Baele et al. (2004) financial integration provides additional opportunities for firms and households to share financial risk and to smooth out consumption inter-temporally. Financial integration allows project owners with low initial capital to turn to an intermediary that can mobilize savings so as to cover the initial costs. These avenues indicate a strong link between financial institutions and economic growth (Levine, 1997). The exploitation of economies-of-scale can allow firms, in particular those small and medium-sized ones that face credit constraints, to have better access to broader financial or capital markets.

Risk-sharing opportunities make it possible to finance highly risky projects with potentially very high returns, as the availability of risk-sharing opportunities enhances financial markets and permits risk-averse investors to hedge against negative shocks. Because financial markets and institutions can handle credit risk better, integration could also remove certain forms of credit constraints faced by investors. The law of large numbers guarantees less exposure to credit risk as the number of clients increases. Individual risks could also be minimised by integrating into a larger market and, at the same time, enhancing portfolio diversification.

Through the sharing of risk, financial integration leads to specialization in production across the regions. Furthermore, financial integration promotes portfolio diversification and the sharing of idiosyncratic risk across regions due to the availability of additional financial

instruments. It allows households to hold more diversified equity portfolios, and in particular to diversify the portion of risk that arises from country-specific shocks. Similarly, it allows banks to diversify their loan portfolios internationally. This diversification should help euro-area households to buffer country-specific income shocks, so that shocks to domestic income should not affect domestic consumption, but be diversified away by borrowing or investing abroad (Jappelli and Pagano, 2008). Kalemli-Ozcan et al. (2003) provide empirical evidence that sharing risk across regions enhances specialisation in production, thereby resulting in well-known benefits.

Kalemli-Ozcan and Manganelli (2008) analyzed banking integration since the banking system, especially in the euro area, is the main financial channel for both the corporate sector and households. They find that higher cross-border banking integration increases consumption risk sharing. Their findings have important policy implications for the euro. Asymmetric shocks in a currency union generate output and inflation differentials. The impact of such shocks is considerably reduced if cross-country risk sharing is significant. To the extent that risk-sharing allows hedging of consumption, it represents a key counteracting mechanism against output asymmetric shocks among members of a currency union. This mechanism reduces the need for policy intervention in dealing with such asymmetries.

Improved capital allocation

It is a generally accepted view that greater financial integration should allow a better allocation of capital (Levine, 2001). An integrated financial market removes all forms of impediments to trading of financial assets and flow of capital, allowing for the efficient allocation of financial resources for investments and production. In addition, investors will be permitted to invest their funds wherever they believe these funds will be allocated to the most productive uses. More productive investment opportunities will therefore become available to some or all investors and a reallocation of funds to the most productive investment opportunities will take place (Baele et al., 2004).

Kalemli-Ozcan and Manganelli (2008) show that by opening access to foreign markets, financial integration will give agents a wider range of financing sources and investment opportunities, and permits the creation of deeper and more liquid markets. This allows more information to be pooled and processed more effectively, and capital to be allocated in a more efficient way.

Economic growth

The theoretical literature proposes various mechanisms through which financial integration may affect economic growth. In the neoclassical framework, all effects are generated through capital flows. In the standard model, opening international capital markets generates flows from capital-abundant towards capital-scarce countries, thereby accelerating convergence (hence short term growth) in the poorer countries. In a more sophisticated context, productivity may also increase since capital flows may relieve the economy from credit

constraints and thus allow agents to undertake more productive investments (Bonfiglioli, 2008). Furthermore, in the standard neoclassical growth model, financial integration enhances the functioning of domestic financial systems through the intensification of competition and the importation of financial services, bringing about positive growth effects (Levine, 2001). An alternative view (Saint-Paul, 1992; Obstfeld, 1994) suggests that international capital mobility may affect productivity independently of investment, by promoting international risk diversification, which induces more domestic risk taking in innovation activities, thereby fostering growth.

There is ample evidence in the literature that financial integration leads to higher economic growth. Gianetti et al. (2002) demonstrate that financial integration facilitates access to investment opportunities and an increase in competition between domestic and foreign financial institutions. This in turn leads to improved efficiency of financial institutions as financial resources are released for productive activities. In addition, financial integration leads to increased availability of intermediated investment opportunities, and consequently higher economic growth. Authors also argue that the integration process will increase competition within less developed regions and thereby improve the efficiency of their financial systems by, for instance, reducing intermediation costs. Moreover, this should render these regions' financial systems more attractive, thus enhancing participation from local and foreign agents and contributing to further development of these financial systems.

Edison et al. (2002) and Prasad et al. (2003) examine various dimensions of the causal link between financial integration and growth, and conclude that financial integration generates growth benefits, although to varying degrees.

Financial development

According to Hartmann et al. (2007) financial development can be understood as a process of financial innovations, and institutional and organizational improvements in the financial system. Combined, the process have the effect of reducing asymmetric information, increasing the completeness of markets and contracting possibilities, reducing transaction costs and increasing competition.

Jappelli and Pagano (2008) show that the main channel through which the removal of barriers to integration can spur domestic financial development is increased competition with more sophisticated or lower-cost foreign intermediaries. This competitive pressure drives down the cost of financial services for the firms and households of countries with less developed financial systems, and thus expands local financial markets.

In some cases, the foreign entrants themselves may supply the additional financial services. Direct penetration by foreign banks and cross-border acquisitions of intermediaries are likely to erode local banks' rents. If mergers bring banks closer to their efficient scale, the process will also be associated with a decreasing cost of intermediation. Sharper competition, possibly coupled with cost cutting, translates into more abundant credit and/or lower interest rates. A

second channel is through harmonization in national regulations (accounting standards, security laws, bank supervision, corporate governance), which the process of integration requires. To the extent that regulatory harmonization promotes convergence to the best international standards, it will also enhance domestic financial development and the entry of foreign financial intermediaries in more backward countries.

The link between financial development and financial integration is of the utmost importance, as there is strong evidence that financial development is linked with economic growth (Baele et al., 2004). As described in Levine (1997), financial systems serve some basic purposes. Among others, they (i) lower uncertainty by facilitating the trading, hedging, diversifying and pooling of risk; (ii) allocate resources; and (iii) mobilize savings. These functions may affect economic growth through capital and technological accumulation in an intuitive way.

However, while Levine (1997) recognises the positive relationship between economic growth and financial development, he is careful not to infer any causality. Indeed, economic growth and financial development are so intertwined that it is difficult to draw any firm conclusion with respect to causality. Nevertheless, recent research has found evidence that financial development affects growth positively. Rousseau (2002) finds empirical evidence that financial development promotes investment and business by reallocating capital. Also, industry-level studies like that of Jayaratne and Strahan (1996) show that financial development causes economic growth.

Trichet (2005) argues that financial integration fosters financial development, which in turn creates potential for higher economic growth. Financial integration enables the realisation of economies of scale and increases the supply of funds for investment opportunities. The actual integration process also stimulates competition and the expansion of markets, thereby leading to further financial development. In turn, financial development can result in a more efficient allocation of capital as well as a reduction in the cost of capital.

COSTS AND BARRIERS OF FINANCIAL INTEGRATION

In addition to the potential benefits, financial integration may also generate significant costs. In a world with imperfect capital markets, integration can make a country more vulnerable to external macroeconomic shocks and financial crises. Contagion effects, possibly amplified by ‘fickleness’ and herding behaviour of financial institutions, may actually increase output and consumption volatility, instead of lowering them as the risk-sharing thesis holds.

