AMERICAN UNIVERSITY OF BEIRUT

BANKS IN THE CROSSHAIRS: MEASURING THE
LIKELIHOOD OF ACQUISITION

by
ALI HUSSEIN HAYEK

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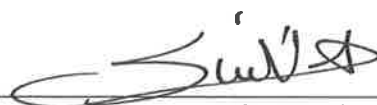
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AN ABSTRACT OF THE PROJECT OF

Ali Hussein Hayek   for   Master of Arts in Financial Economics
                            Major: Financial Economics

Title: Banks in the Crosshairs: Measuring the Likelihood of Acquisition

Mergers and acquisitions have become common in most of the areas in the world specifically in the banking sector, whereby many domestic and international banks have been involved in those activities in the past few decades.

A dataset consisting of 5999 banks that were announced to be acquired between 2003 and 2015 in the US. 374 entries were the resulting sample to be used in my model.

I will use the PROBIT analysis to forecast the likelihood of a bank being an acquisition target (announcement of acquisition being the reference) within a year, with the base year being that preceding the announcement date, subject to the bank's liquidity, solvency, and profitability in addition to the variation in the cost of debt and the growth in GDP.

Results are intuitive and in line with theory, whereby a profitable bank with a good financial standing (liquidity match and solvency stats) was unlikely to be a target and the opposite case was conforming as well. The model can be extended and used as universal preliminary practical forecasting tool to rate a bank's distance to acquisition.

CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

Mergers and acquisitions (M&A) have a substantial influence on industries' evolution whereby they account for a considerable portion of firm turnover, facilitate the redeployment of capital to productive uses, and accelerate the circulation of new technologies among firms as per Dimopoulos & Sacchetto, 2014. With respect to the parties involved, Mergers and acquisitions denote complex investment decisions whereby Companies should weigh the value of the synergies created in a deal against future takeover occasions (Dimopoulos & Sacchetto, 2014).

In the Banking sector, mergers and acquisitions have become common in most of the areas in the world and many domestic and international banks are involved in those activities. (Dimopoulos & Sacchetto, 2014) It is important to note that mergers and acquisitions in the banking sector are forms of horizontal merger (as opposed to vertical) given that the merging entities are involved in the same kind of business. Nonetheless, some non-banking financial institutions could also be merged with other banks if they prove to have an added value to the resulting complex.

Among the major goals behind the mergers and acquisitions in the banking sector is to achieve synergies; such as the benefits of economies of scale; hence, banks can realize significant growth in their operations and minimize expenses to a significant level. (Economy Watch, 2010) Another important outcome behind this kind of merger is that,

after the process is completed, competition in the banking industry is eliminated, many views around this point are available and will be discussed in a later section in my project.

It would be relevant to define an Acquisition at this stage, Mergers are often associated with Acquisitions whereby in acquisitions a change in control occurs after the operation; this does not need to be the case in this paper. Consequently I will use the following definition for Acquisition; it is simply the combination of two –or more – companies (Banks in my case) to form a new company (or Bank) as per Dimopoulos & Sacchetto, 2014; in addition to the possibility of having a change in control. Briefly, a change in the shareholders structure was enough to select each bank in my dataset; therefore in the context of my project, Acquisition designates both mergers and acquisitions.

The initial model was meant to measure the likelihood of failure of a Banks merger but the data limitation was the main cause for shifting to the model I present hereunder. Inspired by the Distance to Default Model applied by Song in 2012, I use a "Distance to Acquisition" model to estimate the likelihood of a Bank to become an acquisition target within the coming year. I aim to obtain standardized weights to apply to liquidity, solvency, profitability, real cost of debt and economic growth, in order to calculate/estimate the likelihood of the Bank -whose data is applied in my model- to be an acquisition target within a year (base year would be that of which the balance sheet and income statement data is retrieved, typically the year closing prior to the announcement date of the acquisition).

The plan of the paper is as follows: Chapter II summarizes relevant literature to my topic. Chapter III discusses cases of Banks Mergers in order to shed light on the nature

and weight of the factors that have characterized Banks as acquisition targets. Chapter IV introduces a framework for monitoring the likelihood of failures for mergers, presents the empirical model and discusses the variables I used in my analysis along with the econometric results. Chapter V concludes and presents implications of the model.

The below chapter presents literature relevant to my topic and that would have an added value to my model.

CHAPTER II

RELEVANT LITERATURE

A. The Theory and Practice of Corporate Finance: Evidence from the Field - John R. Graham, Campbell R. Harvey

Graham and Harvey surveyed 392 CFOs about the cost of capital, capital budgeting, and capital structure in "The theory and practice of corporate finance: evidence from the field". Larger firms depend on present value techniques and the capital asset pricing model, while smaller firms would go for the payback criterion. An unexpected number of firms use firm risk rather than project risk in evaluating new investments. When issuing debt, firms are concerned about financial flexibility and credit ratings, and earnings per share dilution and recent stock price appreciation when issuing equity. They find some support for the pecking-order and trade-off capital structure hypotheses but little evidence that executives are worried about asset substitution, asymmetric information, transactions costs, free cash flows, or personal taxes (Graham, Harvey).

Results showed that executives use the main techniques such as NPV and CAPM, to value projects and to estimate the cost of equity. Interestingly enough, financial executives are much less likely to follow the academically proscribed factors and theories when determining capital structure (Graham, Harvey) which raises possibilities that require additional thought and research. It is possible that the somewhat weak support for many capital structure theories suggests that it is time to reevaluate the assumptions and implications of these mainline theories. On the other hand, the theories could be valid

descriptions of what firms should do-but corporations ignore the theoretical advice. Also, one last conclusion reached by the authors was that perhaps the CAPM and NPV are more widely understood than capital structure theories because they make more precise predictions and have been accepted as mainstream views for longer; and end the paper by the fact that additional research is needed to investigate these issues.

B. Acquisition Targets and Motives in the Banking Industry - Hannan and Pilloff

The paper by Hannan and Pilloff "Acquisitions Targets and Motives in the Banking Industry" makes use of a large sample of banks observed on an annual basis, to examine the characteristics that affected the likelihood of a bank being acquired throughout the period from 1996 to 2003. It is worth noting that this was the first study of acquisition likelihoods that used data recent enough –at the time- to include a substantial number of interstate acquisitions, the first to investigate whether the elements of interstate acquisitions differ profoundly from the elements of intrastate acquisitions. Another major difference from previous studies with large samples of bank acquisitions was that they defined an acquisition as occurring when there is a change in control rather than when there is a merger of target banking institution with another. Extending from Wheelock and Wilson (2000), Hannan and Pilloff used a competing-risk proportional hazard model to estimate the relationships between several bank and market characteristics and the "hazard" of being acquired. In our study, however, the type of acquirer, classified according to location and size, defines the competing risks. The results that Hannan and Pilloff got were in line with the framework that suggests that acquisitions occur when the acquirer values the assets of the target more than do the existing owners; whereby less profitable firms are more likely

5

to be acquired, regardless of the nature of the acquirer, and, in many cases, a proxy for inefficiency was concluded to have a positive relationship with the hazard of acquisition. They also confirm, as conveyed in most studies earlier to theirs, that banks with higher capital-asset ratios face a smaller likelihood of being acquired and also find a strong relationship between the proportion of core deposits that a bank has to assets and the hazard of being acquired: banks with higher ratios are more likely to be acquired, irrelevant of the acquirer.

Modeling the scenarios of acquisition with respect to competing risks of acquisition by diverse varieties of acquirers shows some important distinctions that would be hidden by a more aggregated handling: the proxy for inefficiency used in the analysis is positively related to the hazard of acquisition by acquirers operating in the same market as the target but not with acquirers outside the market, reflecting a wider understanding of the target's operations by possible acquirers in the same market or their greater ability to present efficiencies by closing overlapping services and eliminating unnecessary staff. Also, bigger market share is associated with a higher hazard of acquisition by large out-of-market acquirers, but a lower hazard of acquisition by potential acquirers operating in the same market. In addition to that, the effect of the size of the bank versus the one of its prospects obviously varies in relation to the size classification of the prospects. Clearly, the bank's likelihood of being acquired varies with its relative size vis-à-vis the acquirer: "a bank is less likely to be acquired by small acquirers, the greater its size, but perhaps less obviously, it is more likely to be acquired by large acquirers, the greater its size". The data and

statistical methodology employed in the paper allow for an explicit examination of the hazard of being acquired by an out-of-state acquirer.

The study by Hannan and Pilloff mainly shows that out-of-state acquirers place more weight on being present in urban areas of the new state, and, in the case of large out-of-state acquirers, seem to give less attention to other relevant bank and market characteristics than do comparable in-state acquirers.

