Did Life Insurers Benefit from TARP or Regulatory Forbearance During the Financial Crisis of 2008–2009?

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Abstract:

Life insurers' odds of being placed under regulatory control (for example, conservatorship or receivership) during the financial crisis years of 2008 and 2009 increased with deteriorating fundamentals at a much higher rate than during normal times or during the previous recession. However, no life insurer in the sample belonging to a life insurance holding company system (LIHCS) in receipt of TARP funds experienced such insolvency issues, and life insurers with poor and deteriorating performance that belonged to a LIHCS in receipt of TARP funds received increased capital inflows during the crisis years. In contrast, life insurance entities with poor and deteriorating performance but with no access to TARP funds received a smaller dollar amount of capital injections on average during the crisis. Evidence is presented of state-based regulatory forbearance due to prescribed and permitted accounting practices (P&P) during the crisis, and it is shown that such forms of state-based regulatory forbearance acted as a substitute for the receipt of TARP funds.

Keywords: financial crises, financial institutions, life insurers, government policy and regulation, capital and ownership structure, solvency
JEL codes: G01, G21, G22, G28, G32, G33

1. Introduction

The financial crisis of 2008 and 2009 witnessed large government bailouts of several life insurance companies worldwide, the most notable being AIG. Many have argued that AIG was unusual, and that the Treasury's opening up of Troubled Asset Relief Program (TARP) funds through the Capital Purchase Program (CPP) to bail out U.S. life insurers during the spring of 2009 was unnecessary (Berry-Stölzle, Nini, and Wende 2014, Harrington 2009, Grace 2010, *inter alia*). Berry-Stölzle, Nini, and Wende (BNSW 2014), in particular, argue that consolidated life insurance groups' demand for external capital during the crisis was quite large, but was consistent with (very large) changes in fundamentals and was met with the needed supply. They also argue that there was no change in behavior in life insurers' demand for capital during the crisis (or the prior recession). Along these lines, Niehaus (2014) found no evidence of a differential relationship between life insurance entities' internal capital flows and their fundamentals during the crisis.

Against this backdrop, it also has been pointed out that life insurers used several means to bolster reported statutory capital during the crisis. First, a number of life insurance holding companies applied for TARP funds. Second, they received significant amounts of regulatory forbearance in the form of prescribed and permitted accounting practices (P&P) that had a positive impact on reported statutory surplus (GAO 2013, Barnes, Bohn, and Martin 2015).[1] They also experienced large internal capital inflows through capital contributions from, and reductions in shareholder dividends to, non-insurance parents, in combination amounting to roughly $60 billion in aggregate reported capital relief over the crisis years of 2008 and 2009 (Barnes, Bohn, and Martin 2015). This is a magnitude that is close to the amount of total

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[1] P&P are deviations from accounting standards promulgated by the National Association of Insurance Commissioners (NAIC) and are granted on a state-by-state basis. Prescribed practices are granted to all insurers within a state, while permitted accounting practices must be applied for and are granted, or not, to the individual insurance entity making the application for the permitted practice. In a March 3, 2009, bulletin, the Maine Superintendent of Insurance, Mila Kofman, argued that "the current reporting period has witnessed an unprecedented volume of permitted practice requests. Many are motivated, or appear to be motivated, by a desire to mitigate the impact of the current financial crisis on insurers' investment performance." The GAO (2013) estimated that life insurance entities in aggregate received about $8.9 billion in statutory capital relief as a result of P&P in 2008, an amount that far exceeded previous aggregate levels. This could reasonably be viewed as a form of regulatory forbearance.

(unconsolidated) paid-in capital and surplus notes (TCT, for total capital transfers) raised by life insurers during this period, and represents about 20 percent of average (unconsolidated) statutory capital and surplus over 2008 and 2009 for entity-level life insurers (Barnes, Bohn, and Martin 2015).[2] Figure 1 shows the aggregate amount of net internal capital contributions within the LIHCS (ICT, for internal capital transfers, top panel), P&P (middle panel), and total paid-in capital and surplus notes (TCT, bottom panel) for different groupings of life insurers: AIG, other life insurers affiliated with ultimate parents that applied for TARP funds, and other life insurers, at the unconsolidated entity level. As shown in Figure 1, neither ICT nor TCT to life insurers were limited to AIG or the largest life insurers that applied for TARP (Barnes, Bohn, and Martin 2015, BNSW 2014, GAO 2013, and Niehaus 2014), but both types of transfers were fairly widespread across the life insurance industry; on the other hand, positive contributions to reported capital and surplus from P&P are attributable more to the larger life insurance holding company systems (LIHCS) that applied for TARP funding.

In short, life insurers in aggregate experienced a very significant injection of capital during the crisis from a variety of proximal sources. There was ample evidence that they were in financial distress and were financially constrained, largely as a result of large investment losses during the height of the financial crisis (Klein 2009, GAO 2013, Koijen and Yogo 2015). Figure 2 shows the (unconsolidated) components of the numerator of the return on assets (ROA) for the three groups of life insurers in Figure 1: aggregate net income, top panel, and aggregate unrealized capital gains (losses), bottom panel. As this figure shows, in aggregate, life insurers in this sample experienced outright declines in both net income and unrealized capital gains in 2008. This is true even excluding AIG's life insurers. Combined, these observations make it questionable to take at face value the assertion that life insurers had no need during the financial crisis years for TARP funds or other forms of regulatory forbearance, given the extent to which external capital markets were frozen at that time. This paper is the first to provide direct evidence on the question of whether, during the financial crisis, life insurers that were likely in need of capital support due to poor and deteriorating performance received more

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[2] This measure of TCT excludes changes in treasury stock.

capital inflows or had a lower probability of financial distress if they were affiliated with an ultimate parent in receipt of TARP funds. It is also the first paper to provide evidence on the use of state-based regulatory forbearance for life insurers in the form of large and positive additions to reported capital and surplus from P&P during the crisis and the previous recession.

From Figure 1, it is clear that the aggregate ICT and TCT during the crisis year of 2008 were dominated by AIG, which received a special, large-scale, bail-out package on September 16, 2008, the day after Lehman Brothers failed. AIG's need for such transfers was due in large part to losses and withdrawals faced by its life insurance subsidiaries as a result of its securities lending business, which had focused on residential mortgage-backed securities products (McDonald and Paulson 2015, Kohn 2009).

Since the scale of AIG's problem was so large, its bailout preceded the TARP program by one quarter. Because it is desirable to see whether financial stress at the life insurance entity level was being met with differential capital inflows to life insurers in LIHCS that were in receipt of TARP funds more broadly, AIG is omitted from the main analysis; however, as is shown below, presented results are robust to its inclusion.

The paper establishes new evidence that insurers were under capital duress during the crisis in that they faced much greater odds of going into conservatorship, receivership, or liquidation in 2008 and 2009 than at other times and that these odds of capital duress were higher with deteriorating fundamentals, such as ROA, capital asset ratios, and liquidity ratios. In this sample, no life insurance entity that was affiliated with an ultimate parent in receipt of TARP funds or of positive additions to reported surplus (equity) from P&P went under regulatory control. Expanding the measure of capital duress to include reported and unreported acquisitions of life insurance entities and their business closings reveals that overall the odds of such "trouble" were lower for entities affiliated with ultimate parents in receipt of TARP funds and that there were more such acquisitions and business closings during the crisis for insurers in TARP-recipient groups. The results, therefore, suggest that for life insurance entities with

ultimate parents in receipt of TARP funds, their deteriorating financial position was met with assistance that overall lowered their odds of going under formal regulatory control.

The GAO (2013 and 1992) points out that the capital surplus benefits of P&P practices were fairly large, "provide[d] capital relief for insurers" during the recent crisis, and were also used as a form of regulatory forbearance during the early 1990s' failings of some large life insurers.[3] This suggests that, in some cases, regulator-approved P&P may be a form of regulatory forbearance. In this paper, positive and large increases in reported statutory capital and surplus due to P&P accounting practices are explored as possible proxies for regulatory forbearance from state-based regulators.[4] Evidence is provided that is consistent with the idea that, during the crisis, state-based regulators may have engaged in these forms of regulatory forbearance more intensely than before, to the benefit of life insurers with deteriorating capital positions. Further, state-based regulatory forbearance during the crisis in the form of large and positive inflows due to P&P appear to have been more prevalent for life insurers not affiliated with ultimate parents in receipt of TARP funds, consistent with the notion that these two forms of assistance may have been used as substitute forms of assistance during the crisis.