Most likely, the potential dangers of greater contagion due to financial integration are not as relevant to the euro area as to developing countries. This is because countries with relatively well developed financial systems, such as the euro area, are less vulnerable to financial crises (Lane and Milesi-Ferretti, 2006).

Financial integration in the presence of pre-existing distortions can actually retard growth (Edison et al., 2002; Ho, 2009). In Eichengreen’s (2001) insightful literature review, there are

innumerable constellations of distortions for which liberalization of international capital controls will hurt resource allocation and growth. For example, in the presence of trade distortions, capital account liberalization may induce capital inflows to sectors in which the country has a comparative disadvantage. Boyd and Smith (1992), for instance, argue that financial integration in countries with weak institutions and policies, such as weak financial and legal systems, actually induces capital outflows from capital-scarce countries to capital-abundant countries with better institutions. Thus, some theories predict that international financial integration will promote growth only in countries with sound institutions and good policies (Edison et al., 2002).

Many research papers, e.g. Edison et al. (2002), Agenor (2003), Baele et al. (2004), Komárek and Komárkova (2008) and ECB (2010) mention major costs of financial integration: (i) high degree of concentration of capital flows and lack of access to financing for small countries, either permanently or when they need it most; (ii) inadequate domestic allocation of these flows, which may hamper their growth effects and exacerbate pre-existing domestic distortions; (iii) loss of macroeconomic stability; (iv) pro-cyclical movements in short-term capital flows; (v) high degree of volatility of capital flows, which relates in part to herding and contagion effects; and (vi) risks associated with foreign bank penetration.

Concentration and domestic misallocation of capital flows

Historical evidence suggests that periods of ‘surge’ in cross border capital flows tend to be highly concentrated to a small number of recipient countries. A number of developing countries (particularly the small ones) may simply be ‘rationed out’ of world capital markets – regardless of how open their financial account is.

Although the capital inflows that are associated with an open financial account may raise domestic investment, their impact on long-run growth may be limited if such inflows are used to finance speculative or low-quality domestic investments such as investments in the real estate sector. Low-productivity investments in the non-tradable sector may reduce over time the economy’s capacity to export and lead to growing external imbalances. The misallocation of capital inflows may in part be the result of pre-existing distortions in the domestic financial system.

Loss of macroeconomic stability

The large capital inflows induced by financial integration and openness can have undesirable macroeconomic effects, including rapid monetary expansion (due to the difficulty and cost of pursuing sterilisation policies), inflationary pressures (resulting from the effect of capital inflows on domestic spending) and real exchange rate appreciation and widening current account deficits. Under a flexible exchange rate arrangement, growing external deficits tend to bring about a currency depreciation, which may eventually lead to a realignment of relative prices and induce self-correcting movements in trade flows. By contrast, under a fixed exchange rate regime, losses in competitiveness and growing external imbalances can erode

confidence in the viability and sustainability of the peg, thereby precipitating a currency crisis and increasing financial instability.

Pro-cyclicality of short-term flows

Pro-cyclicality may, in fact, have a perverse effect and increase macroeconomic instability: favourable shocks may attract large capital inflows and encourage consumption and spending at levels that are unsustainable in the longer term, forcing countries to over-adjust when an adverse shock hits. There are essentially two reasons that may explain the pro-cyclical behaviour of short-term capital flows. First, economic shocks tend to be larger and more frequent in developing countries, reflecting these countries' relatively narrow production base and greater dependence on primary commodity exports. A common adverse shock to a group of countries may cause deterioration in some countries' creditworthiness, as a result of abrupt changes in risk perception. This can lead borrowers who are only marginally creditworthy to be 'squeezed out' of world capital markets. Second, asymmetric information problems may trigger herding behaviour because partially informed investors may rush to withdraw 'en masse' their capital in response to an adverse shock whose economic consequences for the country are not fully understood.

Herding, contagion and volatility of capital flows

A high degree of financial integration and openness may be conducive to a high degree of volatility in capital movements, a specific manifestation of which being large reversals in short-term flows associated with speculative pressures on the domestic currency. The possibility of large reversals of short-term capital flows raises the risk that borrowers may face costly 'liquidity runs'. The higher the level of short-term debt is relative to the borrowing country's international reserves, the greater will be the risk of such runs. High levels of short-term liabilities intermediated by the financial system also create risks of bank runs and systemic financial crises. In general, the degree of volatility of capital flows is related to both actual and perceived movements in domestic economic fundamentals, as well as external factors, such as movements in world interest rates. In any case, rational or irrational, herding behaviour often translates into large movements into and out of certain types of assets and exacerbates fluctuations in asset prices and capital movements. Volatility of capital flows can also result from contagion effects.

Risk of entry by foreign banks

Although foreign bank penetration can yield several types of benefits, it also has some potential drawbacks. First, foreign banks may ration credit to small firms (which tend to operate in the non-tradable sector) to a larger extent than domestic banks, and concentrate instead on larger and stronger firms (which are often involved in the production of exports).

If foreign banks do indeed follow a strategy of concentrating their lending operations only to the most creditworthy corporate (and, to a lesser extent, household) borrowers, their presence

will be less likely to contribute to an overall increase in efficiency in the financial sector. More importantly, by leading to a higher degree of credit rationing to small firms, they may have an adverse effect on output, employment and income distribution.

Second, entry of foreign banks, which tend to have lower operational costs, can create pressures on local banks to merge in order to remain competitive. The process of concentration (which could also arise as foreign banks acquire local banks) could create banks that are ‘too big to fail’ or ‘too political to fail’ – as monetary authorities may fear that the failure of a single large bank could seriously disrupt financial markets and lead to social disruptions.

Third, entry of foreign banks may not lead to enhanced stability of the domestic banking system, because their presence per se does not make systemic banking crises less likely to occur. In addition, they may have a tendency to ‘cut and run’ during a crisis.

Besides the above mentioned costs of financial integration one can also distinguish barriers hindering financial market integration. Some of the barriers are described in e.g. Jappelli and Pagano (2008). First, if two jurisdictions have different currencies, exchange rate fluctuations create additional risk, and investors will require a risk premium to hold a security denominated in a foreign currency. And even if there are no exchange rate fluctuations, transaction costs for currency conversion will induce a deviation from international arbitrage. A second barrier to integration stems from differential taxes and subsidies, which drive a wedge between the after-tax costs of capital in different countries. Next, differences in regulation and enforcement can prevent financial intermediaries from competing across borders on equal footing. For instance, regulation can create stiffer entry barriers for foreign intermediaries; similarly, judicial efficiency can differ across countries, requiring intermediaries to charge higher interest rates in inefficient jurisdictions to compensate for expected recovery costs in case of default. Finally, entry barriers may arise not from regulatory constraints but from asymmetric information between potential foreign entrants and domestic incumbents. This is particularly relevant in credit markets, where the opacity of firms and households combines with local knowledge to give local lenders an informational advantage.

