

2008-09 U.S. Government Financial System Rescue Initiatives and Shareholder's Wealth

INVESTIGADOR PRINCIPAL	José J. Cao Alvira, Ph.D.
RANGO ACADÉMICO	Catedrático Auxiliar
DEPARTAMENTO	Finanzas, FAE

CO-INVESTIGADOR	Scott Brown, Ph.D.
RANGO ACADÉMICO	Catedrático Auxiliar
DEPARTAMENTO	Escuela Graduada, FAE

First Draft: August 2010
This Version: January 2011

Preliminary Working Paper. Do not cite without the explicit consent of the authors.

Abstract: We analyze the impact of emergency funding on the share price of publicly traded corporations and government sponsored enterprises within the 2008 and 2009 U.S. Government financial markets rescue initiatives. In order to avoid a complete collapse of the U.S. financial system, the Bush-Paulson and the Obama-Geithner administrations implemented aggressive and costly rescue fiscal measures intending to capitalize the financial institutions and reinstitute the issuance of credit to private investors. Using event study analysis, our research proposal objectively measures the dimension of any realized short-term capitalization of the financial institutions as a result of the bailout and, via Monte Carlo simulations and bootstrapping techniques, estimates the long-term performance of such initiatives. This draft focuses on the conservatorship embargo by the Federal Housing Finance Agency of Fannie Mae and Freddie Mac on September 7 2008, and the concurrent Senior Preferred Stock Purchase Agreement of each GSE with the U.S. Treasury. The asset event study analysis indicates a stark loss on shareholder's wealth consecutive the conservatorship announcement. Significant wealth gains are obtained only at the first senior preferred stock purchase announcement, nevertheless this gain measures at approximately 5% of the original wealth loss estimate. Preliminary results indicate the existence of abnormal yields on the debt instruments of the GSEs and a bond event study is proposed and currently undergoing to measure these abnormal yields.

Key Words: Event study, Monte Carlo simulation, TARP, FSP, GSE

2008-09 U.S. Government Financial System Rescue Initiatives and Shareholder's Wealth: The case of the conservatorship embargo of Fannie Mae and Freddie Mac

Abstract: We analyze the impact of emergency funding on the share price of publicly traded corporations and government sponsored enterprises within the 2008 and 2009 U.S. Government financial markets rescue initiatives. In order to avoid a complete collapse of the U.S. financial system, the Bush-Paulson and the Obama-Geithner administrations implemented aggressive and costly rescue fiscal measures intending to capitalize the financial institutions and reinstitute the issuance of credit to private investors. Using event study analysis, our research proposal objectively measures the dimension of any realized short-term capitalization of the financial institutions as a result of the bailout and, via Monte Carlo simulations and bootstrapping techniques, estimates the long-term performance of such initiatives. This draft focuses on the conservatorship embargo by the Federal Housing Finance Agency of Fannie Mae and Freddie Mac on September 7 2008, and the concurrent Senior Preferred Stock Purchase Agreement of each GSE with the U.S. Treasury. The asset event study analysis indicates a stark loss on shareholder's wealth consecutive the conservatorship announcement. Significant wealth gains are obtained only at the first senior preferred stock purchase announcement, nevertheless this gain measures at approximately 5% of the original wealth loss estimate. Preliminary results indicate the existence of abnormal yields on the debt instruments of the GSEs and a bond event study is proposed and currently undergoing to measure these abnormal yields.

I. Introduction

Facing colossal insolvency¹, on September 7 2008 the Federal Housing Finance Agency (FHFA) embargoed Fannie Mae and Freddie Mac and placed both Government Sponsored Enterprises, or GSEs, into conservatorship. The conservatorship embargo precipitated the enactment of a Senior Preferred Stock Purchase Agreement between each GSE and the U.S. Treasury that intended to avert the systemic risk posed by the two corporations, ensuring both maintain a positive net worth and providing explicit guarantees to the GSEs' senior and subordinated debt holders. The U.S. Treasury's current combined direct investment in Fannie Mac and Freddie Mac is in the vicinity of \$150 billion; that is excluding the Treasury's explicit guarantees to the GSEs' debt obligations.

Table 1 portrays the financial scenario of Fannie Mae and Freddie Mac during the last decade, and shows the necessity of the investment of vast sums by the U.S. Treasury on both GSEs to ensure their solvency. The combined assets of both GSEs currently mount to \$5.6 trillion, with a combined outstanding balance of \$4.2 trillion in outstanding mortgage-backed securities carried in their balance sheets. **Figure 1** illustrates the historical pertinence and credit exposure of Fannie Mae and Freddie Mac in the residential U.S. mortgage market. The figure contains the value holdings of Single-Family Residential Mortgages by Fannie Mae and Freddie Mac, that is excluding MBS holdings, and its percentage value over the entire holdings by financial institutions. Over the course of thirty years, the GSEs have gone from holding less than a combined ten percent of the outstanding residential mortgages to holding nearly half, becoming the principal agents in the residential U.S. mortgage market.

¹ The leverage ratio of Fannie Mae at the end of the third quarter of 2008 was 9½ to 1, that of Freddie Mac on the second quarter of 2008 was 6¾ to 1.

<Insert Table 1 here>
<Insert Figure 1 here>

In this paper we try to measure the impact on the market capitalization of both GSEs that resulted from the conservatorship embargo of the FHFA and the Senior Preferred Stock Purchase Agreement with the U.S. Treasury. We do this via an augmented market model event study. In addition, we identify possible extensions to the research agenda focusing at the performance of the debt obligations of Fannie Mae and Freddie Mac on the bonds market. The rest of the paper is organized as follows: the next section of the paper shows the historical and current asset pricing performance of Fannie Mae and Freddie Mac. Section III introduces the augmented market model event to be implemented, and contains a discussion on the data to be analyzed and the considered events. Section IV is the event study analysis and presentation of results. Section V concludes and mentions the currently undergoing extensions to the research.

II. Fannie Mae and Freddie Mac exposure to mortgage market turmoil

The panels in **Figure 2** and **Figure 3** depict time series illustrations of the historic Fama-French (FF) coefficient estimates for Fannie Mae's and Freddie Mac's excess returns, respectively. The two upper panels of the figures also depict the upper and lower limits of the 95% confidence interval of the historic alpha and beta coefficient estimates resulting from a CAPM specification on the excess return. Two important characteristics are worth noting from these figures.

<Insert Figure 2 here>
<Insert Figure 3 here>

The first of these is that the CAPM and the FF methodologies for estimating excess returns yield similar coefficient estimates on periods of relative stability on the mortgage market. When excluding the periods corresponding to the "Saving and Loans debacle", 1980s and early 1990s, and the latest subprime mortgage crisis, starting in 2007, the FF estimates for the alpha and beta coefficients of the excess return series for Fannie Mae and Freddie Mac lie within the limits of the confidence interval of the CAPM coefficient estimates. This observation is an indication that during periods of distress in the mortgage sector the excess market portfolio return coefficient decreases its explanatory power for the estimates of market valuation of Fannie Mae and Freddie Mac, and the SMB and the HML coefficients increase in pertinence. For this motive the event study abnormal return analysis included in the next section of the paper uses an expanded market model incorporating the FF factors.

