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Investment and Commercial Banking: To Merge or Separate? An Empirical Analysis

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Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

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ABSTRACT

A major concern of regulators in the banking industry is how to decrease the risk exposure of banks and prevent a possible collapse. It is a widely held view that bank collapse is contagious hence if a few banks cave in it will inevitably lead to the destruction of the financial system as a whole. In the United States, commercial banks are allowed to establish section 20 subsidiaries to provide investment banking services. This, in the opinion of many industry analysts poses a heightened risk. Many analysts have therefore suggested that risky investment activities should not be merged with traditional depository activities of commercial banks. This paper assessed the merits and demerits of such a proposition by empirically analyzing the four largest banks in the US by market capitalization as of 2014. Tests of possible bankruptcy with the use of the modified Altman and Ohlson metrics were employed. Capital Adequacy and Size were also analyzed between the years of 2011 and 2014. As is consistent with the findings of some prior studies, this paper came to the conclusion that by allowing the two banking activities to be merged under one holding company, it was not only risk that increased but the banks' ability to withstand shocks.

Keywords: Modified Altman Z" score; Ohlson O-score; capital adequacy; size; commercial banking; investment banking.

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1. INTRODUCTION

Asserting the sovereignty of the general public over banks has always been the cornerstone of policies regulating the banking industry. As has been seen in past situations of bank failures, citizens and not only creditors bear the brunt. There have been instances where taxpayers have had to bail out banks. To avert the continuous recurrence of this phenomenon, the proposition from some academics and some industry players for structural reform of banks (separate commercial banks from investment banks) have always gained traction.

According to Vickers [1], the structuralist argument is predicated on the assumptions that risk in retail banking is low and that investment banking is risky. Moreover, deposits, payment systems and lending activities of commercial banks cannot be interrupted and therefore in the event of a failure, governments will have to intervene. Separation will therefore ensure that banking activities which are deemed essential are separated from those that are classified as not too essential. The structuralist argument suggests that investment activities of banks can be interrupted and therefore does not warrant government bail out in the event of failure and they should be left to market forces.

The overall rationale of the structuralist argument is that there will be a reduction of the potential cost to the taxpayer in the event of a bailout. A section of analysts, however, cites economies of scope culminating in cheaper information collection activities of banks which is key to determining the risk of clients as a reason for the amalgamation of commercial and investment banks. As was posited by Cornett et al. [2], risk does not change significantly when commercial and investment banks are aligned.

Further, section 20 [1] activities of banks result in an increase in operating cash flow return on assets owning to revenue from banking activities that are non-commercial. This paper empirically analyzes the four largest universal banks by market capitalization in the United States to determine whether or not it is risky or profitable to have commercial and investment banks merged.

The focus is on the US because bank failures in that country will most likely reverberate across the globe. Metrics such as the Modified Altman (for non-manufacturers) and Ohlson models will be used to test for the financial distress of Wells Fargo, Citigroup, J P Morgan Chase and Bank of America. Capital Adequacy and Size will be assessed over a four year period beginning 2011. All the banks under review have commercial as well as underwriting activities.

In Claire and Priestley [3] it is argued that bank failures are contagious. Hence, if a few banks fail, it can spread to other banks. It is safe to say as attested to by Claire and Priestley [3] that a sample of four universal banks is adequate to make an analysis of whether or not commercial and investment services should be separated.

1.1 Objective

The objective of this paper is to analyze whether the services provided by Investment and Commercial Banks be separated or merged. If after the analysis, it is concluded that the banks under review do not stand the risk of collapse per the metrics employed herein, then this paper will advance an argument that the services should not be separated and vice versa.

1.2 History and Current State

Following the financial crisis that occurred between 2007-2009, some players in the financial industry have questioned the wisdom behind the repeal of the Glass-Steagal Act (GSA) [2]. As ascribed by Cornett et al. [2], commercial and investment banks between the periods of 1933 and 1963 upheld the tenets of the GSA till after 1963 when they started to challenge the imposition by the act to remain separated.

