



Consolidation of the European Banking Industry: Are Acquisitions Value Creating?

Shareholder Wealth Effects of Merger & Acquisition Deals in the First Decade of the Euro, 1999-2008

A Master essay by

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Abstract

In the past two decades the European banking industry has undergone an intense process of reshaping, fostered by a junction of reasons. Consolidation of the industry has been increasing at an accelerating pace. However, continental literature in the field is still not thorough or conclusive. While European banking M&As have been up to now judged as creating more value than their US counterpart, they have also shown a trend of decreasing returns in the last few years. This impression is confirmed by this study. Using an event-study approach, this paper analyses the short-term market reaction to 74 large banking M&A deals occurring in EU countries during the years 1999 to 2008. We find substantial abnormal gains for targets, slightly negative abnormal returns for bidders and small positive returns for the combined entity. These results were also found to be economically significant. Results obtained analysing type-classifying sub-samples show that markets value geographic and product diversifying deals of medium sized targets financed by cash.

Key Words: Bank mergers; Mergers and acquisitions; European banking markets

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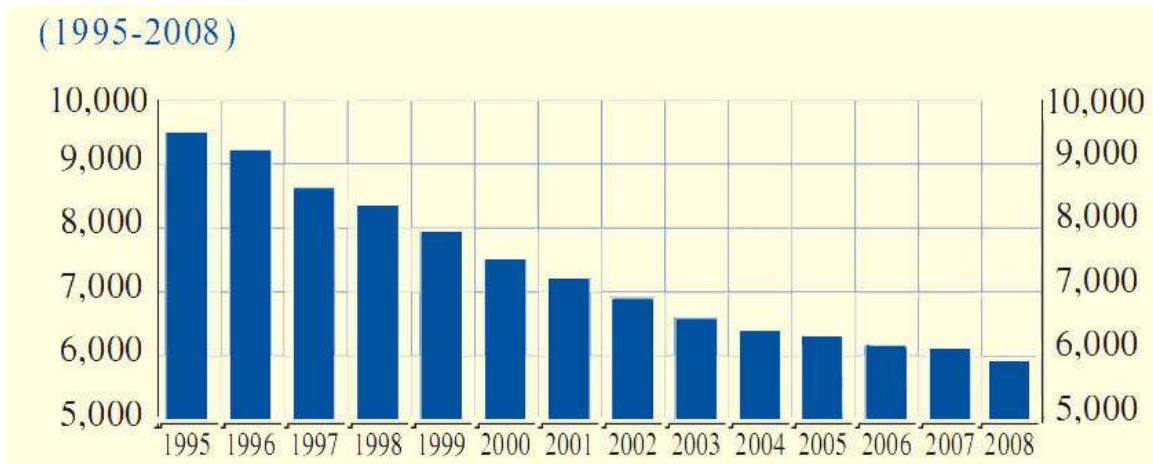
1. Introduction and Motivation

Today's dynamic and complex European banking environment is the result of key transformations that have only occurred in the past two decades: globalisation of financial markets, reflected by a spectacular rate of growth in the volume of cross-border, cross-exchange transactions of every kind; functional combination of bank and non-bank businesses due to trends of deregulation both at national and international level which has blurred the usual distinction between commercial and investment banking and brought about new phenomena such as Bancassurance and universal banking; privatisation of previously state owned enterprises; financial technological innovation, pushed by extraordinary developments in computing and information technology (above all the 'internet') and the drop in their associated costs; the extraordinary development and expansion of financial derivatives (Greenspan, 1999); ongoing homogenisation of the European market as a consequence of political integration of EU countries and specifically tailored banking directives; the creation of the European Monetary Union (EMU); ever changing regulations on capital requirements and risk management.

These changes have seen the banking industry in Europe consolidate at an incredible rate (see Chart 1) with merger and acquisition¹ (M&A) deals playing a major role. In the Euro area, over a third of the 9,500 institutions existing in 1995 have since disappeared, with less than 6,000 operating as of 2008². M&As increased drastically in the late 1990's and despite periods of increased and decreased activity, the number and level of M&As has remained substantially high ever since (see Chart 2 & 3).

¹ Throughout this dissertation, although technically and legally different in meaning, the terms 'acquisition', 'merger', 'takeover', 'merger and acquisition' will be used interchangeably, unless specifically addressed or purposely distinguished one from another.

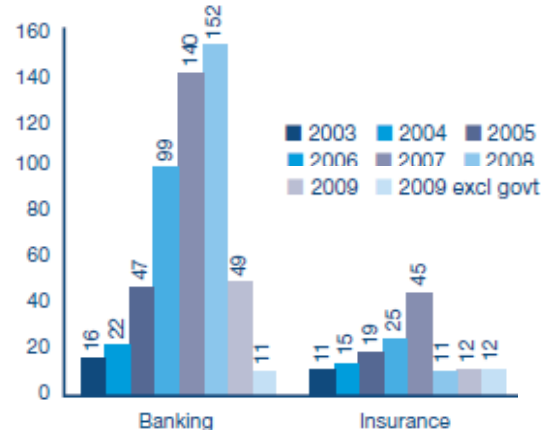
² Figures from European Central Bank (2000) and (2010) – excludes the reclassification of 419 Irish credit unions as credit institutions on 1 January 2009.

Chart 1 - Consolidation in the euro area banking sector

Source: ECB (2005b), ECB (2010), author's updates

Chart 2 - M&As in the EU banking sector 1990 - 2002

Source: Thomson Financial Deals

Chart 3 - M&As in the EU banking and insurance sector 2003 - 2009

Source: PWC - European financial services M&A insight: Feb 2010

Given the drastic nature of a takeover deal and the amount of money involved, few other financial transactions are given so much relevance in both academic and journalistic articles. A plethora of reasons are given to justify a company taking over another one: creating operating or financial synergies through costs and risk reduction, improved efficiency and enhanced profitability, access to new resources and information, wider product offering, expansion into other geographical locations and removing ineffective management from target firms (Jensen and Ruback, 1983). In accordance with corporate finance theory, the primary motive for managerial decisions should be the maximisation of existing shareholders value. Hence shareholders ought to be better off as consequence of consolidation activity. Indeed, the recent

popularity in deal making supports this idea. In reality however this is not always true. Mergers affect more or less profoundly a different range of stakeholders: shareholders, employees, managers, customers, authorities and, at large, the whole community. Their interests, quite obviously, do not always coincide and as such agency problems may arise. For example, if managers' remuneration is tied to factors such as growth, an incentive is created to merge for the sole purpose of quickly increasing the firm's size (known as 'empire building') to maximise managers' personal utility, regardless of the effects on shareholders (see Jensen, 1986). Another agency problem related motive is put forward by Shleifer and Vishny (1989) who suggest that managers engage in consolidation activity so that the newly created entity will depend even more on their personal expertise. This is known as 'management entrenchment' and comes at the cost of the bidder's shareholders. Roll (1986) advance an alternative hypothesis for acquisitions, of manager's exaggerated self-confidence goading to control new targets on the belief that they can do better than the existing management, even at the cost of paying a significant premium. Empirical evidence has shown this 'hubris' has been detrimental for shareholders (Hayward and Hambrick, 1997; Malmendier and Tate, 2005). Regardless of the motive, following the announcement the shift in market capitalisation of the firms involved should reflect the value placed by investors' on the benefits arising from the merger.

The academic evidence on the creation of value from M&A announcements is yet to be consistent or conclusive. Historically, the vast majority of studies concentrate on the US market. This was mainly due to methodological difficulties arising from the state of fragmentation of the banking markets and the different legal and regulatory frameworks throughout European nations. The implementation of the EMU and other harmonisation initiatives have in recent times lessened the problem. US studies tend to find that banks' mergers could create shareholder value (in the form of accumulated abnormal stock market returns) only for the target institution shareholders (most likely due to the premiums paid), usually at the expense of the bidding institution (e.g. Houston and Ryngaert (1994) and Berger et al., 1999). By contrast, some of the handful of cross-country European studies available so far observes significant stock market

valuation gains for both the target and the bidder (e.g. Cybo-Ottone and Murgia, 2001; Campa and Hernando, 2004). However, in the booming merger activity of the very late 1990s a different, negative trend started even in the Old Continent (Aktas et al., 2001; Beitel and Schiereck, 2001).

Given the relative paucity of studies conducted in Europe, this research aims at contributing in filling the gap with the bulk of US-studies. More importantly, to our knowledge no study of the European banking market to date uses deals data more recent than up to 2004 . Since then, new countries have joined the EU and the EMU area, new capital requirements have been introduced and a common framework for cross-border takeover bids has been established. As the recent crisis bottoms out and we prepare for a new phase of banking deals (see next section), we seek to wrap up the share price implications for the last decade of European banking mergers. Thus the analysis of short-run wealth effects for shareholders from takeover activity will be extended beyond the time frame of previous studies to 2008. A ten year sample period may also improve on prior European studies as typically only a small period of M&A activity is analysed. This will allow us to present a more comprehensive picture of announcement effects over time. As well as analysing if any change in performance can be observed between the period 1999-2003 and 2004-2008, different aspects of the deals – namely geographic focus, product focus (scope), size of the transaction, relative size of the institutions involved in the deal and methods of payments – will be investigated to better understand which characteristics affect the most stock market returns. Furthermore, unlike many studies, separate returns for targets and bidders will be combined in a single, merged entity, to have a representation of the overall value creation or destruction effects of M&A announcements.

The paper is organized as follows. Chapter 2 introduces the financial environment within which banks have consumed their takeover deals in the last decade. Chapter 3 reviews the main methodologies used and main findings on M&A shareholders value creation. Chapter 4 explains meticulously the sample selection criteria and illustrates some descriptive statistics about the

sample selected. Chapter 5 discusses the econometric methodologies adopted. Chapter 6 shows empirical results on the whole sample. Chapter 7 describes empirical results on the value effects shown by different characteristics sub-samples, one at a time. Chapter 8 attempts to determine the impact of all the six characteristics simultaneously. Chapter 9 concludes the paper.

2. European Banking: the XXI Century Playground

This section aims at summarising the evolution of the European banking sector in recent times and presents the main driving forces which have led to the intensification of merger activity within the sector. Although our analysis is centred on the banking sector within the 15 pre-2004 EU members (EU15), when referencing other papers or studies this focus might be somehow lost according to: whether a certain publication concentrates on the banking sector only or the financial sector at large; whether a certain publication concentrates on the EMU only or the EU area at large; whether the new countries entering the EMU or EU in recent years were taken into account. We will however strive to present consistent and relevant measures of the banking consolidation process.

While the process of integration between European financial markets started over 30 years ago, as documented in Table 1, the trend of banking consolidation that had characterised the US since the 1980s exploded at a later time in Europe. Over half of the 30 largest European banks as of 1999 emerged as a result of M&As within the previous couple of years (Belaisch et al., 2001) and roughly two thirds of the value of European mergers within the financial sector during the 1990s occurred during the last three years of the decade (BIS, 2001). During the same period more deals occurred than during the previous 14 years (Beitel and Schiereck, 2001) as deals were struck between large banks and banks and insurance companies (ECB 2005b).

The link between the surge in deal-making in the late 1990s and the introduction of the single currency is impossible to ignore. ECB (1999) notes that following the Stability and Growth Pact in 1997, increasing macroeconomic stability and a downward trend in interest rates - notably in EU countries with higher differential with respect to long-term German rates - promoted exceptional short-term capital gains on the banks security portfolios and boosted returns from maturity transformation (by borrowing cheaply in the short-term). Reduction of public debt, another by-product of the 1997 Pact, and an increasing awareness of the limitations of public pension systems further determined a marked reallocation of assets from public to private debtors, with financial assets increasing more rapidly than GDP for many years. At the

Table 1 - Legislation impacting on the EU banking and financial sectors

1977	First Banking Directive. Removed obstacles to the provision of services and establishment of branches across the borders of EU member states. Harmonized rules for bank licensing. Established EU-wide supervisory arrangements
1985, 1986	White Paper on the Completion of Internal Market & Single European Act. Establishment of an internal market intended as “an area without internal frontiers in which the free movement of goods, persons, services and capital is ensured”, accompanied by changes in the Community legislative system
1988	Basle Capital Adequacy Regulation (Basle I). Minimum capital adequacy requirements for banks (8% ratio). Capital definitions: Tier 1 (equity); Tier 2 (near-equity). Risk-weightings based on credit risk for bank business
1988	Directive on Liberalization of Capital Flows. Free cross-border capital flows, with safeguards for countries with balance of payments problems
1989	Second Banking Directive. Single EU banking licence. Principles of home country control (home regulators have ultimate supervisory authority for the foreign activity of their banks) and mutual recognition (EU bank regulators recognise equivalence of their regulations). Passed in conjunction with the Own Funds and Solvency Directives, incorporating capital adequacy requirements similar to Basle I into EU law
1992	Maastricht Treaty. Creation of the European Union and the Euro currency
1992	Large Exposures Directive. Banks should not commit more than 25% of their own funds to a single investment. Total resources allocated to a single investment should not exceed 800% of own funds.
1993	Investment Services Directive. Legislative framework for investment firms and securities markets, providing for a single passport for investment services
1994	Directive on Deposit Guarantee Schemes. Minimum guaranteed investor protection in the event of bank failure
1997	Stability and Growth Pact. Agreement between future EMU members to promote the stability of the Union by meeting and observing the Maastricht convergence criteria, thus maintaining and enforcing fiscal discipline
1999	Introduction of the Euro as a legal currency for 11 EU countries.
1999	Financial Services Action Plan (FSAP). Legislative framework for the Single Market in financial services
2000	Consolidated Banking Directive. Consolidation of previous banking regulation
2000	Directive on e-money. Access by non-credit institutions to the business of e-money issuance. Harmonised rules/standards relating to payments by mobile telephone, transport cards, and Basle payment facilities
2001	Directive on the Reorganisation and Winding-Up of Credit Institutions. Recognition throughout EU of reorganisation measures/winding-up proceedings by the home state of an EU credit institution
2001	Regulation on European Company Statute. Standard rules for company formation throughout the EU
2002	Financial Conglomerates Directive. Supervision framework for a group of financial entities engaged in cross-sectoral activities (banking, insurance, securities)
2004	New EU Takeover Directive. Common framework for cross-border takeover bids
2005–2010	White paper on Financial Services Policy. Plan to implement outstanding FSAP measures, consolidation/convergence of financial services regulation and supervision
2006–2008	Capital Requirements Directive. Updates Basle I and incorporates the measures suggested in the International Convergence of Capital Measurement and Capital Standards (Basle II). Improved consistency of international capital regulations and risk-sensitivity of regulatory capital. Promotion of improved risk-management practices among international banks

Source: ECB (2005b, Table 2), Goddard et al. (2007, Table 2) and authors updates

same time, the launch of the EMU surely contributed to more liquid, open, uniform and integrated money and capital markets which stimulated growth of stock exchanges, increased demand and offer for credit by fostering price transparency as well as reducing risks and costs associated with national currencies.

