

Estimating JP Morgan Chase's Profits from the Madoff Deposits

Linus Wilson^d
Assistant Professor of Finance
University of Louisiana at Lafayette
B. I. Moody III College of Business
Department of Economics & Finance
214 Hebrard Boulevard, Moody Hall 253
P. O. Box 44570
Lafayette, LA 70504-4570
Phone: (337) 482-6209
Fax: (337) 482-6675
E-mail: [linuswilson \[at\] louisiana \[dot\] edu](mailto:linuswilson[at]louisiana[dot]edu)
Web: <http://www.linuswilson.com>

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Abstract

JP Morgan Chase allegedly had deposits from Bernard L. Madoff totaling \$5.5 billion at one point in 2008. The Chase account was supposedly where most of the funds in his Ponzi scheme were deposited. Any large deposit can be a considerable source of profit to a bank. Assuming that the deposits returned the bank's net interest margin and grew at a random geometric rate, this paper estimates that JP Morgan Chase generated \$483 million in after-tax profits from this very large account over the course of sixteen years. With JP Morgan Chase the target of pending lawsuits relating to the Madoff fraud, this paper's methodology and results may be of interest to litigants, prosecutors, journalists, and academics.

Journal of Economic Literature Codes: G01, G21, G24, K13, K14, K23, K41, K42

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1. Introduction

Banks are in the primary business of taking deposits and lending out the proceeds of their deposits at higher rates of interests to individuals and businesses. Any long-term large deposit for a bank can be very profitable. This note estimates, based on court filings, that JP Morgan Chase inadvertently earned after-tax profits for their shareholders totaling \$483 million dollars from 1993 to 2008. Without detailed account records, these estimates should be treated with some caution. Nevertheless, with suits pending relating to the JP Morgan Chase account in the name of Bernard Madoff Investment Securities (BMIS), this note indicates that JP Morgan Chase's shareholders may have profited in the short-run if Chase's bankers ignored warning signs about that account.¹ Yet, the author suspects that JP Morgan Chase's shareholders now wish that he put his deposits in a competitor's bank.

¹ The suits pending were taken from Kevin M. LaCroix, August 19, 2009, "The List: Madoff Investor and 'Feeder Fund' Litigation," Oakbridge Insurance Services accessed online on August 22, 2009, at <http://www.oakbridgeins.com/clients/blog/madofflawsuitlist.doc>. Some of the suits are Liquidation of Bernard L. Madoff Investment Securities LLC and JP Morgan Chase Bank, N.A. v. Rosenman Family LLC at <http://www.oakbridgeins.com/clients/blog/rosenman.pdf>; Irving H. Picard, Trustee (etc.) and J.P. Morgan Chase Bank v. Hadleigh Holdings LLC at <http://www.oakbridgeins.com/clients/blog/hadleigh.pdf>; and JP Morgan Chase & Co.; JP Morgan Chase Bank NA v. MLSMK Investments Company at <http://www.oakbridgeins.com/clients/blog/mlsmk.pdf>. The defendant is listed first and the plaintiff is listed second. The last suit alleges that JP Morgan Chase decided to withdraw investments totaling \$250 million with one of Madoff's feeder funds in the summer of 2009 because of concerns arising out of due diligence and meetings with Madoff's firm. Yet, JP Morgan Chase allegedly took no action with respect to the deposit account that Madoff used for his Ponzi scheme. A source inside JP Morgan Chase said, "The due-diligence people had too many doubts. They felt the consistency of its performance wasn't any longer credible" prior to closing out those investments in the fall of 2009, according to Claudio Gatti and Diana B. Henriques, January 29, 2009, "JP Morgan Exited Madoff-Linked Funds Last Fall," *New York Times* accessed online on August 22, 2009, at <http://www.nytimes.com/2009/01/29/business/29madoff.html>. In an audio interview on the New York Times site, Diana B. Henriques, the New York Times reporter, said, "They [JP Morgan Chase] started pulling their hedged investment, \$250 million, out of Fairfield [the Madoff feeder fund] in September and October [2008]. They had only a small fraction of that amount still in Fairfield at the time when Bernie Madoff was arrested and the Fairfield fund collapsed." This audio interview of Ms. Henriques was conducted by Jeff Sommer, January 28, 2009, "Today's Business with Jeff Sommer and Diana B. Henriques," *NYTimes.com* accessed online on August 22, 2009, http://graphics8.nytimes.com/images/multimedia/icons/audio_icon.gif.