Another way financial distress may have been mitigated for life insurance entities or their consolidated life groups is by capital transfers to life insurers that originated from sources external (TCT) or internal (ICT) to the LIHCS. Essentially, receipt of TARP funds—an external source of capital—could relieve a financial constraint on a constrained LIHCS. Then, capital flows into life insurers within the LIHCS with poor and deteriorating performance during the crisis—life insurers with an arguable need for such capital inflows—should have been greater for life insurers affiliated with ultimate parents in receipt of TARP funds than for insurers without such affiliation. This should hold regardless of the ultimate source (internal or external to the LIHCS or consolidated life group) of the funds flowing into the insurers.

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[3] From GAO (1992): "Statutory accounting and reporting requirements prescribed by regulators failed to ensure the filing of financial statements that presented the true magnitude of the deterioration in the four insurers' financial condition." This was in reference to the 1991 failings of Executive Life, its subsidiary Executive Life of New York, First Capital, and Fidelity Bankers.

[4] To be clear, P&P have negative surplus impacts as well; here it is only large positive amounts of ICT or P&P that are evaluated as proxies for state-based regulatory forbearance.

The receipt of TARP funds provides a quasi-natural experiment to study capital flows to and from life insurers during the crisis. As is commonplace in economics, it was not a pure experiment, nor was it a purely exogenous natural experiment.[5] The results of estimating such difference-in-differences TARP-receipt quasi-experimental treatment effects indicate that additional capital inflows are predicted for life insurers with poor and deteriorating performance (negative and declining ROA) during the crisis if they were affiliated with ultimate parents in receipt of TARP funds. The total amount of capital inflows predicted for similarly positioned life insurers without such TARP affiliation is significantly smaller during the financial crisis years of 2008 and 2009. This is true even when controlling for additional net equity and net long-term debt issuance during the crisis years by all public ultimate parents, or for other LIHCS characteristics.

In order to address concerns about the validity of interpreting these results as causal, results are also presented for which the treatment and control groups are increasingly more similar to one another, and the quasi-treatment effect results become progressively stronger. First, the sample is reduced to include only life insurers with public ultimate parents. The sample is then further reduced to include only life insurance entities with ultimate parents that applied for TARP. Finally, the control group becomes life insurance entities with ultimate parents that were approved for, but did not receive, TARP funds.[6] In addition, the analysis on TCT is conducted on a quarterly basis to exploit the timing of TARP funding availability. The results still hold, even when restricting the sample to increasingly similar control groups. The results remain robust to these exercises and are further robust to many different controls that

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[5] As noted in Calomiris and Khan (2015), while nine TARP CPP recipients were forced to take TARP funds (six of these nine, including Bank of America, Citigroup, Goldman Sachs Group, Inc., JP Morgan Chase & Co., Morgan Stanley, and Wells Fargo & Co., are in this sample), many others applied to receive the funds. Approval and receipt of TARP funds was in some cases a function of political connections (Calomiris and Khan 2015). Generally, the weakest institutions were not forwarded by the CPP council to the Treasury's Investment Committee for approval.

[6] Since this was not a pure experiment, there may still have been unobservable omitted factors that could instead have been driving the TARP quasi-treatment effect or correlation. A more skeptical way of interpreting the results then is that increased capital flows were associated with deteriorating performance during the crisis for life insurers affiliated with TARP-recipient ultimate parents, but not for other life insurers. In this alternative interpretation, the financial crisis is treated as an exogenous shock, and the response of capital flows to deteriorating fundamentals at the time of the shock is found to have been different for life insurers in different types of LIHCS (depending on whether the LIHCS did or did not receive TARP funds).

characterize the life insurance entity relative to its LIHCS, characteristics of its LIHCS, or its ultimate parent's access to alternative sources of public external capital during the crisis.[7]

The paper proceeds to section 2 with a general description of the sources, cleaning, and construction of data used in the analysis. Section 3 establishes new results on the heightened solvency concerns for life insurers during the crisis and indicates that such concerns appear to have been relieved for life insurers in LIHCS that received TARP funding. Section 4 presents evidence on the behavior of state-based regulatory forbearance in the form of positive P&P during the business cycle and the recent financial crisis. Section 5 evaluates whether the financial difficulties faced by life insurers during the crisis were mitigated by capital inflows for life insurers in LIHCS in receipt of TARP funds and includes robustness exercises. Section 6 concludes.

2. Data

2.1 General Description of the Data and the Data Sources

The data on life insurance operating companies (entities) and consolidated life insurance groups are from SNL Financial, based on data from annual and quarterly statutory insurance filings for life insurance filers with the National Association of Insurance Commissioners (NAIC).[8] For the data in this paper, the flat files SNL Financial receives from the NAIC were also used to obtain data not covered by SNL Financial, including longer histories of data. For entity-level data, the statutory financial data pertaining to operating status, capital flows, demographics, and other financial fundamentals start in 1996.[9] Annual consolidated life group data begin in 2001. The quarterly data begin in 2000:Q4. The sample runs through the end of

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[7] For TARP-recipient ultimate parents, the net equity issuance is constructed to be net of TARP.

[8] The life insurance entity is defined as an operating company with a license to sell life insurance that files statutory financial statements with its state insurance commissioner. Consolidated life group refers to the consolidation of all life insurers within a life insurance holding company system, and not to the consolidation of the entire holding company system, which could, in principle, include both other types of insurers (P&C or health) and other types of affiliates (such as savings and loan institutions and private individuals).

[9] Excepting "Change in Surplus Notes" which begins in 1997, and the reported statutory surplus impact of P&P, which begins in 2001.

2014. All regressions, except where noted, include both affiliated and unaffiliated life insurance entities.

As noted by Niehaus (2014), and Niehaus and Chiang (2016), both measures of TCT and ICT existing in the literature and used in this paper conflate capital raised from outside the LIHCS that is truly external to the entire group with capital that is "external" to the consolidated life group or the life insurance entity, which may be coming from a non-life-insurance affiliate within the insurance holding company system, for example, an ultimate parent that is a bank holding company (BHC) or a financial holding company (FHC). Too, the concept of measured ICT captures the net surplus impact on an affiliate of the flows within the life insurance holding company system, but the ultimate source of capital for these internal flows could be external to the insurance holding company system, as in the case of TARP funds or long-term debt or equity raised in external public capital markets, as opposed to coming from, say, the retained earnings of the affiliate or truly internally sourced capital. Both types of flows are evaluated in this paper, and there is some overlap in their coverage.

The ICT capital contribution data come from Part 2 of Schedule Y of reporting entities' annual statutory financial filings with the NAIC. State-based insurance regulators require life insurance entities to file detailed schedules regarding the net surplus impact on the reporting entity and its affiliates of all ICT within the LIHCS.[10] Hence, at the entity level, ICT data are net flows.[11] The purpose of this reporting and of the state-based regulators' approval of these ICT, is to make sure that life insurance entities are not entering into transactions that "may not reflect economic realities or may not be fair and reasonable to the reporting entity of its policyholders" (NAIC Accounting Practices & Procedures Manual 2015). SNL Financial does not report the ICT data on a consolidated life group basis.[12] Schedule Y, Part 2, includes identifying information such as affiliates' NAIC codes, their federal employer identification numbers (FEIN), and

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[10] Schwarcz (2015) discusses the fact that state-based regulators have one month to approve reported internal capital transfers.

[11] This schedule does not include bilateral capital flow information.

[12] Niehaus (2014) and Barnes, Bohn, and Martin (2015) provide different examples of how these data, in aggregate, can be grouped by different types of affiliates (life, health, or PC insurers, non-insurance affiliate, parents, non-insurance parents, etc.) to show the net transfers to and from particular types of affiliates.

names. There are various types of internal capital transfers (ICT) recorded in this schedule, but in this paper the focus is on capital contributions (column 5). These are the closest parallels to the type of capital injected by TARP, and they include surplus notes, among other forms of capital contributions.[13]

Across the entire LIHCS, the sum of all net ITC must equal zero. This is one of the important cleaning checks used for improving the integrity of these data. While the cleaning approach taken by Niehaus (2014) is largely followed here, there are some differences that allow the retention of larger and more-complicated insurance holding company systems in the data sample. Appendix A contains more details about the cleaning of these ICT data.[14] Table 1 provides a comparison of the Niehaus (2014) sample and the annual entity-level data used in this paper. It reproduces and extends Table 2 from Niehaus (2014) to include the same statistics for the sample and cleaning process used in this paper.