On the other hand, banks faced the prospects of lost revenues from foreign exchange activity and longer-term reduction in margins from interest income. Therefore, alternative means of returns were sought by banks and customers alike, no longer satisfied by returns on deposits. Non-interest income as a proportion of total income peaked in 2000 at 50%, compared to 28.3% in 1992 (Goddard et al., 2007). European banks have thus responded to demand from customers for a wider range of financial products by becoming the main forces in the 'disintermediation' process, which in the banking sector developed as – on one side – a shift of funds from traditional bank operations (deposits and loans) to alternative financial instruments yielding higher returns (equities, bonds, securitization³, etc.) and – on the other side – as an increasing involvement in (and internalisation of) these alternative activities by the same banks. Already in 1997, in the majority of EU States more than 80% of undertakings for collective investments in transferable securities (UCITS) were controlled by banks (ECB, 1999). Rajan and Zingales (2003) and Van der Zwet (2003) remarkably note how the distinction between banks and non-banks financial intermediaries has become increasingly blurred.

Overall, globalisation, homogenisation initiatives, deregulation, the introduction of the Euro, high economic growth and buoyant stock markets enhanced competition for corporate control within the European banking sector during those years (Allen and Song, 2005). Although establishing the extent to which each factor affected M&As activity is a rather complex exercise, they led to a reduction in the excess banking capacity thus far inherent in the system – due to protective regulations of some Member States and imperfect competition – and which continued

³ Although the level of financial engineering in Europe has never reached the levels experienced in the US: securitization was €2.5 trillion at its 2006 peak in the US compared to €481 billion in Europe the same year (ESF 2009)

for the whole period under exam (up to 2008). This consolidation process exercised further pressure on profitability which in turn determined further consolidation. The notion of 'local', 'regional' and 'national' markets had to be revised spawning geographical diversification while – with increasing staff costs, improved but costly risk management techniques and new technologies requiring conspicuous initial investments but permitting to reach a broader customer base to whom offer an increased number of products through new distribution channels – the critical mass with regard to break even volume had changed (ECB, 1999 and 2005b).

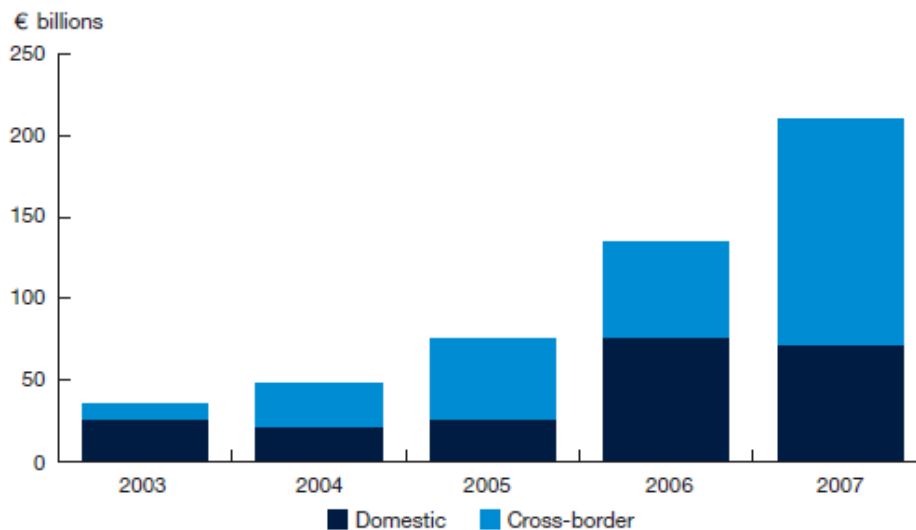
As a consequence, 3 broad merger trends characterise this wave: i) combination of banks with institutions offering different products (e.g. banks and insurance firms) giving rise to conglomerates which can diversify revenue sources; ii) increased cross-competition between institutions previously operating in different product segments and/or geographical markets as banks strategically reposition in view of the changing environment to realise cost and operational synergies as well as risk reduction, generally through economies of scale and scope; iii) consolidation between banks, for the most part of small size and at domestic level, to reduce excess capacity and 'fortify' against international competition (and presumably prepare the ground for cross-border expansion). However, while at the turn of the century universal cross-border mergers already accounted for more than 80% of all foreign direct investment by industrialised countries (UNCTAD, 2000), opportunities for further consolidation seemed to be far from terminated: the aggregate number of banking institutions per inhabitant in the EU was still almost two times the number in the US⁴ and the banking industry had the smallest percentage of cross-border deals to total deals when compared to the other sectors (Focarelli and Pozzolo, 2001).

The burst of the dot com bubble and extreme market uncertainty following September 11 dented share returns and caused the M&A frenzy to slow down considerably. Despite this, in the following years, 2001 to 2004, volumes of acquisitions remained high compared to the early

⁴ Figures from Bank for international Settlements (2003)

1990s (see Chart 2 & 3). Consolidation then rose sharply again until 2007 as economic conditions improved and fragmented market such as Italy and Germany offered extensive scope for further consolidation. Remarkably, Cross-border deals have increased relatively more than domestic transactions in recent years and actually accounted for roughly 60% of the total deals value over the period 2005-2008 (see Chart 4), with intra-euro area cross-border deals taking the lion's share. This, consistently with growing integration between European national markets, has been mainly driven by large institutions, facing limited domestic growth opportunities, now ready to look abroad to get bigger (notably by acquiring mid-sized organisations, hence the higher than average size of cross-border deals) and increasing interest by US companies to invest in Europe (PWC, 2006).

Chart 4 – European FS M&A Deal Value, Domestic vs Cross Border



Source: PWC - From Uncertainty to Opportunity. FS M&A in Europe's developed and developing markets: March 2008

As reported by the European Central Bank (2007 and 2009), there are now 46 EU banking groups (out of a total of 8,000 banks for the enlarged EU) holding 68 percent of total EU banking assets. Of these, 16 major banks hold at least 25 percent of their assets in other EU countries and are present in at least 25 percent of other EU countries. However, evidence provided by Aviat et al. (2009) suggests that there is no indication of a Euro effect on cross-border mergers. Furthermore, the level of cross-border activity is still low compared to the manufacturing sector caused by common geographical, cultural, legal, regulatory and fiscal

barriers still in existence and, of particular relevance, information barriers due to “higher opaqueness of bank assets relative to other sectors” (ECB, 2008).

Table 2 expands the analysis conducted by Goddard et al. (2007) presenting the evolution of structural indicators for the banking sector of the EU15 between 1999 and 2008.⁵ During the 10 years under exam in this study, the total number of credit institutions operating in the EU15 dropped 24% from 8,809 to 6,683. The results, however, present considerable differences between geographic areas: while the top 4 countries in terms of proportional reduction of bank institutions (Netherlands, Germany, France and Luxemburg) all reside in Central Europe, two countries with somehow unexpected low levels of reductions are Spain and most notably Italy. Other countries have even seen a rise in the number of institutions, but from a relatively low absolute number. Further concentration can then be expected in the long-term. This is supported by data on CR5 (the concentration ratio of the top 5 banks to total banking assets for a given country) which shows that despite concentration in all of the ‘big 5’ countries (France, Germany, Italy, Spain and the UK) has increased, the absolute level is still well below the EU15 average for all of them (with the partial exception of France), with the EU15 average approximately unchanged over the last 10 years. During the same period, assets under management by the sector doubled to €41 trillion, a remarkable growth especially considering that the largest economy by banking assets value as of 1999, Germany, experienced the lowest proportional increase (39% against an average of 150% for the remaining countries). The number of branches and employees has substantially remained unchanged during the period, supporting the view that consolidation has been driven by M&As, rather than branch restructuring (ECB 2005). However, country-specific evidence is too mixed to be conclusive.

In conclusion, while the acquisition of ABN AMRO in 2007 marked the largest banking deal in history⁶, the current financial crisis has obviously seen activity come to a close, with extensive government involvement in the few agreed deals. As predicted by the ECB in 1999, while the

⁵ Plus a mid-interval in 2004. 1985 and 1995 used as reference.

⁶ Interestingly, it will not be part of our sample since the obvious complexity of the deal determined that it does not satisfy our criteria for selection because of multiple bids and multiple bidders.

Table 2 - Structural Indicators for EU15 Banking sectors

COUNTRY	Structural indicators for EU15 banking sectors										Employees ('000s)					Concentration (CR5)					
	Number of banks		Assets (billion euros)		Number of branches		Employees ('000s)		Concentration (CR5)		Employees ('000s)		Concentration (CR5)		Employees ('000s)		Concentration (CR5)				
	1985	1995	1999	2004	2008	1985	1995	1999	2004	2008	1985	1995	1999	2004	2008	1985	1995	1999	2004	2008	
Austria	1476	1041	875	796	803	-	-	487	635	1,063	-	-	4,383	4300	4,243	-	-	39	41	44	39
Belgium	130	143	117	304	105	286	589	715	914	1,272	8207	7688	6,970	4837	4,316	48	54	70	84	81	
Denmark	259	302	210	202	171	96	126	383	607	1,092	3411	2215	2,294	2021	2,192	01	72	71	67	60	
Finland	498	381	340	364	357	-	-	120	212	384	-	1812	1,985	1,672	1,672	-	70.6	89	83	83	
France	1992	1469	1,159	897	718	1,349	2,514	3,402	4,416	7,225	29,782	26,000	25,501	20,370	39,034	46	41.3	43	45	51	
Germany	4739	3785	2,992	2148	1,989	1,495	3,584	5,656	6,384	7,875	39,925	44,032	38,546	45,505	39,331	-	10.7	19	22	23	
Greece	41	53	57	62	66	69	94	167	231	462	1815	2417	2,742	3403	4,090	81	75.7	67	63	70	
Ireland	42	56	81	80	82	21	46	303	723	1,413	-	808	1,083	909	895	48	44.4	41	44	56	
Italy	1101	970	890	801	618	547	1,071	1,629	2,276	3,628	13,033	30,839	27,154	30,948	34,139	-	32.4	26	26	33	
Luxembourg	177	220	211	169	152	170	446	599	695	952	120	224	310	253	229	27	27	27	30	27	
Netherlands	178	102	616	461	302	227	650	984	1,678	2,235	6868	6729	6,258	3649	3,421	92	111	124	115	116	
Portugal	226	333	224	200	175	38	116	303	345	482	1494	3401	5,401	5408	6,391	59	60	61	53	62	
Spain	384	508	587	346	362	331	696	1,006	1,717	3,381	32,503	36,405	39,376	40,621	46,065	244	249	244	246	276	
Sweden	598	249	148	222	182	-	-	391	583	900	-	-	2,140	2034	2,025	-	-	43	39	50	
UK	772	564	496	413	391	1,294	2,000	4,331	6,970	8,840	21,204	17,522	15,470	14,001	12,514	-	-	850	383	481	511
EU15	12,473	9,974	8,809	7,265	6,683	5,905	11,931	20,475	28,586	41,189	155,382	170,458	199,027	185,902	201,562	2,264	2,500	2,819	2,769	2,876	
EMU12	10,844	8,959	7,955	6,428	5,939	4,513	9,806	15,370	20,426	30,357	129,747	150,721	179,123	167,846	184,611	1,862	2,070	2,246	2,175	2,277	
Big 5	8,928	7,294	5,924	4,605	4,288	4,996	9,864	16,025	21,963	30,950	113,467	145,384	166,047	157,443	171,883	1,953	2,101	2,250	2,231	2,291	
EU15	-20%	-12%	-12%	-18%	-8%	102%	69%	69%	40%	44%	6%	13%	13%	-7%	8%	10%	7%	7%	-2%	4%	
Big 5	-18%	-19%	-22%	-7%	-4%	97%	62%	37%	37%	41%	9%	14%	14%	-5%	9%	-18%	8%	7%	-1%	3%	
not EMU12	-17%	-11%	-19%	-8%	-8%	117%	57%	33%	33%	49%	10%	19%	19%	-6%	10%	11%	9%	9%	-3%	3%	
not a big 5	-16%	-19%	-22%	-7%	-7%	97%	62%	37%	37%	41%	9%	14%	14%	-5%	9%	-18%	8%	7%	-1%	3%	
AGGREGATE	averages																				
PERIOD ON																					
CHANGE (%)																					

Source: Goddard et al. (2007) and authors' updates

Euro has brought about positive macroeconomic effects which were believed to, and in part did, mitigate credit risk for some time, the single market and the other initiatives of integration and deregulation also put the banks under competitive pressure which resulted in a shift of funds towards more profitable but also more risky business. It also increased transmission of instabilities across borders thus making systemic risk more complex and its possible effects harder to predict (ECB, 2008). Without pretensions of explaining the complicated dynamics of the recent financial crisis which are beyond the scope of this thesis, we note the temporary end of many of the trends in M&A activity observed during the period under analysis (1999 to 2008), above all product and geographic diversification. As PwC 2009 and 2010 propose, in the near future merger activity is expected to increase again as a deep shake-up takes place in the industry. As the markets bottom out and stabilise, potential buyers might see an opportunity to snap up businesses sold at an attractive price. Added to this, many potential sellers that have found themselves in distressed situations will look at disposals of non-core operations⁷ and re-focus on their core market to shore up capital, as soon as they perceive price expectations return to normality following the initial period of uncertainty. During this period of restructuring, carefully chosen deals will privilege operational issues – rather than the usual financial aspects and value creating potentialities – especially in light of new risk-sensitive capital requirements that necessitate a thorough reflection about the risk and reward trade-off when considering their product mix and geographic exposure.

⁷ “The availability of potential takeover targets has been given further impetus by the announcements in November 2009, that some of the groups that have received significant government funding will be required to sell off certain assets, to fall into line with EU state aid and competition rules” (PwC 2010)

3. Previous Research

To measure the economic impact of an acquisition in the banking industry, a number of techniques have been used in academic studies thus far. Even more remarkable is the variation in sample size and selection criteria, size of the deals, geographic coverage, time lags and statistical tests adopted. These differences, as they are bound to affect the outcome of the analysis, may perhaps explain why findings are often inconsistent between each other. However, the authors of this paper observe that the vast majority of previous academic research has employed one of two methodologies to assess the effects of M&As.

3.1 Critical Assessment of the Two Main Methodologies

The first technique, based on operating performances, consists of analysing accounting data and operating performances of the banks involved in, or target of, M&As activity, to observe potential balance-sheet based changes in indicators such as profitability ratios, revenues or costs, from before to after the merger. The second, called 'event study', investigates anomalous stock price movements of acquiring and target companies around the announcement date. Evaluating the stock's performance against a benchmark, usually constituted by a broad portfolio representing the market index, it is possible to search for returns in excess to what is expected and therefore considered normal. These 'abnormal' returns, positive or negative, reflect the view market participants have of the value-yielding potentialities of the M&A deal. Both approaches present advantages and shortcomings (see Bruner, 2002; Pilloff and Santomero, 1996; Rhoades, 1994 for further discussion of the two methodologies).

Proponents of the operating performance methodology assert that accounting data can be easily measured and obtained. They are thought to provide additional insight as compared to a mere stock price and to be more reliable, as they do not depend on investors expectations, which are formed on unrealized events, but measure actual performances. On the other hand, it is easily arguable that, unlike stock prices, they are based on historical figures and not on current market valuation. It is therefore possible that other events unrelated to the acquisitions may have

taken place during the period under evaluation, thus influencing the accounting data. It is also well known that accounting figures can sometimes be subject to measurement problems or be difficult to compare due to different accounting rules used in different countries, different companies and different periods. Some accounting figures might be neglected and others might be allocated to different accounting years either because of common practice or because of creative accounting, hence exposing accounting data to manipulations and discretionary choices. In addition, the time interval to be chosen for the study is uncertain: while stock prices are assumed to react immediately and to quickly assimilate the announcement of the deal, operational performances may take several years before they adjust.