On June 29, 2009, Bernard L. Madoff was sentenced to 150 years in a medium-security federal prison for defrauding up to 15,400 investors out of \$65 billion. Handing down the sentence, the district court judge called his theft “extraordinarily evil.”² Mr. Madoff ran the largest Ponzi scheme in history. Ponzi schemes use the funds of new investors to pay “returns” to old investors. Investor redemptions in the financial crisis of 2008 caused Mr. Madoff’s scheme to unravel. In his allocution of his scheme, Mr. Madoff said, “For many years and up until I was arrested on December 11, 2008, I never invested those funds in securities, as I had promised. Instead, those funds were deposited in a bank account at Chase Manhattan Bank.”³ Chase Manhattan Bank merged with JP Morgan in 2000 to become JP Morgan Chase.

By several accounts, this Chase bank account was active from 1992 to 2008. The complaint by the Securities and Exchange Commission against Madoff’s alleged partner in crime Bernard Madoff Investment Securities (BMIS) former Chief Financial Officer Frank Dipascalli, Jr. puts the account balance at \$5.5 billion in 2008. The JP Morgan Chase checking account was used to take client deposits and client redemptions. The market crash in September 2008 caused BMIS to receive redemption requests totaling over \$6 billion, leading to Mr. Madoff’s confession in December 2008. In his allocution, Mr. Madoff said, “To the best of my recollection, my fraud began in the early 1990s. At

² Diana B. Henriques, June 30, 2009, “Madoff Is Sentenced to 150 Years for Ponzi Scheme,” *New York Times* accessed online on August 22, 2009, at <http://www.nytimes.com/2009/06/30/business/30madoff.html>.; Diana B. Henriques, July 10, 2009, “Claims Total Over 15,400 in Fraud by Madoff,” *New York Times* accessed online on August 22, 2009, at <http://www.nytimes.com/2009/07/10/business/10madoff.html>.; Zachary Kouwe, July 15, 2009, “Madoff Arrives at Federal Prison in North Carolina,” *New York Times* accessed online on August 22, 2009, at <http://www.nytimes.com/2009/07/15/business/15madoff.html>

³ Exerpts from Bernard L. Madoff’s allocution at “Madoff Speaks: The Plea Allocution,” *WSJ.com* accessed online on August 22, 2009, at <http://blogs.wsj.com/law/2009/03/12/madoff-speaks-the-plea-allocution/>.

that time, the country was in a recession and this posed a problem for investments in the securities markets.”⁴

That statement seems consistent with a start date earlier than 1992 since the National Bureau of Economic Research says that the early 1990s recession ended in March 1991.⁵ Yet, a slow economic recovery in 1992 is often attributed to the defeat of President George H. Bush. The plaintiff’s complaint of *MLSMK Investments Co. v. JP Morgan Chase* provides the timeline for the account as beginning in 1992 to Mr. Madoff’s arrest in December 11, 2008. This is consistent with the timeline provided by the SEC complaint against Frank Dipascalli, Jr. In the fall of 1992, the SEC complaint alleges that some feeder funds, which recruited investors with high “guaranteed returns” to Mr. Madoff’s investment company were put into receivership because they were charged with unlawfully offering unregistered securities. Many of those investors turned directly to BMIS with their money. According to the complaint, Mr. Madoff and Mr. Dipascalli embarked on their now famous Ponzi scheme, and Mr. Dipascalli allegedly led the effort to book fictitious stock options transactions.⁶

The author is only aware of a few analytic studies on the Madoff Ponzi scheme. Yet, unlike this study, no paper to date has analyzed the profitability of the JP Morgan Chase bank account. Most studies have focused on the exceptionally good risk-adjusted returns realized by feeder funds that invested in Bernie Madoff Investment Securities (BMIS). Culp and Heaton (2010) find that the excess returns of the Madoff funds should have raised questions, but the excess risk-adjusted returns by themselves could not have

⁴ *Ibid.*

⁵ The NBER put the recession as beginning in the third quarter of 1990 and ending in the first quarter of 1991.