When data vendors such as SNL Financial or A.M. Best Company consolidate financial data at the group level, they do so only across the life insurers in the group based on the current vintage (not the real-time vintage) of reported organizational structure and ownership of life insurance affiliates for the group.[15] Importantly, for interpretation of the "external" capital flows data (TCT), here taken to be total paid-in capital and surplus notes net of treasury stock changes, which are also available from SNL at the consolidated life group level, the consolidation does not reflect all affiliate types within the system, or even all the insurers, but only the life insurers. Furthermore, if the data were pulled from the vendor in 2015, as is the case here, then the organizational structure at the time is projected back over previous years, so the data as they pertain to previous years do not reflect the real-time organizational structure. At the entity level, however, such TCT data are gross flows, meaning that there is no attempt to

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[13] According to Statement of Statutory Accounting Principles (SSAP) No. 41, surplus notes are also referred to as surplus debentures and contribution certificates. They are allowed to be accounted for as surplus (equity) and not debt if they have the following properties: "a) subordination to policyholders; b) subordination to claimant and beneficiary claims; c) subordination to all other classes of creditors other than surplus note holders; and d) interest payments and principal repayments require prior approval of the commissioner of the state of domicile."

[14] TARP-recipient LIHCS' Schedule Y, Part 2, data are further hand-corrected and verified.

[15] Real-time organizational structure data are available from 2011–2014 from Schedule Y, Part 1a. Digitizing the pre-2011, real-time organizational structure of the LIHCS is ongoing work by the author and colleagues.

purge the pass-through of capital from an entity to its subsidiaries from such reported flows. Instead, at the consolidated life group level, attempts are made by SNL Financial to parse out the TCT among the life insurers in the group, so the consolidated TCT are closer to a net flow from this perspective.[16]

Since the entity-level and consolidated group data involve different types of mis-measurement of TCT, either because it is a gross flow at the entity level or because real-time organizational structure is not used in the consolidated life group (nor is the consolidation done across all entity types), both perspectives are analyzed in this paper for estimating the TARP quasi-treatment effect on the relationship between poor and deteriorating performance and capital flows during the crisis. Too, TCT quarterly data, also at both the entity and consolidated group level, are further evaluated in order to exploit the timing of the receipt of TARP funds at the entity and the consolidated life group levels to bolster interpretation of the results as plausibly causal; as mentioned above, quarterly data are not available for the "internal" capital flows (ICT) data.

2.2 Identifying the TARP Recipients and their Data

Many insurance holding companies' ultimate parents attempted to become savings and loan holding companies or acquire thrifts or depository institutions to become eligible for TARP funds (for example, Hartford Financial Services Group, Prudential Financial, Lincoln National Group, The Phoenix Companies, Protective Life, Principal Financial, Ameriprise Financial, Allstate Corporation, and Genworth Financial Inc.[17]), but some LIHCS included affiliates that were eligible for TARP even before the Treasury opened the program up to holding companies that were predominantly life insurers (Koijen and Yogo 2015). Thus, life insurers may have had

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[16] Examples can be found where an ICT is reported in TCT but not on Part 2 of Schedule Y, and vice versa, but there is a fair degree of overlap between the two series. At the entity level for the cleaned data sample used for the baseline results in this paper, the correlation between ICT and TCT, both as a share of total assets, is 0.557, with a p-value of 0.000.

[17] http://www.reuters.com/article/us-insurers-bailout-idUSTRE5162CQ20090208 and
http://www.marketwatch.com/story/treasury-to-hand-insurers-tarp-billions-wsj accessed 4/7/2016. Note that although they applied, Genworth Financial, The Phoenix Companies, and Protective Life did not receive TARP funds.

indirect access to TARP funds even before the Treasury approved $22 billion of TARP funds for life insurers from the CPP in May of 2009.[18] An inspection of total paid-in-capital and surplus notes excluding changes in treasury stock (TCT) for life insurance entities and consolidated life insurance groups reveals that much of the external funding they received—external to the life insurance entity or consolidated life group—occurred during the peak of the crisis (see Figure 3), from 2008:Q4 through 2009:Q2. The first Treasury purchases of preferred stock under the TARP CPP program were made on October 28, 2008, and included injections of capital into a number of LIHCS.

Data from the U.S. Treasury and SNL Financial (both their GAAP and Statutory databases) are used to determine which life insurance entities and consolidated life groups have ultimate parents that received TARP funds, and the amount and timing of such receipts.[19] In a similar fashion, LIHCS that applied for or were approved for TARP funds are also identified. Table 2 includes a list of the ultimate parents in receipt of TARP funds along with their affiliated life insurance entities. Bank of America and Citigroup were also part of the Treasury's Targeted Investment Program, receiving additional funds by issuing equity to the Treasury on December 31, 2008, and January 16, 2009, respectively, above and beyond what they received from the CPP Program. Excluding AIG, there were eight LIHCS and 11 affiliated life insurance entities in receipt of TARP funds in 2008, and there were a further three LIHCS and 12 affiliated life entities newly receiving TARP funds in 2009.

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[18] The TARP program began on October 3, 2008, and the CPP program was explicitly opened up to life insurance holding companies in May 2009 (it was announced by April 8, 2009). See Scott Patterson, Deborah Solomon, and Leslie Scism, "U.S. to Offer Aid to Life Insurers," *Wall Street Journal*, April 8, 2009. By the middle of May 2009, it was public knowledge that some life insurers would, in fact, be receiving TARP funds. See Andrew Dowell and Jamie Heller, "U.S. Slates $22 Billion for Insurers from TARP," *Wall Street Journal*, May 15, 2009.

[19] By linking to S&P Capital IQ's debt structure database, the availability of short-term credit, like bank credit and commercial paper (CP), could be analyzed. That could be a nice extension of this analysis, but, here, the analysis is limited to the availability of long-term external finance, like debt and equity, because we rely on SNL's matching of the status of the TARP program to life insurance entities and because this longer-term public financing most closely parallels the nature of the TARP funding arrangement. Note that to extend the whole sample to include the New York Federal Reserve Bank's Commercial Paper Funding Facility (CPFF) recipients, the match from the New York Federal Reserve Bank's CPFF program's information on the name of the CP issuer and parent or sponsor would have to be verified by hand, as only names are provided by the New York Federal Reserve.

Due to its unique circumstances, on September 16, 2008, the day after Lehman Brothers failed, AIG was given access to an $85 billion revolving credit facility from the New York Federal Reserve Bank pursuant to section 13(3) of the Federal Reserve Act.[20] Over the course of the next several months, this assistance was expanded and restructured, in part with a special TARP program; it was not part of the CPP. According to testimony by Vice Chairman of the Federal Reserve System Donald Kohn on March 5, 2009, this special assistance was granted to AIG because the "prospect of AIG's disorderly failure posed considerable systemic risks in various ways as a consequence of its significant and wide-ranging operations." AIG, which received in total about $182.3 billion in government assistance, was, as of its September 16, 2008, rescue, a company with $1 trillion in assets; it lost $99.3 billion in 2008 (McDonald and Paulson 2015). AIG was affiliated with 16 life insurance entities in 2008, and 15 in 2009. For these reasons, AIG's life insurers are not included in the main results of this paper; instead, robustness exercises are included that show the paper's results are robust to including AIG in the sample.

The U.S. Treasury provides the identity (by name only), amount, and timing of TARP funding for institutions that participated in the TARP and its CPP. These data are linked to the SNL Financial statutory databases on life insurers, using as identifying information each recipient institution's statutory entity key, Federal Employer Identification Number (FEIN), and name.[21,22] The amount of net debt and equity issued (including preferred shares issued in conjunction with receiving TARP funds) by publicly traded affiliates in these LIHCS, and the same information on publicly traded affiliates of life insurers that did not receive TARP funds, are obtained in the same way. Further, the link between the CRSP and Compustat databases enables calculation of the relative cost of issuing common equity capital for public holding companies of life insurance entities during the crisis years of 2008 and 2009.

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[20] AIG was to sell assets in an orderly way, and initially had two years to repay the facility; this timeframe was eventually extended. As additional payment for the facility, AIG was required to issue to the benefit of the Treasury preferred stock convertible into 79 percent of AIG's outstanding common stock.

[21] Since this is a relatively small sample of companies, their status as public, ultimate parents, as well as the match to the amount and timing of TARP receipts, was verified by hand.

[22] FEIN matching also allows for determining the size and financial health of TARP recipients that are holding companies of life insurance entities by matching each institution's FEIN to data in the Compustat database.

From 2011 forward, there is electronically coded information regarding the relationship between each reporting life insurance entity and its affiliates reported in Part 1a of life entities' annual Schedule Y, along with each affiliate's NAIC code, FEIN, and name. This schedule also gives a codified description of each affiliate's relationship to the reporting entity (for example, upstream direct parent, upstream indirect parent, downstream subsidiary, insurance affiliate, non-insurance affiliate, reporting entity, and other).[23] From these data, the relationship between the reporting entity and its affiliates is known (and linkable to annual ICT data, other statutory financial information, and information from GAAP-based databases such as SNL and Compustat, if the affiliates are public), beginning in 2011. The ultimate parent is determined by column 14 of Schedule Y, Part 1a, which gives the name of the ultimate controlling parent.[24] Because the match is by name only, and not by numerical code, and because there are no data available from this source before 2011, this study limits its analysis of the type of information included to information on public ultimate parents of insurers, in order to bolster the integrity of the name match by relying on the reported FEIN associated with this name in the annual Schedule Y, Part 2, statutory data.[25] This also ensures the real-time nature of the identification of the ultimate parents in years prior to 2011.

