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Published in:
National Institute Economic Review

DOI:
[10.1177/002795011222000114](https://doi.org/10.1177/002795011222000114)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2012

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Inklaar, R., de Guevara, J. F., & Maudos, J. (2012). The impact of the financial crisis on financial integration, growth and investment. *National Institute Economic Review*, 220(1), R29 - R35.
<https://doi.org/10.1177/002795011222000114>

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THE IMPACT OF THE FINANCIAL CRISIS ON FINANCIAL INTEGRATION, GROWTH AND INVESTMENT

Robert Inklaar*, Juan Fernández de Guevara
and Joaquín Maudos****

Financial crises, and in particular those of the past few years, have severe consequences for the affected economies. In this paper we analyse the impact of financial development and European financial integration on growth and we find no reversal of the growth benefits of financial development and integration in recent years. This highlights the economic cost of regulatory changes that would reverse European financial integration. We also find that, following a financial crisis, investment declines more in countries with a greater degree of uncertainty aversion, which can be informative for evaluating post-crisis economic performance.

Keywords: Financial crises; economic growth; financial integration; uncertainty aversion; investment

JEL Classifications: G01; O16; F36; D81

Introduction

The effects of the global financial crisis of 2007–8 are still being felt around the world, in considerable part through the current Euro Area debt crisis. This underscores the need for a thorough understanding of the broader economic impact of the 2007–8 crisis and financial crises more generally. In this article, we draw on recent research to analyse two aspects in more detail. First, we show how the financial crisis has affected the degree of financial integration within Europe and how this in turn has affected economic growth. Second, we analyse the effect of financial crises on investment across countries and show how this effect differs systematically across countries.

We focus on European financial integration because creating a common market for financial services has long been one of the main goals of the European Single Market Programme, and the Financial Services Action Plan of 1999 more specifically.¹ The share of cross-border lending, deposit-taking and financial market activity has increased considerably, in particular since the introduction of the euro. But this has also tied the fate of European banking systems closer together; a major

argument used to defend emergency loans to Greece and other troubled euro economies has been that financial institutions across Europe would suffer greatly from any sovereign default.

This raises a number of questions. First, to what extent has the broader economy benefited from European financial integration? Second, to what extent has European financial integration gone into reverse since the start of the 2007–8 financial crisis and has this been a drag on economic growth? In the first part of this article, we will discuss some of the recent evidence on these questions.² We show how European financial integration has had a substantial impact on financial development across Europe and this has benefited growth. Since 2007, European financial integration has not reversed strongly so it has not been a major drag on economic growth.

A financial crisis can also have a more direct effect on the real economy and investment in new buildings and machinery are particularly sensitive to crises. This is because a financial crisis is typically a period of heightened uncertainty, which can lead firm managers

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to postpone investment until quieter times. However, not everyone responds to uncertainty in the same way and if there are systematic differences across countries in the aversion to uncertainty, financial crises may have a larger impact in countries with a higher aversion to uncertainty. Our results³ show that there is indeed a significant difference in the impact of financial crises on investment depending on the degree of a country's uncertainty aversion. Although this is established using a global dataset and all types of financial crises since 1970, this can also lead to differences across Europe with countries that are less averse to uncertainty, such as Ireland, recovering faster than countries with greater aversion to uncertainty, such as Greece.

Overall, this article illustrates the importance of getting current policies right, both in regulating the financial sector and overall macroeconomic policies. While reversing the trend in financial integration could be argued on grounds of financial stability, this has a clear price in terms of lower economic growth. Furthermore, enduring uncertainty may extract a sizeable toll on current and future growth by reducing investment in new capital and this effect may be strongest in some of the countries that are already hardest hit, such as Greece and Portugal, where uncertainty aversion is strong. Providing a reliable intergovernmental safety net for such countries may be very important for restoring confidence enough to move out of recession.

Financial development, integration and growth

To gauge the impact of European financial integration on economic growth, we decompose total capitalisation, the most frequent proxy variable for financial development. Financial development can be interpreted as increasing the efficiency of allocating financial resources and monitoring capital projects. In empirical terms, this translates into an increasing volume of bank intermediation and an increasing role for equity capital. For this reason, total capitalisation is measured as the sum of the outstanding bonds in national markets, stock market capitalisation and bank credit, all expressed as a percentage of GDP.⁴ We distinguish between the level of capitalisation that would have been attained regardless of European financial integration, so-called 'pure financial development', and the contribution from European financial integration.