According to Cornett et al. [2], commercial bank holding companies in the US were allowed to establish section 20 subsidiary investments, but with a cap of 5% contribution to total revenue which was increased to 25% in 1996. The gradual erosion of the GSA gave way to a total repeal in 1999 when the US congress passed the Financial Services Modernization Act to allow commercial and investment banks to become universal banks (Cornett et al. [2]). Reinholdson

[1] *A section 20 subsidiary of a bank is permitted by the Federal Reserve of the United States to engage in underwriting of securities.*

[2] *The Glass-Steagal Act was introduced in 1933 in the United States to prohibit commercial banks from adding investment banking activities*

and Olsson [4] posit that the enactment of the Gramm-Leach-Bliley Act (GLBA) which repealed the GSA allowed commercial banks to engage in risky investment activities. It may or may not be coincidence that a few years after the GSA was repealed, the 2007-2009 financial crisis emerged.

2. LITERATURE REVIEW

The subject of whether or not to keep the activities of banks separate from investment banking activities have been well documented in literature. There are arguments for and against the above proposition. The effect of financial crisis is without borders.The financial crisis in the US found space in other financial markets in other jurisdictions making it a real global crisis. Many governments had to respond with financial stimulus. The complexity of high risk and anticipated huge return activities of financial institutions was not eradicated when the global financial crisis was eventually contained.

As reported by Thomason and Taylor [5], the Swiss bank UBS lost $2.3 billion in 2011 coming out of risky trading practices. JP Morgan Chase also suffered a $2 billion loss in 2012 because of speculative hedging (Kopeki et al. [6]). Owing to happenings such as in the UBS and JP Morgan Chase cases, some analysts argue for the separation of investment and deposit taking activities of banks. Kang and Lu [7] advance the argument that there is evidence of conflict of interest in universal banks. Their argument is predicated on an assertion that universal banks discount corporate bond prices they underwrite in a bid to attract investors.

Johnson and Marietta-Westberg [8] in their work on universal banking and stock underwriting also came to the conclusion that conflict of interest exists in universal banks. According to them, asset management divisions of universal banks utilize institutional funds and information advantages to secure more underwriting contracts. Stiglitz [9] propagates the notion that the banking system has become concentrated in the hands of a few big banks whose insolvency puts the whole financial system at risk. This notion pushes them to engage in risky trading activities knowing that they will be bailed out of any imminent bankruptcy as governments will not sit aloof and see to the implosion of the financial system.

Essen [10] identifies a high concentration of power in universal banks as a detriment to the overall health of the banking system. Neale *et al.* [11] conclude that all firms, including financial institutions record an increase in systematic risk after diverging into other activities. A confirmation of this notion is found in the work of De Jonghe [12] in which he buttresses the point that banks have been exposed to a rise in systematic risk after the GLBA was enacted.

In spite of the findings of increased systematic risk in many studies, others point to an increased profitability after banks became universal. Deyoung and Roland [13] document that even though there is an increased risk for banks, there is also an increase in profitability after diversifying activities. When banks merge their commercial and investment activities in a holding company, Baele et al. [14] argue that there is a diversification of revenues, which lead to the minimization of unsystematic risk. Cornett et al. [2] conclude that section 20 subsidiaries are beneficial to bank holding companies. Geyfman [15] supports this argument and supports the repeal of GSA.

Wieandt and Moenninghoff [16] allude to the fact that when banks are big and diversified they increase efficiency of financial markets and by extension contribute to economic growth. The case to create bank holding companies to hold commercial and investment activities is made stronger by Ramirez [17] who found that GSA lowered the market value of commercial banks by making their cost of financing relatively high.

3. RESEARCH METHODOLOGY

Metrics that were used for the study and the justification of their use are enumerated hereafter.

3.1 Data

The sample consists of the 2014 largest universal banks by market capitalization in the United States. Financial data was retrieved from their form 10-K as filed with the Securities and Exchange Commission. The years under review ranged between 2011 and 2014.

3.2 Modified Altman Z'' Model

The Z score in the words of Pradham [18] is a bankruptcy predicting multivariate formula. It is a probabilistic model that forecasts the possibility of a firm entering bankruptcy in a space of two years. The original Altman model is only

applicable to manufacturing firms, but Cheng [19] concludes that the modified Altman Z" model as originated by Altman, Hartzell and Peck [20] overcomes the manufacturing limitation and can therefore be utilized as a predictor of financial distress of financial institutions inter alia.