C. Merger Activity in Industry Equilibrium – Dimopoulos and Sacchetto

In "Merger Activity in Industry Equilibrium" Dimopoulos and Sacchetto discuss the effects of merger activity on industry dynamics over the business cycle by developing an infinite-horizon model of a competitive industry populated by firms with heterogeneous productivities. Their framework features capital accumulation, mean-reverting aggregate and idiosyncratic productivity shocks, entry, exit, and matching of firms in a merger market. In line with the empirical evidence found at the time, the model generated pro-cyclical entry and merger activity, and counter-cyclical exit. The found result emerged from a selection effect: in good times, the threshold productivity levels for entry and exit decrease, while merger synergies, which result from productivity improvements, rise (Dimopoulos & Sacchetto, 2014). While earlier work on the topic employed real-options models that considered acquisitions in a one period model as one-time irreversible investments (e.g., Morellec and Zhdanov, 2008), their infinite-horizon model allowed for repeated mergers over time; so their framework is an ordinary basis to study how firms can finance strategic growth through mergers and acquisitions, and how decisions related to capital structure can affect their future opportunities.

The model generated by Dimopoulos and Sacchetto predicts that if a merger were to happen between two very large firms, they would naturally produce negative synergies, thus destroying value for shareholders.

D. Were Bank Mergers Following the 2008 Financial Crisis Efficient? Three Case Studies - Song

Song studies in his thesis entitled "Were Bank Mergers Following the 2008 Financial Crisis Efficient? Three Case Studies" the economic efficiency of three bank mergers: Bank of America and Countrywide Financial, Bank of America in addition to Merrill Lynch and JP Morgan & Chase and Bear Stearns, by measuring their Distance to Default in an aim to show that efficiency is unrelated to the merger's success or profitability.

In the majority of industries, mergers increase economies of scale, allowing the companies to provide goods and services they would not be able to offer at the same price were they smaller companies. Yet, bank mergers may induce the "too-big-to-fail" moral hazard that being, when they get too big, their special capacity as financial intermediaries guarantees bailouts from the government, encouraging banks to assume riskier investments, jeopardizing the safety of the society's money.

The main question proposed by Song was whether or not the mergers are efficient; are the banks further away from default as one merged bank or as two separate banks by measuring their distance to default (Song, 2012). The case studies showed that mergers between banks of large size are likely to be inefficient and take advantage of the too-big-to-fail policy, and the banks chosen were large enough to cause such a concern.

With respect to the model used, Distance to default (DD) is an application of the Merton model (1974) of assessing credit risk of companies. Gropp, Vesala and Vulpes (2006) show it is also powerful in evaluating bank fragility (Song, 2012). It measures the probability of defaulting within one year if the banks keep their current assets and liabilities. Following Harada and Ito (2008), Song defined DD as:

$$DD_t = \frac{log\frac{V_t}{L_t} + \left(\mu_A - \frac{1}{2}\sigma^2{}_A\right)T}{\sigma_A\sqrt{T}}$$

V_t represents the market value of bank assets at time t; L_t: bank liabilities at time t; μ_A is the mean growth rate of V_t; σ_A is the asset volatility; T is the time until default occurs. T is set to be equal to one year when information on maturity structure of liabilities is not available is to set T equal one year. Song's null hypothesis was that the difference between DDs of the hypothetical pre-merger bank and the control bank (Goldman Sachs was the control bank given that it has not undergone any mergers in the studied period) is the same as the difference between DDs of the post-merger bank and the control bank, hence the merger had no added value on the banks' default risk; in other words, as Song put it, the banks are at the same distance to default point as two separate banks and as one merged bank. The alternative to the null hypothesis was that either banks are closer to the default point as two separate bank (efficient merger) or banks are closer to the default point as a merged bank (inefficient merger).

He concludes that the merger between Bank of America and Countryside Financial, with the smallest merger size among the three mergers he studied, increased the economies of scale of the two parties under the DD analysis: they are less likely to default as one fused bank than as two separate banks. His outcome suggested that when mergers go past a

certain threshold size, they become inefficient. This point was illustrated in the two mergers of Bank of America and Merrill Lynch, JP Morgan Chase and Bear Stearns. Notably, while the distance to default of the Bank of America and Merrill Lynch merger is worse post-merger, it recovers in the long run with the reduction of bank size.

E. Bank Consolidation and Merger Activity Following the Crisis – Kowalik, Davig, Morris, and Regehr

Kowalik, Davig, Morris and Regehr in the paper "Bank Consolidation and Merger Activity Following the Crisis" analyze the financial traits of banks with assets of $1 billion or less that were acquired in a voluntary merger by an unaffiliated bank 2011 to 2014. The importance of this paper lies in the portrayed characteristics of the acquired banks as to how I would be able to integrate, or make use of them in my model in Chapter IV. The reasons for bank mergers as outlined in the paper are as follows; opportunities are perceived to increase the total value of two or more separate banks by consolidating them into one entity (DeYoung and others). Owners of banks that are less profitable, less efficient, and more susceptible to future financial problems may aim to exit the industry by selling their businesses, while profitable and efficient banks may look for opportunities to expand (Hannan and Piloff; Jagtiani; Wheelock and Wilson).

They add that a bank can further increase its business and profitability over time by acquiring another bank and using the latter's resources; that could have been underused due to insufficient capital or ineffective management, to expand loans and other business lines. In addition to that, diversification to the asset portfolio, funding sources and fee generating activities, is introduced by Mergers and can also reduce their risk; whereby acquiring a

10

bank that operates in different markets or business lines will increase diversification. In order to reduce risk though, the acquiring bank must have a solid understanding of the new market's features and associated risks, along with expertise in new business lines, otherwise, the risk of the combined institution could rather increase.

In line with other literature, acquired banks tend to be smaller in size with a lower return on assets, lower net interest income, and higher non-interest expenses than non-acquired banks. Target banks may be less profitable since they tend to have a smaller loan portfolio and higher cash and deposit shares. Also, the condition of acquired banks tends to be inferior to their industry peers in terms of capital, supervisory examination ratings, and problem loans and assets. Among the features that differentiate targets, statistical analysis proposes that profitability and efficiency are the most important factors.

The outcome reached by Kowalik, Davig, Morris and Regehr suggested that mergers on average result in a sounder banking system and more efficient banks; leading to better access to credit at lower cost and hence be beneficial for the public. However, the benefits of mergers can be offset if the transaction makes local banking markets less competitive and limits the access of people to banking services and credit.

F. Assessment of Mergers and Acquisitions in Banking on Small Open Economy as Sustainable Domestic Financial System Development - Lina Novickytė Vilnius, Graziano Pedroja Juris Treuhand

The authors used quantitative and qualitative methods in analyzing the impact of bank mergers and acquisitions on Lithuania's financial system. The qualitative analysis has made it possible to the authors to present their own interpretation of the issue at hand, and has

given them a chance to approach the problem of the study in a comprehensive manner. The quantitative study allowed the analysis of dynamic regularities, performance and comparison of calculations, assessment of data interrelation and reliability. The article includes logical analysis and synthesis of studies dealing with bank mergers and acquisitions. Findings were as follows, mergers and acquisitions in banking take place to enhance the wellbeing of shareholders and to reach an economic effect; the aspect of stability in mergers and acquisitions is short-lived and is usually inspired by the government. Lithuania's modern banking market has evolved through mergers and acquisitions; strategic investors have helped countries with transitional economies ensure the stability of their banking systems and capitalize on economies of scale. Several large banks operating in a small open economy (and a transitional economy in particular) provide the backbone for the stability of its financial sector.

Mergers and acquisitions in banking are driven by factors of tangible and intangible synergy. The key motives, for entering into this type of transaction, vary with respect to the economic situation of each country. Notably, at times of recession, banks tend to merge driven by the promise of financial stability, yet usually deals are made in pursuit of economic benefits, which constitute return for and wellbeing of shareholders. The authors consider that the establishment of financial conglomerates creates a conflict between the country of origin and country of operation, and especially so when the financial conglomerate is about to run into financial distress. Also, financial conglomerates can take advantage of their significance in the market and become an institution that is "too big to fail", thus accepting relatively higher risks, which leads to a danger of moral damages. Analysis revealed that mergers and acquisitions in banking are an appropriate instrument to

ensure the development of a sustainable domestic financial system. Also, a strong investor gives the bank an opportunity to tackle its liquidity and capital issues; the residual joint bank has a bigger capital base, allowing it to extend credit to large-scale projects and issue syndicated loans. However, mergers and acquisitions sometimes may have their negative aspects: sometimes the value of the bank can be miscalculated in a merger or acquisition; the bank's goodwill resulting from a merger or acquisition can be depreciated with the bank establishing a term for such depreciation, which grants the bank an opportunity to manipulate its profits, a joint bank significantly increased market concentration levels, established a monopoly in the market and was in a position to take advantage of this situation, creating added value for itself.

G. Competitive Considerations in Bank Mergers and Acquisitions: Economic Theory, Legal Foundations, and the Fed - Christopher L. Holder

The interest in antitrust enforcement by federal authorities was renewed due to the increased number and size of bank of bank mergers over the past years. The Fed has adopted a two-stage approach to competitive issues in bank mergers: first to determine whether a competitive problem migh exist and then, if that is the case, determining whether the propsed acquisition would have an adverse anticompetitive effect.