The second important characteristic worth noticing is that the volatility of the HML coefficient estimates increases sharply on periods of great uncertainty of the mortgage sector. During the years corresponding to the S&L crisis and the current subprime crisis, the variability of the time series depicting the HML coefficient estimates show significant increases. The implementation of a MA(2)-GARCH(1,1) method on the difference of the time series of Fannie Mae's and Freddie Mac's HML coefficient estimates with dummy variables denoting the periods corresponding to the S&L crisis and the current subprime crisis finds a statistically significant increase in the series volatility for these periods, and found no statistical significant increase on

the level values of the time series during these periods. **Table 2** contains the parameter estimates of the MA(2)-GARCH(1,1) model. This observation motivates the idea that both mortgage sector crisis are due to increased frictions on market valuation vs. book valuation of the GSE's, and sustaining the wide perception that both aforementioned crisis were motivated by misrepresented portfolio valuation and lack of sound capitalization.

<Insert Table 2 here>

III. Event Study Analysis

Event study methodology

To measure the estimated market response implications of an economic event, in this case the conservatorship of Fannie Mae y Freddie Mac, the abnormal returns of the actions associated with the conservatorship are calculated using an event study analysis based on an augmented 3-Factor market model that follows closely the model specifications in Campbell et. al. (1997). The return on security $j = \{FNM, FRE\}$ associated to event i at time τ is:

$$R_{i\tau}^j = \alpha_i^j + \beta_i^j R_{m\tau} + \theta_{i,SMB}^j SMB_{m\tau} + \theta_{i,HML}^j HML_{m\tau} + \varepsilon_{i\tau}^j. \quad (1)$$

Where $R_{m\tau}$ is the market return at time τ , and $\varepsilon_{i\tau}$ is a zero mean disturbance term with variance $\sigma_{\varepsilon i}^2$. $\{\alpha_i^j, \beta_i^j, \theta_{i,SMB}^j, \theta_{i,HML}^j, \varepsilon_{i\tau}^j\}$ are the parameters of the augmented market model. **Equation (1)** can be rewritten using matrix notation:

$$\vec{R}_{ij} = \mathbf{X}_i \vec{\Theta}_{ij} + \vec{\varepsilon}_{ij}. \quad (2)$$

Defining $\tau = 0$ as the event date, the event window is composed by the dates spanning from $\tau = T_1 + 1$ to $\tau = T_2$, and the estimation window by those within $\tau = T_0 + 1$ and $\tau = T_1$. $L_1 = T_1 - T_0$ is the length of the estimation window and $L_2 = T_2 - T_1$ is the length of the event window.

Equations (3) - (6) contain the ordinary least square coefficient estimates of the model using the L_1 observations in the estimation window.

$$\hat{\theta}_{ij} = (\mathbf{X}_i^T \mathbf{X}_i)^{-1} \mathbf{X}_i^T \vec{R}_{ij}. \quad (3)$$

$$\hat{\sigma}_{\varepsilon_{ij}}^2 = \frac{1}{L_i - 2} \hat{\varepsilon}_{ij}^T \hat{\varepsilon}_{ij}. \quad (4)$$

$$\hat{\varepsilon}_{ij} = \vec{R}_{ij} - \mathbf{X}_i \hat{\theta}_{ij}. \quad (5)$$

$$Var[\hat{\theta}_{ij}] = (\mathbf{X}_i^T \mathbf{X}_i)^{-1} \sigma_{\varepsilon_{ij}}^2. \quad (6)$$

Equation (7) contains the formula for abnormal return $\hat{\varepsilon}_{ij}^*$ of event i on security j . \vec{R}_{ij}^* and \mathbf{X}_i^* are a $L_2 \times 1$ vector and a $L_2 \times 4$ matrix of the market returns of security j and the augmented market regressors inclusive in the event window.

$$\hat{\varepsilon}_{ij}^* = \vec{R}_{ij}^* - \mathbf{X}_i^* \hat{\theta}_{ij}. \quad (7)$$

Under the null hypothesis, the abnormal return $\hat{\varepsilon}_{ij}^*$ distributes normally, i.e. $\hat{\varepsilon}_{ij}^* \sim N(0, \mathbf{V}_{ij})$; where $\mathbf{V}_{ij} = \mathbf{I} \sigma_{\varepsilon_{ij}}^2 + \mathbf{X}_i^* (\mathbf{X}_i^{*T} \mathbf{X}_i^*)^{-1} \mathbf{X}_i^{*T} \sigma_{\varepsilon_{ij}}^2$ and \mathbf{I} is an $L_2 \times L_2$ identity matrix.

The estimated cumulative abnormal return $\widehat{CAR}_{ij}(\tau_1, \tau_2)$ of event i on security j is calculated aggregating the abnormal return of the event over the dates delimited by τ_1 and τ_2 , where $T_1 < \tau_1 \leq \tau_2 \leq T_2$. Let $\vec{\gamma}$ be a $L_2 \times 1$ vector with ones in positions $\tau_1 - T_1$ and $\tau_2 - T_1$ and zeros elsewhere. **Equations (8) and (9)** contains the formula for calculating the estimated cumulative abnormal return and its estimated variance.

$$\widehat{CAR}_{ij}(\tau_1, \tau_2) \equiv \vec{\gamma}^T \hat{\varepsilon}_{ij}^*. \quad (8)$$

$$Var[\widehat{CAR}_{ij}(\tau_1, \tau_2)] = \hat{\sigma}_{ij}^2(\tau_1, \tau_2) = \vec{\gamma}^T \mathbf{V}_{ij} \vec{\gamma}. \quad (9)$$

Under the null hypothesis that the cumulative abnormal return is zero, **Equation (10)** presents a statistic distributed as Student with $L_1 - 4$ degrees of freedom.

$$SCAR_{ij}(\tau_1, \tau_2) = \frac{\widehat{CAR}_{ij}(\tau_1, \tau_2)}{\hat{\sigma}_{ij}(\tau_1, \tau_2)} \quad (10)$$

where $\sigma_{ij}^2(\tau_1, \tau_2)$ is calculated using $\hat{\sigma}_{\varepsilon_{ij}}^2$ from **Equation (4)**.

An aggregate measure of abnormal return due to the N conservatorship actions is calculated using the mean cumulative abnormal return or $\overline{CAR}_j(\tau_1, \tau_2)$ of the events, as in **Equation (11)**. The variance of $\overline{CAR}_j(\tau_1, \tau_2)$ is expressed in **Equation (12)**.

$$\overline{CAR}_j(\tau_1, \tau_2) = \frac{1}{N} \sum_{i=1}^N \widehat{CAR}_i(\tau_1, \tau_2) \quad (11)$$

$$Var[\overline{CAR}_j(\tau_1, \tau_2)] = \bar{\sigma}_j^2(\tau_1, \tau_2) = \frac{1}{N^2} \sum_{i=1}^N \sigma_{ij}^2(\tau_1, \tau_2) \quad (12)$$

Inferences from the mean cumulative abnormal return are possible and, as shown in Campbell et al. (197) p. 162, the estimator J_j in **Equation (13)** behaves asymptotically according to a standardized normal distribution.

$$J_j = \frac{\overline{CAR}_j(\tau_1, \tau_2)}{[\hat{\sigma}_j^2(\tau_1, \tau_2)]^{\frac{1}{2}}} \sim asy N(0,1) \quad (13)$$

Data

The return data on Fannie Mae and Freddie Mac R_{it}^j corresponds to the daily percentage change of its end of day price of stock, according to Bloomberg. The market return data is taken from the daily percentage return on the S&P500 index, according to Bloomberg. The $SMB_{m\tau}$ and $HML_{m\tau}$ daily factors are constructed using 6 value-weight portfolios formed on size and book-to-market, where SMB is the average return on the three small portfolios minus the average return on the three big portfolios, and HML is the average return on the two value portfolios minus the average return on the two growth portfolios².