Lack of integration reflects the existence of barriers to cross-border activities. Kalemli-Ozcan and Manganelli (2008) classify the obstacles to financial integration in three main categories:

- Psychological/informational. Many studies, e.g. Guiso et al. (2006) show non-negligible psychological and cultural barriers to financial integration. For example cultural differences and mistrust explains a significant portion of bilateral financial and trade flows. Besides cultural psychological reasons, information frictions seem to have a significant effect on financial integration. Portes and Rey (2005) show that variables reflecting information asymmetries among countries (such as telephone costs, trading time, foreign newspaper circulation) correlate significantly with cross-border equity flows.

- Regulatory/legal obstacles. A precondition for financial integration is the removal of any legislative or regulatory differences discriminating agents on the basis of their location.
- Technical/infrastructure obstacles. Technical market infrastructures are also key for financial integration. Impediments to securities trading across national borders inhibit arbitrage forces and induce violations of the law of one price.

MEASURING OF FINANCIAL INTEGRATION

Various measures exist in the literature for assessing the level of financial integration. The methods which are used most are connected with growing investment opportunities. However, Ho (2009) says that a standard measure of financial integration is difficult to develop. There are many types of financial transactions and some countries impose a complex array of price and quantity controls on a broad assortment of financial transactions. This leads to enormous hurdles in measuring cross-country differences in the nature, intensity and effectiveness of barriers to international capital flows (Eichengreen, 2001). Given the variety of asset classes traded, the measurement of financial integration is not straight forward (Kalemli-Ozcan and Manganeli, 2008).

Financial integration is often measured following the approach adopted by Baele et al. (2004). They consider three broad categories of financial integration measures:

- Price-based measures, which capture discrepancies in prices or returns on assets caused by the geographic origin of the assets. This category of measures is divided into two methods of measurement: yield-based and country effects.
- News-based measures, which measure the information effects from other frictions or barriers. If the global news has relatively bigger importance than local news, the degree of systematic risk should be identical across assets in different countries.
- Quantity-based measures, which quantify the effects of friction faced by the demand for and supply of investment opportunities.

Price-based measures measure discrepancies in prices or returns on assets caused by the geographic origin of the assets. This constitutes a direct check of the law of one price, which in turn must hold if financial integration is complete. If assets have sufficiently similar characteristics, it can base these measures on direct price or yield comparisons. Otherwise it needs to take into account differences in systematic (or non-diversifiable) risk factors and other important characteristics. The cross-sectional dispersion of interest rate spreads or asset return differentials can be used as an indicator of how far away the various market segments are from being fully integrated. Similarly, beta convergence, a measure borrowed from the growth literature, is an indicator for the speed at which markets are integrating. In addition, measuring the degree of cross-border price or yield variation relative to the variability within individual countries may be informative with respect to the degree of integration in different markets.

The news-based measures are designed to distinguish the information effects from other frictions or barriers. More precisely, in a financially integrated area, portfolios should be well diversified. Hence, one would expect news (i.e. arrival of new economic information) of a regional character to have little impact on prices, whereas common or global news should be relatively more important. This presupposes that the degree of systematic risk is identical across assets in different countries; to the extent that it is not, financial integration is not completed and local news may continue to influence asset prices.

The quantity-based measures quantify the effects of frictions faced by the demand for and supply of investment opportunities. When they are available, we will use statistics giving information on the ease of market access, such as cross-border activities or listings. In addition, statistics on the cross-border holdings of a number of institutional investors can be used as a measure of the portfolio home bias. Of course, no measure can be used for all markets, as the specifics of some market or the data available for implementing a measure can differ across markets. However, the spirit is the same across all markets, as they capture the extent of possible asymmetries. A summary of integration measures for each segment of a financial system and how they relate to each other is available in Table 1.

Table 1 Measuring of financial integration

<i>Type of market</i>	<i>Price-based measures</i>	
	<i>Yield-based measures</i>	<i>Country effects</i>
Money market	Spread between interest rates	Dispersion of rates across countries vs. within countries
	Cross-country standard deviation of the average overnight lending rates among countries	
	Cross-country standard deviation of unsecured lending rates among countries	
	Cross-country standard deviation of repo rates among countries	
Credit market	Cross-section dispersion	
	Spread between interest rates using a reference country interest rate	
	Margins using comparable market rates	
	Beta-convergence	
Corporate bond market	Cross sectional dispersion	Country versus rating effects within the country (rating) portfolios
	Size and significance of country effect for corporate bonds spreads	
	Cross-sectional dispersion in	

country effect		
Government bond market	Spread between yields using a reference asset Standard deviation of government bond yield spreads for 10-, 5- and 2-year maturities Evolution of Beta coefficients Average distance of intercept/beta from values implied by complete integration Variance ratio Cross-sectional dispersion	Proportion of cross-sectional variance explained by various factors Estimated coefficients of country dummies Cross-sectional dispersion of country parameters
Equity market		Filtered country and sector dispersions of equity returns Shock spill-over intensity
<i>News-based measures</i>		
Credit market	Percentage of interest rate change explained by common factors	
Government bond market	Percentage of asset price change explained by common factors	
Equity market	Increase in common news components in equity returns	
<i>Quantity-based measures</i>		
Money market	Cross-border lending activities Resort to standing facilities Repo-market: number of traders involving non-euro area banks	
Credit market	Cross-border loans to non-banks and interbank loans Cross-border securities holdings issued by banks and non-banks	
Corporate bond market	Share of assets invested in bond funds with a European-wide investment strategy	
Government bond market	As in corporate bond market	
Equity market	Asset share of euro area Investment funds with non-domestic and European horizon Share of foreign euro area equity in total equity portfolio of pension fund and life insurance sectors	

Source: European Commission and Baele et al. (2004)

The presented indicators mostly rely on the data which were already collected. Pagano (2002) proposes an innovation that data for the financial integration indicators should be collected via new specifically designed surveys, particularly in two areas: (i) surveys intended to measure firms' access to foreign credit and security markets, and (ii) surveys of financial product prices to assess the extent to which the law of one price holds in EU financial markets.

Schäfer (2009) presents that the classification of integration indicators can be geared to the type of data collected or to the information revealed. With this approach, indicators are calculated either on the basis of statistical data on actual business activities (e.g. interest rate statistics) or by means of surveys of banks' and consumers' behaviour and intentions. For example, surveys can be used, to learn about the banks' international strategies or about consumer attitudes towards foreign providers. With regard to the type of information mined, the indicators can be either qualitative or quantitative. The latter category, in turn, can be volume-based or price-based. Indicators can also be classified by their contribution to the measurement of integration as specified in the three definitions of the term given above. Accordingly there are:

- Indicators depicting the extent to which the economic objectives associated with the integration process have been met. In other words, what progress has actually been made on achieving integration.
- Indicators depicting whether banks and consumers perceive the uniform internal market as a whole as their domestic market.
- Indicators depicting the extent to which the legal prerequisites are in place for banks and consumers to take a pan-European view, i.e. how far the artificial hurdles have been removed.

Two problems may arise with each of the three groups of indicators. Firstly, it may be difficult to correctly measure the variables entered into the respective indicator owing to limited data availability. Secondly, if this is not an issue, it will then be necessary to check whether the calculated indicator permits constructive statements on the status of retail banking market integration (Schäfer, 2009).

PROGRESS IN FINANCIAL INTEGRATION IN THE EUROPEAN UNION

Financial integration has not been always considered as an important and leading part of the economic integration in Europe. In the early days of the European integration, liberalization has been focused on trade with coal and steel. The united monetary policy has become the issue of European integration in the late 1960s because of the exchange rate stability threat imposed by the Bretton Woods system. Finance and financial integration played only a limited role in this phase of European economic integration, reflecting the attitude toward finance and financial integration prevalent in the first three decades after World War II.