The article by Christopher L. Holder entitled "Competitive considerations in Bank Mergers and Acquisitions: Economic Theory, Legal Foundations, and the Fed" summarizes the Fed's first approach to antitrust analysis and presents the economic theory and legal framework behind it, in addition to the empirical evidence both for and against the Fed's approach (Holder) . It concludes that certain elements are necessary for each evaluation, for

13

instance specification of the correct geographic and product markets in which competitve effects take place, in addition to determining the direct and potential competitors and analyzing the effect of emrgers on the structure of individual markets. It is also important that the analysis done on the application of mergers be done on a case by case basis.

In chapter III below, I discuss briefly the acquisition of Merrill Lynch by Bank of America in 2008 and that of ABN AMRO by the RBS Consortium in 2007. Both would constitute relevant references for the qualities of the target Banks.

CHAPTER III

CASE STUDIES

A. Bank of America – Merrill Lynch

During 2008, during the financial crisis, Bank of America acquired Merrill Lynch through a $50 billion deal that came as Merrill Lynch was on the verge of collapse, hence effectively rescuing it from bankruptcy. A group of five plaintiffs, consisting mainly of funds in Texas accused the bank and its officers of making false or misleading statements about the health of Bank of America and Merrill Lynch and were planning to seek $20 billion if the case went to trial. Bank of America denied these allegations that went on for three years and agreed to pay $2.43 billion to settle a class-action lawsuit with investors who owned or bought its shares when the bank purchased Merrill Lynch in 2008 (Patel).

Major players in this transaction were mainly Bank of America, BOA CEO Ken Lewis, Merrill Lynch & Co and CEO John Thain, Shareholders and Board of Directors of both parties. In addition to the Securities and Exchange Commission (SEC), the Government and Economy of the United States of America and Ben Bernanke, the Federal Reserve chairman at the times, who, according to Lewis, insisted that he did not back out of the deal.

The following section describes the events and background leading to the transaction:

Countrywide Financials, America's largest mortgage lender at the time, had huge exposure in the subprime market with approximately 900 offices and $200 billion in assets but

15

consequently was forced to draw down on its entire $11.5 billion credit line. Countrywide was blamed by regulators for helping feed the housing bubble by offering loans to high-risk borrowers, thus there was very little hope of government help for Countrywide. This opportunity was seized by Ken Lewis who aimed to enhance the bank's role in mortgage banking. There were hopes that this investment would bring some confidence in the market with BOA owning 16% of Countrywide, but the latter's stock collapsed, and Bank of America bought Countrywide for $4.1 billion.

Former Merrill Lynch CEO Stan O'Neal said that taking on more risks should generate higher returns. Merrill Lynch acquired mortgage origination companies so collateral could be readily available, after entering the mortgage market by repackaging and selling home loans on the debt markets and became the largest issuer of CDOs with AIG as its partner. Merrill Lynch had issued $136 billion worth of CDOs by the end of 2008 even though AIG had stopped insuring issuances by Merrill Lynch since 2005 no matter how high-rated they were because of its aggressive underwriting policies, but Merrill Lynch was high-profit-oriented. Merrill Lynch, like many others, did not record its position in the market, when the subprime market slowed down and the entire CDO market unraveled, and credit rating agencies (and the market) had failed to anticipate the possibility of significant downfall in the housing market.

In late 2007, John Thain failed to understand the extent of Merrill Lynch's financial condition, which he later acknowledged. But the bank was in serious trouble with losses of $10 billion in CDOs in 2008. Thain approached Bank of America CEO Ken Lewis, with the support of the New York Federal Reserve Bank, to sell the company although Thain

had initially turned down the offer from Lewis, he ended up selling Merrill Lynch for $50 billion, at $29 per share. It is notable that the investment firm had assets worth more than $1.02 trillion and more than 60,000 employees worldwide, therefore once it acquired Merrill Lynch, Bank of America became more universal. Bank of America was mainly concerned with the actual worth of Merrill Lynch in 2008, with rapid fluctuations in the market environment. However, Lewis aimed to buy the company because its 16,000 investment advisors, which would fill a gap in Bank of America's product line (Patel).

Bank of America auditors performed due diligence for a potential merger, during the weekend of the September 13, 2008. Also, on September 15, an agreement was publically announced. At the beginning of December, Lewis knew that Merrill Lynch's losses (which exceeded $13 billion) were going to be far worse than expected. Lewis sought advice from Bank of America's legal department and considered backing out of the Merrill Lynch deal. Ken Lewis met with Ben Bernanke and Paulson in December 2008; who urged him not to back out to avoid creating systemic risk to the U.S. economy and to avoid difficulty of access to assistance from the government and the replacement of the Board of Directors and management by the latter. The purpose was to show the market that the big banks of Wall Street were cooperating to keep the system running that even though Lehman had failed.

Over the month, the government negotiated a deal with Bank of America that included an additional direct aid of $20 billion and backing an additional $118 billion to cover potentially bad assets held by Merrill Lynch; noting that all these discussions were not officially disclosed not to create systemic issues in the overall financial system, and

additional losses were not communicated by Lewis and the Board of Directors to the shareholders.

After the acquisition was finalized, Bank of America allowed Merrill Lynch's executives to allocate bonuses of about $3.6 billion before the deal closed, without a public announcement; which triggered an unexpected –neither by Lewis nor Thain- state investigation after these bank executives lived in an elite bubble of their own making. Strangely, Thain did not seem to realize it was wrong to distribute bonuses out to poorly performing employees –whose actions led to the detrimental losses-, with the recourse to taxpayers' money to bail out the bank.

Most of the money would be paid out in cash before the deal closed, at Bank of America's request since this early payment would actually lessen expenses for Bank of America in 2009, making it easier for BOA to hit its Q1 numbers. Thain had also negotiated the title "President of Global Banking, Securities and Wealth Management "for himself: he would be in charge to plan and execute the merger of Merrill Lynch's banking and trading business with that of Bank of America. With this deal, Merrill Lynch employees would arise as winners, with thousands of Bank of America staffers replaced by their Merrill Lynch counterparts.

After bonuses were paid and word of the acquisition got out, criticism focused on the very high price and associated risks. Some argued that Bank of America should have waited for the markets to adjust after the news of Lehman Brothers bankruptcy, regardless of pressure from the U.S. government.

B. The RBS Consortium – ABN AMRO

The following case targets a cross-border transaction: The RBS Consortium – ABN AMRO

In April 2007, the European Commission ordered Dutch regulators to permit the takeover

of ABN AMRO (hereon referred to as ABN). Shortly after, ABN received a takeover bid

for €66 billion from Barclays Bank. A couple of days later the RBS Consortium, led by the

Royal Bank of Scotland (RBS), including Fortis Bank and Banco Santander, made an

bigger offer of €72 billion, out of which €50 billion would be paid in cash and the

remainder would be constituted of shares in RBS. For starters, it is important to give an

idea of the size of ABN AMRO's operation at the time; it was founded in 1824, it is ranked

as the Eighth bank in Europe with total operating income of €22.658 billion. ABN is

headquartered in Amsterdam, with more than 4,500 branches in 53 countries and employed

more than 105,000 people before the takeover. Therefore in the case of ABN AMRO, you

have a bank with an important presence in the European banking market and its

performance was far from suggesting that it was in any financial complications.

 As the eighth largest bank in Europe, combination of ABN and RBS –or even Barclays-

would allow the new owners of ABN to move up into the league of some of their American

counterparts. (fsteurope.com)

As for the significance of this transaction, the takeover is unmatched in terms complexity

and size and is very significant as it is the world's biggest banking transaction to date and

the first cross-border takeover of a European bank It is interesting that the acquisition was

for a perfectly solvent conglomerate, given that usually such acquisitions happen in

situations where there is a gap between two organizations or where one party is in financial

crises; also, no European bank had ever submitted to a cross-border hostile bid.

An important factor governing the transaction was ABN's sale of its US banking division –
LaSalle- to Bank of America for a total of about €12 billion in cash.

As for the bids in place, the takeover is classified as hostile because the board of ABN
AMRO did not recommend either the offer from the RBS Consortium or Barclays. It was
therefore the shareholders who were influential in voting: shareholders will naturally
support the offer that carries them the largest gains. Among ABN's largest shareholders
were pension and fund managers, and because they own such a large proportion of the
shares their votes were crucial (Ultimate Law Guide).

The Consortium was competing against Barclays Bank, which had plans to acquire ABN
with a €65 billion bid in March 2007. Market forces including the credit crunch and the
consequent support offered by the Bank of England, pushed down Barclays' share price,
preventing it from matching the €70 billion proposed by the RBS Consortium; the offer
was cash rich and looked more appealing to the ABN shareholders than the equity-heavy
offer from Barclays, which was diluted by the fall in its share price.