Table 1 and **Table 2** list the dates and types of actions associated with the Treasury’s conservatorship agreements with Fannie Mae and Freddie Mac, respectively. In addition to the date of the conservatorship enactment, September 7 2008, the **Tables 1 and 2** recognizes three types of actions: the instances where the Treasury purchases senior preferred stock from both GSEs (Preferred Stock), the instances where the GSEs pay the quarterly accrued dividends to the Treasury corresponding its ownership of senior preferred stock (Dividend Paid), and the instances where each GSE pays the quarterly required commitment fee to the Treasury in compensation for the Treasury’s explicit support for the agreement (Dividend Payment). The latter commitment fee can be paid in cash or may be added to the senior preferred stock.

<Insert Table 1 here>

<Insert Table 2 here>

IV. Event study implementation and results

As analyzed in the previous section, the environment in the mortgage market that led to and followed the conservatorship embargos of Fannie Mae and Freddie Mac is characterized with high volatility of the coefficients that parameterize the returns of these GSEs, see **Figure 1** and **Figure 2**. For this reason a separate estimation window for all events is implemented. To preserve the well-defined inferential properties of the event study, allow an ample analysis of the information content of each event, and also conserve a reliable number of conservatorship actions to study as events, an event window of 21 market trading days and a 36 market trading days estimation window are chosen. The event window includes the day of the event and ten days prior and subsequent of the event. The estimation includes the 36 market trading days immediately preceding the event window.

<Insert Table 3 here>

² Values for SMB and HML are from the data library made available by Kenneth R. French at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

The primary events in the study are the conservative embargo of the GSEs by the Treasury and the senior preferred stock purchases. The other conservatorship actions, the Dividend Paid and the Dividend Payment, are not primary events in the study because their occurrences are assumed to be rationally expected by the market participants given that their incidence were documented well in advance at the enactment of the conservatorship. The third column of **Table 3** contains the conservatorship actions that are considered the final primary events in the study. The preferred stock purchases not chosen as final primary events in the study is due to the overlap of their estimation or event windows with those of other conservatorship actions.

<Insert Table 4 here>

Table 4 presents the least squares estimates and confidence intervals of the abnormal return event study parameters for each GSE corresponding to the individual estimation window of each event. The tables also present the parameter estimates if only a single estimation window is considered for all events. These are called “Benchmark 1” and “Benchmark 2”, and are associated with estimation windows spanning throughout the entire natural year of 2007 and the first semester of 2008, respectively. The estimated parameters values calculated from the considered single estimation windows, “Benchmark 1” and “Benchmark 2”, do not lie within the confidence intervals of the estimated parameter values calculated from event-specific estimation windows. Even though that event-specific estimation windows reduce the amount of events included in the study due to overlap, we consider that it is not appropriated to utilize a single set of parameter values for an event study on the conservatorship actions undertaken by the Treasury on Fannie Mae or Freddie Mac. **Table 4** reinforces with statistical significance the conjectures previously made on **Figure 2 and Figure 3** on the increase in volatility of Fannie Mae or Freddie Mac excess return parameter estimates during periods of mortgage market distress.

<Insert Table 5 here>

<Insert Table 6 here>

The event study results are presented in **Table 5 and Table 6**. Both, Fannie Mae and Freddie Mac, react with deeply negative and statistically significant abnormal returns to their conservatorship announcements on Sept. 7 2008, and with significantly positive abnormal returns to the announcement of the first senior preferred stock purchase by the Treasury that is considered in the event study analysis, on August 6 2009 and Nov. 29 2008 respectively. The GSEs senior preferred stock purchases by the Treasury that successively occurred after the initial purchases on August 6 2009 and Nov. 29 2008 did not yield statistically significant abnormal returns.

The information content of the conservatorship announcement Sept. 7 2008 precipitated a significant negative response on the stock price of both GSEs. On the event date an abnormal return of -102.1% is estimated for Fannie Mae and -91.6% for Freddie Mac. For the case of Fannie Mae, most of the impact on the stock return occurred on the day of the announcement and the five days preceding it; i.e. of a cumulative abnormal return of -76.8% during the period [-5:+5], -115.8% corresponds to the period [-5:-1]. The cumulative abnormal return corresponding to the conservatorship announcement of Freddie Mac spans significantly through the days before and after the event, i.e. an estimated CAR of -121.3% for period [-5:+5], the CAR is -95.6% for

[-5:-1], and -25.7% for [0:+5]. The abnormal return on the conservatorship embargo of Fannie Mae, throughout the [-5:+5] window represented an estimated cumulative loss on its market valuation of \$4,685 million; for Freddie Mac this value is estimated at \$4,138 million.

While the initial purchases by the Treasury of the GSEs senior preferred stock, on August 6 2009 for Fannie Mae and Nov. 29 2008 for Freddie Mac, caused positive significant abnormal return, it is interesting to note that the stock statistically significant abnormal returns for Freddie Mac occurred on the period previous the stock purchase announcement; whereas for Fannie Mae the statistically significant returns occurred along the dates after the announcement. It is estimated that the cumulative abnormal valuation of this first purchase represented an increase of \$236.7 million for Fannie Mae along [0:+5] and \$264.3 for Freddie Mac along [-5:-1]. The losses in market valuations of both GSEs from the conservatorship embargoes are far superior to the increases due to the purchases of senior preferred stock, fueling the conjecture that the conservatorship embargo bailed out creditors, not shareholders nor senior management.

The Treasury purchases of the GSEs senior preferred stocks occurring after the initial purchases on August 6 2009 and Nov. 29 2008 did not yield statistically significant abnormal returns. The results of an event study performed on the natural logarithm of the turnover ratio of both GSEs, regressed on a constant and the natural logarithm of the turnover ratio of the companies included in the S&P500 index, show significant percentage increases on the turnover ratio at the events corresponding to the conservatorship announcement and the initial preferred stock purchases but none on the successive events. **Table 7 and Table 8** contain the results of the volume event study analysis. Provided these findings, one may conjecture that no additional information content was derived by the market participants from these subsequent events.

<Insert Table 7 here>

<Insert Table 8 here>

V. Conclusions and Current Extensions

The impact of the FHFA conservatorship embargo on Fannie Mae and Freddie Mac, and the Senior Preferred Stock Purchase Agreement between the GSEs and the U.S. Treasury decreased considerably the market capitalization of both corporations, significantly reducing shareholders' wealth. Nevertheless, explicit guarantees to each GSE creditors by the U.S. Treasury seemed to have influenced a decrease in the mortgage rates and on the yields of Fannie Mae's and Freddie Mac's obligations. Substantiating the conjecture any positive impact of both aggressive emergency measures by the federal government, the embargo and the stock purchase agreement, is only reflected on the debt market financial instruments of the corporations, and not on those of the asset market.

The currently undergoing extension on the research incorporates a bond event study on the yield of Fannie Mae and Freddie Mac debt obligations. The bond event study considers the same conservatorship events as the asset event study plus the November 25 2008 Federal Reserve announcement on the creation of new facilities to purchase up to \$600 billion in debt obligations and MBS guaranteed by the GSEs. The expected result is that the conservatorship

announcement and, most likely, the initial events associated with it will yield a negative statistically significant impact on the yield of Fannie Mae's and Freddie Mac's debt obligations.