Although event studies rely on assumptions of semi-strong form of market efficiency (implying that stock prices should always and immediately reflect all publicly available information), rationality and perfect arbitrage, market data is believed to display more accurately the implied value of the transaction, as well as its future benefits and costs (i.e. present value). Detractors say that they do not permit direct measurement of the effects of the deal on profits, costs, cash flows, revenues and so on. However, the relationship between operating performances and shareholder wealth can in many cases be weak. Besides, to the extent that analysts' and investors' decisions are also based, amongst other factors, on the fundamental analysis of accounting data of the companies in question, it seems reasonable to regard the market reaction as a sound indicator of the overall economic impact of an M&A deal. It is indeed true that even stock prices, like accounting data that were found to be potentially misleading, may not reflect accurately underlying performances because of market trends and swings, trading euphoria and other commonly observed tracts of market behaviour. Nevertheless, sophisticated research design and the law of large numbers can control the problem and overcome it.

What is indubitably true is that with the operating performances approach it is possible to study a larger number of deals as it allows the inclusion of private and unlisted companies in the sample, for which stock prices are unavailable. For this same reason, the sample analysed in

event studies is usually biased towards large, publicly traded banks, and ignores smaller institutions.

The authors' view is that as both approaches have their strength and their weaknesses, it eventually comes down to what the purpose of the research is and from which perspective the research will be looked at. Perhaps it seems sensible for regulators and management to look at accounting data. Conversely, since the aim of this study is to analyse the capital market value implications of M&A deals, an investor or shareholder perspective should be taken as there would be relatively less concern about profitability ratios than for stock price performance (especially in the case of short-term investments). Therefore the attention will be focused on the event study methodology, the only feasible approach allowing to directly determine the features of M&As instrumental to create shareholder value.

3.2 Published Literature on Mergers and Acquisitions

3.2.1 Reviews of M&A studies

There are a handful of excellent reviews that detail the historical empirical evidence of the effect of acquisitions, which present tables that summarise previous studies according to techniques used, criteria selected and findings. Jensen and Ruback (1983) review 16 event studies of universal takeovers which cover mainly the 60s and the 70s in the US market, reaching the conclusion that following the takeover, target companies gain while acquiring companies are somehow even, resulting in positive benefits overall. On the other hand, similar surveys by Weidenbaum and Vogt (1987) and Datta et al. (1992) provide evidence that, although shareholders of target firms usually experience some gains, the average shareholder is at the best no worse off as bidding firms do not realize significant returns following M&As.

Bruner (2002) presents one of the most comprehensive and satisfactory investigations in his summary of 114 studies conducted from 1971 to 2001 adopting all the known methodologies. He confirms that M&A transactions do create value for shareholders of target firms, with very few

exceptions, and criticises previous researches for being too harsh. Only by looking at M&A deals from a different perspective the overall picture is not as gloomy: if we acknowledge the fact that investors are most likely to be satisfied by just earning their required return instead of assuming that they will be disappointed, the assertion that "about 60-70% of the deals fail to provide benefits to stockholders of acquiring companies" can be easily converted to "60-70% of the deals trigger returns that at least make up for shareholders' expectations". Taking this into account, it can be said that performances of the joint-ventures are also generally positive.

The most recent reviews by Tuch and O'Sullivan (2007) and DeYoung et al. (2009) have both been conducted on M&A's within the finance industry. Tuch and O'Sullivan look at 50 studies over the past 60 years concentrating on the performance of the acquiring institution. They find that the announcement effect is insignificant at best in the short run, overwhelmingly negative in the long run and mixed on the basis of accounting ratios. DeYoung et al. cover 150 studies in the post-2000 era again analysing the two main methodologies (operating performance and event study). Their results show that M&A's can be efficiency improving and, in the case of European takeovers, value creating for shareholders. This contrasts with the North American market where they find mixed results in terms of shareholder returns.

3.2.2 Event Type Studies in the Banking Industry

Due to the difficulties arising from the state of fragmentation in the banking markets and the different legal and regulatory frameworks throughout European nations, the majority of previous research in this area has been conducted on the US market. Rhoades (1994) summarises 39 studies on banking mergers in the US reaching up to 1991. He derives that there are no efficiency improvements or cost reductions stemming from bank mergers; stockholders of target banks indeed have some gains but returns to acquiring banks are mixed. As a matter of fact, Cornett and De (1991), Desai and Stover (1985) and James and Weir (1987) report positive abnormal returns to bidding banks while Cornett and Tehranian (1992), Hawawini and Swary (1990) and Knapp et al. (2005) report negative abnormal returns, only to cite some. Thus the net gains of

the combined entity target-bidder in the US are uncertain, leading to the conclusion that bank mergers, disregarding the technique employed, fail to produce any substantial improvement in performance. Such results are corroborated by other works, such as Gupta and Misra (2007), Houston and Ryngaert (1994) and Pilloff and Santomero (1998). However, the findings of Zhang (1995), still on U.S. data, contradict most of the previous abnormal return studies, as he observes significant overall gains for 107 mergers between 1980 and 1990.

Over the last 10 years the number of studies analysing M&A's in the European market has grown due to the implementation of the EMU and some harmonisation initiatives that have in part lessened the measurement and comparison problems researchers have faced in the past, while at the same time increasing the importance of such research. The relative scarcity of studies focusing on Europe, at least up until the time of their study, is highlighted in Beitel and Schiereck (2001) who conduct a survey of more than 100 banking merger studies employing 5 different methodologies that took place in the 20 years prior to their publication. They find that less than 15% of the studies analysed are conducted on non-US markets and of those employing event study methodology only two (Cybo-Ottone and Murgia 2000; Tourani-Rad and Van Beek 1999) investigate the European market. Cybo-Ottone and Murgia's (2000) analysis of a sample of 54 deals announced in Europe between 1988 and 1997 is possibly the most significant pan-European study to date. Their findings contradict the majority of US research as they provide evidence of a strongly positive market reaction subsequent an M&A announcement resulting in significant abnormal returns for not only the target, but for the bidding firm also. This conclusion is supported by Fields et al. (2007)⁸ and Ekkayokkaya (2009) however the majority of European studies on the banking sector have found insignificant or near zero returns for bidders (Tourani-Rad and Van Beek 1999; Campa and Hernando 2006) with some studies providing evidence that the overall result is still wealth creating when combined with target returns (Beitel et al. 2004; Lepetit et al. 2004). There is empirical evidence however (Beitel and Schiereck 2001) that points to significant negative returns to bidding institutions during 1998-2000 with comparable

⁸ This study focuses solely on Bancassurance deals

conclusions being found by Aktas et al. (2001), Bruner (2002) and Campa and Hernando (2004) based on French, US and European data respectively⁹. One audacious supposition arising from this last finding could be that as the transaction volume increases (as was evident during this time), the market for corporate control itself becomes more competitive, eroding potential returns.

Evidence on bid characteristics that have influence on value creation is not of easy summarisation, as it is very much dependable on the sample specification. Consequently, it will be postponed to chapter 6, where an exhaustive discussion on all of the characteristics analysed in this study will be offered and main results found by the earlier body of literature will be presented.

3.3 Conclusions

Abnormal returns to shareholders of target companies are invariably positive, significant and often substantial due to the premium paid on the actual value of the share. Abnormal returns to acquiring firms, however, appear to be hard to statistically prove, with very mixed evidence that is seemingly dependant on the model specification as to what event windows, industry, year, etc., are selected. The combined effect is also empirically mixed. Although the amount of research into the European market, and banking sector in specific, is still in its infancy compared to the US, a general picture is beginning to appear. In contrast to the US, most studies find that M&A's are wealth creating for the combined entity with some research even finding evidence of significant abnormal returns for bidding firms as well as the usual profits experienced by target bank shareholders.

⁹ The last two studies are not bank focused but cover a broader range of industries.

4. Sample Data

4.1 Sample Selection and Data Sources

The empirical analysis is based on a sample of deals. The selection criteria to be satisfied by a deal in order to be included in the sample examined are now specified:

- The first public announcement of the deal took place during the period January 1, 1999 to December 31, 2008 as reported in the Mergerstat Database¹⁰ from FactSet Research Systems, Inc., which is a reliable data provider.
- Only deals which have eventually been concluded¹¹ have been selected.
- At least one of the parties involved, either the target or the acquiring firm, have to be classified within the 'Banking & Finance' sub-industry, with the other party being either another 'Banking & Finance' firm or classified within the 'Finance' sector. Thus, deals involving exclusively companies in the financial sector but not involved in banking activities have not been selected.
- The parties involved, both target and acquiring company, have to be publicly listed and traded for at least 282 trading days before the announcement date and at least 30 trading days after, and based in one of the EU-15 countries¹² plus Norway and the important market of Switzerland¹³. Information on historical stock prices area as reported in the FactSet database, which has also been used as a source for national market indexes (FacSet Aggregates 'Country' General index).
- Only deals entailing an actual change in corporate control are relevant, therefore the percentage of the target owned by the acquiring firm after the transaction has to be in

¹⁰ All definitions of criteria and classifications, unless otherwise stated, as to be intended 'as reported in the Mergerstat database'

¹¹ Reported in the Mergerstat database as 'Completed'.

¹² Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom.

¹³ For the level of financial sophistication and their role in European financial markets – especially that of Switzerland – these two countries are considered at least on par with the EU15 countries. Furthermore, ECB (1999) notes that “a specific development in the area of internationalisation relates to the Nordic countries, where domestic banks enter each other's markets, regarding the whole Nordic area as their *home market*”.

excess of 50%. Obviously, deals involving a bidding firm which already had majority control over the target have not been selected.

- To avoid most of the problems arising from thin trading, which biases beta estimation downwards (Dimson, 1979 and Dimson and Marsh, 1983), the value of the transaction has to be in excess of USD 100 millions.
- Finally, to avoid clustering and overlap in the estimation period and event window, we follow Piloff and Santomero (1998) we discarded deals presenting instances of repeated bids by the same company within one trading year. Similarly, deals with multiple bidders have been discarded, as the share price implications are dependent on the extent of their relative involvement in the deal.

4.2 Sample Composition: Descriptive Statistics

The selection process yields a sample of 74 transactions. Although it is not the largest sample studied so far it exceeds that of other comparable event studies such as Cornett and Tehranian (1992), Siems (1996), Tourani-Rad and Van Beek (1999), Karceski et al. (2000), Cybo-Ottone and Murgia (2000) and Houston et al. (2000) just to name a few. The mean stake acquired from the bidder in the target equity is 80.09% (median = 100%), validating the intent of selecting only transactions resulting in unambiguous transfer in control.

Table 1 shows the sample distribution across countries: as result of the selection process, no companies from Austria are represented in the sample (which, in fact, has seen the number of institutions growing during the last 4 years and concentration decrease). Instead, it is noticeable a strong aggregate presence of banks from the Big5 countries (Italy, Germany, France, Spain and the UK), which historically have experienced lower concentration levels than the rest of Europe, below 50% (see Table 2 in Chapter 2) and therefore are the main playgrounds of the consolidation process under way. This aspect is common to all comparable studies on the European banking sector.

Table 3. Geographical Distribution of identified deals

	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy
Targets	1	5	1	7	8	6	3	16
Acquirers	2	1	2	6	5	5	0	15
Total	3	6	3	13	13	11	3	31
	Luxembourg	Netherlands	Norway	Portugal	Spain	Sweden	Switzerland	U.K.
Targets	0	2	5	2	4	1	1	12
Acquirers	2	3	4	2	7	5	2	12
Total	2	5	9	4	11	6	3	24

Another tendency revealed by the transactions' sample (although not shown in the Tables) is that almost three quarter of all cross-border acquisitions are confined to a neighbouring or regional expansion. This leads to an important consideration: that obstacles to a pan-European market still exist, notably cultural and language differences, so that regional similarities still play an important role. On the other side, it is encouraging to observe that the majority of the deals involving countries which are geographically separate from each other happened after 2004, perhaps a sign that now banks are starting to broaden their horizon when looking at cross-border deals.

A similar impression is derived by figures in Table 4 showing that despite an overall decrease in the number of deals, the mean value of cross border deals has more than doubled in the period after 2004, while domestic deals' value is fundamentally unchanged. During the 10 years studied, the average value per transaction – in excess of EUR 5 billions - is very high, even when compared to previous studies which focus on large transactions (see Beitel and Schiereck 2001, Figure 6). Market values are also considerably bigger than in previous studies. On one hand, this aspect is partially explained by the strict selection criteria adopted in this study (which biases upwards average values) and by the fact that only nominal values are reported (hence the more recent the years under study the higher the nominal value of transactions and market capitalisation, *ceteris paribus*). On the other hand, it is a confirmation of the high level of takeover activity reached by European countries during the last decade, as well as a signal that

the larger banking institutions have visibly taken the lead in the consolidation process. While the peak in deal-making of 1999-2000 not surprisingly coincides with the beginning of the second phase of the EMU, the average deal in the sample has been 20% bigger in the last 5 years. A more relevant figure, however, is the ratio target to bidder, as it permits to directly compare the relative size of the banks in the sample to other studies. In fact, the ratios in this study are much more alike to those of previous studies than the nominal values discussed above. Finally, product-diversifying deals are generally smaller than the average deal and show no clear pattern as the number of deals post-2004 is too exiguous to be significant and the average transaction value pre-2004 is heavily influenced by the size of the Allianz – Dresdner Bank deal.

Table 4. Size characteristics and sample composition by Year, Geographic Focus and Scope

		Targets	Bidders	Ratio Target/Bidder		
Market Value, EUR mil.						
Average		4,892.51	22,623.64	21.63%		
Standard Deviation		7,107.81	25,071.20			
Maximum		36,166.23	98,394.94			
Minimum		58.25	140.25			
Year	No. of transactions	Mean tx value (EUR, mil)	Geographic Focus		Scope	
			Domestic	Cross- Border	Bank- Bank	Cross- Product
1999	12	5,885	7	5	11	1
2000	17	4,605	9	8	11	6
2001	6	10,768	4	2	5	1
2002	9	2,081	8	1	8	1
2003	5	1,417	4	1	5	0
2004	3	9,335	1	2	3	0
2005	7	4,329	5	2	6	1
2006	5	9,678	3	2	5	0
2007	4	7,325	2	2	3	1
2008	6	1,797	2	4	4	2
TOTAL	74	5,218	45	29	61	13
(in %)	(100%)		(60.8%)	(39.1%)	(82.4%)	(17.6%)
Mean tx value (EUR, mil)	1999-2003	4,844	6,394	2,402	5,062	4,090
	2004-2008	5,871	6,302	5,405	6,877	587

5. Methodology

5.1 *Methodology: Event Study*

Following common approach, to examine wealth effects for shareholders of target and bidding firms, cumulative abnormal returns have been calculated. Returns to shareholders of both the acquiring and the target institutions are examined over a period ('window') surrounding the announcement of the deal (the 'event'), which is considered day 'zero'.