Our measure of European financial integration is calculated from a counterfactual analysis. For each EU-15 country, we look at the change in funds received from

other EU-15 countries and funds received from the rest of the world, using data from the European Central Bank (ECB). We assume that if the degree of integration had not advanced, the growth of funds received from other EU-15 countries would have been equal to the growth in funding obtained from the rest of the world. Since 1999 growth in funding from other countries in the EU-15 has been higher than the growth of funding in the rest of the world, so the contribution of European financial integration to total financial development has been positive. Pure financial development is defined as total capitalisation minus the contribution from European financial integration. Our definition of European financial integration is thus a quantity measure, rather than a price measure that looks at, for instance, differences in interest rates for comparable financial products. The benefit of this quantity measure is that it is directly related to the financial development measure, so that the effect of 'pure' financial development and of European financial integration can be disentangled. In formulating this measure, we recognise that financial integration contributes to the development of the financial system by increasing competition, enhancing stability, expanding markets and increasing the efficiency of financial intermediaries, thereby resulting in lower intermediation costs and a more efficient allocation of capital (Obstfeld, 1994). In other words, the gains from integration are already embedded in the effect of financial development on growth.

The first two columns of table 1 show the results of the decomposition of financial development into pure financial development and the contribution from European financial integration.⁵ From 1999 to 2010, total market capitalisation in the Euro Area increased at an average annual rate of 2.5 per cent. Of this growth, 58 per cent is explained by the growth of pure financial development and the remainder by European financial integration. As can be expected, there is a big difference between the years before the financial crisis and the years since. Over the period 2007–10, the average annual growth of total capitalisation has been lower, only 0.9 per cent.⁶ The contribution from financial integration is also lower than in the pre-crisis years (39 per cent *vs* 45 per cent). This already suggests one of the main results of this study, namely that European financial integration has not gone strongly into reverse since the outbreak of the financial crisis, suggesting that any growth benefits will not have disappeared.⁷

Once the levels of financial development and integration are measured, their impact on economic growth is estimated. To this end, the Rajan and Zingales' (1998)

model is used, with results from the model estimated by Maudos and Fernández de Guevara (2011). These authors apply the specification of Rajan and Zingales (1998) using a sample of 53 sectors in 21 countries over the period 1993–2003. Those regressions test whether industries that are highly dependent on external finance grow faster compared with less-dependent industries in countries with a higher capitalisation level. Maudos and Fernández de Guevara (2011) show that the hypothesised effect is highly significant.⁸ A caveat here would be that the finance–growth relationship is not estimated separately for the most recent years, so one could argue that the relationship between finance and growth changed during the crisis. Then again, the relationship is established for a period that considerably predates the recent crises, using data up to 2003, so it is not based on the large pre-crisis increases in credit either.

Gauging the impact of pure financial development and European financial integration on growth is carried

out at the country and industry level, taking into account the differences in financial development across countries, the uneven level of integration achieved, and the changing composition of the importance of industries across countries. The results illustrate that both financial development and integration have been important driving forces behind the growth of European economies. Table 1 shows that, from 1999 to 2010, financial development contributed 0.14 percentage points per year to the GDP growth of the Euro Area, or about 11 per cent of annual GDP growth. Over the whole period, the major contribution to growth is from pure financial development, accounting for 83 per cent of the total effect.⁹

Given the fact that the financial crisis led to a general decline in the growth rate of total capitalisation, the contribution of financial development to GDP growth also decreases during the crisis period 2007–10. This reduction of financial deepening translates into a

Table 1. Decomposition of total financial development in the Euro Area and its effects on growth (annual contribution to GDP growth, in percentage points)

	Financial development		Effects of financial development on GDP growth		Observed GDP growth (%)	Effect of financial development on GDP growth/observed GDP growth (%)
	Annual growth (%) and contribution (percentage points)	% of total financial development growth	Annual contribution (percentage points)	% of total effect on growth		
1999–2010					1.30	
Total financial development	2.5	100	0.14	100		11
Pure financial development	1.4	58	0.12	83		9
Integration	1.0	42	0.03	17		2
1999–2007					2.10	
Total financial development	3.1	100	0.18	100		8
Pure financial development	1.7	55	0.15	83		7
Integration	1.4	45	0.03	17		1
2007–2010					–0.06	
Total financial development	0.9	100	0.06	100		–
Pure financial development	0.6	61	0.04	72		–
Integration	0.4	39	0.02	28		–

Source: Bank for International Settlements, European Central Bank, Eurostat, World Bank, World Federation of Exchanges, OMX -Nordic Exchange-, Euronext, International Monetary Fund, AMADEUS, GGDC (Groningen Growth and Development Centre) and own elaboration.