References

1. Bong-Chan Kho, Dong Lee & Rene M. Stulz, (2000). "U.S. Banks, Crises, and Bailouts: From Mexico to LTCM", *American Economic Review*, vol. 90(2), pages 28-31.
2. Daniel, Kent & Sheridan Titman, 2006. "Market Reactions to Tangible and Intangible Information," *Journal of Finance*, vol. 61(4), pages 1605-1643, 08.
3. Frame, S. (2010), "The 2008 Intervention to Stabilize Fannie Mae and Freddie Mac". *Journal of Applied Finance*, Fall/Winter 2008 (18). Pages 124–33.
4. Frame, S. and White, L. (2011), "The Industrial Organization of the U.S. Single-family Residential Mortgage Industry", *International Encyclopedia of Housing and Home*, forthcoming.
5. Frame, S. and White, L. (2005), "Fussing and Fuming over Fannie and Freddie: "How Much Smoke, How Much Fire?" *The Journal of Economic Perspectives*, Vol. 19, No. 2 pp. 159-184.
6. Kayhan, A., & Titman, S. (2007). Firms' histories and their capital structures. *Journal of Financial Economics* 83, pages 1-32.
7. Kho, Bong-Chan and Stulz, René M. (2000). "Banks, the IMF, and the Asian Crisis." *Pacific Basin Finance Journal*, Vol. 8, No. 2 pages 177-216.
8. MacKinlay, A Craig, (1997). "Event Studies in Economics and Finance," *Journal of Economic Literature*. Vol. XXXV, Issue 1 pages 13-39.
9. White, L. (1993), "A Cautionary Tale of Deregulation Gone Awry: The S&L Deblacle", *Southern Economic Journal*, Vol. 59, No. 3, pages 496-514.
10. White, L. (2009), "The Role of Capital and Leverage in the Financial Markets Debacle of 2007-2008". *Mercatus on Policy*, No. 37 February 2009. The Mercatus Center at George Mason University.

TABLES AND FIGURES

Figure 1: Single-Family Residential Mortgage Holdings

The left axis indicate the percentage holdings by Fannie Mae, Freddie Mac and other financial institutions of Single-Family Residential Mortgages from 1970 to 2009. “All Others” are mainly banks and thrifts, credit unions, ABS issuers, Ginnie Mae, REITS and other finance companies. The right axis references the amount, in billion USD, of the Single-Family Residential Mortgages holdings of Fannie Mae and Freddie Mac.

Source: Flow of Funds Accounts of the United States, Table L.217 and Frame & White (2005).

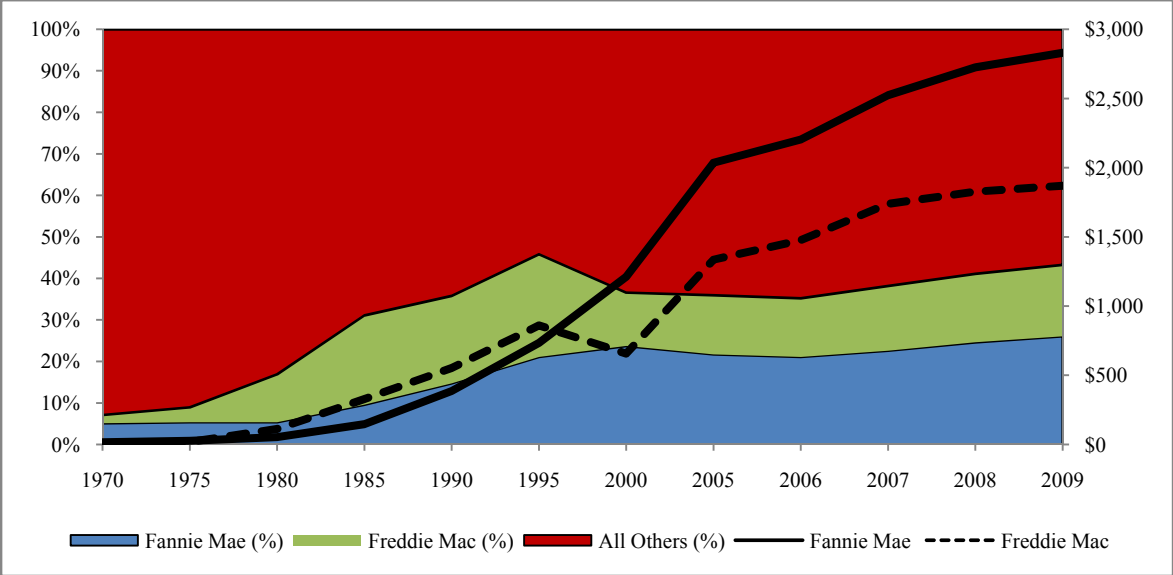


Figure 2: Fannie Mae Fama-French coefficient estimates historical time series

The blue series in Panels 1 to 4 depict the historical daily values of the Fama-French coefficient estimates Alpha, Beta, SMB and HML, respectively, on Fannie Mae's excessive return time series, constructed using a 100 day rolling estimation window. The data is of daily frequency and for the time period between 1/2/1980 to 5/28/2010. Panels 1 and 2, with the two red series, depict the upper and lower bounds of the 95% confidence intervals created by the CAPM Alpha and Beta coefficient estimates.

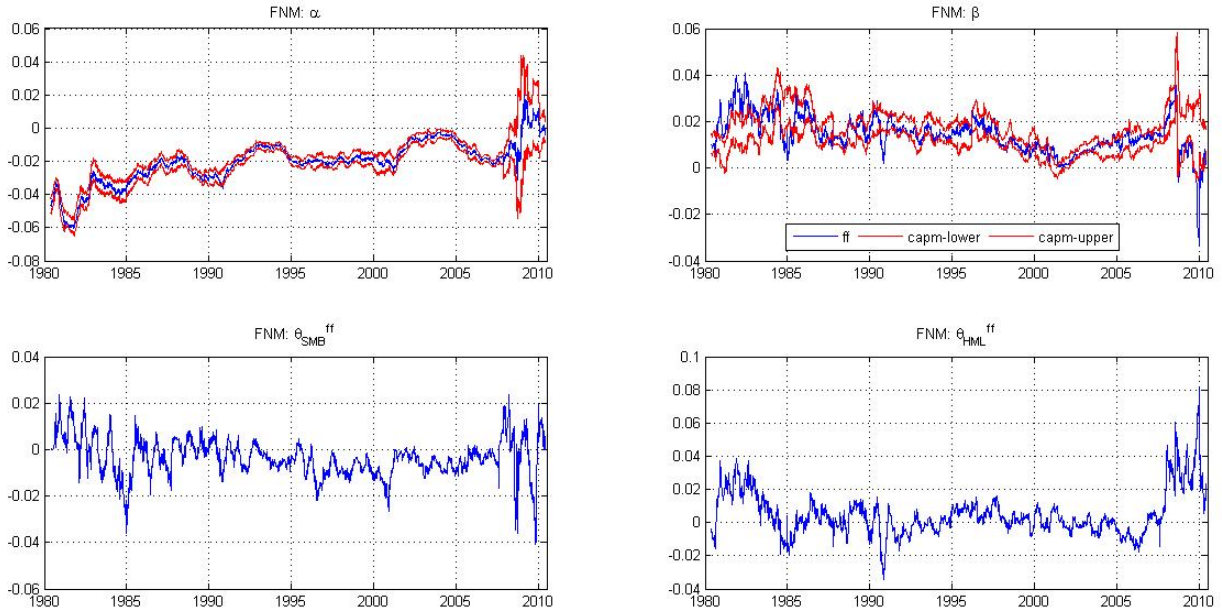


Figure 3: Freddie Mac Fama-French coefficient estimates historical time series

The blue series in Panels 1 to 4 depict the historical daily values of Fama-French coefficient estimates Alpha, Beta, SMB and HML, respectively, on Freddie Mac's excessive return time series, constructed using a 100 day rolling estimation window. The data is of daily frequency and for the time period between 11/8/1989 to 5/28/2010. Panels 1 and 2, with the two red series, depict the upper and lower bounds of the 95% confidence intervals created by the CAPM Alpha and Beta coefficient estimates.