Nine different windows have been considered: two pre-announcement windows, [-30,-1] and [-10,-1] to investigate whether there is a price run-up before the announcement, resulting presumably from information leakage, i.e. insider trading or public information which increases the probability of a takeover (Keown and Pinkerton, 1981); similarly, two post-announcement windows, [+1,+10] and [+1,+30] to assess the price adjustment process following the disclosure of the deal; three symmetric windows centred at progressive length around the announcement, from [-1,+1] to [-2,+2] and to [-10,+10]; a window investigating only the announcement day [0], which together with the former three will hopefully give some insights on an eventual announcement effect; a window covering the whole extent of the others to give a broader picture, [-30,+30]. Overall, only a short-term horizon is covered (something less than three calendar months) as it is assumed that the market absorbs quickly the shock of the announcement. Besides, investigations of longer time lags could introduce some disturbance in the data due to the influence of other events unrelated to the merger.

Actual returns during the windows, defined as the daily logarithmic change of the share price, are compared to 'expected' returns, which are based on expectations formed in a period supposedly unaffected by the announcement.

5.2 *Estimation models of expected returns*

To calculate expected returns, we strive to determine the best and most appropriate model by analysing models used in previous M&A event studies as well as papers that specifically attempt

to determine the most robust model to employ in event studies. Models that have been utilised in the past include the Capital Asset Pricing Model (CAPM), market model, mean adjusted returns model, market adjusted returns model and multifactor models such as the Arbitrage Pricing Theory (APT) model. The market model is the method employed in the majority of past event studies. Cable & Holland (1999a) and (1999b) carry out a pilot study to test the performance of the models listed above with the exception of a multifactor model. The results of the study show a clear preference for the market model. MacKinlay (1997) suggests that the market model is an improvement on the constant mean model, dominates the CAPM and is preferred to the APT model. He further states that although multifactor models are best used when the sample observations have similar characteristics (eg: same industry), they generally do not have much more explanatory power than the market model. This view is supported by Binder (1998) who indicates that the market model may perform better than multifactor models due to problems in estimating betas of other factors precisely. Fama and French (1993) maintain that failing to find an accurate model, misspecifications and systematic biases can occur. We believe this occurrence to be more likely the more complex the model becomes. Perhaps the most cited study concerning which model to employ in event studies is Brown (1980) who states: "beyond a simple, one-factor market model, there is no evidence that more complicated methodologies convey any benefit. In fact, we have presented evidence that more complicated methodologies can actually make the researcher worse off, both compared to the market model and to even simpler methods". As such, we choose to utilise the market model to estimate expected returns for the banks involved in our study.

5.2.1 The Market Model

The theoretical foundations of the market model lie on the CAPM. The model expresses the following relationship between a single stock's return and the return of the market:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (1)$$

where R_{it} and R_{mt} are the returns at time t on a stock i and on the market respectively; α_i is the intercept and β_i compares historical price volatility of a security i with the volatility of the market the security belongs to, thus representing its correlation or systematic risk; ε_{it} is a random error which averages out to zero. Both α_i and β_i are model parameters estimated conducting an OLS-regression of daily returns¹⁴ for every single stock i in the sample of 74 deals against returns on the respective local (national) market over a period of a year (252 trading days) prior to the event window, using Stata from Stata Corporation.

Following Cybo-Ottone and Murgia (2000) and Beitel and Schiereck (2001), we choose a 252 day estimation period since it offers a reasonable trade-off between containing enough relevant price information and being excessively long so that other events prior to the one under study might have contaminated it. Furthermore, note that we eliminated deals for which a known M&A event occurred during the estimation period. Following Campa and Hernando (2004), Ekkayokkaya et al. (2009), Lepetit et al. (2004) and Goergen and Renneboog (2004), as a proxy for market returns R_{mt} we employ general national market indexes (FacSet Aggregates 'Country' General index), tailored to the home country of target and bidding companies respectively. Although some papers (Beitel and Schiereck, 2001; Cybo-Ottone and Murgia, 2000) use financial or banking indexes, we felt this would lead to correlation problems, especially for countries with less developed stock markets, since sector-specific indexes may be sensibly affected by abnormal returns for a single company.

¹⁴ Most of the early literature employed monthly returns. As daily data are nowadays relatively easy to obtain, given the more detailed information they convey, their utilisation have become the norm in the recent studies. On the other side, estimation from daily data may be somehow trickier and less reliable than estimation from monthly data, which present less volatility. Scholes and Williams (1997) point out potential problems arising when estimating the parameters using daily non-synchronous data. However, as mentioned in the 'sample selection' section and intentionally seek with the sample construction, the larger than average size of the banks and other financial companies involved in the study hints at the fact that the data employed in this study are based on higher than average liquid stocks, lessening the problem associated with non-synchronous trading. Moreover, Brown and Warner (1985) demonstrate that "procedures other than OLS for estimating the market model in the presence of non-synchronous trading convey no clear-cut benefit in detecting abnormal performance". Goergen and Renneboog (2004) also state that "none of their main results is influenced by the choice of the beta estimation technique". For these reasons, to conclude, estimated parameters have not been adjusted in this study.

The estimated parameters $\hat{\alpha}_i$ and $\hat{\beta}_i$ are then substituted into formula (1) and, together with the market performance R_{mt} observed during the window under scrutiny, used to calculate expected returns $(E)R_{it}$ given by:

$$(E)R_{it} = \hat{\alpha}_i + \hat{\beta}_i R_{mt} \quad (2)$$

Subsequently, expected returns for any stock i are subtracted from returns realized for the stock i during the event window, giving a measure of how actual returns differ from benchmark returns (investors' required return). This measure is referred to as 'abnormal returns' (AR):

$$AR_{it} = R_{it} - (E)R_{it} \quad (3)$$

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt}) \quad (4)$$

Daily AR are calculated for any single stock and, when found, cumulated for all the days in the intervals (windows) selected. Individual cumulated abnormal returns (CAR) are then averaged across the whole sample of banks and financial institutions under investigation to give an estimation of the effect of M&As announcement on the share price of parties involved, in the form of cumulative average abnormal returns (CAARs). If the announcement of an M&A deal is believed to create additional value for shareholders, then CAARs for the whole sample will be positive over the time horizons studied. The average AR for a sample of n firms at time t cumulated during time interval t_1 to $t_2 \in T$ (the whole event window under study) are computed as follows:

$$CAAR_{[t_1;t_2]} = \sum_{[t_1;t_2]} \overline{AR}_t = \sum_{[t_1;t_2]} \frac{1}{n} \cdot \sum_{i=1}^n AR_{it} \quad (5)$$

We initially considered three different main samples, yielding three different measures of CAARs: those for shareholders of the target firms, those for shareholders of the bidding firms and total CAARs for shareholders of both firms (targets and bidders) merged in single entities. To calculate AR for these 'combined entities', we adopted the method recommended by Houston and Ryngaert (1994). Therefore, AR for targets and bidders are aggregated for every transaction and weighted by the relative market values of the two parties:

$$AR_{\cup t} = \frac{AR_{bt} \cdot MV_{bt} + AR_{gt} \cdot MV_{gt}}{MV_{bt} + MV_{gt}} \quad (6)$$

where subscript \cup , b and g refer to the combined entities, bidders and targets respectively.

AR for combined entities have also been averaged and cumulated in a similar fashion as to what is done for targets and bidders separately. Market capitalisations are computed as the ones observed at the end of the 252 trading days estimation period (i.e. 31 days prior to the announcement). The assessment of the effects on the combined entities is very important as it allows us to judge the net outcome of the transaction in terms of wealth creation. Many studies fail to take this into consideration and halt at the analyses of targets and acquirers separately.

In addition to the three main samples mentioned beforehand, other sub-samples have been identified to inspect potential differences attributable to drivers such as *geographic focus* (domestic vs. cross-border deals), *scope* (horizontal vs. cross product deals), *value* (transaction value of deals), *size* (relative size of target to bidder), *method of payments* (cash vs. stock swap) and *timing* (deals during 1999-2003 vs. deals during 2004-2008)

5.3 Test Statistics

Significance tests are used to test the null hypothesis that cross-sectional average abnormal returns for targets and bidders are zero in the announcement day and that the average abnormal returns cumulated in the other event windows are also zero. High t-test values will lead to rejecting these hypotheses and conclude that AR and CAAR are significantly different from zero.

The test statistics employed are those from Kothari and Warner (1997) and used by Goergen and Renneboog (2004). The one-day test statistic for the announcement day [0] is the ratio of the average abnormal return observed for the portfolio of deals for the day to its estimated standard deviation, calculated from the time series of average returns to the whole portfolio during the 252 days estimation period:

$$\frac{AR_{pt}}{\sigma(AR_{pt})} \sim N(0,1) \quad (7)$$

Where

$$AR_{pt} = \frac{1}{n} \times \sum_{i=1}^n AR_{it} \quad (8)$$

$$\sigma(AR_{pt}) = \sqrt{\frac{1}{252} \times \sum_{t=-282}^{-31} (AR_{pt} - \overline{AR}_{pt})^2} \quad (9)$$

$$\overline{AR}_{pt} = \frac{1}{252} \times \sum_{t=-282}^{-31} AR_{pt} \quad (10)$$

Similarly, the test statistic for CAARs in other event windows is:

$$\frac{CAAR_{pT}}{\sigma(AR_{pt})\sqrt{T}} \sim N(0,1) \quad (11)$$

where T is the length of the event window in days. Test statistics are assumed to be distributed unit normal in the absence of abnormal performance.

However, to take into account the possibility of departure from such an assumption due to skewed or long-tailed data attributable to observation of outliers, we increase the robustness of our results for the whole sample by applying the non-parametric Wilcoxon (1945) signed-rank test. This test is widely used in comparable studies, e.g. Cybot-Ottone and Murgia (2000) and Ismail and Davidson (2005) and makes fewer assumptions about the distribution of abnormal

returns. We analyse the series of abnormal returns observed for each company in our sample (bidders, targets and combined entities) during different event windows in turn. The procedure (Sprent and Smeeton, 2007) provides for absolute deviations from the hypothesised median (which is zero for ARs) to be arranged in order of magnitude and assign ranks to these in ascending order. We then proceed to attaching a negative sign to each rank that corresponds to a negative deviation. If the hypothesised median is also the true median, we expect a near equality between the sum of negative and positive ranks. A high imbalance between negative and positive ranks leads to rejection of the null hypothesis. The test and attached p-values are computed using Stata from Stata Corporation.

For the six proposed subsamples, since we seek to determine if there is a different impact of one characteristic with respect to the other, we further conduct mean-difference tests on the null hypothesis that the difference between CAARs observed for different sub-samples is zero. As we do not know a-priori whether the difference will be positive or negative for a particular event window, the probabilities computed using Stata from Stata Corporation are for two tailed significance (i.e. $\Pr (|T| > |t|)$).

6. Empirical Results Based on The Whole Sample

Table 5 shows the market reaction for the several event windows surrounding the announcement of an M&A, including the day of the announcement itself, for the whole sample (74 deals, 148 firms) of targets, bidders and weighted combined entities. These results will be analysed and compared mainly to previous research in this specific field (i.e. event studies of M&As in the European banking sector) as it is naturally the best reference for comparability.

Table 6 has a summary of the literature.

Table 5. CAARs for targets, bidders and combined entities, whole sample of 74 deals

	Bidders				Targets				Combined			
	Mean CAR	t-test ^a	Wilcoxon ^b	p-value	Mean CAR	t-test ^a	Wilcoxon ^b	p-value	Mean CAR	t-test ^a	Wilcoxon ^b	p-value
Total (n=74) ^c												
[-30,-1]	-0.55%	-0.498	-1.14	0.25	5.20%	3.747 ***	2.73	0.01***	0.42%	0.461	0.04	0.97
[-10,-1]	0.86%	1.355	0.72	0.47	4.24%	5.288 ***	3.68	0.00***	1.29%	2.485 **	2.24	0.03 **
[-30,+30]	-3.32%	-2.123 **	-2.39	0.02 **	17.21%	8.688 ***	5.05	0.00***	-1.16%	-0.903	-1.48	0.14
[-10,+10]	-0.54%	-0.589	-0.39	0.70	16.02%	13.786 ***	5.83	0.00***	1.25%	1.650	1.05	0.30
[-2,+2]	-0.35%	-0.775	-0.17	0.86	10.19%	17.977 ***	5.47	0.00***	0.65%	1.774 *	0.65	0.52
[-1,+1]	-0.78%	-2.260 **	-1.21	0.23	8.61%	19.608 ***	5.12	0.00***	0.15%	0.519	0.20	0.84
[0]	-1.19%	-5.952 ***	-1.64	0.10 *	7.01%	27.639 ***	4.54	0.00***	-0.10%	-0.618	0.02	0.98
[+1,+10]	-0.21%	-0.327	-0.06	0.95	4.77%	5.949 ***	3.23	0.00***	0.05%	0.102	-0.13	0.90
[+1,+30]	-1.58%	-1.442	-1.46	0.14	4.99%	3.596 ***	1.98	0.05**	-1.48%	-1.635	-1.99	0.05 **

^a Test of significance for the mean according to Kothari and Warner (1997), two-tailed test;

^b Test of significance for the median using the Wilcoxon statistics,

^{a,b} * = significant at the 10% level, ** = significant at the 5% level, *** = significant at the 1% level.

^c n = number of deals

6.1 Effects on Targets

As would be expected, target firms in our sample experience highly significant positive abnormal returns consistent with previous studies that invariably reach the same conclusion due to the premiums offered by bidding firms. Approximately 70% of targets experience positive abnormal returns resulting in CAAR's ranging from 4.24% to 17.21%, depending on the event window analysed, with means and medians that are all significant at the 1% confidence level. The symmetrical event windows produce the greatest returns (mostly due to the inclusion of the

Table 6. Summary of Shareholder Returns for European Banking M&A Event Studies

Study	Window	CAARs			Study	Window	CAARs		
		Target (%)	Bidder (%)	Combined (%)			Target (%)	Bidder (%)	Combined (%)
<i>Rad and Van Beek (1999)</i>	[-40,-1]	5.93	-0.73	N/A	<i>Campa and Hernando (2004)</i> ^a	[-30,-1]	5.3**	0.88	N/A
	[-10,-1]	2.84	-0.37			[-60,-1]	5.72**	1.96	
	[-5,-1]	1.97	-0.54			[-90,-1]	6.6**	2.61**	
	[-1,0]	4.46*	-0.25			[-1,+1]	3.93**	0.44	
	[0]	3.77*	-0.12			[-30,+1]	8.85**	1.35	
	[0,+1]	3.96*	-0.19			[-1,+30]	3.24**	-0.22	
	[+1,+5]	-1.14	0.57			[-30,+30]	8.9**	0.56	
	[+1,+10]	-2.01	0.92		<i>Campa and Hernando (2006)</i>	[-30,-1]	1.85	-1.03	N/A
	[+1,+40]	-3.99	1.03			[-90,-1]	4.35**	-0.08	
	[-1,+1]	4.65*	-0.33			[-1,+1]	3.24**	-0.87**	
	[-5,+5]	4.59	-0.09			[-30,+1]	5.80**	-1.81**	
	[-10,+10]	4.6	0.43			[-1,+30]	2.38**	-1.20	
	[-40,+40]	5.71	0.18			[-30,+30]	5.43**	-2.37**	
<i>Cybo-Ottone and Murgia (2000)</i>	[-1,+1]	12.93***	0.99***	2.67***		[-30,+360]	-3.56	-2.42	
	[-2,+2]	13.68***	1.40***	2.89***		[-1,+360]	-4.43	-3.37	
	[-5,+5]	13.52***	1.08	2.86***	<i>Fields et al. (2007)</i> ^b	[-51,-2]	7.25*	1.06	0.83
	[-10,+10]	14.16***	1.16	3.41***		[-1]	-0.32	0.42	0.38
	[-20,+20]	15.30***	2.19**	4.27***	Listed targets	[0]	3.44***	0.66**	1.50*
	[-1,0]	13.16***	0.62*	2.65***		[-1,0]	2.98***	1.07**	1.89*
	[-2,0]	14.31***	0.70*	2.81***		[-51,-2]	N/A	0.06	N/A
	[-5,0]	15.02***	0.58	2.88***	Unlisted targets	[-1]		-0.02	
	[-10,0]	15.69***	0.92	3.52***		[0]		0.07	
	[-20,0]	17.95***	1.46*	4.49***		[-1,0]		0.05	
<i>Beitel et al. (2004)</i>	[-20,-1]	14.16***	0.42	2.01***	<i>Ekkayakkoya et al. (2009)</i>	[-1,+1]	All periods	0.029	
	[-10,-1]	12.31***	0.14	1.46***		[-1,+1]	Pre-euro	0.317*	
	[-1,0]	10.48***	0.06	1.20***		[-1,+1]	Run-up to Euro	0.307	
	[0]	8.27***	-0.14	0.91***		[-1,+1]	Post-euro	-0.189	
	[-1,+1]	12.39***	-0.01	1.40***					
	[-10,+10]	14.39***	0.24	1.35**					
	[-20,+20]	16.00***	-0.2	1.29*					

^a Although Campa and Hernando (2004) study a range of industries, the financial sector still makes up a significant portion of their analysis.