Neither academics nor policymakers regarded finance or financial integration as important drivers of growth. Most of them were inspired by Joan Robinson and Robert Lucas who seemed to support the notion that finance has no bearing on growth and development. Robinson (1952) declares 'where enterprises leads finance follows'. Lucas (1988) asserts that economists 'badly over-stress' the role of financial factors in economic growth. Academic literature on the finance and growth relationship only emerged in the late 1980s. There were, however, some defenders of financial integration as the driver of growth. Bagehot (1873)

found the financial system to be a critical factor in igniting industrialization in England by facilitating the mobilization of capital for immense works. King and Levine (1993) agree with Schumpeter and his theory, that financial systems can promote economic growth and that banks are important funding mechanisms of entrepreneurs, who lead economic growth.

The main impulse for the European financial integration was provided by the European Single Market project which has allowed free movement of goods, people, services, and capital. Progress in financial integration relates to the structural reforms and the Broad Economic Policy Guidelines connected to the Lisbon strategy. The establishment of the Economic and Monetary Union is also considered as extraordinary important stimulus of the European financial integration. The main statement in favour of the European financial integration can be found in the definition of the mission of the Eurosystem: ‘We in the Eurosystem have as our primary objective the maintenance of price stability for the common good. Acting also as a leading financial authority, we aim to safeguard financial stability and promote financial integration’.

The existing literature generally concludes that the financial integration within the euro area is apparent and enlarging. On the other hand, the evidence on financial integration between the groups of old and new EU member states is not so homogeneous. Nevertheless, the European Commission (2009) comes to the conclusion that integration between the old and new parts of the EU has been advancing rapidly, albeit in a different form than that among the euro area members.

The most recent factor with significant influence on the European financial integration is the world financial crisis. However, the effects differ considerably across financial system segments and countries. In addition, various measures lead to inconsistent results. Angeloni (2010) points out that when interpreting the results one should take into account the fact that the financial crisis had several phases and consisted of banking crisis and sovereign crisis. Therefore, development of the financial integration during the crisis period is rather turbulent.

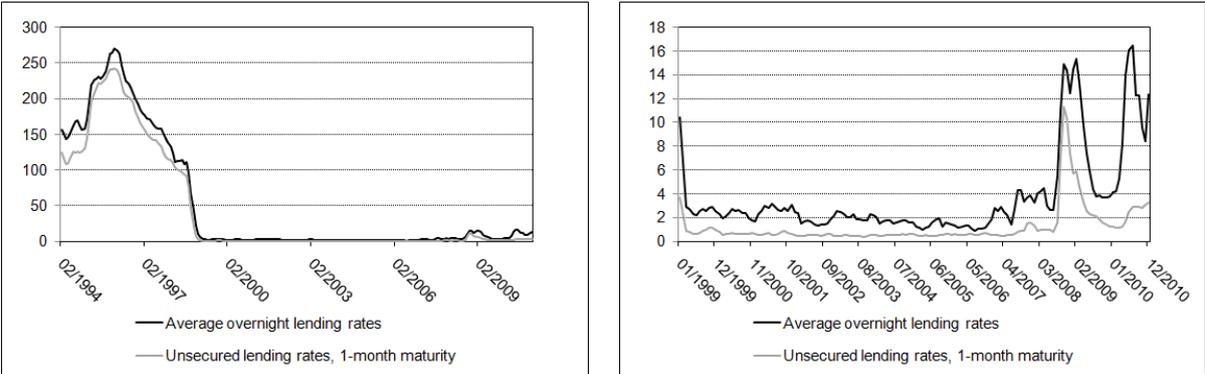
Integration of money markets

According to Cassola et al. (2010) single monetary policy decisions should affect all euro area countries in the same way. Financial and monetary integration have been reinforcing each other, with financial integration fostering the process of monetary union, and monetary union strengthening efforts to increase financial integration (Winkler, 2010). The available evidence (Hartmann et al., 2001; Gaspar et al., 2001 or Perez-Quiros and Mendizabal, 2006) suggests that both the unsecured and secured segments of money markets have reached a high degree of integration. There is not only high level of integration within the euro area money markets recorded, but the speed of convergence is very high as well. A very fast convergence of interest rates was found across the Europe (ECB, 2005a). Likewise, ECB (2010) concludes that the euro area money market has been characterized by a high degree of integration since shortly after the introduction of the euro in 1999.

The recent financial turmoil represents a significant episode on the development path of the money markets integration. Money markets were seriously hit by the crisis because of their function of channelling funds to enable banks to cover their most immediate funding needs. This makes the money markets vulnerable and sensitive to counter-party risk. After August 2007, cross-border volumes traded on the money markets declined sharply. ECB (2010) and Cassola et al. (2010) recognize the bankruptcy of Lehman Brothers as an important milestone that caused further decline in cross-border volumes and a strong rise in foreign premiums. This post-Lehman phase was followed by a period, starting in May-June 2009, characterized by the gradual return to more stable conditions provided by the improvement in the activity of financial integrity indicators. This stabilization and improvement was also supported by measures adopted by the ECB’s Governing Council that strengthened and consolidated those gains, with further beneficial effects on financial integration. However, the sovereign crisis in some of the euro area and EU countries intensified in February-March 2010 and brought back the instability to money markets. The financial integration indicators worsened to levels recorded during the peak of financial crisis.

For illustration we use one of possible price-based indicators – the cross-sectional standard deviation of the overnight Eonia (Euro over night index average) lending rates across euro area countries (Figure 2). The phase of preparation for the single currency is reflected in the substantial increase of the integration degree. The effects of the financial and sovereign crises are apparent as well. Similar results can be obtained if Euribor (Euro Interbank Offered Rate), Eurepo (European Repo Market rates) or Eonia Swap are used to calculate the integration indicator.

Figure 2 Cross-sectional standard deviation of the overnight Eonia (in basis points, 1994 – 2010 and 1999 – 2010)



Source: ECB, <http://sdw.ecb.europa.eu/browse.do?node=20188171>

Financial integration of the money markets of the euro area countries and the new EU countries (Czech Republic, Hungary, Poland, Slovakia, and Slovenia) was investigated by Babetskii et al. (2009). The results suggest that the speed of convergence was somewhat lower in the Czech Republic and Slovakia in the period from January 1995 to July 2007. Slovenian money markets achieved a higher degree of integration, which was linked with its completed euro adoption process. During the period from August 2007 to January 2009 the calculations show that most countries recorded a slowdown in convergence of yields towards

those in the euro area. The money market integration accelerated in that time only in Slovakia since the country was preparing for the euro adoption.