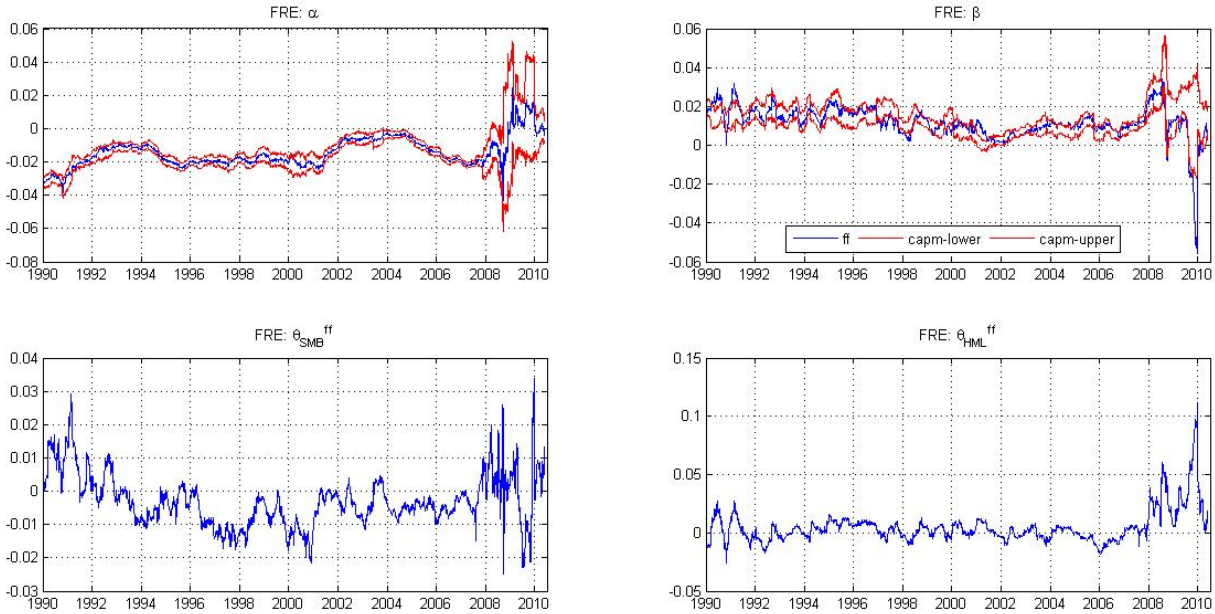


Table 1: Fannie Mae and Freddie Mac Assets, MBS and Mortgage Portfolio (in billions)

In billions of USD. Net Worth is calculated by the subtraction of Total Liabilities (not shown) to Total Asset. The Mortgage Portfolio column includes repurchased mortgage backed securities. The Mortgage Backed Securities column excludes those MBS held in the Mortgage Portfolio.

Source: Financial Statements of Fannie Mae and Freddie Mac, various years.

	Fannie Mae				Freddie Mac			
	Total Assets	Net Worth	Mortgage Portfolio	Mortgage backed securities	Total Assets	Net Worth	Mortgage Portfolio	Mortgage backed securities
2000	675.1	20.8	607.7	706.7	459.3	15.4	385.5	576.1
2001	799.9	18.1	706.8	859.0	617.3	19.0	503.8	653.1
2002	887.5	16.3	801.1	1029.5	752.2	33.6	589.9	749.3
2003	1009.6	22.4	901.9	1300.2	803.4	33.4	660.4	768.9
2004	1020.9	39.0	924.8	1733.1	795.3	32.9	664.5	840.7
2005	834.2	39.4	736.5	1598.9	806.2	28.1	709.4	938.8
2006	841.5	41.6	726.1	1777.6	804.9	27.4	700.5	1126.2
2007	882.5	44.1	727.9	2118.9	794.4	26.9	709.8	1392.9
2008	912.4	-15.2	792.2	2289.5	851.0	-30.6	804.8	1402.7
2009	869.1	-15.3	769.3	2432.8	841.8	4.4	755.3	1495.3
2010.II	3256.3	-1.4	707.2	2416.7	2343.6	-1.7	739.5	1770.8

Table 2: MA(2)-GARCH(1,1) Model for Fannie Mae & Freddie Mac HML estimates

The Table shows the parameter estimates for the difference of the historical HML coefficients and variance. Parameters are estimated by maximum likelihood using the daily 7573 observations for Fannie Mae illustrated in Panel 4 of Figure 1, and the daily 5143 observations for Freddie Mac in Panel 4 of Figure 2. $D_t^{S\&L}$ and D_t^{Sub} are dummy variables denoting the S&L and the subprime crisis. $D_t^{S\&L}$ is equal to one for that period within 1980-92 and 0 otherwise, and D_t^{Sub} is one within 2007-10 and 0 otherwise. Numbers in parenthesis are each coefficient's standard error. ***, ** & * denote 1%, 5% & 10% significance.

$\Delta\theta_{j,t}^{HML} = \mu_j + \varphi_{j1}\varepsilon_{j,t-1} + \varphi_{j2}\varepsilon_{j,t-2} + \varepsilon_{j,t}$		
Means Diff Equation	FNM	FRE
μ	1.230E-07 (9.0E-06)	-1.170E-06 (1.0E-05)
ε_{t-1}	-0.0288 (0.013)**	0.0256 (0.016)*
ε_{t-2}	0.0315 (0.013)**	0.0293 (0.014)**
$h_{jt} = \phi_j + \gamma_{j1}\varepsilon_{j,t-1}^2 + \rho_1 h_{j,t-1} + \tau_{jS\&L}D_{j,t}^{S\&L} + \tau_{jSub}D_{j,t}^{Sub}$		
Variance Equation	FNM	FRE
ϕ	1.430E-07 (5.0E-09)***	1.520E-07 (5.5E-09)***
ε_{t-1}^2	0.2193 (0.007)***	0.2917 (0.011)***
h_{t-1}	0.5736 (0.011)***	0.5221 (0.014)***
$D_t^{S\&L}$	3.470E-07 (1.5E-08)***	3.250E-07 (3.1E-08)***
D_t^{Sub}	9.530E-07 (3.5E-08)***	1.030E-06 (4.5E-08)***

Table 3: Events associated to the conservatorship of Fannie Mae and Freddie Mac

The Table lists the dates and types of actions associated with the Treasury’s conservatorship agreements with Fannie Mae and Freddie Mac, respectively. In addition to the date of the conservatorship enactment, September 7 2008, the Table recognizes three types of actions: the instances where the Treasury purchases senior preferred stock from both GSEs (Preferred Stock), the instances where the GSEs pay the quarterly accrued dividends to the Treasury corresponding its ownership of senior preferred stock (Dividend Paid), and the instances where each GSE pays the quarterly required commitment fee to the Treasury in compensation for the Treasury’s explicit support for the agreement (Dividend Payment).