⁶ SEC v. Frank Dipascali, Jr. complaint U.S. Southern District Court of New York dated August 11, 2009. Accessed online on August 22, 2009, at <http://www.sec.gov/litigation/complaints/2009/comp21174.pdf>.

proven that Madoff was running a Ponzi scheme. Bernard and Boyle (2009) find that, while Madoff's feeder fund, Fairfield Sentry, had percent returns that were plausible, it had low levels of volatility that were not. They show that following a similar "split-strike" strategy of options and stock investing would have generated much higher volatility over that time period. Clauss *et al.* (2009) find that the feeder funds had Sharpe ratios of investment performance that lay well above the theoretical capital market line of portfolio theory. Those funds earned Sharpe ratios, which are the returns in excess of the risk-free rate divided by the funds' standard deviation, which were five times greater than the S&P 500.

Other studies of the Madoff fraud focus on the regulatory failures. An example of this literature is Poser (2009). Gregoriou and Lhabitant (2008) focus on the failures of due diligence by investors in the Madoff scandal, but do not mention the JP Morgan Chase checking account.

This paper estimates the after-tax cash flows to JP Morgan Chase, given that the Madoff bank account was opened at the start of 1993 with a balance of \$100 million. The starting balance was arbitrary,⁷ but the ending balance of \$5.5 billion is based on the August 12, 2009, complaint filed by the SEC. This account was nearly zero for most of the last quarter of 2008.⁸ The author assumes that the Chase bank account led to annual before tax profits equal to the average annual balance times net interest margin (NIM). (Because this account was reportedly so large, administrative overheads were likely to be an insignificant percentage of the account balance.) Using a Monte Carlo simulation, the

⁷ The beginning balance had to be positive to generate an ending balance of \$5.5 billion with geometric growth. A larger beginning balance would generate higher estimated profits for JP Morgan Chase.

⁸ Claudio Gatti and Diana B. Henriques, January 29, 2009, "JP Morgan Exited Madoff-Linked Funds Last Fall," *New York Times* accessed online on August 22, 2009, at <http://www.nytimes.com/2009/01/29/business/29madoff.html>.

author estimates that the account added shareholder value of \$483 million based on closing prices on August 21, 2009.

2. Data and Analysis

To estimate the profitability of the Chase account number 140081703, the author obtained the net interest margins reported (NIM) on the 10-K's for JP Morgan Chase going back to 1993.⁹ The NIM is defined as the difference between interest earned and interest expense, divided by average earning assets. On the JP Morgan Chase 10-K's, the less common term "net yield on interest-earning assets" is used instead of net interest margin. The author will use the more common term of net interest margin or NIM. The pretax annual profits were the estimated account balance in that year times the NIM for that year. Because the account fell close to zero in the last quarter of 2008, leading to Madoff's confession, this formula is slightly altered. For 2008 the pretax profits were estimated as the \$5.5 billion times 0.75 times the reported NIM of 2.87 percent. From 1993 to 2008 the NIM ranged from 1.87 percent to 3.73 percent.

The NIM seems to be a good estimate of the difference in the interest rates offered to BMIS and the interest rates at which JP Morgan Chase lent out the deposits. Mr. Madoff's account likely earned money market interest rates because of its size and similar risk and liquidity characteristics to money market instruments like T-bills. In 2008, for example, 3-month T-bills averaged 1.37 percent, according to the Federal

⁹ JP Morgan Chase & Co.; JP Morgan Chase Bank NA v. MLSMK Investments Company at <http://www.oakbridgeins.com/clients/blog/mlsmk.pdf> provides the full account number. The SEC complaint dated August 12, 2009, refers to it as the 703 account. I think it is safe to assume that this account is no longer active.