Notes: Financial development is the sum of outstanding debt securities, stock market capitalisation and bank credit. Pure financial development is calculated by decomposing total growth of financial development into the effect of domestic capitalisation, capitalisation coming from the EU and capitalisation from the rest of the world, and assuming that if the process of European financial integration had not taken place the funds coming into the EU would have grown at the same rate as capitalisation from abroad. The effect of financial integration is the difference between total and pure financial development. To calculate the effects on growth we follow the methodology and data of Fernández de Guevara and Maudos (2011) based on the model of Rajan and Zingales (1998). Details of the decomposition of financial development in the two components and how the impact on growth is calculated can be found in Fernández de Guevara and Maudos (2010). The last column of the table is not calculated for the crisis period as the overall GDP growth is negative.

reduction to a third of the contribution of financial development to GDP growth (0.06 percentage point), compared with the contribution in the previous period 1999–2007 (0.18 percentage point). Taking into account that the Eurozone annual GDP growth rate (excluding some countries) was –0.06 per cent over the period 2007–10, the drop in GDP would have been 0.06 percentage points greater in the absence of the observed increase in total capitalisation. The relevance of integration for growth is greater in the crisis period, accounting for 28 per cent of the total effect. So, despite the financial headwinds, European financial integration has been a net positive for growth even in more recent years.

Crises, investment and uncertainty

It is no surprise that financial crises hurt economic performance and there are a large number of studies that show this.¹⁰ Investment tends to be affected to an even greater degree, as shown by Joyce and Nabar (2009). This may be because financial crises are typically periods of heightened uncertainty and, in such periods, firm managers may delay investments.¹¹ However, not everyone reacts to uncertainty in the same way; individuals in some societies go to greater lengths to avoid uncertainty than those in other societies. Here we show that this can have substantial effects on economic outcomes.

We analyse how the effect of financial crises on investment differs between countries depending on their degree of uncertainty aversion. For this, we use a dataset covering 74 countries for the period 1970–2005 with total economy investment from the UN National Accounts;¹² dates of bank, currency and debt crises from Laeven and Valencia (2008); and a measure of uncertainty aversion from Hofstede (2001).¹³ The uncertainty avoidance index (UAI) for the 22 EU countries in the sample is shown in figure 1. This leads to a regression model where the investment–GDP ratio is explained by past investment, financial crises and an interaction between crises and country-level uncertainty aversion, controlling for country and year fixed effects. This rather parsimonious model is used as a baseline to ensure full country coverage. The main results are not sensitive, though, to a range of potentially important omitted variables, such as interest rates, terms of trade, financial development, financial openness, etc.

Table 2 shows some key regression results. This shows that a financial crisis in the current or previous year has a significant negative effect on the investment–GDP ratio (columns (1) and (2)). A financial crisis is defined as a

bank, currency or government debt crisis, but results are very similar if separate dummies are included for each type of crisis. The interaction between financial crises (current or lagged) and UAI is significantly negative in column (3); the main results are based on OLS estimation with country and year fixed effects. Estimation using System-GMM shows very similar results in column (4), but overidentifying restrictions are rejected. A model in first differences in column (5) is very similar to the main results in column (3).

To interpret the regression results, we should look at marginal effects though, rather than the interaction effects. Figure 2 charts the marginal effects from the baseline model in column (3) and, as shown, the effect of crises on investment turns significantly negative around a value of 0.5 of Hofstede's (2001) UAI. Table 2 also shows that this threshold is very similar across specifications. This implies that in about two thirds of the countries, investment declines significantly by more than GDP after a financial crisis and this includes the majority of European countries, such as France, Germany, Italy and Spain, as can be seen from figure 1. Portugal and Greece even have some of the highest UAI levels at values greater than one. In contrast, countries like Ireland or the United Kingdom have a UAI below the threshold, suggesting they would not, on average, suffer a drop in investment–GDP ratios after a financial crisis. Caution is in order, though, when going from an

Figure 1. Uncertainty avoidance index for EU countries

Source: Hofstede (2001), measures divided by 100.