Panel A: Fannie Mae Conservatorship Actions		
Date	Action	Event
9/7/2008	Conservatorship	√
3/31/2009	Dividend Paid	
3/31/2009	Preferred Stock	
5/8/2009	Preferred Stock	
6/30/2009	Dividend Paid	
8/6/2009	Preferred Stock	√
9/30/2009	Dividend Paid	
11/4/2009	Preferred Stock	√
12/31/2009	Dividend Payment	
2/26/2010	Preferred Stock	√
3/31/2010	Dividend Payment	
5/10/2010	Preferred Stock	√
Panel B: Freddie Mac Conservatorship Actions		
Date	Action	Event
9/7/2008	Conservatorship	√
11/29/2008	Preferred Stock	√
12/31/2008	Dividend Paid	
3/30/2009	Dividend Paid	
3/31/2009	Preferred Stock	
5/12/2009	Preferred Stock	
6/30/2009	Dividend Paid	
9/30/2009	Dividend Paid	
12/31/2009	Dividend Payment	
3/31/2010	Dividend Payment	
5/5/2010	Preferred Stock	√

Table 4: Augmented-market model event study parameter estimates

The Table presents the least squares estimates and confidence intervals of the abnormal return event study parameters for each Fannie Mae and Freddie Mac, in Panel A and Panel B, respectively, corresponding to the individual estimation window of each event. The tables also present the parameter estimates if only a single estimation window is considered for all events. These are called “Benchmark 1” and “Benchmark 2”, and are associated with estimation windows spanning throughout the entire natural year of 2007 and the first semester of 2008, respectively. The estimated parameters values calculated from the considered single estimation windows, “Benchmark 1” and “Benchmark 2”, do not lie within the confidence intervals of the estimated parameter values calculated from event-specific estimation windows.

Panel A: Fannie Mae Estimation Window Coefficients				
Varying Estimation Window Coefficients	α_i^{FNM}	β_i^{FNM}	$\theta_{i,SMB}^{FNM}$	$\theta_{i,HML}^{FNM}$
$\tau = 0$: Conservatorship 09/07/08	-0.02566 [-0.06:0.01]	0.71881 [-2.99:4.43]	-0.04806 [-0.09:0.00] †‡	-0.04806 [-0.09:-0.01] †‡
$\tau = 0$: Pref. Stock Purchase 03/31/09	-0.00189 [-0.02:0.02]	1.02842 [-0.73:2.78]	-0.03733 [-0.06:-0.01] †‡	-0.03733 [-0.07:0.00] †‡
$\tau = 0$: Pref. Stock Purchase 08/06/09	-0.01562 [-0.04:0.01]	0.80554 [-3.69:5.30]	-0.03172 [-0.11:0.05]	-0.03172 [-0.09:0.02] ‡
$\tau = 0$: Pref. Stock Purchase 11/04/09	0.00241 [-0.02:0.02]	1.34913 [-1.41:4.11]	-0.02661 [-0.09:0.03]	-0.02661 [-0.08:0.03]
$\tau = 0$: Pref. Stock Purchase 02/26/10	0.00132 [-0.01:0.02]	0.66877 [-2.45:3.79]	0.01183 [-0.02:0.04]	0.01183 [-0.02:0.05]
Fixed Estimation Window Coefficients	α_i^{FNM}	β_i^{FNM}	$\theta_{i,SMB}^{FNM}$	$\theta_{i,HML}^{FNM}$
Benchmark 1 (†) $T_0 + 1 = 01/01/07$ $T_1 = 12/31/07$	-0.0003 (-0.166)	1.7495 (9.799)***	0.0084 (1.857)*	0.0166 (2.447)**
Benchmark 2 (‡) $T_0 + 1 = 01/01/08$ $T_1 = 06/30/08$	-0.0022 (-0.559)	2.7192 (9.399)***	0.0148 (1.746)*	0.0243 (2.417)**
Panel B: Freddie Mac Estimation Window Coefficients				
Varying Estimation Window Coefficients	α_i^{FRE}	β_i^{FRE}	$\theta_{i,SMB}^{FRE}$	$\theta_{i,HML}^{FRE}$
$\tau = 0$: Conservatorship 09/07/08	-0.04176 [-0.07:-0.01] †‡	0.74683 [-2.57:4.07]	0.00266 [-0.04:0.04]	0.00266 [-0.03:0.04]
$\tau = 0$: Pref. Stock Purchase 11/29/08	-0.00818 [-0.04:0.02]	1.54749 [0.83:2.27] ‡	0.01294 [-0.01:0.03]	0.02170 [-0.01:0.05]
$\tau = 0$: Pref. Stock Purchase 05/05/10	0.00243 [-0.01:0.02]	-0.12082 [-3.37:3.13]	0.02170 [-0.01:0.05]	0.02170 [-0.01:0.06]
Fixed Estimation Window Coefficients	α_i^{FRE}	β_i^{FRE}	$\theta_{i,SMB}^{FRE}$	$\theta_{i,HML}^{FRE}$
Benchmark 1 (†) $T_0 + 1 = 01/01/07$ $T_1 = 12/31/07$	-0.00205 (-1.095)	1.76596 (9.622)	0.00190 (0.408)	0.00791 (1.137)
Benchmark 2 (‡) $T_0 + 1 = 01/01/08$ $T_1 = 06/30/08$	-0.00223 (-0.563)	2.65546 (8.915)	0.01438 (1.651)	0.01947 (1.877)

*** : 1% signif., t-stat(250df)>|2.596|; **: 5% signif., t-stat(250df)>|1.970|; *: 10% signif., t-stat(250df)>|1.651|.

Table 5: Abnormal returns event study results for Fannie Mae

The table indicates the estimated cumulative abnormal returns of the events associated with the conservatorship embargo of Fannie Mae by the Treasury. The first column of Panel A indicates the considered values of $\tilde{\gamma}$ along the event window, and the second to sixth columns contain the estimated value of $\widehat{CAR}_{i,FNM}(\tau_1, \tau_2)$ for each event i for a given $\tilde{\gamma}$, and its corresponding t-statistic $\widehat{S}CAR_{i,FNM}(\tau_1, \tau_2)$ in parenthesis. The first column on Panel B indicates a date τ along the event window, and the second to sixth columns contain the abnormal return estimate $\hat{\epsilon}_{FNM}^*$ for date τ , and its corresponding t-statistic in parenthesis. +++, ++ & + indicate positive statistical significance at the 1%, 5% and 10% levels, respectively. ---, -- & - indicate negative statistical significance at the 1%, 5% and 10%.