2.3 Data Sample Restrictions

In the following analysis, except where noted, AIG is dropped from the sample, as are life insurers formed as mutuals instead of by stockholder ownership, and any entities for which total assets or total capital and surplus are negative.[26,27] The data samples for both entity-level and consolidated life group-level analysis include unaffiliated life insurers as well as those

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[23] The organizational chart of the life insurance holding company system, found in Schedule Y, Part 1, is available starting as early as 2000, but these data were digitized in machine-readable format starting only in 2011, with Schedule Y, Part 1a.

[24] From 2011 on, Part 1a of Schedule Y also includes information on ownership percentage when an affiliate is directly controlled by another affiliate by ownership.

[25] Only public ultimate parents of life insurers received TARP funds in this data sample.

[26] Mutuals are owned by policyholders and do not issue dividends. They do not face the same return-on-equity pressures as life insurers owned by other public or private entities (Biggs 2014). Also, Berry-Stölzle et al. (2012) showed that an insurer's line-of-business diversification strategy is a function of whether it is organized as a mutual (policyholder ownership).

[27] Results are robust to including entities with negative capital and surplus or total assets.

belonging to LIHCS, unless explicitly stated otherwise. Health filers are also dropped. All regression variables are winsorized at the 1 and 99 percentile levels by year to reduce the influence of outliers.

3. Odds of Financial Distress, Receipt of TARP Funds, and State-based Regulatory Forbearance

3.1 The Relationship between the Business Cycle, Fundamentals, and Life Insurance Entities' Odds of Financial Distress

The first step in this paper is to determine whether life insurance entities were, in fact, under an unusual amount of duress during the financial crisis, conditional on fundamentals, compared with, say, the previous recession, or normal times. The first type of dependent variable considered in this paper pertains to the odds of financial distress or regulatory control. The statutory variable "operating status" is used to develop dichotic measures of financial distress or "trouble."[28,29] The baseline logit regression, without regard to the potential influence of TARP funding or state-based regulatory forbearance in the form of positive P&P, is:

$$Y_{i,t} = a + b * X_{i,t} + c * (X_{i,t} * R1) + d * (X_{i,t} * R2) + e_{i,t}, \qquad (0.0)$$

where $Y_{i,t}$ is either *F01 Trouble1* or *F03 Trouble1* for life insurance entities i in year t.[30,31] *Trouble1* is defined as equal to 1 when the life insurance entity's operating status variable is equal to 0

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[28] The operating status variable can take on the following values: "0" for "Active: Conservatorship"; "1" for "Active: No regulatory action in process"; "3" for "Inactive: Merged or combined into another company"; "4" for "Active: Rehabilitation, permanent or temporary receivership"; "5" for "Inactive: Voluntarily out of business;" "6" for "Active: Being liquidated or has been liquidated;" "7" for "Inactive: Estate has closed;" "8" for "Inactive: Charter is inactive"; and "9" for "Inactive: Combined Statement Filer." (There are no combined statement filers in this study's sample, only life filers.)

[29] The operating status data used in this paper are annual, available from the NAIC flat files, and begin in 1996. The operating status data come from the Jurat pages of the statutory financials. There is a break in the data after 2000 and again after 2006. After 2006, values different from 1, in particular, the values for 0, 4, and 6, have a much lower level than before.

[30] The timing of the explanatory variables follows Niehaus (2014) and is suggested by the model he presents of internal capital transfers within LIHCS.

[31] In this paper, italics are used to denote actual variables used in the empirical analysis of this paper.

(conservatorship), 4 (rehabilitation/receivership), or 6 (liquidation), and 0 otherwise.[32,33] In the regressions, two versions of the dependent financial distress variable are used: *F01 Trouble1* is equal to 1 if *Trouble1* is equal to 1 in time *t* or *t*+1, and is otherwise equal to 0. *F03 Trouble1* is similarly defined to take on a value of 1 if *Trouble1* is equal to 1 in the years *t*, *t*+1, *t*+2, or *t*+3, and 0 otherwise. *R1* is equal to 1 in 2001 and 2002, and *R2* is equal to 1 in 2008 and 2009; both are equal to 0 otherwise. These variables capture, respectively, the recession period of the early 2000s and the recent financial crisis and recession. Life insurers' fundamentals, including contemporaneous performance or return on assets (*ROA*), beginning of period capital (*Lagged CapRat)*, beginning of period liquidity, and contemporaneous real size, are used in the empirical analysis, and are included in $X_{i,t}$.[34] *ROA* is defined to be this period's *(t)* flow of net income plus unrealized capital gains divided by the end of the prior period's *(t-1)* total assets.[35] The effects of positive (*Positive ROA*) versus negative *ROA* (*Negative ROA*) are typically separated in this paper, since the ultimate effect being estimated is the TARP quasi-treatment effect on capital flows when life insurance entities' performance is poor during the crisis. *Negative ROA* serves as a proxy for either shocks to capital, or financial distress, as discussed by Niehaus (2014) and BSNW.[36] *Lagged CapRat*, the measure of insurer's capitalization, is defined as the lagged *(t-1)*

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[32] The NAIC promulgates criteria for state-based regulators to follow when insurers' risk-based capital ratios fall below certain thresholds or meet certain tests. There are various events: Company Action Level Event, Regulatory Action Level Event, Authorized Control Level (ACL) Event, and Mandatory Control Level Event. The Company Action Level is the product of 2.0 and the ACL RBC (explained immediately below). The Regulatory Action Level RBC is the product of 1.5 and the ACL RBC. The Mandatory Control Level RBC is 0.7 multiplied by the ACL RBC. The ACL RBC is a number determined by the NAIC's risk-based capital formula. The Total Adjusted Capital used in conjunction with the ACL to calculate the RBC ratio is given by an insurer's statutory capital and surplus. These recommendations are outlined in the NAIC's Risk-Based Capital (RBC) for Insurers Model Act (for example, from the NAIC's January 2012 Model Regulation Service).

[33] In particular, for values of operating status other than 1, the values are carried forward in time if they are missing in the future.

[34] The model presented in Niehaus (2014) takes the capital stock as exogenous, and performance, or ROA, as a contemporaneous shock to capital. The results presented in this paper are materially similar if lagged real size is used in the regression analysis instead of contemporaneous size.

[35] "Net income" is from line 35 of the Summary of Operations page of the statutory financials. The "Change in net unrealized capital gain (loss)" comes from line 38 of the Capital and Surplus Account on the Summary of Operations page and includes gains or losses from equity ownership of parent, subsidiary, or affiliate stock. 'Total assets" is from line 28 of the Assets page of the statutory financials.

[36] As argued in Niehaus (2014), if the life insurance holding company is financially constrained, a decrease in a life insurer's capital, due to, say, a decline in net income or unrealized capital gains, would elicit the holding company system, on net, to inject capital into the insurer, in order to increase the marginal return on the life insurer's franchise value. Under financial constraints, this is not a one-for-one increase in the amount of the capital injection; instead, the

sum of total capital and surplus, asset valuation reserve, and interest maintenance reserve as a share of lagged *(t-*1*)* total assets.[37,38] *Lagged LiqRat is* defined as cash and marketable securities divided by total assets.[39,40] *Log Real Total Assets* is the time *t* natural log of total assets deflated by the CPI, or contemporaneous log real size.[41] This regression is run on a panel of life insurance entities that survived the data cleaning process as described in the previous section and in the appendix, over the years from 1997 to 2014. The pooled logit regression includes year fixed effects and standard errors clustered at the LIHCS (real-time NAIC group) level, so the level effects of *R1* and *R2* are subsumed in the year fixed effects.[42]

Table 3 includes the results of this estimation for different specifications. As expected, during normal times, an increase in *ROA*, and *Lagged CapRat* are both associated with a significant decline in the odds of being under regulatory control due to conservatorship or rehabilitation during the current year or the next year (*F01 Trouble1*). Both of these coefficients remain significant during normal times when the odds of being in financial distress by this measure include not only the current year, but also the next three years (*F03 Trouble1*). In contrast, an increase in the liquidity ratio, *Lagged LiqRat*, is associated with increased odds of trouble or distress according to *F01 Trouble1* and *F03 Trouble1*. This last result is consistent with

size of the injection is determined by equating the marginal benefit of increasing the insurer's franchise value to the marginal cost of decreasing the deployment of capital elsewhere in the holding company system, so that the coefficient would be less than 1 in absolute value. In the absence of such system-wide financial constraints, the increase would be one for one. It is of interest to recall this when interpreting the results, which typically have values close to 1.