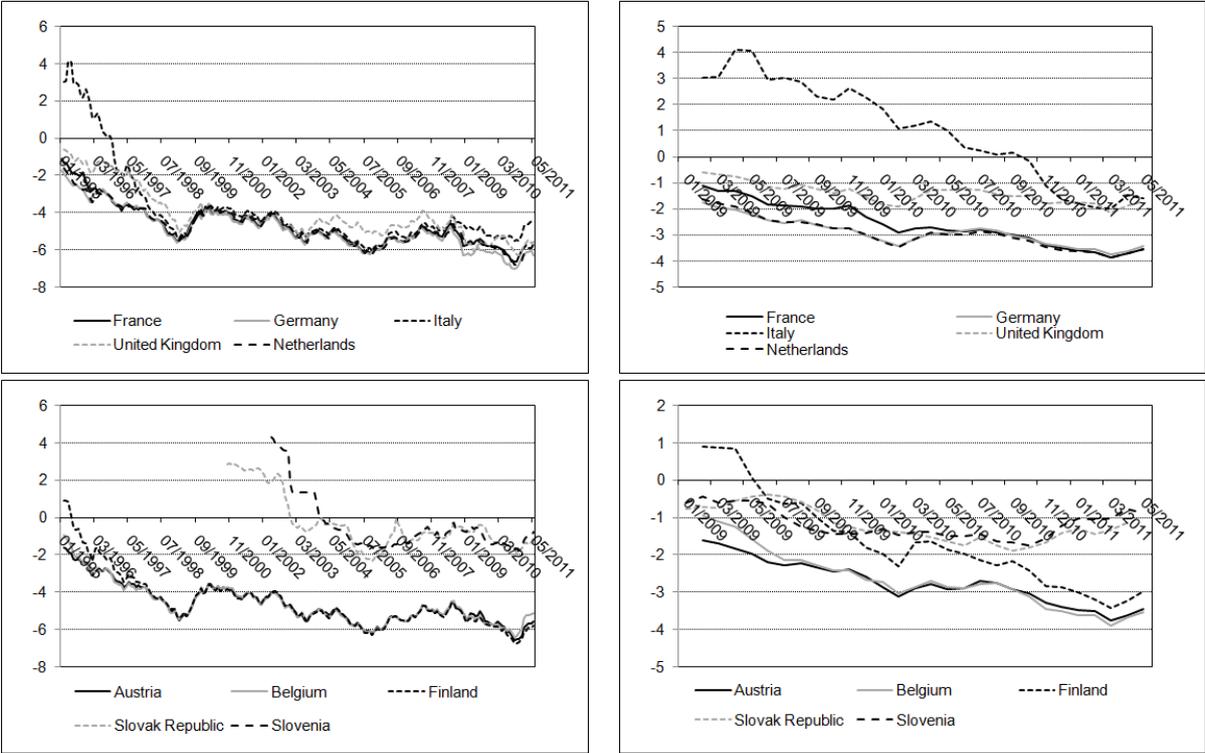
Integration of bond markets

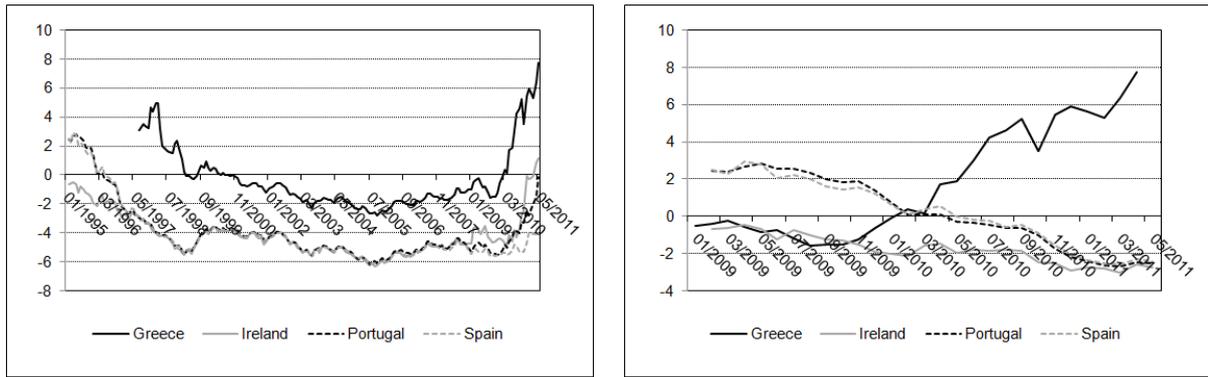
The financial integration of bond markets is usually studied separately for government bond markets and corporate bond markets. In addition to the integration in the euro area, some studies focused on the integration within the EU as a whole and the integration between EU and other world centres.

Government bond market

Previous studies do not provide consistent findings on the level of financial integration of the bond markets. Abad et al. (2009) apply news-based indicators on the government bonds markets and report rather incomplete integration from the January 1999 to June 2008. On the other hand, price-based indicators show that the government bond markets were highly integrated during this period, although the long-term government bond yield spreads related to Germany remain. There was actually a significant integration within some countries’ government bond markets even before the launch of EMU. Figure 3 depicts the development of the government bond markets integration measured by the 10-year government bond yield spreads between the country’s yield and the euro area average.

Figure 3 Government bond yield spreads in the euro area (in percent, 01/1995 – 05/2011 and 01/2009 – 05/2011)

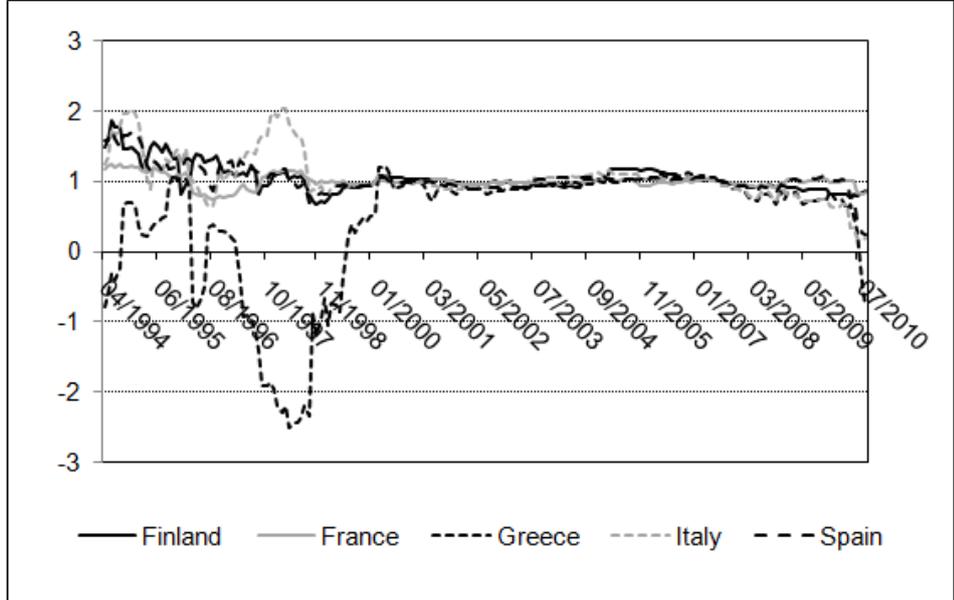




Source: Authors' calculations based on OECD statistics, <http://stats.oecd.org/index.aspx?r=636904>

In order to illustrate the differences among the euro area countries we divided the countries into three groups that are presented individually. Similarly with the development of the money markets one can realize very intensive equalization of the government bond yields before the introduction of the euro. The euro area government bond markets have also been influenced by the financial crisis and consequent actions taken by governments and central banks. As is evident from Figure 3, the most significant impact of the crisis is possible to see after January 2010 when some of the countries (namely Greece, Portugal and Ireland) recorded significantly higher government bond yields as compared to the euro area average. The development of the government bond yields suggests that since the beginning of tensions in the financial system in 2007-2008 the euro area government bond markets have had a tendency towards greater segmentation and differentiation.