The modified Altman Z" is calculated as follows:

$$Z" = 6.56\ T_1 + 3.26T_2 + 6.872\ T_3 + 1.05\ T_4$$

Where

T_1 = (Current Assets-Current Liabilities) / Total Assets
T_2 = Retained Earnings/ Total Assets
T_3 = Earnings before Interest and Taxes / Total Assets
T_4 = Book Value of Equity / Total Liabilities
Z = Overall Index

The zone of discrimination is interpreted thus:

Z > 2.6 --Safe Zone
1.1<Z<2.6 –Grey Zone
Z < 1.1 –Distress Zone

3.2.1 Interpretation

Table 1 shows the Altman probability of bankruptcy of Bank of America in 2011 to be 0.8. The Z'' score decreased to 0.4 in 2014. In Table 2, it is observed that the Z" score only changed marginally between the years. However, across all the years, the bank was in the distress zone. Table 3 shows an increasing Z" score for JP Morgan Chase. It climbed from 0.2 to 1.1 moving from the distress zone to the grey zone. Table 4 depicts an almost flat movement of the Z" score across 2011 to 2014. Between the years, Wells Fargo was in the distress zone per the Altman index.

Table 1. Altman Z" score: Bank of America

	2011	2012	2013	2014
Z" score	0.8	0.8	0.4	0.4

Table 2. Altman Z" score: Citigroup

	2011	2012	2013	2014
Z" score	0.8	0.6	0.8	0.7

Table 3. Altman Z" score: JP Morgan Chase

	2011	2012	2013	2014
Z" score	0.2	0.3	0.8	1.1

Table 4. Altman Z" score: wells Fargo

	2011	2012	2013	2014
Z" score	0.4	0.4	0.5	0.6

3.3 Ohlson Score

The Ohlson model, just like the Altman model is a predictor of bankruptcy. According to Ohlson [21], firms with an O-score greater than 0.5 is indicative of a high possibility of financial distress and default. As evidenced in Dichev [22], the Ohlson's measure indicates that firms with a higher bankruptcy possibility have lower than average returns. The Ohlson O score is calculated on an ex ante basis and the inputs are from fiscal years t-1 as found in the financial statements.

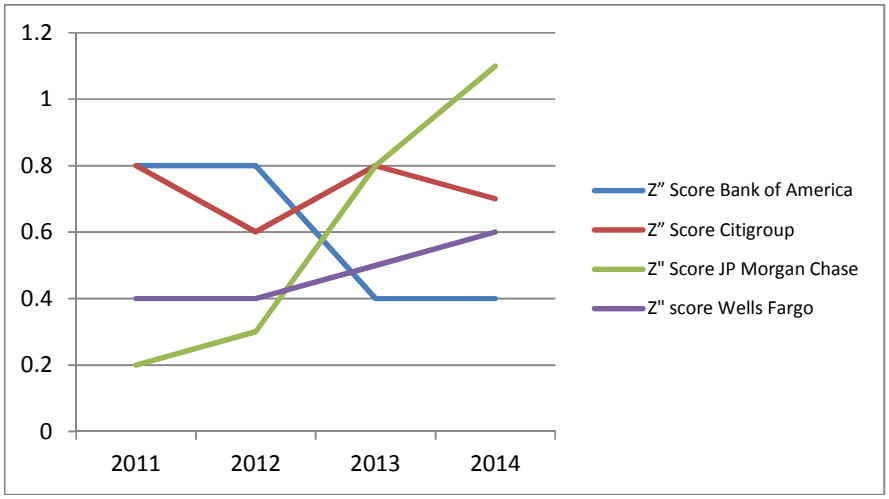

Fig. 1. Graphical representation: Z" score: Universal banks under review

Ohlson's O-Score is calculated thus:

$$T = -1.32 - 0.407\ln(TA_t) + 6.03\frac{TL_t}{TA_t} - 1.43\frac{WC_t}{TA_t} + 0.0757\frac{CL_t}{CA_t}$$
$$- 1.72X - 2.37\frac{NI_t}{TA_t} - 1.83\frac{FFO_t}{TL_t} + 0.285Y - 0.521\frac{NI_t - NI_{t-1}}{|NI_t| + |NI_{t-1}|}$$