The shareholders struggled to choose between the larger offer from the RBS
Consortium, which would split ABN, and the lower offer from Barclays, which was
decreasing daily due to the fall in share price but which would ultimately keep the entire
ABN organization together (Ultimate Law Guide). It will be no wonder that the higher
offer was preferred in the US or Britain. Barclays was aiming to create a new global bank
which would later become one of the world's largest financial institutions but the RBS
Consortium answered by initiating a charm offensive to persuade the authorities that its
plan to fragment ABN was not such an awful suggestion. ABN bosses favored the offer

from Barclays since it would have kept the organization intact and the headquarters in the Netherlands.

One aspect worth noting would be the cultural difference between the Dutch shareholders on one hand and British or US shareholders on the other. The complexity and potential for conflict in the RBS Consortium's proposal was immense whereby the plan was to split the bank into three parts, each member of the RBS Consortium taking control of the parts of the banks they were best placed to handle. In practice, this meant that RBS would take over ABN's wholesale operation and its Asian business; Santander would take control of the retail banking franchises in Italy and Brazil; and Fortis would take over the Dutch retail operation, and the asset management and private banking arms.

On 8 October 2007, the RBS Consortium announced that it had secured the bid for ABN after eight months of negotiation and the reason why the Barclays offer deceased was eventually because it did not meet its deadline for securing majority shareholder support. The RBS Consortium, on the other hand, prevailed and its bid was approved by 86 per cent of ABN shareholders, exceeding the 80 per cent threshold required to secure the deal.

RBS and Fortis soon ran into serious distress: just as the financial crisis of 2007–2010 started, the large debt incurred to fund the takeover had depleted the banks' reserves. Consequently, the Dutch government interfered and bailed out Fortis in October 2008, before separating ABN AMRO's Dutch assets –which had primarily been allocated to Fortis- from those owned by RBS, which were effectively assumed by the British Government due to its bail-out. The operations owned by Santander, particularly those in Italy and Brazil, were either merged with Santander, sold or eliminated.

21

The Dutch government appointed former Dutch finance minister Gerrit Zalm as CEO to stabilize and restructure the bank, and in February 2010 the assets it owned were legally separated from those owned by RBS creating two separate organizations, ABN AMRO Bank N.V. and The Royal Bank of Scotland N.V. The former was merged with ABN AMRO Private Banking, Fortis Bank Nederland, the private bank MeesPierson (formerly owned by the original ABN AMRO and Fortis) and the diamond bank International Diamond & Jewelry Group to create ABN AMRO Group N.V., with the Fortis name let go on 1 July 2010. The remainder of the original ABN AMRO that was still owned by The Royal Bank of Scotland N.V., meanwhile, was renamed, sold or closed. The Dutch government has stated that ABN AMRO would remain state-owned until at least 2014, and afterwards would consider a public stock market listing for the bank.

It is important to discuss at this point the economic effects of such mergers, arguments to approve or reject such transactions are listed in table 1 below:

Approval	Rejection
Static efficiency (cost saving)	Creation of monopolies and market dominance
Increased efficiency	Merger can deter actual or potential competition
Role of the capital markets (to sort out mergers which fail to deliver forecasted benefits)	Imperfections in the capital markets (unsuccessful managements may remain in place for some time)
Market contestability (free market to encourage competition)	Employment (loss of jobs)
Investment (higher level of capital investment)	
Globalisation (improve competitive position of EU companies)	
Enhanced economic integration within the EU	

Table 1: Economic factors for approving or rejecting mergers (the Ultimate Law Guide)

CHAPTER IV

THE MODEL

The model I present hereunder intends to present a score range indicating the likelihood of being acquired. Accordingly, any bank scoring within this range hits a *Hot score* making that bank a potential target for acquisition. Following Song's application of the Distance to Default in 2012 (Song, 2012), I aim to measure the Distance to Acquisition by making use of a bank's fundamentals and surrounding economic environment at a time prior to the announcement (for instance, if the announcement happens at year T, the input data would be provided from the year ending at 31 December T-1); in short I will try to predict the likelihood of a bank being acquired (through a merger or acquisition) in the coming year with respect to its performance in the base year.

I use the Bloomberg Terminal as a source for all my input data, and target US banks whose acquisition (or merger) was announced throughout the period starting January 1st 2002, ending December 31st 2015. The dataset consists of all banks operating in the US market and were acquired through an M&A transaction with an announcement date falling in the period specified above in addition to their acquirers representing the likelihood of not being acquired; the sample size at this point is 5,999 banks, depending on the financial data availability this figure may vary. The size and fate of the acquisition will not be of interest for my model at this stage, also, I need not to worry about any duplication since it would not be possible for a bank to be acquired by the same acquirer more than once in the same year, and in the case where the bank has overcome many acquisitions, each entry would

have a different fundamentals given the variation of years. I will obtain all the financial data (discussed below) of the banks by importing them from Bloomberg as well.

All fundamentals discussed in this section will be those of the year closing prior to the announcement date of the acquisition (T-1). I will implement the following financial indicators in my model and discuss their respective proxies (ratios):

Liquidity is represented in my model by the current ratio (Current Assets to Core Deposits). In theory, a bank operating at a current ratio of 1 is capable of meeting short term obligations with current assets' conversion to liquid cash. Liquidity is a measure of Banks ability to pay off due debts as they mature, or in other words, to gain reach to their money (cash) when need be. Liquid assets or liabilities are those that mature within one year. Less liquid banks are more likely to default, making them prone to be acquired. Theory suggests a negative relationship between the likelihood of being an acquisition target and a healthy liquidity. I expect my results to reflect this relationship whereby giving a relevant probability weight to my λ.

Solvency, to which I will use the Solvency ratio as a proxy. Given the data availability, solvency ratio (SR) will be calculated as EBIT to total liabilities (conservative perspective). Solvency will be defined as the bank's ability to meet long-term obligations, hence conserving the equity side of the balance sheet. A solvency ratio of 1 indicates the ability to equally match long term obligations from earnings. As for liquidity, solvency is negatively related to the likelihood of acquisition, i.e. the higher the solvency ratio, the lower the likelihood, but given that solvency is a major factor when bank's aim to acquire other banks, I expect the model to allocate an indicative weight to solvency when estimating $\hat{H}$.

24

Sustainable profitability is represented in my model by the Return on Assets ratio (EBIT to Total Assets). Literature focuses on the negative relationship between ROA and the likelihood of a bank being a target for acquisition, for a simple reason that a bank not generating lower than required returns on the total balance sheet must suffer from an inefficiency (cost allocation, use of resources…) hence the need for restructuring.

In addition to bank-specific variables, I will introduce economy-related variables to account for the systemic impact of the economy on the banking sector.

Real interest rate growth as a proxy for the cost of debt as the appeal for debt financing from the acquirer's perspective, and the debt burden from the target's perspective. The higher the cost of debt, the higher the probability of the target's default, but also the cost of acquisition would increase, so this factor is subject to the willingness of the acquirer to borrow money to finance the acquisition or even repay the target's debt. Therefore I have no final assumption in this respect. I use the 3-month US treasury bills rate as a proxy for the real cost of debt. The data is retrieved on quarterly basis and reflects the change in actual interest rate at the closing of each quarter with respect to the preceding quarter.

GDP growth is included in my model to reflect the effect of the economic situation on the acquisition announcement. The relationship is not clear at this stage given its nature, as for the cost of debt. In fact, in periods of low growth, targets are expected to underperform the market hence making them prone to be acquired, but on the other hand, acquirers would not be willing to invest that largely in such times unless the target is a real "catch". GDP is that of the US, retrieved on a quarter over quarter basis; that is each value allocated to a given end of quarter is the growth of GDP from the preceding quarter.

25

A. Methodology

Distance to default (DD) adopted by Wenting Song (2012) is an application of the Merton model (1974) of assessing credit risk of companies. Gropp, Vesala, and Vulpes (2006) that it is also powerful in evaluating bank fragility. Harada and Ito (2008) use DD to evaluate fragilities of Japanese banks, they find that mergers between Japanese mega-banks have no added value to the merged banks and are merely taking advantage of the too-big-to-fail policy. A quick overview on how Song's model works is as follows; it measures the probability of defaulting within one year if the banks keep their current assets and liabilities. Following Harada and Ito (2008), Song defined DD as:

$$DD_t = \frac{log\frac{V_t}{L_t} + \left(\mu_A - \frac{1}{2}\sigma^2{}_A\right)T}{\sigma_A\sqrt{T}}$$

V_t represents the market value of bank assets at time t; L_t: bank liabilities at time t; μ_A is the mean growth rate of V_t; σ_A is the asset volatility; T is the time until default occurs. T is set to be equal to one year when information on maturity structure of liabilities is not available is to set T equal one year. Song's null hypothesis was that as he put it, the banks are at the same distance to default point as two separate banks and as one merged bank. The alternative to the null hypothesis was that either banks are closer to the default point as two separate bank (efficient merger) or banks are closer to the default point as a merged bank (inefficient merger).