Table 2. The effect of financial crisis and uncertainty avoidance on investment, 74 countries, 1970–2005

Estimation method	(1) FE	(2) FE	(3) FE	(4) Sys-GMM	(5) FE
Lagged investment	0.844*** (0.0161)	0.844*** (0.0161)	0.842*** (0.0166)	0.958*** (0.0613)	
Lagged growth	0.289* (0.166)	0.274* (0.156)	0.253* (0.152)	0.0526 (0.200)	0.195 (0.142)
Financial crisis	–0.0533*** (0.0163)	–0.0576*** (0.0152)	0.0376 (0.0490)	0.104** (0.0472)	0.0474 (0.0523)
Lagged financial crisis		–0.0658*** (0.0110)	0.0176 (0.0466)	0.0562 (0.0641)	0.0228 (0.0528)
Financial crisis x UAI			–0.134** (0.0644)	–0.229*** (0.0627)	–0.151** (0.0684)
Lagged financial crisis x UAI			–0.112* (0.0606)	–0.173** (0.0816)	–0.110 (0.0676)
<i>Marginal effect of a crisis significantly negative for countries with a UAI exceeding:</i>					
Contemporaneous			0.56	0.62	0.57
Lagged			0.49	0.57	0.54
Observations	2416	2416	2416	2342	2416
R-squared	0.749	0.746	0.753		0.061
No. of countries	74	74	74	74	74
Sargan test (p-value)				0.0000	
1st order autocorrelation (p-value)				0.0000	
2nd order autocorrelation (p-value)				0.6862	

Notes: Dependent variable is the log of real investment to real GDP in columns (1)–(4); it is the change in the log of real investment to real GDP in column (5); see main text for sources. Robust standard errors are in parentheses. Standard errors are clustered by country, except for the GMM specifications in column (4). All specifications include year dummies. FE: country fixed effects; Sys-GMM: Blundell-Bond (1995)/Arellano-Bover (1998) estimator. ***p<0.01, **p<0.05, *p<0.1.

Figure 2. Marginal effect of a financial crisis in the current year and one year ago ('lagged') and 95% confidence interval

Notes: Marginal effects measure the change in the log of real investment minus the log of real GDP after a crisis for different levels of uncertainty avoidance; these are computed using the regression results in table 2, column (3).

average relationship to specific country results, since no regression model will fit the data perfectly. Furthermore, the model could not cover certain dimensions, such as the severity of a crisis, which may matter considerably.

Inklaar and Yang (2012) report further results using a range of control variables, uncertainty avoidance measures and alternative samples. They also show that the results are the same for different types of financial crises; they apply for private, not public investment, for long-term investments (i.e. structures) rather than shorter-term investments (i.e. machinery), and for the least volatile industries, which presumably attract the most risk-averse investors. Indeed, the threshold value of uncertainty avoidance is similar to those in figure 2 throughout the regressions. There appears to be more going on in a financial crisis than just an increase in uncertainty, as measures of stock market volatility cannot replace crisis dummies in the model in table 2.

A deep-seated factor, such as uncertainty avoidance, can of course be expected to have a broad range of effects. For example, voters in an uncertainty-averse country may well prefer laws that make it harder for firms to fire workers or they may prefer a conservative, inflexible legal system. Such institutional choices can also affect how quickly firms resume investing after a financial crisis, but results show that this is not the main story. Instead, it is more likely to be the attitude of managers in firms that leads to lacklustre investing after a crisis.

Conclusions

In this paper, we have highlighted two important aspects of the impact of financial crises. First, we have quantified the effect of financial development on growth in Europe, isolating the effect of European financial integration based on a counterfactual analysis. Results show that both financial development and financial integration have been important in driving the growth in European economies. From the introduction of the euro and the Financial Services Action Plan in 1999 to 2007, increases in financial development have contributed 0.18 percentage points to economic growth of 2.1 per cent. Financial integration in turn was responsible for 0.03 percentage points of this total effect. Since the beginning of the crisis in 2007, the contribution of financial development and integration has gone down, with an annual contribution of 0.06 percentage points for overall financial development, of which 0.02 percentage points is due to financial integration.