[37] Total capital and surplus is derived by subtracting line 28 from line 39 of the "Liabilities, Surplus and Other Funds" part of the statutory financials. Added to this is "Asset valuation reserve," line 24.01 from the same page, and the "Interest Maintenance Reserve," line 9.4 of the same page. This sum is then normalized by Total assets, line 28 of the Assets page of the statutory financials.

[38] Data on RBC ratios are available only at the life insurance entity level, not on a consolidated life insurance group level, and only on an annual basis, so capital asset ratios are used in this paper instead of RBC ratios.

[39] Specifically, "Cash, cash equivalents and short-term investments," line 5 of the Assets page of the statutory financials, is expressed as a share of total assets, line 28 of the same page.

[40] Since stresses to liquidity and solvency were so intertwined for so many financial firms during the crisis, it seems prudent to consider this channel of potential distress as well. Here, the lag is taken because it forms part of the capital stock buffer available to life insurers going into year *t*.

[41] Size serves as a proxy for financial constraints and also as a proxy for the franchise value of the life insurer, as discussed in Niehaus (2014).

[42] For all regressions in this paper, there is no insistence that they be run only for entities with an operating status equal to 1, since, here, explicit consideration is given to entities that are sufficiently stressed that, while still active, they may be under some form of regulatory control.

poor asset management or with underinvestment of liquid assets in organic growth. When the dependent variable is extended from *F01 Trouble1* out two more years to *F03 Trouble1*, *Log Real Total Assets* also becomes significant, with the expected sign: the larger the life insurance entity, the less likely it is to fall under regulatory control.

The coefficients on the fundamentals interacted with *R2* are all negative, significant (except for the liquidity ratio), and much larger than during normal times or the previous recession for *F01 Trouble1* and *F03 Trouble1*.[43] For example, a decline in *ROA* of 0.05 results in a marginal increase in the odds of *F01 Trouble1* of 16 times the original odds (exp(-0.05x-57.162)-1). Overall, this is consistent with a much greater probability of going under regulatory control by these measures of financial distress during the crisis years than in normal times or the previous recession, a probability of financial trouble that increases even more with any deterioration in performance or other fundamentals for life insurance entities.[44] The pseudo R^2 for these regressions is in the 0.108–0.135 range, so much of the variation in these dependent variables is left unexplained.

The evidence presented so far, which is not already present in the literature on the distressed financial condition of life insurers during the crisis, corroborates the general tone of the literature suggesting that life insurers were under significant financial stress during the crisis. There was a greater likelihood of a life insurance entity going under regulatory control (liquidation, conservatorship, or receivership) during the recent financial crisis and recession than in normal times, odds that also increased conditional on deterioration in life insurers' fundamentals during the crisis. Also evident from the second set of regression results in Table 3

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[43] From the unreported annual fixed effects, it is also clear that while the odds of being placed under regulatory control are higher during the recession years of 2000–2001, they are even more elevated during the recession and crisis years of 2008 and 2009.

[44] This much greater likelihood of falling into trouble is extremely small to begin with. Although the marginal increase in odds is substantial, in probability terms the increase is still to an extremely small probability. Too, it should be noted that for *Trouble1*, there are only four "successes" in the *R2* period. If state of domicile fixed effects is controlled for, half the sample is lost: those observations are associated with states for which there was no change in the dependent variable. The increase in odds is much larger, and the pseudo R^2 almost triples for the *Trouble1*-type specifications, but then "success" is benchmarked against a different sample of entities. This is an example of "rare events" data in the parlance of King and Zeng (2001). They argue that the probability of such rare events is underestimated in practice. This is not the case for the *Trouble2*-based dependent variables, defined below, for which there are 99 "successes" over *R2*. These results are available upon request.

is that this relationship between the likelihood of financial distress and performance during normal times and *R2* is driven by the *Negative ROA* observations, giving credence to the notion that it is poor and deteriorating performance that is associated with financial distress.

3.2 How Receipt of TARP Affected the Viability of Life Insurance Entities during the Crisis

To determine how the receipt of TARP funds by a life entity's ultimate parent affected its viability during the crisis, the above equation is modified to include a term for whether the life insurance entity's ultimate parent received TARP funds (*TARP*=1), along with the interaction of that variable with *R2*. From such specifications (results not shown, but available), it is evident that in this cleaned sample no life insurance entities affiliated with ultimate parents in receipt of TARP funds in 2008 or 2009 have a value of *F01 Trouble1* or *F03 Trouble1* equal to 1; that is, none were placed under regulatory intervention (conservatorship, receivership, or liquidation) as a result of breaching certain capital thresholds in 2008 or 2009 or the three years thereafter: in short, *TARP*=1 is a perfect predictor.[45]

In part to address the perfect prediction problem for *TARP*=1 when the dependent variable is defined based on *Trouble1*, a second variable is constructed to indicate financial trouble, *Trouble2*, which takes on a value of 1 if the operating status is different from 1 (active/no regulatory action) for a given year, and 0 otherwise. Since there are a lot of life insurers that drop out of the sample but are assigned no operating status by the regulator (particularly after 2006), a 10 is assigned to such entities in the years they drop out. This allows for the possibility that regulators may be overly conservative in their designation of distressed or insolvent operating status and that, in practice, when insurers are in trouble, they are likely actively encouraged to merge or dissolve by their regulators, formally or informally.[46]

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[45] This is also the case for any life insurance entities that received positive P&P or that were affiliated with public ultimate parents during *R2* that were able to issue net equity or long-term debt. These results are available from the author by request.

[46] In particular, for values of operating status different from 1, the values are carried forward in time if they are missing in the future. If, in the next year, a life insurer has none of these values and is also not a 1, a 10 is assigned (and carried forward).

Table 4 contains the results of estimating equation 1.1 with *F01 Trouble2* and *F03 Trouble2* as dependent variables and allowing for a differential impact of receipt of TARP funds overall and during the crisis. From Table 4, it is clear that being associated with an ultimate parent in receipt of TARP funds in 2008 or 2009 significantly reduced the odds of being acquired or otherwise ceasing to exist during the sample years. However, during the crisis years, and up to three years thereafter for life insurance entities, the reduction in the odds of being acquired or ceasing to exist for entities with parents in receipt of TARP funds was mitigated, in that these coefficients are positive, although they are not statistically different from zero.[47]

4. State-based Regulatory Forbearance (Positive P&P) over the Business Cycle and Its Relationship to Life Insurance Entities' Financial Distress

4.1 Relationship between the Odds of Financial Distress and Regulatory Forbearance from Positive P&P

In this section, the role of positive additions to reported statutory surplus from P&P is explored.[48,49] First, results are presented that augment equation 1.1 to include level and interaction effects of four different proxies for regulatory forbearance from positive P&P to see whether regulatory forbearance in the form of P&P is associated with lower odds of *F01 Trouble2* or *F01 Trouble2*, and whether *TARP*=1 and positive P&P act as complements or

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[47]Again, in unreported results, this also holds true for life insurance entities affiliated with public ultimate parents during *R2* that were able to issue public equity or long-term debt.

[48] P&P is defined to be the difference between reported surplus and the NAIC surplus. Positive P&P results from prescribed and permitted accounting practices that allow for reporting statutory surplus that is higher than what would be allowable under NAIC guidelines.

[49] Becker and Opp (2014), in reference to the NAIC's recommended and implemented changes for risk-based capital charges for mortgage-backed securities (MBS) in 2009 and 2010, argued that "the new system of capital requirements for MBS achieved massive relief for the industry at a time when it faced very large losses and was struggling to meet regulatory requirements." Although there is room for disagreement, some would argue that, this, too, was a form of regulatory relief at the national level by the NAIC, which, while it has no official regulatory authority over life insurers, does serve an important role in standard setting for the industry, including setting standards for risk-based capital calculations and the statutory accounting standards in the NAIC Accounting Practices and Procedures Manual. As the GAO (2013) report puts it, "state insurance regulators and NAIC took various actions to identify potential risks, and changed the methodology for certain RBC provisions and accounting requirements to help provide capital relief for insurers." Here, the NAIC surplus values are not restated retrospectively, so the real-time values of the surplus impact of P&P are as reported.

substitutes in reducing the odds of *Trouble2*. Everything else is defined as above. Here, there are four different measures of regulatory forbearance based on the P&P data. *Positive* equals 1 for entity i in year t if reported surplus is larger than NAIC surplus as a result of P&P (positive P&P), and 0 otherwise. Similarly, *Top 75* equals 1 if P&P is in the top 75 percent of the distribution of positive additions to reported annual surplus from P&P, and 0 otherwise. *Top 50* equals 1 if P&P is in the top 50 percent of the distribution of positive additions to reported annual surplus from P&P, and *Top 25* equals 1 if P&P is in the top 25 percent of the distribution of positive additions to reported annual surplus from P&P, and 0 otherwise. Due to the availability of the P&P data, the annual sample of life insurance entities for these regressions runs from 2001 through 2014. This remains a pooled panel logit regression, with annual fixed effects and standard errors clustered at the LIHCS (real-time NAIC group) level.