Figure 4 Beta coefficients on government bond markets (in basis points, 1994 – 2010)



Source: ECB, <http://sdw.ecb.europa.eu/browse.do?node=2018817>

In calculating the indicator of beta-convergence, where the beta represents the estimated correlation of changes in the 10-year government bond yield of a given country with changes

in the German bond yield, growing integration was found (Figure 4). The betas varied substantially up to 1998 and converged afterwards towards 1, the perfect integration level (ECB, 2005b). The financial crisis substantially worsened beta coefficients of some euro area countries such as Greece, Spain and Italy.

Cappiello et al. (2006) examine financial integration between the bond markets of the euro area and selected new EU member countries during the period 2000-2005 and two sub-periods: pre-convergence (2000-2002) and convergence (2003-2005). They estimate return co-movements and find that integration increases only for the Czech Republic and Poland (versus Germany used as a benchmark for the euro area).

Babetskii et al. (2009) also investigate financial integration between the bond markets of the euro area countries and the new EU member countries (Czech Republic, Hungary, Poland, Slovakia, and Slovenia). They apply various news-based and price-based measures of financial integration and summarized results showing evidence of relatively strong and gradually increasing integration of the new EU members' markets towards the levels of the euro area economies. This was mainly the case for the period from January 1995 to July 2007.

Corporate bond market

The corporate bond market is relatively younger than the market of government bonds. The market for short-term securities has shown little signs of integration, mainly because of differences in market practices and standards. Since commercial paper contracts vary across countries due to differences in legal systems and regulatory requirements, the market for short-term papers in Europe has remained largely of a domestic nature (Kalemli-Ozcan and Manganelli, 2008).

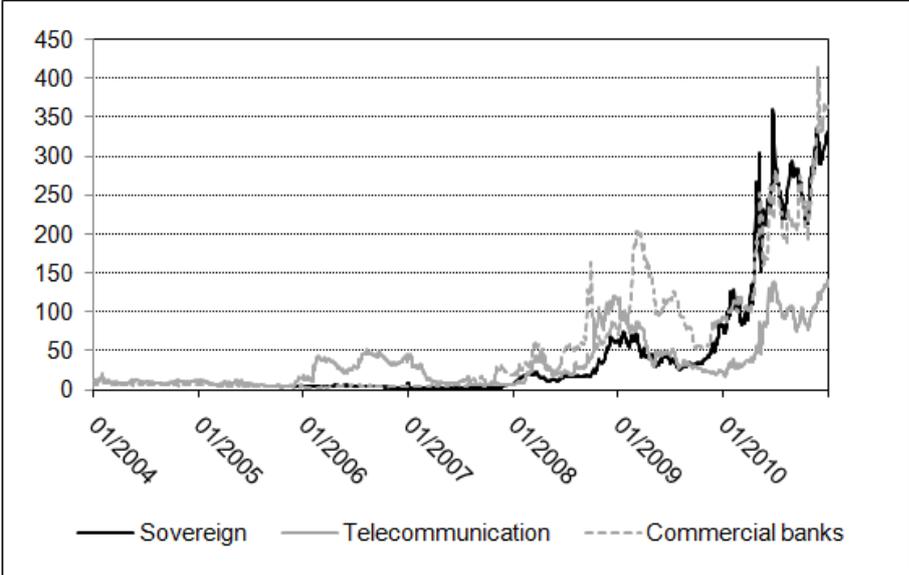
According to the heterogeneity of the corporate bonds, it is not possible to analyze the integration by the simple comparison of the bond yields during the selected time period. The yield on a corporate bond typically depends on a number of factors such as the bond's credit rating, time to maturity, liquidity and cash-flow structure. Full integration should be confirmed by the identical impact of specific factors across all countries. Therefore, more sophisticated methods to measure financial integration within these markets have to be applied. Usually, the impact of the country where the bond was issued is investigated. In the case of price-based measures of integration, there is a testing whether risk-adjusted yields have a systematic country component. In an integrated market, the proportion of the total yield spread variance that is explained by country effects should be close to zero (ECB, 2007).

Baele et al. (2004) investigate the integration of corporate bond markets by the estimation of the cross-sectional regression in the period 1998-2003. In the analysis, the yield spread on a corporate bond, relative to a benchmark government bond yield, was decomposed into a component common to all and a component due to the corporate bond's coupon size, time to maturity, liquidity, sector, and credit quality. It is imposed that the parameters related to these

factors are equal for all bonds, irrespective of the country of origin. Authors suggest that the corporate bond markets in the analyzed countries are reasonably integrated with each other. This finding is confirmed by the research of ECB (2005b). They study corporate bond markets in the euro area using price-based and quantity-based measures. All alternative approaches lead to the conclusion that the markets are well integrated.

We present development of financial integration on the euro area corporate bond markets on basis of dispersion in 5-year CDS (credit default swap) premiums among leading telecommunication firms and commercial banks across the euro area countries (Figure 5). The markets are considered integrated if the dispersion is zero. For better comparison of government and corporate bond markets we report the same indicator for government bonds.

Figure 5 Dispersion in 5-year CDS premiums (in basis points, 01/2004 – 03/2011)



Source: ECB, <http://sdw.ecb.europa.eu/browse.do?node=2018817>

We can clearly identify the effects of global financial turmoil and subsequent sovereign crisis in some European countries. While the government bond markets consistently showed a higher level of integration than the corporate bond markets before the crisis, the situation changed in 2009 when the crisis effects started to be more reflected in fiscal policy and public finance of the euro area members. Banking sectors in many euro area countries were under serious pressures during the financial crisis. The instability of banking sectors contributed to the substantial decrease of integration on the bank bond markets. Although the telecommunication bond markets followed a similar development, the crisis-related worsening of integration was not so remarkable and it seemed to be more integrated during the turbulent crisis times.

According to Avadanei (2010), quantity-based indicators also point to an increasing degree of integration of corporate bond markets. For instance, holdings of long-term debt securities issued by the euro area governments and non-financial corporations held by residents of other (non-domestic) euro area countries have continued to increase in the previous eleven years,

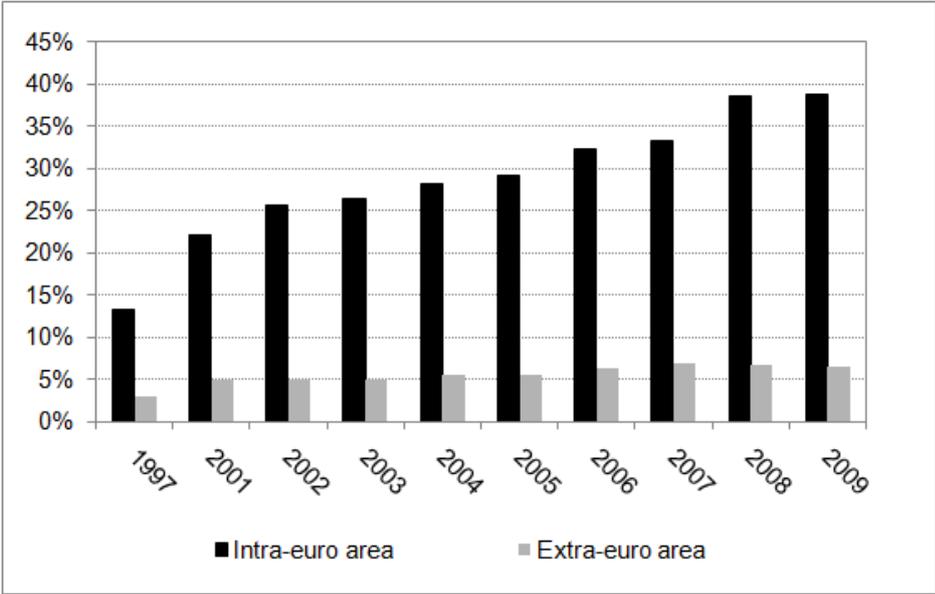
although there was a decrease during the recent financial crisis period. Monetary financial institutions have strongly increased their cross-border holdings of debt securities since the end of the 1990s, from about 10 percent to nearly 60 percent. In particular, the holdings of bonds issued by non-financial corporations have increased markedly from a very low level, suggesting that investors are increasingly diversifying their portfolios across the euro area.