Reserve Bank of St. Louis. Negotiable Certificates of Deposit (CDs), which are not normally Federal Deposit Insurance Corporation (FDIC) insured due to their large size, earned 2.97 percent on average; and one-month, AA-rated commercial paper issued by non-financial companies earned 1.97 percent on average in 2008, according to the St. Louis Fed. These rates are comparable to the 2.26 percent that the average interest earning deposit earned at JP Morgan Chase in 2008 according to that year's 10-K. In addition, the average interest rate on interest earning assets was 5.36 percent. Thus, the difference between the rates on interest earning assets and interest earning deposits was 3.01 percent, which is greater than the NIM for the year of 2.87 percent, the latter of which was used in the analysis. It seems unlikely that Mr. Madoff or another investor could have earned much more investing in a low-risk money market mutual fund, which would be predominately invested in T-bills because of their lower risk than both commercial paper and jumbo CDs. For most of 2008, negotiable CDs carried substantial risk because of the fears about the money center banks and the lack of a FDIC guarantee for most of the year.

To find the present value of the annual profits, we have to re-invest the cash flows until the valuation date. First, the author multiplied the pre-tax profits based on the NIM and average balance by the marginal corporate tax rate. The marginal corporate tax rate for JP Morgan Chase, which is based in New York State was estimated to be 39.9 percent by Hodge (2008). (The marginal federal corporate tax rate was 35 percent over this period.) The author believes it makes the most sense that the profits were reinvested in JP Morgan Chase stock. The author adjusted the closing prices on Yahoo! Finance for stock splits. He assumed that the account balance estimated for a given year was

reinvested in JPM stock on the first day of the next year until the valuation date. On August 21, 2009, the valuation date, JP Morgan Chase's stock closed at \$43.66. Thus, the average account balance in 1993 was invested on the first trading day in 1994 until August 21, 2009. The author found the annual returns with the following formula where t stands for year t . S_t stands for the stock price on the first trading day of the year and DIV_t stands for the sum of the dividends paid in year t .

$$R_t = \frac{S_{t+1} + DIV_t - S_t}{S_t} \quad (1)$$

Those returns were calculated for every full year up to 2009. In 2009, the ending stock price of \$43.66 was used instead of the first closing price in 2010. The 2009 dividends also are only the dividends for which the *ex*-dividend date has been reached. The *ex*-dividend date is the day at which a buyer of the stock no longer has a right to the next quarterly dividend. The stock price, in theory, will roughly drop by the amount of the dividend on the *ex*-dividend day. The after tax annual profits for year t are denoted $EARN_t$. Thus, the total 2009 after-tax profits are the following:

$$\text{Profit} = \sum_{t=1993}^{2008} \left(EARN_t \prod_{i=t+1}^{2009} (1 + R_i) \right) \quad (2)^{10}$$

¹⁰ For those unfamiliar with multiplication operator, an example may illustrate what it denotes. Suppose that $t \leq 2005$, then the symbol $\prod_{i=t+1}^{2009} (1 + R_i) = (1 + R_{t+1})(1 + R_{t+2}) \dots (1 + R_{2008})(1 + R_{2009})$.

The average account balance is assumed to follow a geometric progression from \$100 million dollars in 1993 to \$5.5 million in 2008. Thus, the geometric growth rate, denoted by g , can be calculated by inverting the following relationship, $(1 + g)^{15}(\$100 \text{ million}) = \$5,500 \text{ million}$. $g = (\$5,500/\$100)^{(1/15)} - 1 = .3122$ or 31.22 percent. This is the expected path of the simulation. If the volatility of the simulation was zero, then this geometric growth path of the account balance would generate after-tax profits of \$498 million. The geometric growth model is denoted by the line with circles in Figure 1. Lower (higher) initial balances in 1993 would generate higher (lower) geometric growth rates, and would lead to less (greater) profits accruing to JP Morgan's shareholders.