Taking the model by Song as a starting point, I intended to study the viability of a banks merger through a model that could predict the likelihood of failure of the merger subject to pre-merged banks fundamentals and post-merger performance. However, this model was not feasible at this stage for given the complexity of the panel data I would be dealing with

26

(qualitative and quantitative complexity) and the lack of technical access to deal with such dataset. I then decided to study one side of the equation: the target. What makes a Bank a target for acquisition? Theory suggested, as stated previously, that factors such as, but not limited to liquidity, solvency, profitability and cost of debt could be the most influential criteria. From there, I decided to introduce the parameter "Distance to Acquisition" as a probability of a bank being a likely target for acquisition within a year scope. I first collected data on banks operating in the US and were announced to be acquired through the period ranging from beginning of 2002 until the end of 2015. The dataset consisted of targets only. I was aiming to use a two-stage model whereby I run OLS on the data on hand in order to find respective coefficients for each proxy as a first stage, then calculate the likelihood with respect to the case-specific fitted dependent variable subject to a specified range. I overlooked the fact that a system of hundreds of equations that all had a solution of "1" was not feasible since OLS would return a zero relationship between all equations (i.e. zero estimators). On a side note, OLS would not have been efficient and the two-stage model would have not been accurate in the sense that all the input needed to forecast the likelihood was linked and formed a circular relationship. Therefore, I figured I should use the PROBIT analysis, as a way to reach my conclusion in a one-stage model that is specific to cases like mine, whereby the dependent variable is a dummy variable. Employing PROBIT on the data as given would not have worked, given that the dependent variable had no variance (all input related to my dependent variable was equal to "1"); therefore I realized I had to include the Acquirer in my dataset with a "0" likelihood of being acquired. This gave my dependent variable a variance, and the model was set to be tested, as follows:

27

I will use a dummy variable to depict that the bank has been an acquisition target (TARGET=1, ACQUIRER=0) and will employ it as my dependent variable as a first-step application to the model. Hence, the model will become as follows:

$$H = \alpha + \lambda X_1 + \varsigma X_2 + \rho X_3 + \iota X_4 + \gamma X_5 \qquad (1)$$

H will be set to 1 in the case where the bank is a target, and 0 when the bank is an acquirer, also I will give values to X_1 (current ratio), X_2 (Debt to Equity ratio), X_3 (Return on Assets), X_4 (Growth in Real Interest Rates), and X_5 (GDP growth) subject to the coefficients for λ, ς, ρ, ι, γ respectively representing liquidity, solvency, profitability, cost of debt and economic growth.

Given the nature of my dependent variable –dummy variable- I use the PROBIT analysis to measure the likelihood of a bank being acquired subject to the fundamentals representing liquidity, solvency, profitability in addition to the cost of debt and economic growth.

First, I explain the technique to be used. Logit / Probit regression is a nonlinear regression model that results in (1, 0) outcome for a (1, 0) dependent variable. The outcome is the probability of the depending variable being equal to 1, i.e. the acquisition event to happen. My sample consists of a standard normal distribution (Θ), hence the use of PROBIT. The model, following Stock & Watson retrieved from the Introduction to Econometrics book, (key concept 9.3) (Watson & Stock, 2007), is as follows:

$$Pr(Y = 1|X_1, X_2 \ldots X_k) = F(\beta_0 + \beta_1 X_1 + \beta_2 X_2 \ldots \beta_k X_k) \quad (2)$$

$$Pr(Y = 1|X_1, X_2 \ldots X_k) = \frac{1}{e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 \ldots \beta_k X_k)}} \quad (3)$$

$$Pr(Y = 1|X_1, X_2 \ldots X_k) = \frac{1}{1 + \left(\frac{1}{e^{(\beta_0 + \beta_1 X_1 + \beta_2 X_2 \ldots \beta_k X_k)}}\right)} \quad (4)$$

The obtained coefficients for each independent variable are in log-odds units, and cannot be interpreted the same way as OLS estimators, hence the need to replace the values of X in the PROBIT function in order to obtain $\hat{H}$, the estimated "hit score" designating the predicted probability of a the subject bank being an acquisition target (acquisition announcement to happen).

I run the Augmented Dickey Fuller unit root test on my independent variables at level, all of them are stationary (noting that economic indicators are by nature (q.o.q) taken in differenced form) (tables 4-8). Based on the output generated by the correlogram of standardized residuals, the data does not suffer from autocorrelation starting the second lag (36 lags included) (table 9).

I run the regression based on equation (1) and get the following coefficients:

α	3.769603
λ	-0.902316
ς	-0.346452
ρ	-11.01368
ι	1.003903
γ	-34.59883

I then implement the values in the table above in the probit model as stated in equation (4).

I will then compare Ĥ to H as a back-test procedure, I aim to be more than 90% accurate in order to consider the model as valid. Finally I will use my model on an acquired bank that was not included in my dataset. The cut-off value for Ĥ is aimed to be 65% in order to consider a bank as "target".

B. Results

Results were interesting, the final dataset consisted of 347 entries (lack of available accurate data) and each entry resulted in an Ĥ that deviated from the initially assigned H (0, 1) by an average of 3.6%, fitting in my 90% confidence interval.

$$\hat{H} = 3.77 - 0.90\,X_1 + 3.50X_2 - 11.01X_3 + 1.00X_4 - 34.60X_5 \tag{5}$$

$$\Pr(Y = 1 | X_1, X_2 \ldots X_k) = \frac{1}{1 + \left(\frac{1}{e^{(3.77-0.90\,X_1 + 3.50X_2 - 11.01X_3 + 1.00X_4 - 34.60X_5)}}\right)} \tag{6}$$

Equations (5-6) represents the fitted model, coefficients are significant at the 5% level and the likelihood ratio is significant at the 5% level as well (table 2).

In addition, I ran a random test with estimators of X_1 through X_5 that I assigned: first case was a bank with $X_1 = 1.5$, $X_2 = 1.2$, $X_3 = 11\%$ operating in an environment with $X_4 = 5\%$ and $X_5 = 2\%$. The resulting Ĥ was equal to 53.7%, the bank has a healthy matching of maturities and is profitable. This outcome is in-line with theory whereby fundamentals are healthy and the economic environment is booming, hence the appeal to acquire it given economic circumstances but the high cost given the bank's standing. On the other hand, I run a second case of a bank with $X_1 = 0.5$, $X_2 = 0.3$, $X_3 = 1\%$ operating in same economic environment. The resulting Ĥ was equal to 92.2%; in a booming economic environment, an underperforming bank is highly likely to be acquired.

30

At this point, I would like to extend the model and relax the assumption with respect to the GDP growth in order to focus on the stand-alone acquisition risk of a bank based solely on its performance and cost of debt. This model would give a more practical view on the likelihood of acquisition given that many cases throughout the history of corporate finance disregard the business cycle in which the economy stands and target a bank for acquisition.

$$\hat{H} = 2.67 - 0.66\,X_1 - 0.40\,X_2 - 8.65\,X_3 + 1.14X_4 \tag{7}$$

$$\Pr(Y = 1|X_1, X_2 \ldots X_k) = \frac{1}{1 + (\frac{1}{e^{(2.67 - 0.66\,X_1 - 0.40\,X_2 - 8.65\,X_3 + 1.14X_4)}})} \tag{8}$$

Results were expected, the final dataset consisted of 347 entries (same as first trial) and each entry resulted in an $\hat{H}$ that deviated from the initially assigned H (0, 1) by an average of 5%, fitting in my 90% confidence interval.

Equations (7-8) is the fitted equation to estimate $\hat{H}$ while relaxing the effect of GDP growth on the likelihood of acquisition, coefficients are significant at the 5% level (table 3) and the likelihood ratio is significant at the 5% level as well (table 3). I then run the same random test on two random banks with the same coefficients as the example stated above (refer to example with effect of GDP growth included). Likelihoods of acquisition of a bank with good financial standing and another that's underperforming, at T+1 are respectively 57% and 90%. Comparing both situations, results generated in the model after GDP growth effect was relaxed are more reflective of the real acquisition risk that a bank faces based on its fundamentals.

In short, the model is in line with theory whereby the likelihood of a bank being an acquisition target is negatively related to its performance and positively related to the cost of debt.