Panel A: Cumulative abnormal asset return on events associated with Fannie Mae's embargo							
$[\tau_1: \tau_2]$	Conserv. 9/7/08		Purch. 8/6/09		Purch. 11/4/09	Purch. 2/26/10	Purch. 5/10/10
[-10:+10]	-0.0038 (-0.0064)		0.5890 (1.7974)	+	0.2467 (0.6021)	0.0256 (0.0816)	-0.1367 (-0.4842)
[-5:+5]	-0.7683 (-1.8657)	-	0.4880 (2.0650)	++	0.0154 (0.0553)	-0.0021 (-0.0105)	-0.1624 (-1.0341)
[-2:+2]	-0.7178 (-2.9160)	---	0.6036 (4.3906)	+++	0.0192 (0.1180)	-0.0010 (-0.0079)	-0.1024 (-1.1263)
[-5:-1]	-1.1576 (-3.9190)	---	0.0704 (0.4021)		0.1100 (0.5642)	-0.0385 (-0.2794)	-0.0857 (-0.8044)
[0:+5]	0.3894 (1.5952)		0.4176 (3.3774)	+++	-0.0946 (-0.5684)	0.0364 (0.2677)	-0.0768 (-0.7784)
Panel B: Abnormal asset return on dates on event window associated with Fannie Mae's embargo							
τ	Conserv. 9/7/08		Purch. 8/6/09		Purch. 11/4/09	Purch. 2/26/10	Purch. 5/10/10
10	0.4016 (3.6663)	+++	0.1641 (3.1749)	+++	0.0273 (0.3939)	-0.0240 (-0.4501)	-0.0119 (-0.2933)
9	0.0854 (0.6803)		-0.0056 (-0.1084)		0.0047 (0.0713)	-0.0119 (-0.2217)	0.0406 (0.9826)
8	-0.0737 (-0.6330)		-0.0130 (-0.2434)		0.0433 (0.5533)	0.0280 (0.5250)	0.0048 (0.0760)
7	0.1093 (0.9299)		-0.0267 (-0.4869)		0.0015 (0.0217)	0.0615 (1.1714)	-0.0274 (-0.6787)
6	-0.2902 (-2.8609)	---	-0.0579 (-1.0856)		0.0235 (0.3279)	0.0026 (0.0489)	0.0011 (0.0273)
5	0.1097 (0.9140)		-0.0188 (-0.3538)		0.0024 (0.0365)	0.0131 (0.2420)	-0.0035 (-0.0927)
4	-0.0417 (-0.4149)		-0.0413 (-0.8056)		-0.0276 (-0.3814)	0.0055 (0.1044)	0.0018 (0.0400)
3	-0.0025 (-0.0237)		0.1096 (2.1028)	++	-0.0590 (-0.7619)	-0.0156 (-0.2988)	0.0043 (0.1040)
2	-0.2021 (-1.9861)	-	0.5314 (10.2679)	+++	-0.0540 (-0.8010)	0.0199 (0.3661)	-0.0576 (-1.3084)

1	0.5259 (4.6863)	+++	-0.1632 (-3.0139)	---	0.0436 (0.5735)	0.0136 (0.2294)	-0.0216 (-0.5400)
0	-1.0207 (-9.9407)	---	0.0301 (0.5643)		-0.0551 (-0.7055)	-0.0352 (-0.6493)	-0.0131 (-0.1996)
-1	0.0096 (0.0931)		0.2301 (3.9842)	+++	0.1239 (1.6272)	-0.0015 (-0.0273)	0.0207 (0.4622)
-2	-0.0304 (-0.2776)		-0.0247 (-0.4669)		-0.0392 (-0.5132)	0.0022 (0.0413)	-0.0308 (-0.5507)
-3	-0.0471 (-0.4567)		-0.0631 (-1.1228)		0.0616 (0.8227)	0.0017 (0.0314)	-0.0281 (-0.7055)
-4	0.0590 (0.5636)		-0.0237 (-0.4305)		0.0242 (0.3185)	-0.0057 (-0.1080)	-0.0096 (-0.1975)
-5	-0.1279 (-1.2403)		-0.0783 (-1.4142)		-0.0055 (-0.0688)	0.0000 (-0.0003)	-0.0248 (-0.6364)
-6	0.1670 (1.6529)		0.0497 (0.9526)		0.0013 (0.0195)	-0.0285 (-0.5350)	-0.0001 (-0.0020)
-7	0.1556 (1.5503)		0.0160 (0.3130)		0.0028 (0.0413)	0.0053 (0.1005)	-0.0046 (-0.1176)
-8	0.0781 (0.7810)		0.0091 (0.1718)		0.0453 (0.6497)	-0.0160 (-0.2848)	0.0195 (0.5008)
-9	0.0992 (0.9572)		-0.0029 (-0.0562)		-0.0459 (-0.6913)	0.0485 (0.8056)	-0.0009 (-0.0202)
-10	0.0321 (0.3194)		-0.0319 (-0.5974)		0.1275 (1.9031)	+	-0.0377 (-0.6857)
							0.0047 (0.1239)

Table 6: Abnormal returns event study results for Freddie Mac

The table indicates the estimated cumulative abnormal returns of the events associated with the conservatorship embargo of Freddie Mac by the Treasury. The first column of Panel A indicates the considered values of $\vec{\gamma}$ along the event window, and the second to sixth columns contain the estimated value of $\widehat{CAR}_{i,FRE}(\tau_1, \tau_2)$ for each event i for a given $\vec{\gamma}$, and its corresponding t-statistic $\widehat{SCAR}_{i,FRE}(\tau_1, \tau_2)$ in parenthesis. The first column on Panel B indicates a date τ along the event window, and the second to sixth columns contain the abnormal return estimate $\hat{\epsilon}_{FRE}^*$ for date τ , and its corresponding t-statistic in parenthesis. +++, ++ & + indicate positive statistical significance at the 1%, 5% & 10% levels, respectively. ---, -- & - indicate negative statistical significance at 1%, 5% & 10%.

Panel A: Cumulative abnormal asset return on events associated with Fannie Mae's embargo					
$[\tau_1: \tau_2]$	Conserv. 9/7/08		Purch. 8/6/09		Purch. 5/10/10
[-10:+10]	0.4611 (0.8625)		0.5454 (1.0793)		-0.1987 (-0.7580)
[-5:+5]	-1.2131 (-3.2855)	---	0.5450 (1.5298)		-0.1020 (-0.6905)
[-2:+2]	-0.9637 (-4.3661)	---	0.6512 (3.0755)	+++	-0.0926 (-0.7203)
[-5:-1]	-0.9557 (-3.6086)	---	0.7704 (3.2460)	+++	0.0069 (0.0642)
[0:+5]	-0.2573 (-1.1758)		-0.2254 (-1.0127)		-0.1089 (-1.1804)
Panel B: Abnormal asset return on dates on event window associated with Fannie Mae's embargo					
τ	Conserv. 9/7/08		Purch. 8/6/09		Purch. 5/10/10
10	0.8063 (8.2096)	+++	0.0197 (0.2203)		-0.0357 (-0.8736)
9	0.4621 (4.1065)	+++	0.0535 (0.5799)		0.0270 (0.6466)
8	-0.0407 (-0.3899)		-0.0190 (-0.2090)		-0.0237 (-0.6066)
7	0.2431 (2.3069)	++	-0.0714 (-0.7991)		0.0005 (0.0115)
6	-0.4146 (-4.5584)	---	-0.0070 (-0.0787)		0.0211 (0.4968)
5	0.0696 (0.6466)		-0.0752 (-0.8381)		-0.0543 (-1.2443)
4	-0.1797 (-1.9957)	-	-0.0795 (-0.8771)		-0.0038 (-0.0918)
3	-0.0944 (-1.0109)		0.1198 (1.3410)		0.0115 (0.1758)