Table 5 contains the results from these regressions. The column headings refer to both the dependent variables, *F01 Trouble 2* and *F03 Trouble2*, as well as to the threshold for the positive P&P proxy for state-based regulatory forbearance. For example, the *F01 Positive* column heading contains the regression results for the dependent variable of *F01 Trouble2*, using *Positive* as a proxy for regulatory forbearance. Similarly, *F03 Top 25* contains the regression results using *F03 Trouble2* as the dependent variable and *Top 25* as the proxy for regulatory forbearance. Table 5 shows that while there is evidence that these proxies for regulatory forbearance were associated with higher odds of being acquired or going out of business in *R1* (the interaction of *Positive PP* = 1 and *R1* is positive for all dependent variables), the estimated odds are insignificant. Instead, in *R2*, these proxies were associated with much lower odds of these forms of financial distress at both the *F01* and *F03* horizons, and this is statistically significant for the highest positive thresholds for regulatory forbearance (*Top 25*). Also notable is that, in these regressions, the overall estimated coefficients for *Lagged CapRat* and *Lagged LiqRat* now are significant only when interacted with the dummy variable for regulatory forbearance (*Positive PP* = 1 x *Lagged CapRat* and *Positive PP* = 1 x *Lagged LiqRat*). The pseudo R^2 range, from 0.077 to 0.091, is consistent with the fact that there remains much unexplained variation in these regressions. Overall, these results are consistent with the observation that during the recent

crisis there were lower, significant odds of a life insurance entity being acquired or going out of business, formally or informally, when it was in receipt of positive and very high additions to reported surplus from P&P.

4.2 Odds of Receiving Regulatory Forbearance over the Business Cycle and TARP

The purpose of this pooled logit regression is to explore whether such state-based, regulator-approved additions to reported surplus are related to life insurance entities' fundamentals in predictable ways, consistent with such additions to reported capital and surplus offsetting potential reductions to capital from poor performance or weak fundamentals. To explore this possibility, regressions are run that are similar to that specified in equation 1.1, except that now there are four different dependent variables: *Positive*, *Top 75*, *Top 50*, and *Top 25*.

Table 6 shows this to be the case. Where the threshold should be drawn is arguable, but overall these results suggest that state insurance regulators tend to use P&P in a systematic way that results in improved reported surplus for life insurers experiencing weak fundamentals—in particular, declines in their capital ratios. There is also evidence that for the highest threshold, *Top 25*, there was a cyclical response of P&P during *R2* to changes in lagged capital ratios, consistent with declines in such ratios being associated with larger surplus relief from P&P. There is also some evidence that during *R2*, the larger the entity, the greater the odds of it receiving large positive surplus relief from P&P, and that these odds also increase with liquidity ratios. It is notable that during *R1*, the differential effect on lagged capital ratios was absent and that declines in liquidity ratios were associated with greater odds of positive additions to surplus from P&P. Adding *TARP*=1 and *TARP*=1 interacted with *R2* to the specification reveals that the overall odds of receiving positive P&P were higher for entities affiliated with TARP-recipient ultimate parents during normal times, but that in *R2* the odds of receiving positive P&P for such entities were significantly lower. This suggests that state-based regulatory forbearance in the form of positive P&P and receipt of TARP funds were substitute forms of capital relief during *R2*.

5. The TARP Quasi-Treatment Effect on the Relationship between Poor Performance and Life Insurance Entities' Capital Flows during the Crisis

5.1 Estimation with Annual Entity-level Data

One way ultimate parents could relieve difficulties life insurers experienced during the crisis, such as increased pressure on statutory capital levels due to poor investment results, was by some form of capital inflow from the parent or the rest of the LIHCS, ultimately to the life insurance entity, either through direct capital contributions (ICT, TCT), or through some form of quasi-reorganization (TCT). This basic hypothesis, that receipt of TARP funds by a public ultimate parent of a LIHCS was associated with greater capital inflows into life insurance entities with poor and deteriorating performance during the crisis, is tested in this section. This test is carried out in a difference-in-differences framework, with life insurers belonging to an insurance holding company system in receipt of TARP funds being the quasi "treatment" group. As discussed in the introduction, as is often the case in economics, since TARP receipt is neither random nor exogenous, this is only a quasi-natural experiment. In the process, the way the relationship between the capital flows data and life insurers' fundamentals differs during the crisis years from during, say, normal times or in the previous recession years of 2001 and 2002, is also evaluated, and it is important to consider these factors when interpreting the results. The panel regression framework is thus:

$$
\begin{aligned}
Y_{i,t} = a_{i,t} &+ b*X_{i,t} + c*(R1*X_{i,t}) + d*(R2*X_{i,t}) + e*((TARP=1)*NegROA_{i,t}) \\
&+ f*((TARP=1)*PosROA_{i,t}) + g*((TARP=1)*R2) + h*(R2*(TARP=1)*NegROA_{i,t}) \quad (0.0) \\
&+ i*(R2*(TARP=1)*PosROA_{i,t}) + j*\mathrm{AmtTarpRepaid}_{i,t} + e_{i,t},
\end{aligned}
$$

where $Y_{i,t}$ is either $ICT\_TA_{i,t}$ or $TCT\_TA_{i,t}$ for life insurance entity i at time t. The changes in total paid-in capital and surplus notes less the change in treasury stock are combined into one measure, and this is referred to as TCT, which is normalized by life insurers' total assets

(*TCT_TA*).[50,51] ICT at time *t* is also normalized by time *t* total assets and is referred to as *ICT_TA*.[52,53] $X_{i,t}$ is now a vector of the life insurer's fundamentals broken down into the relatively weak and strong parts of the distribution of the fundamentals. *Negative ROA*, *Positive ROA*, *Log Real Total Assets*, *R1*, and *R2* are defined as before. *Lagged Low CapRat* and *Lagged High CapRat* equal the *Lagged CapRat* for *i* as of time *t*, when the *Lagged CapRat* is at or below the 50th percentile of the distribution of *Lagged CapRat* across all years (*Lagged Low CapRat)*, or above the 50th percentile of the distribution of *Lagged CapRat* across years (*Lagged High CapRat*).[54] The sum of *Lagged Low LiqRat* and *Lagged High LiqRat* is similarly defined to be the relevant *Lagged LiqRat*. *TARP*=1 is an indicator variable for whether or not a life insurance entity's public ultimate parent received TARP funds in 2008 or 2009 and takes a value of 1 throughout the sample if this is the case. *AmtTarpRepaid*$_{i,t}$ is a variable indicating the amount of TARP repaid in a given year by the life insurance entity's ultimate parent as a share of its total assets.[55] The estimation is a

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[50] For ICT, column 5 of Schedule Y, Part 2, "Capital Contributions" is used. Note that Schedule Y, Part 2, Column 5, "Capital Contributions" internal transactions and paid-in capital or surplus notes (TCT), the measures of "external" capital flows used by BNSW, are not identical, due in part to *ICT* being a net flow and *TCT* being a gross flow at the entity level, but also because there are differences in what actually gets reported in the different accounts, due to differences in statutory accounting principles regarding the different types of flows.

[51] That is, TCT is the change in new paid-in capital and surplus notes less the change in treasury stock and is defined as the sum of "Capital changes: Paid in (line 50.1) and "Surplus adjustment: Paid in" (line 51.1) less "Change in treasury stock" (line 45). Added to this is "Changes in surplus notes," which comes from line 48. All of these data are found in the Capital and Surplus account on the Summary of Operations page of annual and quarterly statutory financial statements. Total assets are taken from line 28 of the Assets page of the statutory financials.

[52] The Schedule Y, Part 2, data reporting is governed by the NAIC's Statement of Statutory Accounting Principles (SSAP) No. 25, "Accounting for and Disclosures about Transactions with Affiliates and Other Related Parties"; the surplus notes data reporting is governed by Statement of Statutory Accounting Principles No. 41, "Surplus Notes"; and the reporting of other components of TCT is governed by SSAP No. 15, "Debt and Holding Company Obligations," and by SSAP No. 72, "Surplus and Quasi-Reorganizations."