^b Fields et al. (2007) analyse bancassurance M&As only.

* = significant at the 10% level, ** = significant at the 5% level, *** = significant at the 1% level.

large announcement day (CAAR), with the event window encompassing the month before and after the event providing the highest mean CAR. The considerable size of the announcement day returns to targets is driven by some enormous one day increases in share value for some firms with five having appreciations in share value of over 40% on the day the acquisition was announced. The significant positive abnormal returns ten days prior to the announcement date show that there is evidence of a price run up before the acquisitions in our sample were made public. However, the negligible difference between the [-30,-1] and the [-10,-1] event windows suggests that positive abnormal returns due to systematic information leakage do not exist prior to the 10th day before the announcement date. The results of our study fall in between the findings of other banking sector event studies. While Cybo-Ottone and Murgia (2000) and Beitel

et al. (2004) find significant positive abnormal returns for targets between 10 and 20% for all event windows¹⁵, Rad and Van Beek (1999) and Campa and Hernando (2004, 2006) find significant single figure abnormal target returns with a few event windows displaying small economically trivial negative CAAR's.

6.2 *Effects on Bidders*

Once again the results of our study are in line with the majority of previous research that generally find that bidding banks are unable to attain value creation for shareholders via an M&A. The CAAR's for the acquiring banks range from -3.32% for the [-30,+30] event window (significant at the 5% confidence level for both mean and median) to 0.86% for the [-10,-1] event window. The only other event windows proven to be statistically significant are the [-1,+1] and announcement date event windows which are significant at the 5% and 1% levels respectively. The Wilcoxon test also shows the announcement date window to be significant at the 10% level. The highly significant one day average abnormal return of -1.19% on announcement day is a clear indication that the market does not see mergers in a favourable light for the acquiring firm. Although our findings for bidders are in line with the bulk of US studies (e.g. DeLong 2001, Houston et al. 2001), the research on European bank mergers is split. Cybo-Ottone and Mugia (2001) report small yet highly significant positive abnormal returns for bidding banks for the 2 (0.99%), 4 (1.4%) and 40 (2.19%) day event windows symmetrically surrounding the announcement date; Campa and Hernando (2004) find positive abnormal returns of 2.61% for the three months prior to announcement and Ekkayokkaya et al. (2009) show a significant CAAR of 0.32% for buyers in the [-1,+1] event window. Results that are more comparable with the findings of this sample however are found by Campa and Hernando (2006) who show negative abnormal returns for bidders of -0.87%, -1.81% and -2.37% for the [-1,+1],

¹⁵ The only exception being the announcement date window in Bietel et al. (2004) where an 8% CAAR was found.

[-30,+1] and [-30,+30] event windows respectively. Rad and Van Beek (1999) also find negative abnormal returns for bidding banks however their results were not economically significant.

6.3 *Effects on Value-Weighted Combined Entities*

The effects of consolidation for the combined entity resulting from an M&A are more inconclusive than that for the targets or bidders. While two event windows produce somewhat significant positive abnormal returns, these returns are minimal. The [-10,-1] event window shows a 1.29% abnormal return with a mean and median significant at the 5% confidence level while the [-2,+2] event window is significant at the 10% level with a positive abnormal return of 0.65%. The sign rank test also shows the median CAAR for the 30 day post announcement day event window to be significant at the 5% confidence level. The remaining CAAR's range from -1.16% to 1.25% but are not of statistical significance. The positive abnormal return and significance of the [-10,-1] event window further supports the information leakage hypothesis that results in a price run up in firms involved in an M&A before it is announced. There are a number of studies that find insignificant or economically trivial combined abnormal returns, especially pre-2000 as noted by DeYoung et al. (2009). However, Cybo-Ottone and Murgia (2000) and Beitel et al. (2004) both provide comparable results to this event study as they find significant positive abnormal returns for the combined entity of between 1 and 4% for all event windows. While the evidence provided here gives some support to the creation of value overall for European bank mergers, the results as they are presented may be further evidence of the argument made by many (e.g. Berkovitch and Narayanan, 1993) that states the average result of an M&A is simply a transfer of wealth, especially in the form of high premiums, from the stockholders of the bidding firm to those of the target.

7. Empirical Results on Sub-samples: Determinants of M&A Value

In this section we will investigate an eventual relationship between a single bid or corporate feature at a time and CAARs to determine how they affect shareholder wealth creation. Therefore, the sample has been partitioned into sub-samples according to different characteristics that have been proven to be meaningful in earlier studies. These categorisations will reflect one of the following: geographic focus, which analyses the effects of geographic diversification in different markets as well as the extent of the integration of different national markets into a common European market; scope, which analyses the value effects of engaging into other financial activities as compared to focusing on one line of business only; value, which analyses an eventual correlation between transaction volume and abnormal returns; size, which analyses if and how the size of the bidder compared to that of the target affects returns around the announcement date; method of payment, which investigates the implications cash payments might have as compared to stock swap; and time, which analyses if there is a changing pattern of abnormal returns in more recent years.

7.1 Effects of Geographic Focus: Domestic vs. Cross-Country Deals

Geographic diversification is justified on the ground that it reduces the probability of financial distress - given that the profits of two banks located in two different markets are less correlated than when the two banks are in the same domestic market (Rad and Van Beek, 1999). Cross-border mergers are also motivated as a means of expansion and future growth in the global market. On the other hand, domestic focus, because of the larger market overlap it provides, is expected to provide superior synergy potentials compared to cross-border deals, eliminating redundancies and thus reducing costs (see Berger and Humphrey, 1992; Rhoades, 1993) as well as strategically increasing market power (Vander Venet, 1996). Which of the two effects is valued more can be tested with the analysis of this sub-sample. The following observations are based on Table 7.

Table 7. CAARs for targets, bidders and combined entities; the effects of geographic focus

	Bidders		Targets			Combined			
	Mean CAR	t-test ^a	Mean CAR	t-test ^a		Mean CAR	t-test ^a		
Domestic (n=45) ^c									
[-30,-1]	-1.32%	-0.885	5.30%	3.298 ***		0.12%	0.098		
[-10,-1]	0.59%	0.685	5.55%	5.990 ***		1.26%	1.709 *		
[-30,+30]	-5.36%	-2.518 **	11.00%	4.806 ***		-1.72%	-0.941		
[-10,+10]	-1.50%	-1.200	11.68%	8.692 ***		1.02%	0.957		
[-2,+2]	-0.28%	-0.457	7.76%	11.834 ***		0.91%	1.747 *		
[-1,+1]	-0.27%	-0.572	5.49%	10.819 ***		0.62%	1.535		
[0]	-1.08%	-3.942 ***	4.02%	13.699 ***		-0.06%	-0.261		
[+1,+10]	-1.02%	-1.177	2.11%	2.274 **		-0.18%	-0.239		
[+1,+30]	-2.97%	-1.986 **	1.69%	1.054		-1.78%	-1.392		
X-Border (n=29) ^c									
[-30,-1]	0.60%	0.370	5.06%	2.298 **		1.09%	0.805		
[-10,-1]	1.26%	1.334	2.18%	1.712		1.53%	1.955 *		
[-30,+30]	-0.26%	-0.114	26.91%	8.568 ***		0.35%	0.183		
[-10,+10]	0.88%	0.645	22.82%	12.383 ***		1.71%	1.501		
[-2,+2]	-0.45%	-0.675	14.02%	15.590 ***		0.30%	0.539		
[-1,+1]	-1.55%	-3.001 ***	13.51%	19.399 ***		-0.55%	-1.274		
[0]	-1.37%	-4.594 ***	11.71%	29.122 ***		-0.18%	-0.714		
[+1,+10]	0.99%	1.054	8.93%	7.024 ***		0.35%	0.446		
[+1,+30]	0.50%	0.306	10.14%	4.603 ***		-0.56%	-0.413		

Difference ^d	Mean CAR	t-test ^b	p-value	Mean CAR	t-test ^b	p-value	Mean CAR	t-test ^b	p-value
[-30,-1]	1.93%	-0.881	0.38	-0.23%	0.052	0.96	0.97%	-0.439	0.66
[-10,-1]	0.66%	-0.574	0.57	-3.38%	1.166	0.25	0.27%	-0.220	0.83
[-30,+30]	5.10%	-1.581	0.12	15.90%	-2.624	0.01	2.07%	-0.709	0.48
[-10,+10]	2.38%	-1.177	0.24	11.14%	-2.278	0.03	0.68%	-0.357	0.72
[-2,+2]	-0.17%	0.105	0.92	6.26%	-1.591	0.12	-0.61%	0.404	0.69
[-1,+1]	-1.28%	0.818	0.42	8.02%	-2.118	0.04	-1.17%	0.811	0.42
[0]	-0.29%	0.253	0.80	7.69%	-2.162	0.03	-0.12%	0.126	0.90
[+1,+10]	2.01%	-1.505	0.14	6.82%	-2.117	0.04	0.53%	-0.448	0.66
[+1,+30]	3.47%	-1.543	0.13	8.44%	-2.320	0.02	1.22%	-0.617	0.54

^a Test of significance for the mean according to Kothari and Warner (1997), two-tailed test, * = significant at the 10% level, ** = significant at the 5% level, *** = significant at the 1% level.

^b Test of significance for mean-difference between the CAARs in the two sub-samples and p-values of the null hypothesis that this difference is zero; p-values in bold are <10% significant.

^c n = number of deals.

^d = CAARs (X-country deals) – CAARs (domestic deals).

Our results show that mean abnormal returns for targets in geographically diversifying deals are clearly preferred to focused ones with the majority of cross border CAAR's being more than double their domestic counterpart and also statistically different from each other. A reason for this outcome put forth by Bietel et al. (2004) is that synergy realisations in domestic deals come at the cost of the target who therefore finds these deals less desirable. Further evidence of this result is produced by Campa and Hernando (2004) who find that merger premiums paid to target shareholders are higher in cross-country rather than in-country acquisitions. Abnormal returns for bidders also seem to favour cross border mergers which would point to a greater perceived risk reduction in geographic diversification. However abnormal returns for the few event windows immediately surrounding the announcement date perform better for domestic deals which is more in line with the general consensus of M&A literature (DeLong, 2001; Lepetit et al., 2004; Moeller and Schlingemann, 2004). The combined effect follows that of the bidding returns, with international deals preferred for most time periods with the exception of the two days before and after the announcement date. While we cannot find a statistical difference between means for domestic and cross border deals for bidders and combined returns, the CAAR's themselves are significant. Significant negative abnormal returns are found for bidders in both domestic and foreign deals while positive significant returns are found in some event windows for the combined entity. In summary, our sample suggests that superior returns are associated with cross border rather than domestic deals, especially for target shareholders, however it must be noted this result seems to contradict the general consensus in the related literature. A plausible explanation is that cross-border deals are smaller on average (see section 4.2) which as we will see below is a feature appreciated by market players.

7.2 Effects of Scope: In-bank Mergers vs. Product Diversification

Product diversification shares the same advantages of geographic diversification in terms of risk reduction. Furthermore, it easily allows firms to reach new customers and market the new products to existing customers at lower costs than separate banks each providing these products

individually (see Pilloff and Santomero, 1998). Once more, however, there are detractors which consider instead the superior synergies and cost savings arising from related businesses merging. Studies from Berger and Ofek (1995), Comment and Jarrell (1995) and Walker (2000) all sustain that the degree of relatedness between the activities of the bidding and the target company are positively correlated with returns.