*****Insert Figure 1 about here.*****

The growth path could be in a straight line. In that case, the account balance would have to rise \$360 million dollars per year from a beginning balance of \$100 million in 1993. This is obtained from inverting $\$100 \text{ million} + 15K = \$5,500 \text{ million}$, where K is annual dollar in. $K = (\$5,500 \text{ million} - \$100 \text{ million})/15 = \360 million . This is graphically represented by the line with squares in Figure 1. If the account balance followed this path, JP Morgan Chase's after-tax profits from Madoff deposits would be \$930 million. It seems more reasonable that the account balances would grow at a geometric, constant growth rate than by a constant dollar amount.

*****Insert Figure 2 about here.*****

To check how sensitive the results were to the assumption that the profits are reinvested in JP Morgan Chase's stock, the author also calculated the profits if the reinvestment rate were zero percent per annum. If the profits were reinvested at a zero rate of interest in the non-random, geometric model, then J.P. Morgan would have \$351 million in total after-tax profits today. Thus, reinvesting in the bank's stock generated profits of \$147 million in excess of the annual profits. Thus, most of total 2009 estimated profits of \$351 million in the geometric model are due to the past annual profits, not reinvestment returns.

It seems very unlikely that the growth of the Madoff deposits would have been smooth. To model this we have used the geometric model as a trend, but have added a mean zero normally distributed shock. The author assumes that the standard deviation of this shock is 30 percent of the balance's trend. Yet, the account balance declines geometrically backwards in time. (We only have confirmation that the account balance reached \$5.5 billion in 2008, but the author has no other data about the account balance over time.) Thus, the standard deviation is $[30 \text{ percent}]/(1 + .3122)$ of the next year's balance or 22.86 percent of the following year's balance. In Figure 2, the author plots the first eight random trials of the 1092 conducted. The trials in Figure 2, tend to show a similar shape as the geometric trend in Figure 1. Despite the downward trend going backwards in time, several trials experience positive shocks that cause earlier balances to exceed later account balances.

In Figure 3, we plot a histogram of the 98.5 percent of the random trials that led to after-tax profits for JP Morgan between \$200 million to less than \$1,100 million. The

distribution of profits appears to be approximately lognormal with over half the observations generating free cash flow for JPM's shareholders between \$300 million to just less than \$500 million. The mean was \$483 million with a standard deviation of \$189 million. The mean is \$15 million less than the non-random geometric model. This difference is likely due to the fact that, when the shock has the account balance go to zero or below zero, the account balance is recorded as zero. Zero is an absorbing state. Whenever the account balance hits zero in one year, the account balance will be zero in all earlier years because the standard deviation of the shock and the trend is proportional to the next year's balance. Thus, the simulation, in theory, should generate lower average account balances than the non-random geometric model as it has in this case. There were only six trials that reached a zero balance.

3. Conclusion

This paper has attempted to estimate the value of the Bernie Madoff Investment Securities' (BMIS) bank accounts to JP Morgan Chase's shareholders. This is the first paper to attempt to estimate the profits to JP Morgan Chase generated from Mr. Madoff's deposits, which reached a balance of \$5.5 billion in 2008. Because we only know the peak balance in 2008, this is a somewhat speculative task. In the author's most preferred model which uses the Monte Carlo simulations of the geometric growth model, he estimates that after-tax shareholder value increased by \$483 million due to Mr. Madoff's very large bank account. Just because JP Morgan Chase may have profited greatly from the bank account, which was so closely associated with Mr. Madoff's \$65 billion fraud,

does not mean that JP Morgan Chase engaged in any illicit or illegal activity. Few would say that the vendor who sold Mr. Madoff a hotdog on the street was doing anything wrong. Indeed, there are likely thousands of individuals and companies who did business with Mr. Madoff profitably, and in doing so engaged in no wrongdoing. Moreover, a good portion of the profits that J.P. Morgan Chase did gain from lending out Mr. Madoff's deposits at higher rates of interest will potentially be dissipated by the pending and future legal action associated with the now infamous bank account. With the Madoff estate insufficient to satisfy creditor's demands, JP Morgan Chase may be the target of more litigation. It seems that not all profits are worth harvesting.