[53] In an earlier version of this paper, capital structure information was used to partial out the ICT component of TCT to get at various measures that are more closely aligned with the notion of capital external to the LIHCS or life entity and are closer to a net TCT flow at the entity level. The results presented in this paper largely hold for those measures as well, but they are not presented here since the Schedule Y, Part 1a, capital structure data begin in 2011, and the assumption has to be that the 2011 organizational structure goes back through time, compromising the potential real-time nature of these derived "external" finance measures. Another requisite assumption is 100 percent ownership of subsidiaries. Over the sample from 2011 to 2014, a life insurance entity was wholly owned 83 percent of the time, and it can be shown that there is a fair degree of stability in the organizational-structure relationships through time. However, the results are not presented here and instead are available upon request, due to the limitations and added complexity these measures entail.

[54] Niehaus (2014) showed a differential response of ICT flows to such partitioning of the lagged RBC ratios for life insurance entities in his sample.

[55] In all specifications, this variable has no material impact on the central results, but is included, since some ultimate parents in receipt of TARP began repaying TARP funds as early as 2009—most importantly, AIG, which is included

panel regression using a panel of life insurance entities over the years 1997 through 2014, with both entity and year fixed effects, and with standard errors clustered at the LIHCS (real-time NAIC group) level.

As mentioned before, there are 11 life insurers affiliated with TARP-recipient ultimate parents in 2008, and 23 in 2008 and 2009 combined. As a result of both the limited observations of TARP recipients in the sample and the fact that receipt of TARP funds in one period could lead to capital flows to subsidiaries in several subsequent quarters, the years 2008 and 2009 are lumped together at times in this analysis. Since the sample of life insurance entities associated with ultimate parents in receipt of TARP funds is small, and since an important way life insurers suffered during *R2* was through unrealized capital losses on investments, which are included in the *ROA* measures, the focus of the hypothesis testing is only on the performance variables (*Negative ROA* and *Positive ROA*) during the crisis years. As discussed earlier, much of the immediate stress on life insurers' capital and viability during the crisis years came from poor investment performance, so focusing on this fundamental is an obvious choice.

The results of estimating these specifications for an annual panel of all life insurance entities in the sample are shown in Table 7. The first column contains the results for the dependent variable *ICT_TA* and the fifth column contains the results for the dependent variable *TCT_TA*. During the crisis, when poor performance deteriorated, if the life insurance entity belonged to a LIHCS in receipt of TARP funds, there was an inflow of *TCT* to life insurance entities affiliated with TARP-recipient ultimate parents. (The negative and significant coefficient on *R2 x TARP = 1 x Negative ROA* for column 5 of -1.094 implies that a dollar decline in *ROA* when *ROA* is negative is associated with an increase in *TCT_TA* of about $1.094.) The same coefficient for the *ICT_TA* capital flows variable is negative, but smaller (-0.342) and insignificant. This is in contrast to life insurance entities that did not belong to LIHCS in receipt of TARP funds or unaffiliated life entities, for which deterioration in weak performance was in total associated with a much smaller total capital inflow to these entities from their LIHCS

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in some robustness results. The variable is defined as a share of total assets rather than as a share of the total TARP amount received, as often the entire amount is redeemed at once.

during the crisis (the coefficients on *R2 x Negative ROA* in both of these columns are positive and significant for the crisis years of *R2*, an outflow that mitigates the total "normal times" inflow effect of declining performance from the coefficient on *Negative ROA*).[56] This contrasts with the estimated relationship between capital flows and *Negative ROA* during *R1*, for which there is no significantly different relationship from normal times. It is of interest to note that for *ICT_TA*, during *R1* and *R2*, but not during normal times, deterioration in the capital ratio when the capital ratio is low is associated with capital inflows roughly three times the size of the capital inflows associated with deterioration in capital ratios when they are relatively high.

5.2 Increasingly Similar Quasi-treatment and Control Groups, and Separating Out the Crisis Years

The other six columns of Table 7 increasingly reduce the regression sample for *ICT_TA* and *TCT_TA,* so the quasi-treatment and control groups are progressively more similar to each other: columns 2, 3, and 4 show the results for *ICT_TA* when the sample is reduced to life insurance entities with public ultimate parents (*Public ICT*), to life insurance entities with ultimate parents that applied for TARP funds (*Applied ICT*), and to life insurance entities with ultimate parents that were approved for TARP funds (*Approved ICT*), respectively. Similarly, columns 6, 7, and 8 show the results for the same sample reductions on the estimation of the TARP quasi-treatment effect for *TCT_TA* (*Public TCT*, *Applied TCT,* and *Approved TCT*, respectively). From this table, it is evident that the TARP quasi-treatment effect on the relationship between poor and deteriorating performance and TCT inflows remains significant, as the quasi-treatment and control groups become increasingly more similar. It is also clear that there is a big drop in the sample size as the sample becomes increasingly restricted, resulting in larger coefficients and also much larger adjusted R^2.

In Table 8, which is organized like Table 7, the TARP quasi-treatment effect on the relationship between capital flows and performance is separated out by the crisis years of 2008

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[56] The total effects on capital flows of poor performance are not emphasized going forward, since the hypothesis is that receipt of TARP funds during the crisis relaxed a financial constraint at the LIHCS level, a relaxation that enabled life insurers with poor and deteriorating performance to receive net capital inflows from the rest of their LIHCS.

and 2009. In this table, to conserve space, only the quasi-treatment effect coefficients are displayed.[57] *TARP*=1 still takes on a value of 1 if the life insurance entity's ultimate parent received TARP funds in 2008 or 2009, and is 0 otherwise. This specification is more stringent than the previous one, in that it prevents the possibility that anticipation of future TARP receipts in 2009 may affect 2008 capital flows. From this table, it is evident that having an ultimate parent in receipt of TARP funds in 2008 or 2009, when life insurance entities are performing poorly and have deteriorating performance, is associated with positive TCT inflows in 2008, and with positive ICT and TCT inflows in 2009. For *TCT_TA*, using the full sample of life insurance entities in the estimation (column 5 of Table 8), the estimated pseudo treatment effect of TARP on its relationship with *Negative ROA* is significantly negative in 2008, -0.704, implying that a dollar deterioration in poor performance is associated with an increase in TCT-type capital flows of $0.704 for entities with TARP-recipient ultimate parents for that year. Similarly, the estimated impact of having an ultimate parent in receipt of TARP funds on the relationship between poor performance and capital flows is also negative in 2009, with an estimated coefficient of -1.976 for *ICT_TA* and -2.595 for *TCT_TA*, implying that, in that year, deterioration in poor performance of one dollar was met with more than a dollar inflow of capital.

Splitting out the years like this makes it clear that, in 2008, the LIHCS in receipt of TARP funds transferred capital to insurers with poor and deteriorating performance, either directly or indirectly, through actions like reorganization, which would show up in TCT measures, but not in ICT measures; whereas, in 2009, the transfers were direct capital contributions that additionally went through Schedule Y, Part 2, and therefore had to be approved by the state-based regulators of the insurance entities receiving such inflows.[58] Looking across the columns of Table 8, as the quasi-treatment and control groups become increasingly similar, it is clear that the expected quasi-treatment effects continue to hold.

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[57] The full regression results are not materially different otherwise from what is shown in Table 7; these results are available upon request.

[58] As noted in Schwarcz (2015), the state-based regulators have 30 days to approve such transactions, and the default is approval.

5.3 Consolidated Life Group TCT Data

As discussed in Section 2, since the *TCT_TA* data at the entity level are gross and not net flows, similar results are presented for the consolidated life group *TCT_TA* data from SNL. As noted before, while these consolidated life group data for *TCT_TA* eliminate double counting from pass-through effects to subsidiaries, the drawback is that they are consolidated back through time on a current-vintage organizational structure basis. Table 9 contains the consolidated life group parallel to Table 7 for the entity-level results, where the TARP quasi-treatment effects are estimated on the combined *R2* years. Instead, Table 10 similarly parallels Table 8, and presents the results for the consolidated life group-level analysis separated out for 2008 and 2009. Here, the estimation sample runs from 2001 through 2014, and the estimation is the same except that now the standard errors are clustered at the SNL consolidated (current vintage) life group level. The results for the TARP quasi-treatment effect on the relationship between capital flows and poor performance during *R2* mirrors the results for the entity-level regressions detailed above. Since the results reinforce each other, it seems unlikely that the different ways the *TCT_TA* variable is measured at the entity or consolidated group level are driving the results.

5.4 Quarterly TCT Data and the Timing of TARP Disbursements

Next, the timing of the receipt of TARP funds is exploited to better identify the TARP quasi-treatment effect. With quarterly data, only *TCT_TA* capital flows are available. In these regressions, the specifications parallel the above annual regressions, but now the panel fixed-effects regressions have fixed quarterly instead of annual time effects. Standard errors are clustered at the appropriate group level, depending on whether the data are consolidated or not. Table 11 is organized like Table 7, and presents entity-level quarterly panel regression results for *TCT_TA*. Table 12 is organized like Table 9 and presents consolidated life group-level quarterly panel regression results for *TCT_TA*. The estimation sample runs from 2000:Q4 through 2014:Q4.