I intended to exclude the data pertaining to Merrill Lynch for the year 2006 (T-1 to acquisition announcement) in order to use it as a proxy for my model's effectiveness. I will shortly discuss the aspects related to liquidity, solvency and profitability and test the outcome. I will retrieve the data from the Merrill Lynch financial report of the year ending December 2006, but given that they are posted in Swiss Francs, I will use the average CHF/USD rate of December 2006 of 0.826 and report my values in US Dollars. The report showed current loans for USD 78,634,374, short term liabilities as dues to customers for USD 31,527,650, non-current liabilities for USD 1,715,501,542, total assets for USD 2,453,078,738 and EBIT of USD 47,798,762 (bearing in mind that this is an optimistic figure from which all interest expense is excluded) and a net income of USD 28,772,698. The proxy for liquidity in this case will be equal to 2.49; that of solvency equal to 0.03 and the proxy for profitability equal to 0.01. The growth in the cost of debt in the period of acquisition was -4.5%. Plugging the values in the modified model produces an $\hat{H}$ of 70.6% above the cut-off likelihood of 65%. This means that my model is accurate at 70% given that Merrill Lynch was eventually announced to be acquired in 2007 (beginning of second quarter).

CHAPTER V

CONCLUSION

In the Banking sector, mergers and acquisitions have become common in most of the areas in the world and many domestic and international banks are involved in those activities (Dimopoulos & Sacchetto, 2014). It is important to note that mergers and acquisitions in the banking sector are forms of horizontal merger (as opposed to vertical) given that the merging entities are involved in the same kind of business. Nonetheless, some non-banking financial institutions could also be merged with other banks if they prove to have an added value to the resulting complex.

I use the PROBIT analysis to estimate the likelihood of a given bank being acquired subject to independent variables representing liquidity, solvency, profitability, cost of debt and economic growth. The obtained coefficients for each independent variable are in log-odds units, and cannot be interpreted the same way as OLS estimators, hence the need to replace the values of X in the PROBIT function in order to obtain $\hat{H}$, the estimated "hit score" designating the predicted probability of a the subject bank being an acquisition target (acquisition announcement to happen).

The final dataset consisted of 5999 entries out of which 347 were used to estimate the model (lack of available accurate data) and each entry resulted in an $\hat{H}$ that deviated from the initially assigned H (0, 1) by an average of 3.6%, fitting in my 90% confidence interval. The original followed the theory behind Song's Distance to Default (Song, 2012) that estimated how far is a post-merger bank from defaulting on its debt; I used the

PROBIT analysis to estimate the likelihood of a bank to become an acquisition target

subject to its liquidity, solvency, profitability, change in cost of debt and GDP growth.

Then I relaxed the effect of GDP growth to measure the stand-alone effect of a bank's

fundamentals on the probability of its acquisition. The estimated likelihood matched the

original likelihood associated with each bank (dependent variable was H(1,0) with 1 being

the positive outcome: bank was an acquisition target.). An arbitrary test was effected to

conclude whether the model's outcome is "intuitive", which it were. In addition to the

aforementioned, the model was 70% accurate when back-testing the case of the acquisition

of Merrill Lynch back in 2007.

Limitations were the data availability and the complexity of modelling panel data

for such a large original dataset in order to account for the historical effect of a bank's

performance on its likelihood of being a target for acquisition. Also, political and

regulatory effects were not taken into consideration. It is important to keep in mind that my

model can be extended further to include more factors to enhance its accuracy and practical

convenience.

BIBLIOGRAPHY

ABN AMRO. (7 October 2009). Split into the new ABN AMRO Bank and RBS N.V. in the 1st quarter of 2010 (Press release).

ABN AMRO. (8 February 2010). ABN AMRO completes legal demerger (Press release).

Bank of America's Merrill Scandal Reignites. (n.d.). Retrieved from http://www.cjr.org/the_audit/bank_of_americas_merrill_scand.php

Becher, D. A. (2000). The Valuation Effects of Banks Mergers. *Journal of Corporate Finance - ELSEVIER*, 189-214.

Bloomberg L.P. (2016) Retrieved January 30, 2. f. (n.d.).

Countrywide Financial Problems. (n.d.). Retrieved from http://www.ehow.com/about_5444985_countrywide-financial-problems.html

Craig, J. S.-G. (September 2012). Bank of America Settle Suit Over Merrill for $2.43 Billion.

Dimopoulos, T., & Sacchetto, S. (2014). Merger Activity in Industry Equilibrium.

Economy Watch. (2010, July 16). Mergers and Acquisitions in Banking Sector.

European Merger Policy – merger policy. (n.d.). Retrieved from http://tutor2u.net/economics/content/topics/Europe

Holder, C. L. (n.d.). Competitive Considerations in Bank Mergers and Acquisitions: Economic Theory, Legal Foundations, and the Fed .

How the Thundering Herd Faltered and Fell. (n.d.). Retrieved from

http://www.nytimes.com/2008/11/09/business/09magic.html?pagewanted=all

James H. Stock, M. W. (2007). *Introduction to econometrics.* 2nd ed., Boston: Pearson

Addison Wesley.

John R. Graham, C. R. (n.d.). The theory and practice of corporate finance: evidence from

the field .

Knee, J. (n.d.). The Accidental Investment Banker: Inside the Decade that Transformed.

Oxford: Oxford University Press.

Larsen, T. (n.d.). RBS Consortium to take control of ABN with board nominations.

Financial Times.

Lina Novickytė Vilnius, G. P. (n.d.). Assessment of Mergers and Acquisitions in Banking

on Small Open Economy as Sustainable Domestic Financial System Development .

Linda K. Trevino, K. A. (2010). Managing Business Ethics. Fifth Edition.

Mahar, J. &. (26 November 2003). The battle for Natwest.

Mergers And Acquisitions - M&A. (2015). Retrieved from Investopedia.com:

http://www.investopedia.com/terms/m/mergersandacquisitions.asp?layout=infini&v

=3A

Merrill Lynch. (2006). Annual Report .

Michal Kowalik, T. D. (2014). Bank Consolidation and Merger Activity Following the

Crisis. *The Economic Review .*

O.C. Ferrell, J. F. (n.d.). *Business Ethics, Ethical Decision Making & Cases*. Ninth Edition.

Patel, P. (n.d.). *Bank of America's Takeover of Merrill Lynch*. Retrieved from Seven Pillars
     Institute for Global Finance and Ethics: http://sevenpillarsinstitute.org/case-
     studies/bank-of-americas-takeover-of-merrill-lynch

RBS. (6 February 2010). ABN AMRO Group announces the legal renaming of ABN
     AMRO Bank N.V. to The Royal Bank of Scotland N.V. (PDF) (Press release).

Sender, G. F. (March 2009). The shaming of John Thain. *Financial Times*.

Shareholders Transparency Demands Rise. (n.d.). Retrieved from
     http://www.ethicsworld.org/corporategovernance/corporatereputation.php

Sharpening the knives. (26 April 2007). *The Economist*.

Song, W. (2012). Were Bank Mergers Following the 2008 Financial Crisis Efficient? Three
     Case Studies.

Stewart, D. (8 October 2007). RBS seal the ABN Amro deal. *Banking Times*. Retrieved
     from http://www.bankingtimes.co.uk/08102007-rbs-seal-the-abn-amro-deal/

Triple play. (11 October 2007). *The Economist*.

Ultimate Law Guide. (n.d.). Retrieved from www.ultimatelawguide.com

Appendix

Dependent Variable: H
Method: ML - Binary Probit (Quadratic hill climbing)
Date: 02/03/16   Time: 21:56
Sample: 1 347
Included observations: 347
Convergence achieved after 11 iterations
Covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	3.769603	0.647509	5.821703	0.0000
LIQUIDITY	-0.902316	0.280627	-3.215356	0.0013
SOLVENCY	-0.346452	0.159269	-2.175264	0.0296
PROFITA	-11.01368	2.513303	-4.382155	0.0000
COD	1.003903	0.352907	2.844664	0.0044
GROWTH	-34.59883	12.51652	-2.764252	0.0057

McFadden R-squared	0.889763	Mean dependent var		0.680115
S.D. dependent var	0.467105	S.E. of regression		0.152055
Akaike info criterion	0.172772	Sum squared resid		7.884119
Schwarz criterion	0.239331	Log likelihood		-23.97592
Hannan-Quinn criter.	0.199273	Deviance		47.95184
Restr. deviance	434.9871	Restr. log likelihood		-217.4935
LR statistic	387.0352	Avg. log likelihood		-0.069095
Prob(LR statistic)	0.000000			

Obs with Dep=0	111	Total obs		347
Obs with Dep=1	236			

Table 2: PROBIT model ran including effect of GDP growth

Dependent Variable: H
Method: ML - Binary Probit (Quadratic hill climbing)
Date: 02/04/16   Time: 20:10
Sample: 1 347
Included observations: 347
Convergence achieved after 11 iterations
Covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	2.668739	0.318875	8.369232	0.0000
LIQUIDITY	-0.659061	0.252108	-2.614201	0.0089
SOLVENCY	-0.400950	0.154671	-2.592278	0.0095
PROFITA	-8.646390	1.958330	-4.415186	0.0000
COD	1.143447	0.331530	3.448999	0.0006

McFadden R-squared	0.865570	Mean dependent var		0.680115
S.D. dependent var	0.467105	S.E. of regression		0.159832
Akaike info criterion	0.197335	Sum squared resid		8.736783
Schwarz criterion	0.252800	Log likelihood		-29.23756