Once again our results (see Table 8) support the diversification motivation as nearly all abnormal returns for cross product deals dominate their focussed product counterparts. Like the geographic sub-sample, this is most evident in terms of returns to target shareholders where product diversification is clearly preferred with a significant CAAR of 35.06% in the case of the [-30,+30] event window. This is further supported by the mean test that shows the target CAAR's are significantly different from that of the focused deal targets for the pre-announcement and longer symmetrical event windows. Similarly to the last section, returns to bidders seem to be superior in cross product deals rather than focused ones although the results are somewhat mixed. There are significant negative abnormal returns for bidders in the focussed sub-sample whereas there are only economically insignificant returns in the cross product sample. Opposed to this however, the [+1,+10] event window shows a significant *positive* mean difference between focussed and non focussed deals. Combined CAAR's show a clearer picture with product diversification generally providing increased returns above focused deals and the whole sample. This difference is substantial in some cases with the pre-announcement date event windows producing significant abnormal returns of 5.19% and 3.1% which are the highest CAAR's for the combined entity for any sub-sample analysed in this report. The [-30,-1] event window also shows a positive and significantly different mean at the 10% confidence level. Combined returns for focused deals are mixed and mainly insignificant. These results are consistent with prior empirical evidence conducted on the European banking sector, in particular with Bietel and Schiereck (2001) who also find superior combined and target returns associated with product diversifying transactions but mixed results for bidders. Cybo-Ottone and Murgia (2000) also show a preference for bank to non-bank deals. Research outside Europe is, however, inconclusive, with

Hendershott et al. (2002) finding product diversification value creating whereas Cornett et al. (2003) and DeLong (2003) show that focused deals provide more benefits in terms of shareholder returns. It must be noted however when

Table 8. CAARs for targets, bidders and combined entities; the effects of scope

	Bidders		Targets			Combined			
	Mean CAR	t-test ^a	Mean CAR	t-test ^a		Mean CAR	t-test ^a		
Focused (n=60) ^c									
[-30,-1]	-1.24%	- 1.066	2.69%	1.778	**	-0.35%	- 0.357		
[-10,-1]	0.68%	1.023	2.37%	2.718	***	1.05%	1.854	*	
[-30,+30]	-3.85%	- 2.326	13.62%	6.312	***	-1.54%	- 1.097		
[-10,+10]	-0.53%	- 0.551	13.37%	10.560	***	1.13%	1.378		
[-2,+2]	-0.37%	- 0.781	9.19%	14.872	***	0.65%	1.625		
[-1,+1]	-0.86%	- 2.352	7.89%	16.496	***	0.17%	0.533		
[0]	-1.51%	- 7.150	6.60%	23.873	***	-0.28%	- 1.560		
[+1,+10]	0.29%	0.439	4.40%	5.035	***	0.36%	0.637		
[+1,+30]	-1.10%	- 0.946	4.33%	2.864	***	-0.91%	- 0.923		
X-Product (n=14) ^c									
[-30,-1]	2.90%	0.935	17.77%	4.795	***	5.19%	1.988	**	
[-10,-1]	1.73%	0.965	13.57%	6.342	***	3.10%	2.059	**	
[-30,+30]	-0.70%	- 0.158	35.06%	6.634	***	2.72%	0.732		
[-10,+10]	-0.57%	- 0.221	29.21%	9.420	***	2.22%	1.018		
[-2,+2]	-0.24%	- 0.188	15.21%	10.056	***	0.77%	0.722		
[-1,+1]	-0.40%	- 0.403	12.20%	10.410	***	0.13%	0.158		
[0]	0.41%	0.724	9.07%	13.405	***	0.84%	1.760	*	
[+1,+10]	-2.71%	- 1.515	6.57%	3.070	***	-1.72%	- 1.140		
[+1,+30]	-4.01%	- 1.292	8.22%	2.217	**	-3.30%	- 1.266		

	Mean CAR	t-test ^b	p-value	Mean CAR	t-test ^b	p-value	Mean CAR	t-test ^b	p-value
Difference ^d									
[-30,-1]	4.14%	- 1.451	0.15	15.08%	- 2.660	0.01	5.54%	- 1.903	0.06
[-10,-1]	1.04%	- 0.686	0.50	11.20%	- 3.124	0.00	2.05%	- 1.235	0.22
[-30,+30]	3.15%	- 0.713	0.48	21.44%	- 2.712	0.01	4.26%	- 1.072	0.29
[-10,+10]	-0.04%	0.015	0.99	15.84%	- 2.489	0.02	1.09%	- 0.432	0.67
[-2,+2]	0.13%	- 0.062	0.95	6.02%	- 1.161	0.25	0.12%	- 0.057	0.96
[-1,+1]	0.47%	- 0.226	0.82	4.30%	- 0.847	0.40	-0.04%	0.018	0.99
[0]	1.92%	- 1.279	0.21	2.47%	- 0.515	0.61	1.12%	- 0.902	0.37
[+1,+10]	-3.01%	1.720	0.09	2.17%	- 0.501	0.62	-2.08%	1.380	0.17
[+1,+30]	-2.91%	0.972	0.33	3.88%	- 0.791	0.43	-2.39%	0.915	0.36

^a Test of significance for the mean according to Kothari and Warner (1997), two-tailed test, * = significant at the 10% level, ** = significant at the 5% level, *** = significant at the 1% level.

^b Test of significance for mean-difference between the CAARs in the two sub-samples and p-values of the null hypothesis that this difference is zero; p-values in bold are <10% significant.

^c n = number of deals.

^d = CAARs (X-product deals) – CAARs (focused deals).

analysing this data that our sample only contains a relatively small number of cross product type acquisitions (14) and thus these results may be non-representative of M&A's in the European bank industry. Furthermore, the overlap with small sized deals is to be taken once again into consideration.

7.3 Effects of Value: Small, Medium-sized and Large Volume Transactions

In the attempt of examining a value effect, the sample has been divided into three sample partitions according to the transaction volume of the deal. The 25 smallest transactions form the 'Small tx' group (mean value of EUR 0.309 billion), the 24 largest transactions form the 'Large tx' group (mean value of EUR 13.959 billion) and the 25 transactions with values in between these two groups form the 'Medium tx' group (mean value EUR 1.734 billion – see Table 9).

The hypothesis that large value takeovers can create economies of scale and achieve profitable changes in market value has generally been denied credibility by academic research (e.g. Eckbo, 1992; Ravenscrat and Scherer, 1987), although Kane (2000) suggests that large deals are able to produce high excess returns because the resulting institution may benefit from being "too big to fail and unwind". Some literature, however, indicates that economies of scale seem to exist only for institutions valued less than USD 100mil. in total assets (see Clark, 1988; Humphrey, 1990). More plausible is the assumption that the larger the size of the deal (and that of the target), the more complex the integration of the target will be for the bidding firm to complete and for the investors to estimate (e.g. Beitel and Schiereck, 2001). Hence, large transactions are seen as riskier compared to smaller transactions and are expected to be valued negatively by markets, at least until synergy potentials become clear.

As usual, targets receive positive abnormal returns for all types of transactions, significant in nearly every event window although it should be noted that small and medium sized transactions are clearly preferred to large ones and are greater in magnitude than the target returns for the whole sample. In fact, medium sized transactions dominate nearly all bidders' and thus combined abnormal returns as compared to small and large transactions. It is, however, perhaps puzzlingly

to note that the [-10,-1] and [-2,+2] event windows for the combined entity in large transactions are positive and economically significant despite eight of the nine event windows for bidders showing negative CAAR's. This may indicate that the targets

Table 9. CAARs for targets, bidders and combined entities; the effects of value

	Bidders		Targets		Combined	
	Mean CAR	t-test ^a	Mean CAR	t-test ^a	Mean CAR	t-test ^a
Small tx (n=25) ^b						
[-30,-1]	-1.11%	-0.569	3.78%	1.526	-0.57%	-0.329
[-10,-1]	-0.09%	-0.079	5.19%	3.621 ***	0.69%	0.694
[-30,+30]	-3.52%	-1.263	24.74%	6.994 ***	-1.62%	-0.659
[-10,+10]	-2.01%	-1.230	23.67%	11.407 ***	-0.98%	-0.679
[-2,+2]	-1.57%	-1.964 *	11.17%	11.030 ***	-0.95%	-1.351
[-1,+1]	-0.69%	-1.117	9.95%	12.685 ***	-0.23%	-0.419 *
[0]	-0.23%	-0.646	8.43%	18.607 ***	0.03%	0.106
[+1,+10]	-1.69%	-1.499	10.06%	7.025 ***	-1.70%	-1.712 *
[+1,+30]	-2.17%	-1.114	12.53%	5.050 ***	-1.08%	-0.629
Medium tx (n=24) ^b						
[-30,-1]	0.86%	0.453	6.07%	2.876 ***	1.68%	1.021
[-10,-1]	0.71%	0.646	3.19%	2.614 ***	1.43%	1.505
[-30,+30]	-0.92%	-0.342	18.05%	5.994 ***	0.61%	0.258
[-10,+10]	1.22%	0.768	16.64%	9.415 ***	2.94%	2.139 **
[-2,+2]	0.48%	0.619	14.03%	16.267 ***	1.40%	2.089 **
[-1,+1]	-0.66%	-1.110	12.64%	18.928 ***	0.37%	0.706
[0]	-0.75%	-2.164 **	10.24%	26.565 ***	0.43%	1.442
[+1,+10]	1.26%	1.152	3.21%	2.629 ***	1.08%	1.138
[+1,+30]	-1.03%	-0.545	1.74%	0.822	-1.51%	-0.916
Large tx (n=24) ^b						
[-30,-1]	-1.47%	-0.724	5.74%	2.704 ***	0.31%	0.186
[-10,-1]	1.93%	1.644	4.40%	3.589 ***	1.98%	2.086 **
[-30,+30]	-5.59%	-1.934 *	8.36%	2.761 ***	-1.74%	-0.741
[-10,+10]	-0.97%	-0.570	7.36%	4.146 ***	1.86%	1.347
[-2,+2]	-0.04%	-0.049	5.01%	5.777 ***	1.50%	2.223 **
[-1,+1]	-1.00%	-1.560	2.83%	4.223 ***	0.32%	0.622
[0]	-2.58%	-6.966 ***	2.01%	5.191 ***	-0.83%	-2.771 ***
[+1,+10]	-0.31%	-0.267	0.95%	0.778	0.71%	0.742
[+1,+30]	-1.54%	-0.762	0.61%	0.285	-1.21%	-0.737

^a Test of significance for the mean according to Kothari and Warner (1997), two-tailed test, * = significant at the 10% level, ** = significant at the 5% level, *** = significant at the 1% level.

^b Test of significance for mean-difference between the CAARs in the two sub-samples and p-values of the null hypothesis that this difference is zero; p-values in bold are <10% significant.

^c n = number of deals.

^d = CAARs (X-product deals) – CAARs (focused deals).

are relatively bigger in the large transactions which means their substantial positive returns would have more weight in the combined entity. The smaller value deals have clearer results when it comes to value creation with medium sized transactions showing significant positive CAAR's for the combined entity while small deals are generally slightly value destroying but are on the whole economically insignificant. In terms of comparison to European studies, most split their samples into only small and large groups with the former, as expected, producing the superior results. We follow the method used by Beitel and Schiereck (2001) however who find very similar results to this study with medium sized deals outperforming those of large and small volumes¹⁶. They motivate this outcome by contending that medium sized deals "may be appreciated positively because of their existing value creation potential that at the same time is believed to be captured."

7.4 *Effects of Size: Relative Market Value of Acquirer to Target*

To further our analysis on the effect of size, once again we break up our sample into three partitions but this time according to the relative size of the target firm to the acquiring firm rather than simply the size of the transaction. To facilitate this we calculate a ratio by dividing the market value of the target by the market value of the bidder. Given that the bidder is almost always larger than the target, a 'small target' implies a small target to bidder ratio (mean of 0.03 – bidder is 33 times as large as target), a 'large target' indicates a target close in market value to the bidder (mean of 0.75 – bidder is 1.33 times the size of the target) and a 'medium target' indicates a ratio in between that of the small and large samples (mean of 0.20 – bidder is 5 times as large as the target – see Table 10). To reiterate, when 'small', 'medium' and 'large' targets are mentioned in this section, it refers to the *relative* size of the target to bidder and although this will substantially coincide with the actual size of the target it will not always be the case.

¹⁶ Note Bietel and Schiereck (2001) only analyse abnormal returns for bidders when investigatin the effects of transaction size on the market reaction to an M&A.

The prevailing hypothesis regarding relative size in consolidation activity is that relatively small targets provide superior abnormal returns and although scale effects may be smaller, integration of the firm will be less complex and therefore may lead to less problematic value creation. Target premiums paid by acquiring firms have also been found to be consistently negatively correlated to the size of the target relative to the bidder (Schwert, 2000). These findings are supported by our sample somewhat as transactions involving targets close in market value to that of the bidder are not preferred when looking at returns for all participants, in any event window. Bidding returns for relatively large targets are also negative and highly significant with a CAAR of -8.97% in the [-30,+30] window. Our results indicate that target shareholders prefer relatively larger bidders when being acquired with CAAR's outperforming those of the medium and large targets as well as the sample as a whole. Abnormal target returns for relatively medium sized targets are quantitatively similar to that of the original sample while large targets experience significantly lower returns. Abnormal returns for bidders are greatest when acquirers take over relatively medium sized targets. This is also the case for combined returns which, more interestingly, show positive and economically significant abnormal returns in four event windows ranging from 1.29% to 2.77%. We can conclude from these results that, in terms of acquiring firms, investors have the greatest expectation of value creation when bidders take over relatively medium sized targets, perhaps due to the right mix of scale effects and level of deal complexity. Although previous studies analyse relative size in a slightly different way, they all come to the same conclusion. That is, acquisitions involving relatively small targets outperform transactions where the bidders and targets are more closely matched in value (see Beitel and Schiereck, 2001; Campa and Hernando, 2006; Hawawini and Swary, 1990) which is corroborated by the results found in this paper.

Table 10. CAARs for targets, bidders and combined entities; the effects of size

	Bidders		Targets		Combined	
	Mean CAR	t-test ^a	Mean CAR	t-test ^a	Mean CAR	t-test ^a
Large target (n=25) ^b						
[-30,-1]	-2.37%	-1.476	1.52%	0.737	-0.81%	-0.595
[-10,-1]	0.85%	0.919	1.47%	1.239	1.17%	1.503
[-30,+30]	-8.97%	-3.914 ***	3.15%	1.074	-3.69%	-1.915 *
[-10,+10]	-1.11%	-0.829	4.07%	2.366 **	1.46%	1.287
[-2,+2]	0.30%	0.458	2.97%	3.538 ***	1.49%	2.700 ***
[-1,+1]	-0.44%	-0.858	2.20%	3.391 ***	0.79%	1.854 *
[0]	-1.98%	-6.757 ***	2.07%	5.503 ***	-0.18%	-0.734
[+1,+10]	0.02%	0.017	0.53%	0.450	0.46%	0.594
[+1,+30]	-4.61%	-2.871 ***	-0.43%	0.210	-2.71%	-2.001 **
Medium target (n=24) ^b						
[-30,-1]	-1.17%	-0.583	10.10%	5.088 ***	-0.11%	-0.064
[-10,-1]	0.91%	0.783	7.91%	6.901 ***	1.76%	1.767 *
[-30,+30]	-0.71%	-0.247	19.14%	6.761 ***	1.20%	0.485
[-10,+10]	0.53%	0.314	16.67%	10.036 ***	2.77%	1.917 *
[-2,+2]	0.36%	0.435	11.63%	14.351 ***	2.12%	3.004 ***
[-1,+1]	-0.23%	-0.367	8.95%	14.251 ***	1.29%	2.363 **
[0]	-0.92%	-2.506 ***	6.35%	17.505 ***	0.40%	1.274
[+1,+10]	0.54%	0.466	2.42%	2.107 **	0.61%	0.607
[+1,+30]	1.38%	0.689	2.69%	1.356	0.90%	0.523
Small target (n=24) ^b						
[-30,-1]	2.38%	1.148	4.35%	1.632	2.55%	1.404
[-10,-1]	0.69%	0.578	3.61%	2.345 **	1.19%	1.134
[-30,+30]	0.06%	0.019	29.98%	7.887 ***	0.16%	0.063
[-10,+10]	-0.77%	-0.446	27.82%	12.475 ***	-0.32%	-0.209
[-2,+2]	-1.71%	-2.028 **	16.34%	15.014 ***	-1.67%	-2.250 **
[-1,+1]	-1.81%	-2.759 ***	14.96%	17.754 ***	-1.66%	-2.886 ***
[0]	-0.59%	-1.561	12.79%	26.288 ***	-0.53%	-1.612
[+1,+10]	-0.87%	-0.732	11.42%	7.421 ***	-0.97%	-0.927
[+1,+30]	-1.73%	-0.836	12.83%	4.815 ***	-1.85%	-1.020

^a Test of significance for the mean according to Kothari and Warner (1997), two-tailed test, * = significant at the 10% level, ** = significant at the 5% level, *** = significant at the 1% level.