Where

- CA = Current Assets
- CL = Current Liabilities
- FFO= Funds From Operations
- NI=Net Income
- TA = Total Assets
- TL= Total Liabilities
- WC = Working Capital
- X = 1 If TL > TA, 0 Otherwise
- Y = 1 If a Net Loss for the last two years, 0 Otherwise

3.3.1 Interpretation

Table 5 indicates a progressively decreasing O-score trend for Bank of America between 2011 and 2014. In all the four years it was only in 2014 when the bank was in financial distress per the Ohlson model. The Ohlson O scores for Citigroup as depicted in Table 6 fluctuates between the years. The bank's best O score was in 2012 but worsened in 2013. However, by 2014 the Bank was having a positive O score of 0.4. JP Morgan Chase experienced a progressively increasing O score between 2011 and 2014. Overall, this portends as per Ohlson [21] a negative financial outlook for the bank in future years. From Table 8, it is evident that the financial outlook for Wells Fargo, especially between the years 2012 and 2014 has been increasingly negative going by the banks O score. In 2011, 2012 and 2013 the O scores were over the 0.5 mark.

3.4 Capital Adequacy

According to Avkiran and CAI [23], most studies measure capital adequacy as the ratio of total equity to total assets. Pille and Paradi [24] agree with this assertion and posit that the ratio of total equity to total assets is an indicator of failure. In the words of Carbas et al. [25], there is a positive correlation between capital adequacy ratio and the financial health of banks to the extent that when capital adequacy ratio increases, financial strength of banks increases and vice versa. It is safe to say that the financial strength of all firms, including banks is inversely correlated with risk of collapse or bankruptcy.

3.4.1 Interpretation

Table 9 indicates a positive financial outlook for Bank of America per the Capital Adequacy Ratio figures. The ratio increased progressively from 2011 to 2014 when it reached a high of 11.7%. Capital Adequacy Ratio for Citigroup also increased consistently between 2011 (9.2%) and 2014 (11.6%). In Table 11, it is observed that Capital Adequacy Ratio for JP Morgan Chase also increased across the years from 2011 to 2014. For Wells Fargo, however, it increased from 2011 to 2013 and then decreased marginally in 2014 as evidenced in Table 12.