Hannan-Quinn criter.	0.219419	Deviance	58.47513
Restr. deviance	434.9871	Restr. log likelihood	-217.4935
LR statistic	376.5120	Avg. log likelihood	-0.084258
Prob(LR statistic)	0.000000		
Obs with Dep=0	111	Total obs	347
Obs with Dep=1	236		

Table 3: PROBIT model ran excluding effect of GDP growth

Null Hypothesis: LIQUIDITY has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=16)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.990239	0.0017
Test critical values:	1% level	-3.449108	
	5% level	-2.869701	
	10% level	-2.571187	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LIQUIDITY)
Method: Least Squares
Date: 02/03/16   Time: 22:13
Sample (adjusted): 3 347
Included observations: 345 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LIQUIDITY(-1)	-0.108026	0.027073	-3.990239	0.0001
D(LIQUIDITY(-1))	-0.160418	0.053372	-3.005644	0.0028
C	0.520160	0.397058	1.310035	0.1911

R-squared	0.088415	Mean dependent var	0.000551
Adjusted R-squared	0.083084	S.D. dependent var	7.276385
S.E. of regression	6.967555	Akaike info criterion	6.729063
Sum squared resid	16603.01	Schwarz criterion	6.762485
Log likelihood	-1157.763	Hannan-Quinn criter.	6.742374
F-statistic	16.58538	Durbin-Watson stat	2.012896
Prob(F-statistic)	0.000000		

Table 4: ADF unit root test - Liquidity

Null Hypothesis: SOLVENCY has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=16)

			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-10.41139	0.0000
Test critical values:	1% level		-3.449108	
	5% level		-2.869701	
	10% level		-2.571187	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(SOLVENCY)
Method: Least Squares
Date: 02/03/16   Time: 22:13
Sample (adjusted): 3 347
Included observations: 345 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SOLVENCY(-1)	-0.723589	0.069500	-10.41139	0.0000
D(SOLVENCY(-1))	-0.138041	0.053614	-2.574712	0.0105
C	0.235602	0.056977	4.135056	0.0000

R-squared	0.430603	Mean dependent var	-0.001031
Adjusted R-squared	0.427273	S.D. dependent var	1.281685
S.E. of regression	0.969962	Akaike info criterion	2.785539
Sum squared resid	321.7628	Schwarz criterion	2.818961
Log likelihood	-477.5054	Hannan-Quinn criter.	2.798849
F-statistic	129.3177	Durbin-Watson stat	2.030633
Prob(F-statistic)	0.000000		

Table 5: ADF unit root test - Solvency

Null Hypothesis: PROFITA has a unit root
Exogenous: Constant
Lag Length: 10 (Automatic - based on SIC, maxlag=16)

			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-5.855800	0.0000
Test critical values:	1% level		-3.449620	
	5% level		-2.869927	
	10% level		-2.571307	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(PROFITA)
Method: Least Squares
Date: 02/03/16   Time: 22:13
Sample (adjusted): 12 347
Included observations: 336 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PROFITA(-1)	-0.527707	0.090117	-5.855800	0.0000
D(PROFITA(-1))	-0.060474	0.081374	-0.743158	0.4579
D(PROFITA(-2))	0.341526	0.079524	4.294638	0.0000
D(PROFITA(-3))	0.228281	0.087977	2.594788	0.0099
D(PROFITA(-4))	0.380734	0.099550	3.824562	0.0002
D(PROFITA(-5))	0.739482	0.122336	6.044669	0.0000
D(PROFITA(-6))	0.779119	0.130756	5.958573	0.0000
D(PROFITA(-7))	0.377293	0.139068	2.713016	0.0070
D(PROFITA(-8))	0.727193	0.124417	5.844820	0.0000
D(PROFITA(-9))	0.036728	0.114531	0.320681	0.7487
D(PROFITA(-10))	-0.453905	0.094427	-4.806943	0.0000
C	0.323846	0.190999	1.695539	0.0909

R-squared	0.543222	Mean dependent var	4.21E-05
Adjusted R-squared	0.527714	S.D. dependent var	4.865955
S.E. of regression	3.344033	Akaike info criterion	5.287293
Sum squared resid	3623.148	Schwarz criterion	5.423619
Log likelihood	-876.2652	Hannan-Quinn criter.	5.341636
F-statistic	35.02873	Durbin-Watson stat	1.995890
Prob(F-statistic)	0.000000		

Table 6:: ADF unit root test - Profitability

Null Hypothesis: COD has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=16)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-14.34196	0.0000
Test critical values:	1% level	-3.449053	
	5% level	-2.869677	
	10% level	-2.571174	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(COD)
Method: Least Squares
Date: 02/03/16   Time: 22:11
Sample (adjusted): 2 347
Included observations: 346 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COD(-1)	-0.748388	0.052182	-14.34196	0.0000
C	0.032980	0.042383	0.778151	0.4370

R-squared	0.374195	Mean dependent var		0.000201
Adjusted R-squared	0.372375	S.D. dependent var		0.993683
S.E. of regression	0.787223	Akaike info criterion		2.365153
Sum squared resid	213.1836	Schwarz criterion		2.387386
Log likelihood	-407.1714	Hannan-Quinn criter.		2.374006
F-statistic	205.6917	Durbin-Watson stat		2.025788
Prob(F-statistic)	0.000000			

Table 7: ADF unit root test - COD

Null Hypothesis: GROWTH has a unit root
Exogenous: Constant
Lag Length: 3 (Automatic - based on SIC, maxlag=16)

			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-6.367220	0.0000
Test critical values:	1% level		-3.449220	
	5% level		-2.869750	
	10% level		-2.571213	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GROWTH)
Method: Least Squares
Date: 02/03/16   Time: 22:11
Sample (adjusted): 5 347
Included observations: 343 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GROWTH(-1)	-0.575153	0.090330	-6.367220	0.0000
D(GROWTH(-1))	-0.400719	0.084116	-4.763897	0.0000
D(GROWTH(-2))	-0.265437	0.073915	-3.591090	0.0004
D(GROWTH(-3))	-0.160936	0.053575	-3.003909	0.0029
C	0.007520	0.001903	3.951941	0.0001

R-squared	0.498782	Mean dependent var		4.96E-05
Adjusted R-squared	0.492851	S.D. dependent var		0.038723
S.E. of regression	0.027576	Akaike info criterion		-4.329240
Sum squared resid	0.257036	Schwarz criterion		-4.273296
Log likelihood	747.4646	Hannan-Quinn criter.		-4.306956
F-statistic	84.08943	Durbin-Watson stat		2.029470
Prob(F-statistic)	0.000000			

Table 8: ADF unit root test - GRP Growth

Date: 02/04/16   Time: 19:15
Sample: 1 347
Included observations: 320

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
.|. |	.|. |	1	0.055	0.055	0.9851	0.321
.|* |	.|* |	2	0.188	0.185	12.403	0.002
.|* |	.|* |	3	0.103	0.088	15.848	0.001
.|. |	.|. |	4	0.026	-0.017	16.066	0.003
.|* |	.|* |	5	0.131	0.100	21.686	0.001
**|. |	**|. |	6	-0.222	-0.254	37.860	0.000
.|. |	.|. |	7	0.045	0.027	38.525	0.000
*|. |	*|. |	8	-0.138	-0.090	44.784	0.000
.|. |	.|* |	9	0.028	0.079	45.046	0.000
*|. |	.|. |	10	-0.071	-0.060	46.731	0.000
*|. |	.|. |	11	-0.119	-0.055	51.457	0.000
.|* |	.|* |	12	0.110	0.082	55.524	0.000
*|. |	.|. |	13	-0.110	-0.051	59.609	0.000
.|. |	*|. |	14	0.003	-0.067	59.613	0.000
.|* |	.|* |	15	0.087	0.169	62.191	0.000
.|. |	.|. |	16	0.005	-0.024	62.199	0.000
.|* |	.|* |	17	0.212	0.173	77.536	0.000
.|. |	.|. |	18	0.024	0.024	77.724	0.000
.|. |	*|. |	19	-0.040	-0.181	78.276	0.000
.|. |	.|. |	20	-0.015	-0.059	78.353	0.000
.|. |	.|. |	21	-0.014	0.020	78.423	0.000
.|. |	.|. |	22	0.010	-0.004	78.460	0.000
*|. |	.|* |	23	-0.071	0.077	80.209	0.000
.|. |	.|. |	24	0.051	0.039	81.105	0.000
.|. |	.|. |	25	-0.015	0.014	81.183	0.000
.|. |	.|. |	26	0.023	-0.008	81.362	0.000
.|. |	.|. |	27	0.068	0.024	82.998	0.000
*|. |	*|. |	28	-0.096	-0.067	86.253	0.000
.|* |	.|* |	29	0.157	0.137	95.035	0.000
.|. |	.|. |	30	0.029	0.052	95.339	0.000
.|. |	.|. |	31	-0.033	-0.048	95.723	0.000
.|* |	.|. |	32	0.091	0.022	98.664	0.000
.|. |	.|. |	33	-0.017	-0.041	98.765	0.000
.|* |	.|. |	34	0.083	-0.013	101.22	0.000
.|. |	.|. |	35	-0.059	0.006	102.47	0.000
.|. |	.|. |	36	0.029	0.062	102.78	0.000