^b n = number of deals; big, medium and small to be intended as the ratio of target's MV relative to acquirer

7.5 Effects of Method of Payment: Cash vs. Equity Swap

There are a couple of motivations presented in academic literature as to which method of payment a firm will choose when bidding for control over another firm. One motivation is that hostile takeovers are financed with cash, presumably because target shareholders are more likely to accept a cash financed takeover bid as there is less risk involved, while friendly M&A's are financed with equity, as this method is cheaper for the acquirer who has not as much need to sway target shareholders. The other is that bidding firms will pay for targets with cash if they feel their own shares are undervalued and equity if overvalued. This sends a signal to the market, depending on the type of financing offered, that management expects a higher (cash financed) or lower (equity financed) performance in the future. Whatever the reason, the question remains, which method provides greater value creation? The existing literature shows overwhelming evidence that cash financed takeovers perform better in both the short run (Dong et al., 2005; Draper and Paudyal, 1999; Walker, 2000) and the long run (Cosh and Guest, 2001; Linn and Switzer, 2001; Loughran and Vijh, 1997) as cited in Tuch and O'Sullivan (2007).

As expected, the performance of cash financed acquisitions is greater for target shareholders than equity financed ones however abnormal returns are quantitatively similar to that of the whole sample for cash and lower for equity. The [-10,+10] event window also shows that the means between the two financing methods are statistically different at the 10% confidence level. Unfortunately the remaining results for this sub-sample are quite inconclusive. Although, somewhat surprisingly, M&A's facilitated through equity swaps perform better for shareholders of bidding firms, the only significant results for either equity or cash financed bids are two significantly negative CAAR's in equity related deals. There are no significant results whatsoever when looking at the abnormal returns of the combined entity and a preference for either payment method is unclear. The means test also shows that CAAR's for bidders and the combined entity are not statistically different from each other. The only European study to look into payment method as a driver of abnormal returns is Beitel et al. (2004). Remarkably, that study produced very similar results to this one as they found targets benefited from cash financed acquisitions

but found slightly higher returns for bidders in equity financed deals, conflicting with the firmly held consensus of previous literature. They posit two explanations for this outcome which can both be applied to this sample due to similarities in the data. The first being that perhaps "the perception of stock undervaluation by bank managers does not drive

Table 11. CAARs for targets, bidders and combined entities; the effects of method of payment

	Bidders		Targets			Combined			
	Mean CAR	t-test ^a	Mean CAR	t-test ^a		Mean CAR	t-test ^a		
Equity (n=23) ^c									
[-30,-1]	1.55%	0.770	4.67%	1.808 *		1.07%	0.734		
[-10,-1]	1.64%	1.406	1.36%	0.911		0.78%	0.923		
[-30,+30]	-1.04%	- 0.362	13.61%	3.697 ***		-0.77%	- 0.372		
[-10,+10]	0.29%	0.169	9.42%	4.362 ***		1.18%	0.967		
[-2,+2]	0.32%	0.383	8.44%	8.007 ***		0.96%	1.617		
[-1,+1]	-1.16%	- 1.814 *	7.66%	9.383 ***		0.06%	0.122		
[0]	-1.74%	- 4.728 ***	6.63%	14.071 ***		-0.05%	- 0.174		
[+1,+10]	0.39%	0.334	1.43%	0.960 ***		0.45%	0.533		
[+1,+30]	-0.85%	- 0.422	2.31%	0.894 ***		-1.80%	- 1.233		
Cash (n=37) ^c									
[-30,-1]	-0.97%	- 0.692	4.44%	2.469 **		0.18%	0.140		
[-10,-1]	0.40%	0.499	3.93%	3.788 ***		0.98%	1.331		
[-30,+30]	-2.08%	- 1.042	20.14%	7.860 ***		-0.25%	- 0.139		
[-10,+10]	-0.36%	- 0.308	19.56%	13.008 ***		0.61%	0.568		
[-2,+2]	-0.48%	- 0.845	10.34%	14.087 ***		-0.15%	- 0.292		
[-1,+1]	-0.56%	- 1.259	9.19%	16.180 ***		-0.23%	- 0.581		
[0]	-0.34%	- 1.327	8.06%	24.579 ***		0.21%	0.924		
[+1,+10]	-0.42%	- 0.525	7.56%	7.290 ***		-0.59%	- 0.800		
[+1,+30]	-0.77%	- 0.551	7.64%	4.251 ***		-0.65%	- 0.508		
Difference ^d									
	Mean CAR	t-test ^b	p-value	Mean CAR	t-test ^b	p-value	Mean CAR	t-test ^b	p-value
[-30,-1]	-2.52%	1.022	0.31	-0.23%	0.045	0.96	-0.89%	0.356	0.72
[-10,-1]	-1.23%	1.018	0.31	2.57%	- 0.831	0.41	0.20%	- 0.149	0.88
[-30,+30]	-1.04%	0.347	0.73	6.53%	- 0.914	0.36	0.52%	- 0.100	0.92
[-10,+10]	-0.65%	0.298	0.77	10.14%	- 1.798	0.08	-0.58%	0.286	0.78
[-2,+2]	-0.80%	0.443	0.66	1.90%	- 0.420	0.68	-1.12%	0.667	0.51
[-1,+1]	0.60%	- 0.338	0.74	1.54%	- 0.347	0.73	-0.29%	0.177	0.86
[0]	1.40%	- 1.053	0.30	1.43%	- 0.344	0.73	0.26%	- 0.245	0.81
[+1,+10]	-0.81%	0.568	0.57	6.13%	- 1.603	0.11	-1.04%	0.887	0.38
[+1,+30]	0.08%	0.016	0.99	5.33%	- 1.244	0.22	1.15%	- 0.462	0.65

^a Test of significance for the mean according to Kothari and Warner (1997), two-tailed test, * = significant at the 10% level, ** = significant at the 5% level, *** = significant at the 1% level.

^b Test of significance for mean-difference between the CAARs in the two sub-samples and p-values of the null hypothesis that this difference is zero; p-values in bold are <10% significant.

^c n = number of deals. 14 deals were financed by a mixture of cash and equity and therefore have been excluded from the sub-samples.

^d = CAARs (cash deals) – CAARs (equity deals).

the payment choice in Europe". And the second being that the valuation signal from bidding banks is not considered correctly in Europe, due to inefficiencies in the capital markets, or alternatively because the overvaluation of the bidding bank's stocks is not believed in.

7.6 Effects of Time: deals during 1999-2003 vs. deals during 2004-2008

Time effects are rarely studied in this type of literature and given that no study has used data past 2004 there are no comparable studies. However we believe that due to changes initiated by the European Union over the last decade to increase financial integration, as set out in chapter 2, a trend in terms of wealth creation over time may be present. Nevertheless, we would expect to see a negative effect on returns as time progresses, especially for targets, as premiums are pushed down due to increasing competition and price transparency from the introduction of the euro and continued efforts by the EU to create a single market. Standardised accounting rules that make it easier for the market to correctly price a company may also see a reduction in unnecessarily high premiums paid to targets.

These expectations are mostly supported by our results as abnormal returns for targets in the older sub-sample outperform those in the recent sub-sample in all event windows except for the announcement day. The large announcement day return for targets in recent years, coupled with the extremely poor performance of the pre-announcement day windows for the same group (which are statistically different to those in the older sample), suggests that information leakage was far more prevalent pre-2004. So called 'Chinese walls' are thoroughly enforced in financial circles nowadays. The older time period sub-sample also performed better in terms of returns for bidding firms although once again they are slightly negative and also significant in the case of the days surrounding the announcement date. A similar result in terms of preference is found for the combined entity however this time there is a significantly positive abnormal

Table 12. CAARs for targets, bidders and combined entities; the effects of time

	Bidders		Targets		Combined				
	Mean CAR	t-test ^a	Mean CAR	t-test ^a	Mean CAR	t-test ^a			
1999-2003 (n=49) ^c									
[-30,-1]	-0.17%	-0.100	8.11%	4.715 ***	1.28%	0.947			
[-10,-1]	0.98%	1.026	6.46%	6.502 ***	2.00%	2.565 **			
[-30,+30]	-3.84%	-1.636	20.71%	8.446 ***	-0.89%	-0.461			
[-10,+10]	-0.77%	-0.557	18.64%	12.956 ***	1.82%	1.609			
[-2,+2]	-0.76%	-1.130	10.50%	14.957 ***	0.78%	1.407			
[-1,+1]	-0.93%	-1.778 *	8.07%	14.841 ***	0.19%	0.436			
[0]	-1.39%	-4.612 ***	5.71%	18.194 ***	-0.27%	-1.111			
[+1,+10]	-0.36%	-0.374	6.47%	6.519 ***	0.09%	0.119			
[+1,+30]	-2.29%	-1.391	6.89%	4.006 ***	-1.89%	-1.402			
2004-2008 (n=25) ^c									
[-30,-1]	-1.26%	-1.108	-0.26%	-0.118	-1.17%	-1.037			
[-10,-1]	0.64%	0.969	0.07%	0.057	0.00%	-0.001			
[-30,+30]	-2.32%	-1.424	10.60%	3.358 ***	-1.67%	-1.038			
[-10,+10]	-0.12%	-0.122	11.08%	5.987 ***	0.18%	0.189			
[-2,+2]	0.43%	0.919	9.61%	10.636 ***	0.43%	0.932			
[-1,+1]	-0.52%	-1.436	9.63%	13.756 ***	0.08%	0.219			
[0]	-0.83%	-3.972 ***	9.44%	23.372 ***	0.21%	1.042			
[+1,+10]	0.07%	0.111	1.57%	1.228	-0.04%	-0.055			
[+1,+30]	-0.23%	-0.197	1.42%	0.640	-0.72%	-0.634			

Difference ^d	Mean CAR	t-test ^b	p-value	Mean CAR	t-test ^b	p-value	Mean CAR	t-test ^b	p-value
[-30,-1]	-1.10%	0.486	0.63	-8.37%	1.841	0.07	-2.45%	1.101	0.27
[-10,-1]	-0.34%	0.283	0.78	-6.38%	2.205	0.03	-2.00%	1.606	0.11
[-30,+30]	1.53%	-0.440	0.66	-10.12%	1.590	0.12	-0.78%	0.263	0.79
[-10,+10]	0.65%	-0.310	0.76	-7.56%	1.488	0.14	-1.64%	0.851	0.40
[-2,+2]	1.19%	-0.710	0.48	-0.89%	0.218	0.83	-0.35%	0.222	0.82
[-1,+1]	0.41%	-0.253	0.80	1.55%	-0.389	0.70	-0.11%	0.073	0.94
[0]	0.56%	-0.471	0.64	3.73%	-0.998	0.32	0.49%	-0.518	0.61
[+1,+10]	0.43%	-0.307	0.76	-4.90%	1.475	0.14	-0.13%	0.084	0.93
[+1,+30]	2.07%	-0.858	0.39	-5.47%	1.448	0.15	1.18%	-0.603	0.55

^a Test of significance for the mean according to Kothari and Warner (1997), two-tailed test, * = significant at the 10% level, ** = significant at the 5% level, *** = significant at the 1% level.

^b Test of significance for mean-difference between the CAARs in the two sub-samples and p-values of the null hypothesis that this difference is zero; p-values in bold are <10% significant.

^c n = number of deals.

^d = CAARs (2004-2008 deals) – CAARs (1999-2003 deals).

return of 2% shown for the ten days prior to announcement which is almost significant in terms of being different to that of the more recent sub-sample. Combined returns for deals between 2004 and 2008 are negligible, negatively or positively, and economically trivial. Thus it can be concluded that our data suggests increased competition and efficiency of capital markets in recent times has had a negative effect on wealth creation for banking mergers. It should be noted however when analysing these results that given the mean size of the more recent deals are higher (see Table 4) and also the presence of a size effect in the sample (see sections 7.3 and 7.4), the overlap of these two characteristics may bias the returns of the 2004-2008 sub-sample down.

8. Multivariate Regression Analysis

This section aims at determining, if possible, the impact of all the value drivers simultaneously. More precisely, as the sub-samples are overlapped (e.g. a merger that is classified as cross-border can also be cross-product at the same time), results for one characteristic can be driven by other factors intrinsic in the composition of the sub-sample. To further clarify the concept, it was noted in section 4.2 that the mean transaction value for cross-border deals is noticeably lower than that for domestic deals. Hence cross-border deals are more likely to be included in the small transaction value sub-sample while domestic deals are more likely to be included in the large value sub-sample. Although this is not necessarily true, findings for cross border deals could be influenced by their inherent low transaction volume nature or vice versa. Multivariate analysis permits us to disentangle the effect of a specific sub-sample.

The basic model specification takes into consideration control variables for the characteristics investigated via the sub-sample analysis and is defined as follows:

$$CAAR_{bg}^t = CONS + \alpha_1 GEO_{bg} + \alpha_2 SCOPE_{bg} + \alpha_3 RSIZE_{bg} + \alpha_4 LNTXVAL_{bg} + \alpha_5 CASH_{bg} + \alpha_6 TIME_{bg} + \varepsilon \quad (12)$$

where $CAAR_{bg}^t$ are the cumulative abnormal returns during an event window t between the bidder b and the target g ; $CONS$ is the intercept; GEO is a dummy variable which takes the value of 1 if the deal is domestic and zero if the deal is cross-border; $SCOPE$ is a dummy variable which takes the value of 1 if the deal is between two banks and zero otherwise; $RSIZE$ is the ratio of the market value of the target firm g with respect to the market capitalisation of both firms b and g together; $LNTXVAL$ is the logarithm of the transaction value; $CASH$ is a dummy variable which takes the value of 1 if the deal was financed with cash only and zero otherwise; $TIME$ is a dummy variable which takes the value of 1 if the deal was announced after 1 January 2004 and zero if it was announced before. We then run separate regressions for bidders, targets and combined entities modifying the model in (12) as we believe appropriate given the results observed in the

previous section. We further decide not to regress the RSIZE and LNTXVAL together as they show a relatively high degree of correlation (58%) and therefore could lead to model misspecifications.

8.1 *Targets*

(Please refer to Appendix 1) Targets across all sub-samples are consistently experiencing abnormal returns, with the vast majority already concentrated in the window [-10,+10] which is the one we used to run our regressions. We regress all independent variables singularly and then together against the target's abnormal returns to have an idea of which ones would turn out to be insignificant and therefore be excluded from our model. After iteration, we decide to discard CASH and LNTXVAL as they do not seem to be significant. By running the Breusch-Pagan (1979) / Cook Weisberg (1983) test we detect heteroskedasticity in our results therefore all regressions from this point onwards are conducted computing standard errors using the heteroskedastic-robust method of White (1980). We calculate variance inflation factors (VIF) without detecting multicollinearity and since we are not in the presence of time series data, we do not consider autocorrelation to be a problem. We also conduct a Ramsey (1969) RESET test both with the powers of the fitted values of approval and with the powers of the independent variables, returning insignificant F-statistics for specification error. Finally, we run the Shapiro and Francia (1972) test on the residuals and notice that they are not normally distributed. Analysis of the histogram reveals the extent of skewness and kurtosis, however we appeal to the central limit theorem by which "the test statistics will asymptotically follow the appropriate distribution even in absence of error normality" (Brooks, 2008). Furthermore, Hubbard (1978) states that "the relaxation of the normality assumption does only minimal damage to the properties of the ordinary least squares (OLS) estimators".