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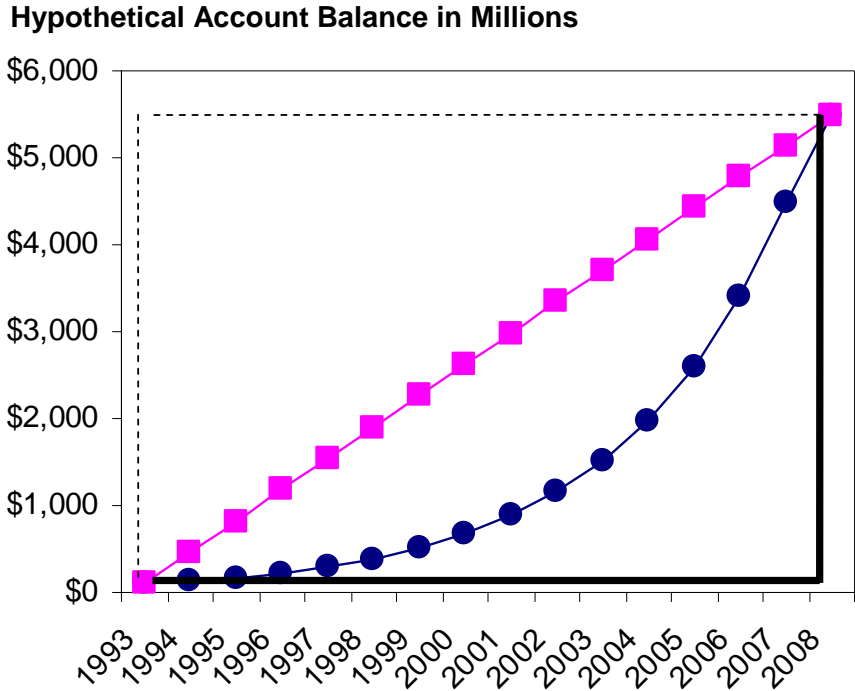
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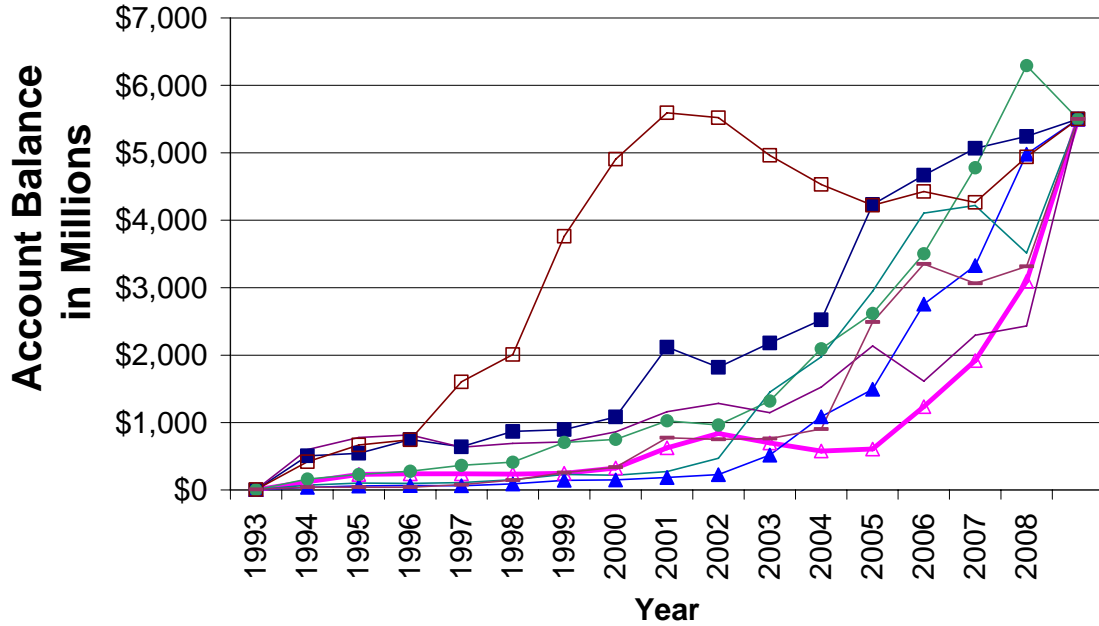
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Figure 1: Contrasting Different Hypothetical Bank Balances