Table 5. Ohlson score: Bank of America

	2011	2012	2013	2014
O-score	1.3	0.3	-0.4	-1.3

Table 6. Ohlson score: Citigroup

	2011	2012	2013	2014
O-score	0.8	0.1	0.8	0.4

Table 7. Ohlson score: JP Morgan Chase

	2011	2012	2013	2014
O-score	0.1	0.5	0.8	1.0

Table 8. Ohlson O score: Wells Fargo

	2011	2012	2013	2014
O-score	0.4	0.7	0.9	0.8

Table 9. Capital adequacy ratio: Bank of America

	2011	2012	2013	2014
Capital adequacy	10.42%	10.44%	11.24%	11.70%

Table 10. Capital adequacy ratio: Citigroup

	2011	2012	2013	2014
Capital adequacy	9.24%	10.22%	11.15%	11.60%

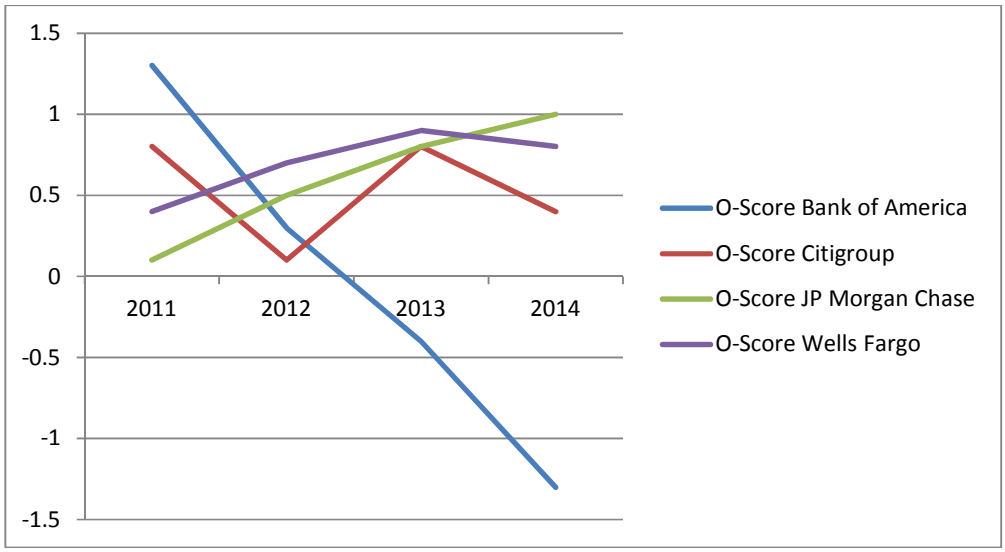

Fig. 2. Graphical representation: O-score of the universal banks under review

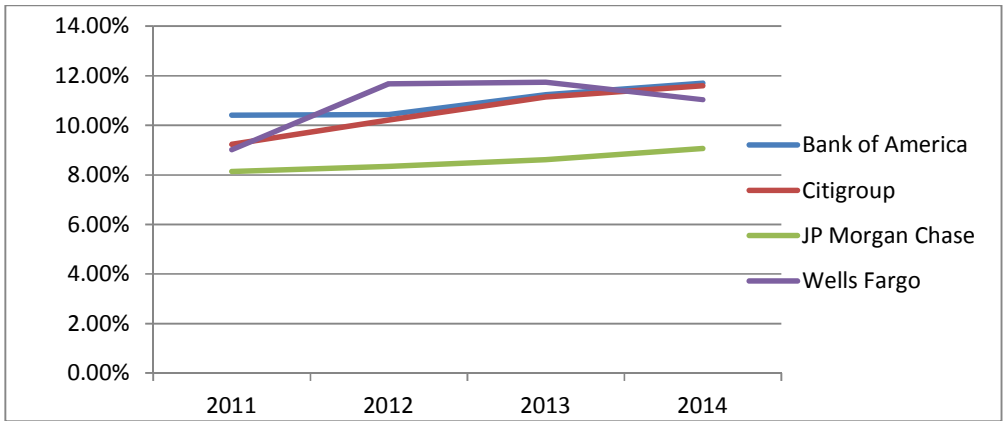

Fig. 3. Graphical representation: capital adequacy of the universal banks under review

Table 11. Capital adequacy ratio: JP Morgan Chase

	2011	2012	2013	2014
Capital adequacy	8.14%	8.35%	8.62%	9.06%

Table 12. Capital adequacy ratio for Wells Fargo

	2011	2012	2013	2014
Capital adequacy	9.02%	11.68%	11.74%	11.04%

3.5 Size

According to Avkiran and CAI [23], size is negatively correlated to default risk and this position is buttressed by Abrams and Huang [26] and Wheelock and Wilson [27]. The bigger the size of a firm, the more diversified it becomes and hence the lesser the risk of bankruptcy or collapse (Curry et al. [28]). Avkiran and CAI [23] assert that size is a function of total assets.

3.5.1 Interpretation

Bank of America's size increased from 2011 to 2012 and declined in 2013. However, it increased marginally in 2014. Citigroup's size fluctuated between 2011 and 2014. It was largest in 2013 and smallest in 2014. From Table 15, it is evident the size of JP Morgan Chase increased steadily from 2011 to 2014. For Wells Fargo, the increase in size was quite huge through the years up to 2014 suggesting a decreasing possibility of default.