Integration of equity markets

Due to a high degree of heterogeneity in equity returns, the measurement of integration of equity markets is even more problematic than assessment of integration of money and bond markets. However, ECB (2010) reports that alternative measures of the euro area equity markets integration indicate similar development as in the money and bond markets. The most common price-based indicator used on stock markets is the country and sector dispersion in monthly stock returns. The results point to the growing integration in the euro area since 2001. However, development of this measure changed the trend after October 2007 when the advantages of a geographical diversification have become higher than those of a sector diversification.

Quantity based indicators seem to be the best for evaluating financial integration of equity markets. According to ECB (2010) quantity-based indicators show that the degree of integration in these markets is rising. The holdings of equity issued in other euro area countries are growing. Figure 6 shows the degree of cross-border holdings of equity issued by euro area residents. The more international are portfolios of investors, the more integrated are the equity markets. Although the total cross-border holdings are rising, investors have oriented on equities issued within the euro area than in countries outside the euro area. While the financial crisis only slowed down the increasing trend in the intra-euro area holdings it caused a reversal in trend of the extra-euro area holdings.

Figure 6 Cross-border holdings of equity issued in the euro area



Source: ECB, <http://sdw.ecb.europa.eu/browse.do?node=2018817>

Similar results stemming from the application of quantity-based indicators are presented in Pagano (2002). He documents an increasing degree of stock market integration in the euro area countries in the 1990s. Cappiello et al. (2006) examine financial integration of the equity markets of the euro area and the new EU countries (Cyprus, Czech Republic, Estonia, Hungary, Latvia, Poland and Slovenia). They reveal an increase in the degree of integration between 1994 and 2005. Significantly weaker co-movements of the euro area and EU members occurred before 2000. The increasing integration in the second part of the analyzed period is mostly driven by larger new EU members (Czech Republic, Hungary and Poland). Small new EU members were almost independent before 2000 and only some of them (Estonia, Cyprus) after 2000 achieved marginal progress in integration.

Babetskii et al. (2009) estimated financial integration of the stock markets of the euro area countries and the new EU countries (Czech Republic, Hungary, Poland, Slovakia, Slovenia). The results show that yields on the Czech and Hungarian stock markets converged towards those on corresponding euro area financial instruments relatively quickly in the period January 1995 – July 2007. This integration was even faster than in some euro area countries such as Austria or Portugal.

Institutional framework of financial integration

According to Tumpel (2006), integration of the institutional framework is crucial for financial integration as it sets up and demarks the playing field for all market participants. We focus on integration of the financial infrastructure and integration (harmonization) of the respective legislative framework.

Financial infrastructure

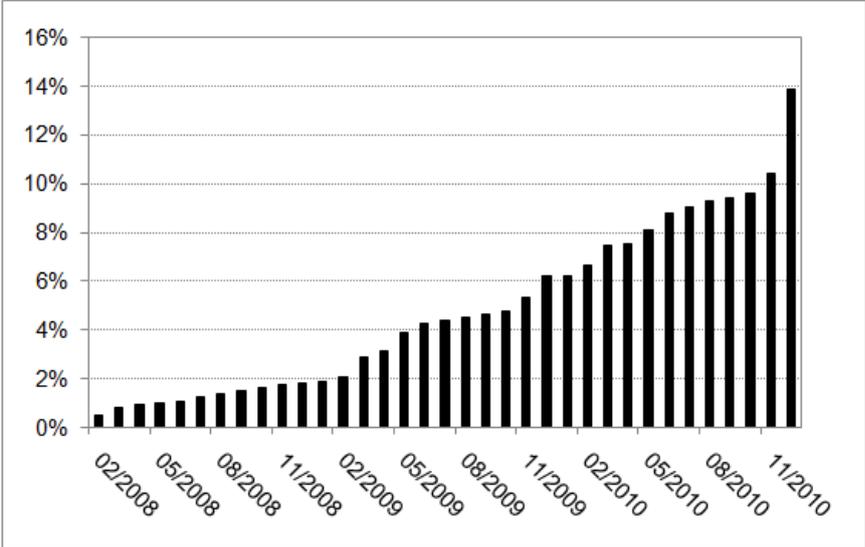
Financial infrastructure can be defined as a set of institutions which enable effective operations on the financial markets. According to Gisiger and Weber (2005) financial infrastructure generally consists of three main elements: (i) a system needed for payments and securities' transfer (clearing and settlement provider), (ii) a gross settlement payment system and (iii) a stock exchange. International Finance Corporation (2010) understands financial infrastructure as the underlying foundation for a financial system including all institutions, information, technologies and rules and standards which enable financial intermediation. It is a merger of payment systems, credit information bureaus and collateral registries. Integration of financial infrastructure is therefore influenced by existing legal and regulatory framework for financial sector operations.

Integration of financial infrastructure should make financial markets more efficient and lead to cost savings. This is the main reason why European financial infrastructure strives for a higher degree of integration. Many integration and harmonization initiatives in the European financial infrastructure exist especially in the euro area but they are not yet fully implemented. The two integration projects with highest level of development within the euro area are the

Single Euro Payments Area (SEPA) and the Trans-European Automated Real-time Gross settlement Express Transfer system (TARGET2).

SEPA replaced all the national payment systems in the countries of the euro area in 2011. Hence, SEPA provides the instrument for the cross-border financial integration. It is used not only by the euro area and EU countries, but also connects members of the European Economic Area that are not EU members (Lichtenstein, Iceland and Norway, Switzerland and Monaco that is the only non-EU country that uses the euro by agreement with the EU). Figure 7 shows the development of transactions processed in SEPA format as a percentage of total transactions.