2	-0.1926 (-2.1106)	--	0.0307 (0.3422)		-0.0065 (-0.1449)
1	0.1397 (1.3884)		-0.2212 (-2.3828)	--	-0.0558 (-0.9691)
0	-0.9164 (-9.9541)	---	-0.0633 (-0.6583)		0.0018 (0.0435)
-1	-0.0077 (-0.0832)		0.4828 (5.3907)	+++	-0.0165 (-0.3328)
-2	0.0133 (0.1355)		0.4222 (4.5861)	+++	-0.0156 (-0.3940)
-3	-0.0132 (-0.1432)		0.1588 (1.7243)	+	0.0017 (0.0390)
-4	0.1023 (1.0908)		-0.0034 (-0.0353)		0.0178 (0.4435)
-5	-0.1341 (-1.4495)		-0.2267 (-2.4448)	--	0.0177 (0.4437)
-6	0.0507 (0.5592)		-0.0165 (-0.1776)		-0.0224 (-0.4626)
-7	0.2054 (2.2817)	++	0.0219 (0.2354)		-0.0109 (-0.2790)
-8	0.2326 (2.5947)	++	0.1831 (2.0607)	++	-0.0060 (-0.1556)
-9	0.2537 (2.7300)	++	-0.1768 (-1.9721)	-	-0.0163 (-0.4041)
-10	-0.1244 (-1.3785)		0.0128 (0.1398)		-0.0302 (-0.7503)

Table 7: Abnormal volume event study results for Fannie Mae

The table indicates the estimated cumulative abnormal volume of the events associated with the conservatorship embargo of Fannie Mae by the Treasury. The first column indicates a date τ along the event window, and the second to sixth columns contain the abnormal volume estimate for date τ , and its corresponding t-statistic in parenthesis. +++, ++ & + indicate positive statistical significance at the 1%, 5% & 10% levels, respectively. ---, -- & - indicate negative statistical significance at 1%, 5% & 10%.

Abnormal volume at dates on event window associated with Fannie Mae's embargo						
τ	Conserv. 9/7/08	Purch. 8/6/09	Purch. 11/4/09	Purch. 2/26/10	Purch. 5/10/10	
10	0.6071	2.4635		0.5471	-0.1731	-0.9586
	1.0355	4.5520	+++	0.5989	-0.2306	-1.1581
9	-0.2531	0.8821		-0.9806	0.4178	-1.1284
	-0.3600	1.6318		-1.0686	0.5564	-1.1580
8	-1.0395	0.8009		-0.2769	0.9036	-1.0206
	-1.6114	1.4701		-0.3065	1.2043	-1.1052
7	-0.4454	1.1048		0.1594	1.4330	-0.1005
	-0.7132	2.0504	++	0.1742	1.9099	+ -0.1167
6	-0.9549	1.3260		0.2354	-0.6983	-0.3658
	-1.5319	2.4458	++	0.2589	-0.9286	-0.4300
5	-0.4271	2.1793		-0.1601	-0.9309	0.0113
	-0.7106	3.9022	+++	-0.1758	-1.2405	0.0135
4	0.5009	2.4867		-0.0787	-0.8216	-0.4720
	0.8539	4.6154	+++	-0.0868	-1.0945	-0.5558
3	0.5129	3.5257		0.0387	-1.0388	-0.3817
	0.8752	6.5031	+++	0.0428	-1.3837	-0.4620
2	2.0515	2.6710		0.8401	-0.8441	-0.8232
	3.5042	+++ 4.8884	+++	0.9198	-1.1242	-0.9913
1	1.6261	0.8482		0.1213	-0.7812	-0.3696
	2.7442	+++ 1.5713		0.1342	-1.0411	-0.4368
0	2.5432	1.7021		0.6705	-1.3783	-0.2309
	4.2830	+++ 3.1565	+++	0.7415	-1.8334	- -0.2562
-1	2.7454	1.1486		0.4409	-1.4277	-0.8464
	4.6815	+++ 2.1148	++	0.4866	-1.9003	- -0.8630
-2	2.5077	-1.7645		0.0944	-1.0666	-0.0022
	4.2823	+++ -3.2740	---	0.1041	-1.4216	-0.0022
-3	3.0071	-1.8175		-0.0460	-0.8214	-0.0646
	5.1165	+++ -3.3731	---	-0.0493	-1.0945	-0.0767
-4	3.0330	-1.9691		0.6370	-1.1251	-0.0706
	5.1625	+++ -3.6264	---	0.7004	-1.4993	-0.0829
-5	3.1747	-1.7920		0.1516	-1.3559	-0.4626
	5.2757	+++ -3.3038	---	0.1645	-1.8004	- -0.5607
-6	3.5761	-1.9739		-0.0326	-0.5199	-0.8254

	5.8583	+++	-3.6593	---	-0.0357	-0.6926	-0.9532
-7	3.5852		-1.5280		0.6077	-0.2000	-0.6962
	5.6104	+++	-2.8347	---	0.6669	-0.2666	-0.8306
-8	3.8003		-1.5228		0.2639	-0.9618	-0.3413
	5.9066	+++	-2.8052	---	0.2883	-1.2812	-0.4026
-9	3.4338		-2.0659		0.6729	-1.1991	-0.0808
	5.4850	+++	-3.8247	---	0.7367	-1.5857	-0.0938
-10	3.3546		-1.8278		1.2989	-0.1459	0.7234
	5.3866	+++	-3.2923	---	1.4074	-0.1945	0.8755

Table 8: Abnormal volume event study results for Freddie Mac

The table indicates the estimated cumulative abnormal volume of the events associated with the conservatorship embargo of Freddie Mac by the Treasury. The first column indicates a date τ along the event window, and the second to sixth columns contain the abnormal volume estimate for date τ , and its corresponding t-statistic in parenthesis. +++, ++ & + indicate positive statistical significance at the 1%, 5% & 10% levels, respectively. ---, -- & - indicate negative statistical significance at 1%, 5% & 10%.

Abnormal volume at dates on event window				
Associated with Freddie Mac's embargo				
τ	Conserv. 9/7/08	Purch. 11/29/08	Purch. 5/5/09	
10	1.1322	-0.8749	0.0253	
	0.8094	-0.8026	0.0296	
9	0.1150	-0.8608	0.0032	
	0.0686	-0.8090	0.0038	
8	-0.4939	-0.5843	-0.0617	
	-0.3209	-0.5535	-0.0749	
7	-0.2979	-0.4081	-0.1443	
	-0.1999	-0.3787	-0.1717	
6	-0.8381	-0.4842	-0.4246	
	-0.5635	-0.4623	-0.5228	
5	-0.3543	-0.2773	-0.6061	
	-0.2470	-0.2673	-0.7412	
4	0.8808	-0.3111	-0.2612	
	0.6292	-0.2987	-0.3122	
3	1.0742	0.0987	-0.4075	
	0.7682	0.0936	-0.4531	
2	2.0105	0.1024	-0.5844	
	1.4393	0.0978	-0.5917	
1	1.8488	0.9194	0.3470	
	1.3076	0.8749	0.3484	
0	2.6927	1.5544	0.0126	
	1.9004	+	1.4790	0.0152
-1	2.9935		1.7229	0.0245
	2.1393	++	1.3556	0.0291
-2	2.8965		0.8663	-0.5974
	2.0730	++	0.8104	-0.7369
-3	3.5743		0.1505	-0.7615
	2.5487	++	0.1451	-0.8859
-4	3.3628		-1.3219	-0.2030
	2.3988	++	-1.2747	-0.2453
-5	3.4180		-1.1476	-0.4505
	2.3805	++	-1.1024	-0.5372
-6	3.7270		-0.9348	-0.0038

	2.5588	++	-0.8998	-0.0044
-7	3.9341		-1.2727	0.8136
	2.5801	++	-1.2215	1.0014
-8	3.9477		-0.8263	-0.0084
	2.5714	++	-0.7952	-0.0103
-9	3.6500		-0.7494	-0.4097
	2.4434	++	-0.7073	-0.4900
-10	3.6650		-0.5877	-0.2773
	2.4664	++	-0.5642	-0.3367