These results highlight the costs involved if financial integration were to be reversed. The financial crisis saw calls for increased lending to domestic companies at the expense of lending abroad. Financial stability could also be an argument in favour of less financial integration, as losses in one country would lead to contagion in others. Regardless of the validity of these arguments, it is important to realise that European economies would pay a price in terms of lower economic growth for policies that would reverse financial integration.

The second part of the paper analysed how investment responds to a financial crisis. We showed how investment only falls faster than GDP in countries with a greater degree of uncertainty aversion. While it is hard to draw inferences from a broad cross-country analysis for individual countries, these results could help explain why Ireland, a country with a low degree of uncertainty aversion, has recently been showing more promising signs than Portugal or Greece, both countries with a very high degree of uncertainty aversion.

More important from a policy perspective is that the degree of uncertainty aversion, like other aspects of a country's culture, changes slowly, with measures based on surveys across different decades showing a broadly similar ranking of countries. In other words, the degree of uncertainty aversion should be taken as a 'fact of life' and policy adjusted accordingly. For instance, economic reforms to free up the labour market would be a much tougher sell in Portugal and Greece than in Ireland and the effects might well be different. Likewise, it might be better to provide a stable perspective on rescue funds rather than many short-term benchmarks if the goal is to revive autonomous growth in these countries.

NOTES

- 1 See for instance, European Central Bank (2009, 2011) and European Commission (2009).
- 2 This part draws on Fernández de Guevara and Maudos (2010).
- 3 Drawn from Inklaar and Yang (2012).
- 4 Data on bond markets are from the Debt Securities Statistics of the Bank for International Settlements and the ECB; stock market capitalisation is from Eurostat, the World Bank, the World Federation of Exchanges, OMX and Euronext; bank credit is from the ECB; and GDP numbers are from Eurostat. Stock and bond market capitalisation are based on market values, while bank credit is based on balance sheet data.
- 5 More details of the decomposition used to calculate pure financial development can be found in Fernández de Guevara and Maudos (2010).
- 6 Although the indicator of financial development is influenced

by rises and falls in equity prices, the effect is less when using averages of several years.

- 7 Note that cross-border lending is by the banking sector, excluding the ECB. So the fact that integration held up reasonably well is not directly due to central bank support.
- 8 The industry growth data are drawn from the EU KLEMS database and industry financial dependence is estimated based on debt/total asset ratios calculated from the Amadeus non-financial firm-level data. The main advantage of that paper is that they extend the sector coverage of the sample including the services sectors, whereas, up until then, the Rajan and Zingales methodology had been tested in several papers only for the manufacturing sector. Furthermore, this paper updates the financial dependence indicator, calculating it for a more recent period (mid 1990s to early 2000s) instead of the original indicator calculated for the 1980s by Rajan and Zingales (1998).
- 9 In table I it is shown that for the Euro Area in the whole period, financial integration accounts for 42 per cent of total financial development. However, it only represents 17 per cent of the effect on growth. This asymmetry is explained by the fact that the effect on growth is calculated at country and sector level, not at the aggregated Euro Area level. The financial development and the importance of integration is different across countries and, according to the Rajan and Zingales (1998) model, their relevance in fostering growth is also different depending on the industry composition of economic activity and their external financial dependence.
- 10 See e.g. Hutchison and Noy (2005).
- 11 See e.g. Bloom et al. (2007).
- 12 Investment refers to gross fixed capital formation in the economy as a whole, so including investment by firms, the government and residential construction. In part of the subsequent analysis, Inklaar and Yang (2012) show that the effects are only found for private, not for public investment; and only found for long-lived assets such as structures, not for equipment. Both findings are in line with the main hypothesis that increases in uncertainty during a crisis increase the (private) incentive to delay investment.
- 13 This measure is based on Hofstede's surveys of IBM employees across the world and their answers on such questions as whether the employee would likely stay in his job for the next few years and whether he feels that abiding by company rules

is very important. Similar results are obtained for a variety of different measures that aim to measure uncertainty aversion, such as from the World Value Survey.

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