Figure 1.7 Transactions processed in SEPA format as a percentage of total transactions

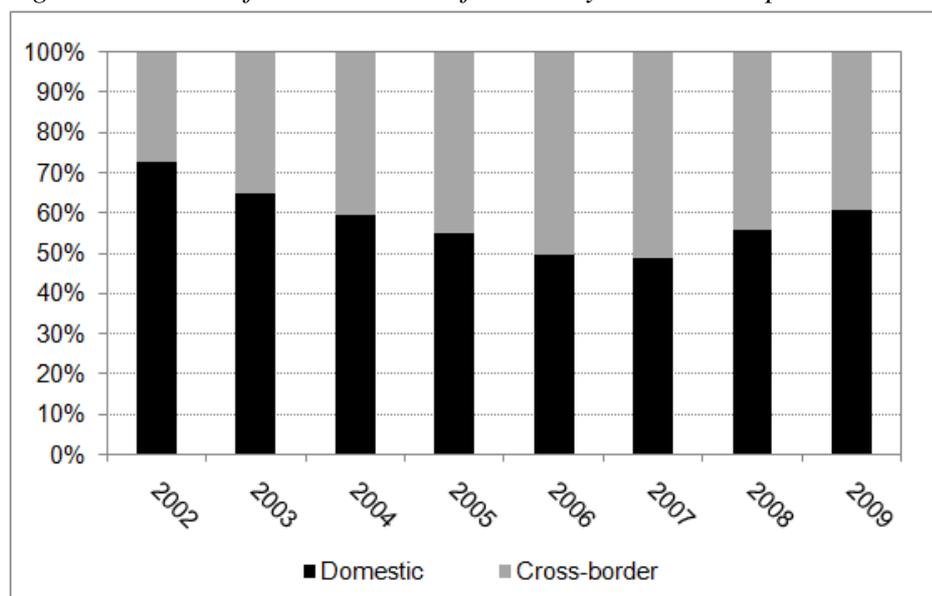


Source: ECB, <http://www.ecb.int/paym/sepa/about/indicators/html/index.en.html>

The harmonization of the wholesale payments sector has been done through TARGET2. It is a single technical platform, which allows firms to offer harmonized services at the EU level with a single price structure. In 2010 it had 23 members, 17 euro area central banks and six non-euro area central banks.

Several projects are still in their early developing phase, but they are already making significant progress. The most significant initiative in regards to integration of financial infrastructure is the TARGET2-Securities project. It is intended to come into operation in 2014 and it will represent an improvement of the Eurosystem’s pan-European securities settlement platform. There is also the project of Collateral Central Bank Management that will consolidate the existing technical infrastructure into one single platform for the domestic and cross-border use of marketable and nonmarketable assets, with live operations starting in 2013 (ECB, 2011). Figure 8 demonstrates the share of domestic and cross-border collateral used for Eurosystem credit operations.

Figure 1.8 Share of collateral used for Eurosystem credit operations



Source: ECB, <http://sdw.ecb.europa.eu/browse.do?node=2018817>

Legislative framework

According to Kalemli-Ozcan et al. (2010), on top of all the other channels and country/time factors, the legislative regulatory harmonization policies have a direct effect on financial integration. Legislative harmonization and reforms of financial services are closely connected with the three main elements of financial infrastructure mentioned above. For instance, SEPA as a self-regulatory initiative by the banking sector is on one side and the Payment Services Directive as a necessary legal framework to the payment service providers is on the other side. Although there is no single legislation on financial system and financial services in all EU member countries, the governments are required to transpose the EU directives into national legislation to minimize cross-country differences. Table 2 lists the EU directives related to financial systems to be implemented by all EU and European Economic Area members.

Table 1.2 EU Directives related to financial systems of EU and European Economic Area

<i>Directive No.</i>	<i>Directive title</i>	<i>Implementation Due day</i>
1998/26/EC	Implementation of the Settlement Finality Directive	N/A
2000/46/EC	Directive on the taking up, pursuit and prudential supervision of the businesses of electronic money institutions	27/04/2002
2000/64/EC	Directive amending the insurance directives and the ISD to permit information exchange with third countries	17/11/2002
2001/17/EC	Directive on the reorganization and winding-up of Insurance undertakings	20/04/2003
2001/24/EC	Directive on the reorganization and winding-up of banks	05/05/2004

2001/65/EC	Directive amending the 4 th and 7 th Company Law Directives to allow fair value accounting	09/10/2004
001/86/EC	Directive supplementing the Statute for a European Company with regard to the involvement of employees	10/10/2004
2001/97/EC	Directive amending the money laundering directive	15/06/2003
2001/107/EC	1 st Directive on UCITS (Undertakings for Collective Investments in Transferable Securities)	13/08/2003
2001/108/EC	2 nd Directive on UCITS /Undertakings for Collective Investments in Transferable Securities)	13/08/2003
2002/13/EC	Directive amending the solvency margin requirements in the insurance directives	20/09/2003
2002/47/EC	Directive on financial collateral arrangements	17/12/2003
2002/65/EC	Directive on the Distance marketing of Financial Services	01/01/2004
2002/87/EC	Directive on the supervision of credit institutions insurance undertakings and investment firms in a financial conglomerate	11/08/2004
2002/83/EC	Solvency 1 Directive for life insurance	20/09/2003
2002/92/EC	Directive on insurance mediation	15/01/2005
2003/6/EC	Directive on insider dealing and market manipulation	12/10/2004
2003/41/EC	Directive on the prudential supervision of pension funds	23/09/2005
2003/48/EC	Directive on the taxation of savings income in the form of interest payments	01/01/2004
2003/51/EC	Directive modernizing the accounting provisions of the 4 th and 7 th company Law Directives	01/01/2005
2003/71/EC	Directive on prospectuses	01/07/2005
2004/25/EC	Directive on Take Over Bids	20/05/2006
2004/109/EC	Transparency Directive	20/01/2007
2004/39/EC	Directive on Markets in Financial Instruments (update of ISD) MiFID	20/01/2007
2005/56/EC	10 th Company Law Directive on cross-border mergers	15/12/2007
2006/48/EC	Directive on the relating to the taking up and pursuit of the business of credit institutions	31/12/2006
2006/49/EC	Directive on the capital adequacy of investment firms and credit institutions	31/12/2006
2007/64/EC	Directive on payment services (PDS)	01/11/2009
2009/924/EC	Regulation on cross-border payments in the Community	Regulation 2560/2001

Source: European Commission

CONCLUSION

The aim of this paper was to describe the concept of financial integration, compare the benefits and risks of financial integration and summarize the progress in financial integration in the EU. The existing literature offers a variety of definitions of financial integration. However, all of them emphasize that financial integration is the process through which financial systems and financial markets in an economy become more closely integrated with those in other economies or with those in the rest of the world.

We found three crucial benefits of financial integration that are mutually interlinked. In particular, we distinguish more opportunities for risk sharing and risk diversification, better allocation of capital among investment opportunities, and potential for higher economic growth. Some economists also consider financial development as a positive effect of financial integration. The financial development reduces asymmetric information, increases the completeness of markets, reduces transaction costs, increases competition and, hence, positively affects the economic growth of countries involved in the integration process. On the other hand, increased vulnerability to external macroeconomic shocks and financial crises transmitted to higher output and consumption volatility and is often considered as the most serious drawback of financial integration. Moreover, a high degree of concentration of capital flows or pro-cyclical movements in short-term capital flows can be also listed among negative implications of financial integration.

We also evaluated the degree of financial integration achieved in the European Union. The euro area money markets are nearly fully integrated. Additionally, the degree of integration in the government bond market has become very high since the introduction of the single currency. Despite a rising degree of integration and a considerable reduction in the home bias in equity portfolios of institutional investors, the euro area equity market remains the least integrated. Integration of the financial infrastructure and harmonization of financial legislation has advanced since 1999. In this field, progress has been especially achieved in evolution and implementation of common payment and settlement systems. By contrast, a securities settlement platform and a system for using central banks' marketable and nonmarketable assets still require further integration.

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