Bearing in mind the possible effects of non-normal distribution of the error terms in our regression, the overall model is highly significant with an F-statistic of 10.24 and R-squared of 25.78% (adjusted R-squared was 21.35% before using robust standard errors) which are both considerably higher than comparable studies (e.g. Cybo-Ottone and Murgia, 2000; Beitel and

Schiereck, 2004). The multivariate regression confirms at large the results obtained in the previous section: the intercept is highly positive and significant reflecting the high CAARs observed; all of the 4 independent variables chosen are at least of some significance – especially the relative size of the target institution to the bidder – while their coefficients are all negative as expected (i.e. abnormal returns for targets being negatively correlated to domestic, focused, relatively large and post-2004 deals) with the relative size of the contenders once more showing the highest correlation.

8.2 *Bidders*

(Please refer to Appendix 2) Contrary to targets, analysis of the returns to bidders in the sub-samples has been harder to prove statistically and none of the characteristics seems to be influencing abnormal returns more than marginally. Event windows showing some significant CAARs are either very close to the announcement date or the overall window [-30,+30]. We choose the latter as CAARs were of higher magnitude across the sub-samples hence we believe that if any conclusion can be drawn, it will be easier from analysis of this extended window. Through the same iterative process employed for target firms, we discard the CASH, GEO, TIME and SCOPE variables as they are insignificant. While this was expected for the method of payment, product focus and timing variables - since the mean differences between samples are never statistically different from zero - we had some expectation that the geographic focus variable would show at least some significance as the mean difference in the event window selected reached a 12% confidence level. Therefore, the model employed for bidders shows on the right hand side only the variables RSIZE and LNTXVAL. Although this time we do not detect heteroskedasticity and therefore we do not need to employ robust standard errors, the coefficient for the transaction size is insignificant and positive on its own while it becomes significant and negative when paired with RSIZE. As noted in the introduction to this section, the uncomfortably high degree of correlation between the two variables leads to model misspecification (corroborated by the Ramsey RESET test in Appendix 2) therefore we are forced to drop the

LNTXVAL variable. Even though the model is now extremely simplistic, it was expected that variables would be mostly insignificant for bidders. Thus, the only conclusion is that abnormal returns are significantly and negatively correlated to the size of the target with respect to the acquirer. This simple model obviously does not suffer from multicollinearity (or autocorrelation) and the normality assumption is not violated at the 10% level (see Shapiro-Francia test and residuals plot).

8.3 Combined entities

(Please refer to Appendix 3) Deciding on which factors are influencing CAARs for combined entities is somehow even more difficult than for bidders. As such we do not expect to find any variable to be significant apart from the proportional size of the target. For the same reasons mentioned in the analysis of bidders, we decide to analyse the [-30,+30] window. As a matter of fact, we do not find any significant combination of variables that can significantly explain the abnormal returns of the combined entity, RSIZE being, in isolation, the only variable of relevance. Since we strive to find significant results about total shareholder wealth effects, we borrow the Beitel and Schiereck (2004) approach and separate successful deals from unsuccessful ones to ascertain if they share common characteristics. We consider the deal as being successful if the mean cumulative abnormal returns for the window under analysis are positive and unsuccessful if negative. We thus separate the transactions accordingly in two subsamples of 30 successful deals and 44 unsuccessful deals. We cannot find any combination of variables that is of any significance either at the t-test or F-test level for the successful deals. No significant combination is found for unsuccessful deals either; however, we find the GEO variable to have a negative coefficient and be highly significant. This is consistent with our findings in table Table 7 where we notice significant CAARs of -5.36% for domestic deals for the [-30,+30] window. Overall, no conclusion can be drawn for the combined entity from the multivariate analysis; however we observe across the vast majority of windows a negative correlation between targets' and acquirers' CAARs while the correlation between cumulative average

abnormal returns for targets and the combined entities is close to zero. This corroborates the idea that merger deals at large represent a transfer of wealth from bidding to target firms.

9. Summary and Conclusions

The ever changing economic landscape in Europe over the past decades has had drastic implications for managers of firms, shareholders, governments and many other stakeholders. The financial sector is no different and firms within the industry have reacted through a wave of consolidation that has sparked the need for debate and analysis on the implications of these changes. This paper aims to achieve this by investigating the short run market reaction to acquisitions in the European banking sector on the shareholders of bidding and target firms, as well as the combined entity, in an attempt to gauge the value creation implications of such activity and what reasons or drivers of value creation are present. We analyse abnormal shareholder returns for 74 M&A deals in 16 countries, for the decade 1999-2008 as well as the impact of six different deal characteristics on the performance of the stocks involved pre and post announcement.

We find that target shareholders experience significant and substantial positive abnormal returns, leading up to - and following - the announcement of an M&A, with cumulative abnormal returns of up to 17%. Acquisitions are found to be value destroying in the case of the bidding firms with significant abnormal returns of up to -3.32% for the month before and after announcement. This result may support the existence of takeovers in Europe motivated by managerial hubris or self interest. Combining the weighted value returns of the two entities we find value is actually created and is economically significant in the lead up to and in days surrounding the announcement. However it should be noted that some event windows produced negative cumulative average abnormal returns, albeit small and insignificant. The positive abnormal returns displayed in the days prior to announcement for bidders, targets and the combined entity, significant in the case of the latter two, support the hypothesis of a price run up due to information leakage or insider trading. These results generally coincide with other European studies, especially in terms of combined and target returns, however there are some studies that find value creation also for bidding firms.

The analysis of deal characteristics influencing returns found some clear drivers of success in M&A's. Geographic and product diversification in M&A's were examined with similar results. Cross border transactions were found to be valued higher by capital markets contrary to the consensus of existing literature. This may be driven by higher weighted targets in the sub-sample that have empirically been shown to receive large premiums in international deals (Campa and Hernando, 2004). Diversification also had a positive impact on returns when it came to looking at the effects of scope. Deals involving firms that took on a new product i.e., bancassurance mergers, had more favourable value implications than bank to bank acquisitions. Size, both in terms of transaction volume and relative market values between target and bidder, were also found to be an important determinant of value creation in banking takeovers. In both cases large transactions and target to bidder ratios were seen unfavourably by all shareholders concerned. In fact medium sized transactions and ratios performed best although target shareholders showed a slight preference for smaller volume deals and deals involving relatively small targets. Although target firms in our sample confirmed previous empirical evidence that showed cash financed acquisitions are clearly preferred to equity ones, results for bidders and the combined entity were mixed and largely insignificant. Finally, it seems that the push for increased financial integration in recent years has caused a declining trend in abnormal returns available to shareholders from consolidation activity. Thus overall we can infer that diversifying acquisitions of smaller targets, paid for in cash, provides the greatest chance of positive abnormal returns. All of these conclusions are at large confirmed by the cross-sectional multivariate regression undertaken in the previous section, although it has to be noted that the relative size of target institution to bidding institution is consistently the most influential characteristic determining the success of a deal, with obvious ramifications given the overlaps with other sub-samples as noted throughout the paper. The implications of this study are mainly positive with results pointing to the successful creation of value when management embark on growth through acquisition. However, discovery of significant negative returns for bidding firms in some cases means acquirers must be wary of simply transferring wealth from the shareholders of the buyer to that of the target.

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Appendix 1: Stata output for multivariate regression, Targets

Appendix 1.1 Regression of deal characteristics, excluding Cash and Transaction Value, against targets' CAARs, [-10,+10]

```
. reg trgtar10 geo scope time rsize
```

Source	SS	df	MS	Number of obs = 74		
Model	.796069371	4	.199017343	F(4, 69) =	5.82	
Residual	2.29193259	69	.034207949	Prob > F =	0.0004	
Total	3.08800196	73	.043492985	R-squared =	0.2578	
				Adj R-squared =	0.2135	
				Root MSE =	.18495	

trgtar10	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
geo	-.0731	.0490563	-1.49	0.141	-.1710168	.0248169
scope	-.1000655	.0585564	-1.71	0.092	-.2169446	.0168136
time	-.0668519	.0470087	-1.42	0.160	-.1606817	.0269779
rsize	-.379486	.1436328	-2.64	0.010	-.6661783	-.0927937
_cons	.3872404	.0609924	6.35	0.000	.265499	.5089819

Appendix 1.2 Breusch-Pagan test for heteroskedasticity

```
. hettest
```

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
 Ho: Constant variance
 Variables: fitted values of trgtar10

chi2(1) = **4.44**
 Prob > chi2 = **0.0351**

Appendix 1.3 Detection of multicollinearity from Variance Inflation Factors

```
. vif
```

Variable	VIF	1/VIF
rsize	1.27	0.789827
geo	1.20	0.830728
scope	1.07	0.936516
time	1.05	0.948559
Mean VIF	1.15	

Appendix 1.4 Regression of deal characteristics, excluding Cash and Transaction Value, against abnormal returns with heteroskedastic-robust Standard errors, [-10,+10]

```
. reg trgtar10 geo scope time rsize, robust
```

Linear regression

trgtar10	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
geo	-.0731	.0436095	-1.68	0.098	-.1601449	.0139449
scope	-.1000655	.0446082	-2.24	0.028	-.1891038	-.0110272
time	-.0668519	.0424688	-1.57	0.120	-.1516201	.0179163
rsize	-.379486	.1166293	-3.25	0.002	-.6122791	-.1466928
_cons	.3872404	.0459435	8.43	0.000	.2955369	.478944

Number of obs = 74		
F(4, 69) =	10.24	
Prob > F =	0.0000	
R-squared =	0.2578	
Root MSE =	.18495	

Appendix 1.5 Ramsay RESET tests

```
. ovtest
```

Ramsay RESET test using powers of the fitted values of trgtar10
 Ho: model has no omitted variables
 F(3, 66) = **0.12**
 Prob > F = **0.9489**

```
. ovtest,rhs
```

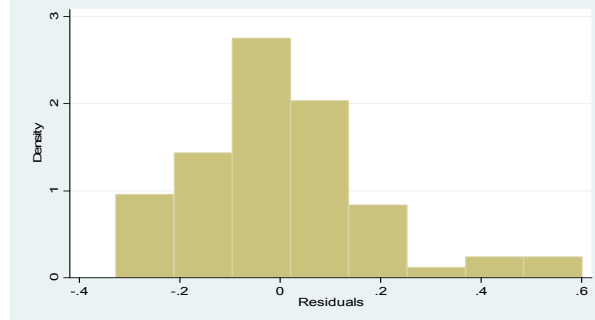
Ramsay RESET test using powers of the independent variables
 Ho: model has no omitted variables
 F(3, 66) = **0.89**
 Prob > F = **0.4487**

Appendix 1.6 Shapiro and Francia (1972) test for normality of residuals

```
. sfrancia res
```

Variable	Shapiro-Francia W' test for normal data				
	Obs	W'	V'	z	Prob>z
res	74	0.91616	5.805	3.345	0.00041

Appendix 1.7 Histogram of residuals from regression in Appendix 1.4



Appendix 2: Stata output for multivariate regression, Bidders

Appendix 2.1 Regression of deal characteristics RSIZE and LNTXVAL against bidders' CAARs, [-30,+30]

```
. reg bidar30 rsize lntxval
```

Source	SS	df	MS	Number of obs = 74		
Model	.19283912	2	.09641956	F(2, 71) =	6.06	
Residual	1.09733794	71	.015903448	Prob > F =	0.0038	
Total	1.29017706	73	.018171508	R-squared =	0.1495	
				Adj R-squared =	0.1248	
				Root MSE =	.12611	

bidar30	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
rsize	-.3710081	.1072409	-3.46	0.001	-.5849477	-.1570684
lntxval	.0186826	.0109922	1.70	0.094	-.0032463	.0406114
_cons	-.0971625	.0729814	-1.33	0.187	-.2427564	.0484314

Appendix 2.2 Correlogram between RSIZE and LNTXVAL

```
. correl lntxval rsize  
(obs=74)
```

	lntxval	rsize
lntxval	1.0000	
rsize	0.5842	1.0000

Appendix 2.3 Ramsay RESET test

```
. ovtest
```

Ramsey RESET test using powers of the fitted values of bidar30
 Ho: model has no omitted variables
 F(3, 68) = 2.26
 Prob > F = 0.0901

Appendix 2.4 Regression of RSIZE against bidders' CAARs, [-30,+30]

```
. reg bidar30 rsize
```

Source	SS	df	MS	Number of obs = 74		
Model	.146898697	1	.146898697	F(1, 72) =	8.99	
Residual	1.14327836	72	.016332548	Prob > F =	0.0037	
Total	1.29017706	73	.018171508	R-squared =	0.1139	
				Adj R-squared =	0.1012	
				Root MSE =	.1278	

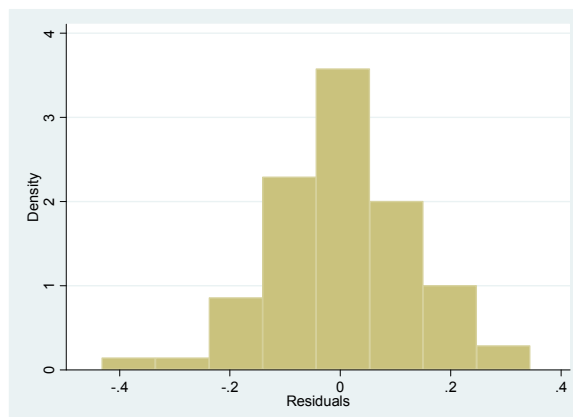
bidar30	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
rsize	-.264524	.0882029	-3.00	0.004	-.4404392	-.0886088
_cons	.0204754	.0234547	0.87	0.386	-.0263035	.0672543

Appendix 2.5 Shapiro and Francia (1972) test for normality of residuals

```
. sfrancia res
```

Variable	Shapiro-Francia W' test for normal data				
	Obs	W'	V'	z	Prob>z
res	74	0.97297	1.872	1.231	0.10907

Appendix 2.6 Histogram of residuals from regression in Appendix 2.4



Appendix 3: Stata output for multivariate regression, Combined Entities

Appendix 3.1 Regression of RSIZE against combined entities CAARs, [-30,+30]

```
. reg combar30 rsize
```

Source	SS	df	MS			
Model	.040027751	1	.040027751	Number of obs =	74	
Residual	.908246394	72	.013162991	F(1, 72) =	3.04	
Total	.948274145	73	.013546773	Prob > F =	0.0856	
				R-squared =	0.0422	
				Adj R-squared =	0.0283	
				Root MSE =	.11473	

combar30	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
rsize	-.1393872	.0799318	-1.74	0.086	-.2988468	.0200724
_cons	.0176448	.0214043	0.82	0.413	-.0250557	.0603452

Appendix 3.1 Regression of RSIZE against combined entities showing negative CAARs for the window [-30,+30].

```
. reg combar30 geo if combar30<0
```

Source	SS	df	MS			
Model	.037569186	1	.037569186	Number of obs =	44	
Residual	.170727009	42	.004268175	F(1, 42) =	8.80	
Total	.208296195	43	.005080395	Prob > F =	0.0051	
				R-squared =	0.1804	
				Adj R-squared =	0.1599	
				Root MSE =	.06533	

combar30	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
geo	-.0615877	.0207586	-2.97	0.005	-.1035425	-.0196329
_cons	-.0437481	.0163328	-2.68	0.011	-.076758	-.0107383