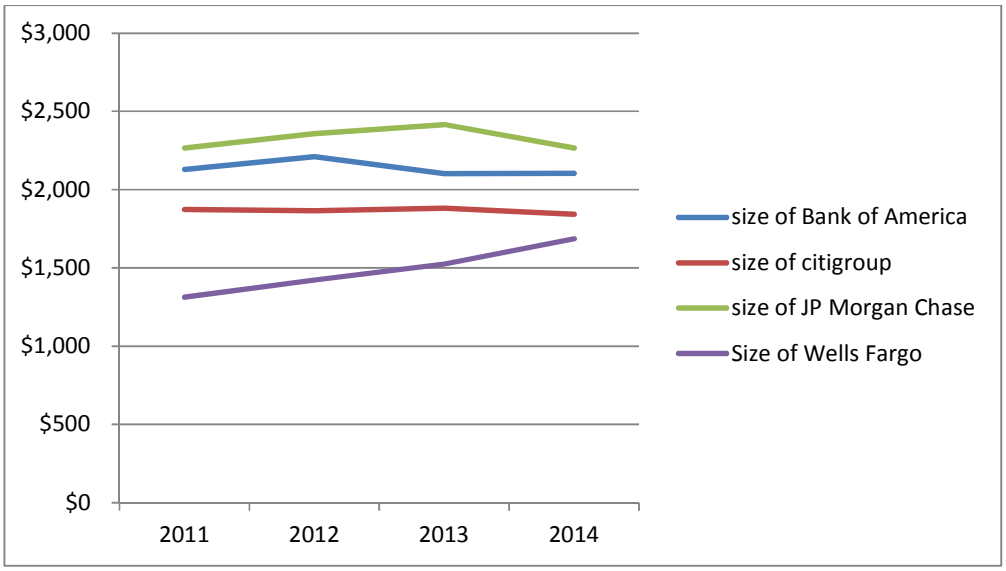

Fig. 4. Graphical representation of the size of the universal banks under review

Table 13. Size of bank of America (in billions of dollars)

	2011	2012	2013	2014
Size	$2129	$2210	$2102	$2105

Table 14. Size of Citigroup (in billions of dollars)

	2011	2012	2013	2014
Size	$1874	$1865	$ 1880	$1843

Table 15. Size of JP Morgan Chase (in billions of dollars)

	2011	2012	2013	2014
Size	$2266	$2359	$ 2416	$2266

Table 16. Size of Wells Fargo (in billions of dollars)

	2011	2012	2013	2014
Size	$1314	$1423	$ 1524	$1687

4. CONCLUSION

It is safe to conclude, per the metrics employed, that the banking industry has not been fatally wounded with the repeal of the Glass-Steagal Act. However, the overall Altman Z" score for all the banks under review was indicative of possible bankruptcy and heightened risk with the associated possibility of default. This may or may not be as a result of the repeal of the GSA.

Possibility of default per the Ohlson metric was not uniform for all the banks under review. The overall O Score for Bank of America and Citigroup was positive but not so much for JP Morgan Chase and Wells Fargo. In terms of Capital Adequacy, which is a measure of the banks' capital vis-à-vis its risk weighted credit exposure and ability to withstand shocks, all the banks are deemed financially healthy. None of the banks recorded a huge slide in size between 2011 and 2014.

If the repeal of the GSA and the integration of commercial and investment activities was a trigger for higher risk and failure, you will expect a progressive downward trend for all the metrics used starting 2011 to 2014 because 2014 is farthest from the point when the GSA was repealed.

In summary, the risk and possibility of default have increased over the years. However, ability to withstand shocks has also increased. This conclusion is consistent with Deyoung and Roland [13] who attest to the increasing risk and profitability phenomenon of banks after investment and commercial activities were merged. The adverse effect of risk which can lead to a disintegration of the financial system is offset by an increase in profitability. This paper therefore advances the argument that investment and commercial activities can remain merged because it does not portend an overriding injury and collapse to the financial system as a whole.

This paper limited itself to four (4) universal banks in the US. Even though Claire and Priestley [3] conclude that the sample size is adequate for this research, it is suggested that further research be done drawn on this paper with a wider sample of banks across a number of geographical jurisdictions. The implications of a crisis in the banking industry will reach segments of the population beyond the financial industry. Therefore, although in the opinion of this paper universal banks can remain merged, regulatory regimes should be tightened. It is gratifying to note that Basel III guidelines have been formulated with among other things, requirements that will ensure that banks do not engage in excessive risk taking.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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