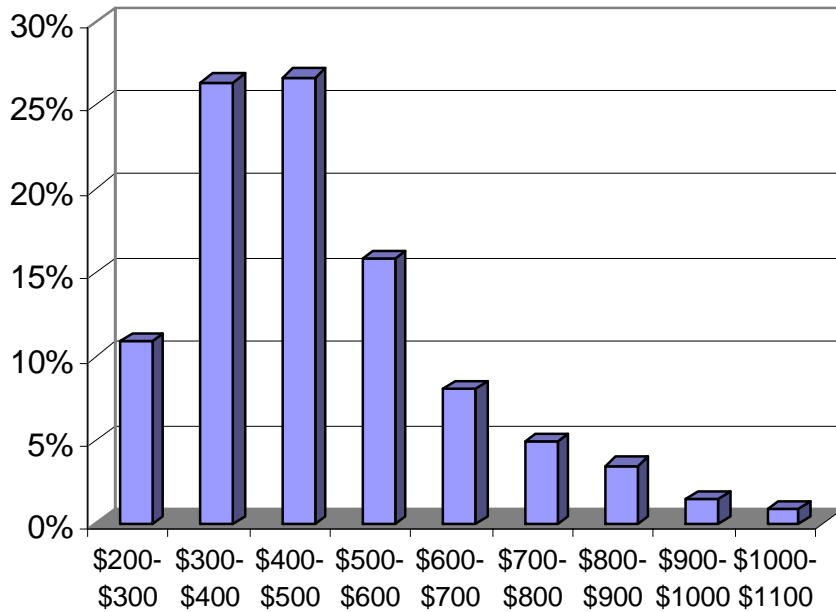
All models assume that the account balance reaches \$5.5 billion in 2008, but the path to that point has a big impact on the valuation of the Madoff deposits. The dashed line shows an account balance that is constant from 1993 to Q3 2008 at \$5.5 billion. This would clearly lead to the highest estimated profits for JP Morgan Chase from the Madoff deposits. An account balance that follows the thick black line would generate the least profits of the four scenarios. The second most profits are generated by an account balance that increases in a straight line from 1993 until 2008. This is the line with the square figures. It is estimated that an account balance which increased in a straight line would generate after-tax cash flows of \$930 million dollars if the profits were reinvested in JP Morgan Chase's stock. The author's most preferred model assumes that the account grows geometrically. This model generates the third most profits. The non-random geometric growth rate model generates after-tax profits for JP Morgan Chase of \$498 million. The geometric growth path, denoted by the circles, is the non-random version of the simulation model.

Figure 2: The First Eight Random Trials



This diagram plots the average account balances by year for the first eight random trials of the simulation. In the simulation, the account balance was assumed to decline geometrically at an approximately 31.2 percent rate from its \$5.5 billion balance in 2008 to its start date in 1993. This trend had a mean zero, normally distributed random shock with a standard deviation equal to approximately 22.9 percent of the previous year's balance. 1092 random trials were used for the simulation estimates. The 1993 balances are all different, but are small relative to the ending balance in 2008 of \$5.5 billion, which is the same for all 1092 random trials.

Figure 3: Histogram of the Estimated After-Tax Profits from the Madoff Deposits



All ranges are in millions of 2009 dollars. There were 1092 random trials. 98.5 percent of the simulations lead to after-tax cash flows to JP Morgan Chase's shareholders of between \$200 million to \$1,100 million. Each range includes all observations less than the highest value and equal to or greater than the lower value. Annual after-tax profits were assumed to be reinvested in JP Morgan Chase's stock until the close of trading on August 21, 2009. The mean profits for holding the Madoff deposits was \$483 million and the median simulation generated after-tax profits of \$442 million. The minimum simulated profits were \$164 million and the maximum simulated profits were \$1,969 million.