*Probabilities may not be valid for this equation specification.
Table 9: Correlogram - GDP Growth effect included

43

Date: 02/04/16   Time: 20:32
Sample: 1 347
Included observations: 328

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
.|.	.|.	1	0.010	0.010	0.0332	0.855
.|*	.|*	2	0.205	0.205	14.031	0.001
.|*	.|*	3	0.087	0.087	16.525	0.001
.|.	.|.	4	0.048	0.006	17.285	0.002
.|.	.|.	5	0.053	0.019	18.215	0.003
*|.	*|.	6	-0.127	-0.152	23.650	0.001
.|.	.|.	7	0.035	0.015	24.073	0.001
*|.	*|.	8	-0.172	-0.132	34.029	0.000
.|.	.|.	9	0.007	0.020	34.045	0.000
.|.	.|.	10	-0.055	0.009	35.075	0.000
.|.	.|.	11	-0.040	-0.010	35.624	0.000
.|*	.|*	12	0.108	0.120	39.612	0.000
.|.	.|.	13	-0.045	-0.017	40.309	0.000
.|.	*|.	14	-0.008	-0.091	40.334	0.000
.|*	.|*	15	0.129	0.149	46.079	0.000
.|.	*|.	16	-0.036	-0.066	46.538	0.000
.|*	.|*	17	0.148	0.116	54.139	0.000
.|*	.|*	18	0.080	0.115	56.380	0.000
.|.	*|.	19	-0.051	-0.151	57.282	0.000
.|.	.|.	20	-0.031	-0.062	57.618	0.000
.|.	.|.	21	-0.014	0.014	57.691	0.000
.|.	.|.	22	0.022	-0.001	57.862	0.000
*|.	.|.	23	-0.091	0.015	60.798	0.000
.|.	.|.	24	-0.011	-0.037	60.842	0.000
.|.	.|.	25	-0.038	0.013	61.348	0.000
.|.	.|.	26	-0.011	0.043	61.389	0.000
.|*	.|*	27	0.123	0.085	66.845	0.000
.|.	.|.	28	-0.033	-0.005	67.243	0.000
.|*	.|.	29	0.119	0.051	72.366	0.000
.|*	.|.	30	0.101	0.063	76.101	0.000
.|.	.|.	31	-0.043	-0.063	76.781	0.000
.|*	.|.	32	0.105	0.044	80.841	0.000
.|.	.|.	33	-0.010	-0.022	80.875	0.000
.|*	.|.	34	0.082	0.044	83.327	0.000
.|.	.|.	35	-0.063	-0.028	84.787	0.000
.|.	.|.	36	0.017	0.002	84.890	0.000

*Probabilities may not be valid for this equation specification.
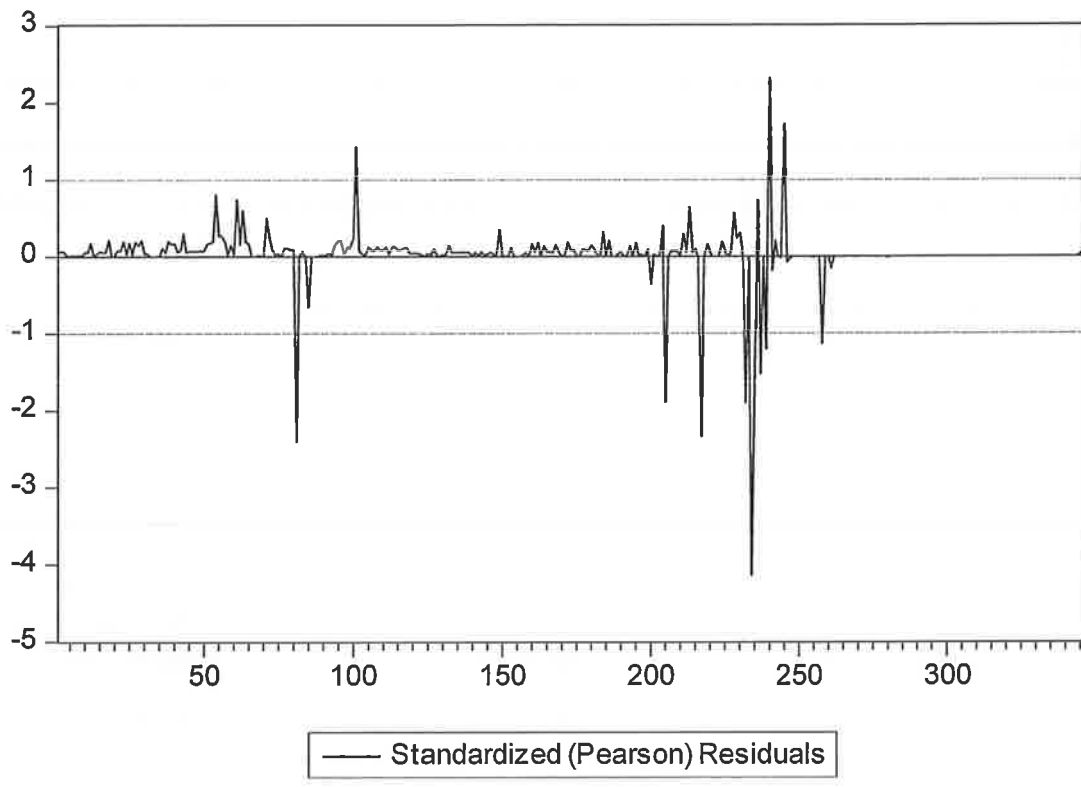*Table 10: Correlogram - GDP Growth effect excluded*

44

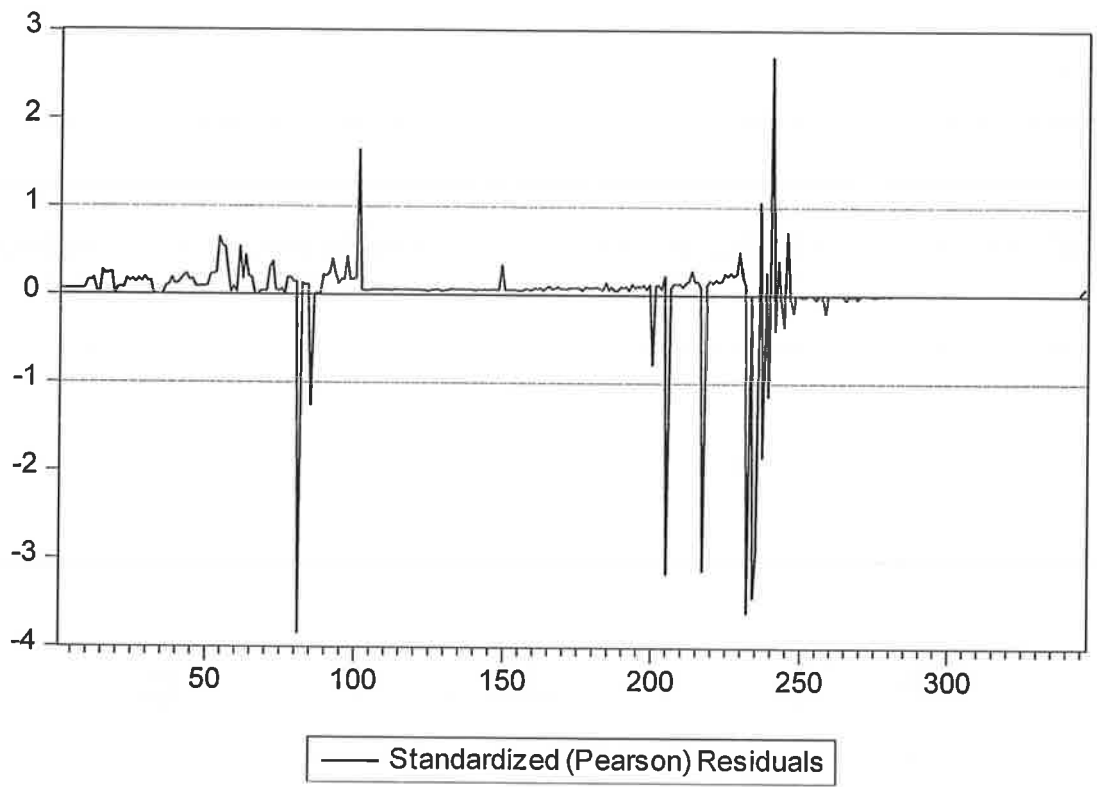*Table 11: Standardized Residuals - GDP Growth effect included*

Table 12: Standardized Residuals - GDP Growth effect excluded