From these tables, it is clear that there are two specifications included, representing different timing conventions for the *R2* quarters, the quarters where *R2* and *TARP*=1 overlap and the remaining quarters of 2009 where *TARP*=1, but the quarters do not overlap with *R2*.[59] The difference between these two specifications is that *P1* equals 1 when the quarter is an NBER-dated recession quarter but the TARP program has not begun disbursing funds, and is 0 otherwise (2008:Q1 through 2008:Q3); *P2* equals 1 when it is both an NBER-dated recession quarter and the TARP program has begun disbursing funds, and is 0 otherwise (2008:Q4 through 2009:Q2); and *P3* equals 1 after the NBER-dated recession has ended, but the TARP program disbursement and effects may still be present (2009:Q3 through 2009:Q4).[60,61] A quarterly specification specific to each ultimate parent's timing of receipt of TARP funds is also provided, where *T1* equals 1 from the start of the recession in 2008:Q1 until the ultimate parent in receipt of TARP funds receives the funds, and is 0 otherwise. *T2* equals 1 during the NBER-dated recession and remains 1 beginning in the quarter when the parent first received TARP funds, and stays 1 until the end of the recession, 2009:Q2; *T2* is 0 otherwise. *T3* equals 1 from 2009:Q3 through 2009:Q4, and is 0 otherwise. So, for example, the first column, labeled *ALL P*, refers to the *P1*, *P2*, and *P3* set of timing dummy variables. That estimation includes all entities or consolidated life groups. The eighth column, labeled *Approved T*, refers to the second set of timing conventions regarding receipt of TARP funds, *T1*, *T2*, and *T3*, and is estimated on only a sample of life insurance entities or consolidated life groups with ultimate parents that were approved to receive TARP funds.

As is evident from Tables 11 and 12, the results from this exercise are also consistent with the notion that life insurers experiencing poor and deteriorating performance during the crisis at the onset of TARP funding disbursement (2008:Q4), specific either to the start of the program (*P2*), or to the time when a particular ultimate parent first received TARP funds (*T2*), were more likely to have capital inflows from their LIHCS, as the *P2* and *T2* TARP quasi-

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[59] Here, *R2* equals 1 when the NBER designates that the quarter was a recession quarter, and 0 otherwise.
[60] There were no TARP disbursements after 2009: Q3, but, here, an allowance is made for the fact that there may be a short delay in any disbursement of those funds to subsidiaries of the ultimate parent.
[61] In these specifications, *R1* and *R2* are based on NBER recession dating.

treatment effects generally remain negative and significant, and are often further augmented by the *P3* and *T3* TARP quasi-treatment effects.

5.5 Controlling for Other Sources of Long-term External Finance

Since, in unreported results, the odds of an ultimate parent receiving TARP funds is evidently related to whether that parent was also able to issue net equity net of TARP or long-term debt, it is important to show that the TARP quasi-treatment effects discussed above still hold when controlling for these alternative sources of external funds, as well as for the issuance-weighted relative cost of issuing common equity during the crisis (the issuance-weighted crisis price of equity as a ratio to its end-of-July 2007 price level, *CoC*).[62,63] It is arguable that TARP was intended both to open up capital markets to financial institutions, and was at times conditional upon financial institutions also raising additional equity finance.[64] As a practical matter, Koijen and Yogo (2015) demonstrate that the timing of TARP was beneficial in enabling or assisting some ultimate parents of LIHCS to access public equity markets.[65] This is a somewhat-complicated issue, since, arguably, receipt of TARP funds helped to open external financial markets for some ultimate parents and may have enabled better access to external

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[62] Also not reported are pooled logit regressions of the amount of net equity issuance net of TARP during the crisis regressed on fundamentals for life entities and their ultimate parents, except that a dummy variable for having received TARP funds is added and the net equity net of TARP (*NEI*) and net long-term debt issuance (*NDI*) explanatory variables are removed. In these unreported results, entities' poor and deteriorating performance is associated with greater odds of *NEI* or *NDI*, and their deteriorating capital ratios and smaller sizes are associated with higher odds of *NEI*. If the LIHCS's ultimate parent was in receipt of TARP funds, then its odds of *NEI* were higher, as deteriorations in performance and the capital ratio for entities' parents are associated with higher odds of *NEI*. Receipt of TARP funds is associated with lower odds of *NDI*, and these odds were increasing in parents' *ROA*.

[63] In this paper, net equity issuance includes common and preferred stock and hence could include TARP funds. To avoid double-counting TARP equity, it is removed from the net equity issuance data used in the paper.

[64] In addition to bank examination ratings and financial ratios, other criteria for judging whether TARP applicants should be approved included signed merger agreements as well as confirmed investments of private capital (Calomiris and Khan 2015). Thus, the complementarity of the receipt of TARP funds and net equity issuance is not entirely surprising. Nor is the fact that LIHCS turned to debt if they could not raise cheaper equity capital, so receipt of TARP funds and NDI could plausibly have been substitute forms of external capital for LIHCS during the crisis.

[65] In fact, as outlined in Table 6 of Koijen and Yogo (2015), three life insurance holding companies issued common equity after applying for TARP funds (Lincoln National, which received TARP funds, along with Protective Life and Prudential Financial, which withdrew their applications for TARP funds), while others issued public equity during the crisis but did not receive or apply for TARP funds (Manulife Financial, which issued equity on December 11, 2008, and again on March 4, 2009, and MetLife, which issued equity on October 15, 2008, after the TARP program was available to BHCs and depository institutions, but before TARP was explicitly made available to life insurers). Many life insurance holding companies also did neither, but did reduce dividends to the rest of their LIHCS.

financial markets for all public ultimate parents in this sample of LIHCS.[66] This would argue for the impact of TARP being greater than the estimated results when controlling for external issuance of public debt and equity, so what is presented here could be viewed as a lower bound. By the same token, though, it is undesirable to attribute to TARP effects that may, in fact, have come from the issuance of debt or equity during the crisis, or from the relative cost of issuing common equity. Tables 13 and 14 are parallels to Tables 7 and 9, respectively, but they are more explicit about the fact that some public ultimate parents during the crisis years of 2008 and 2009 actually did have positive net equity issuance net of TARP (and an associated relative cost of common equity issuance) or positive net debt issuance, although some received TARP funds, while some did not. The TARP quasi-treatment effects during the crisis for *Negative ROA* are consistent with the above results, and, for brevity, are the only results displayed.[67]

5.6 Including AIG and Controls for Additional Entity and Group Characteristics

Finally, AIG's life insurance entities and consolidated life groups are added back to the sample, and the results in Tables 8 and 9 are revisited in Tables 15 and 16, respectively. As before, the estimated TARP quasi-treatment effect for the relationship between capital flows and *Negative ROA* during the crisis is negative for *ICT_TA* and *TCT_TA* and significantly so for *TCT TA*.[68] One last robustness exercise is to add the following controls to the regressions: the growth rate of real net premiums written by the insurer, the life insurance entity's relative ROA

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[66] The odds of receiving TARP funds are positively related to the share of net equity issuance net of TARP to total assets and negatively to the share of net debt issuance over the crisis. This is consistent with the idea that TARP and net equity issuance net of TARP were complements during the crisis and that TARP and net debt issuance were substitutes.

[67] Also available upon request are results for the years 2008 and 2009, separated out as in Tables 8 and 10; again, the estimated TARP quasi-treatment effects are significantly negative for *TCT_TA* in 2008 and 2009, and for *ICT_TA* in 2009.

[68] Again, in unreported results, when the specification separates out the estimated TARP quasi-treatment effects across years 2008 and 2009, the results for *TCT_TA* are significantly negative across both years, and are significantly negative in 2009 for the *ICT_TA* results.

rank among life insurers in its group, and the number of life affiliates in the group.[69] Table 17 includes these results. They are somewhat weaker, but remain significant for *TCT_TA*.

6. Conclusion

It is important to observe that even though a life insurance holding company system may have received TARP funds, it may not have needed them, and failure of a life insurer or the consolidated life group, in the absence of governmental or state-based regulatory support, may not have been a source of systemic risk. As argued in Barnes, Bohn, and Martin (2015) and in Koijen and Yogo (2015), however, there were large operational and reputational costs to accepting TARP funds, as well as a large response of insurance holding companies' stock prices and credit default swap (CDS) spreads to the announcement of TARP being opened to life insurers (arguably larger than for their large BHC and FHC counterparts). This is consistent with a large reduction in the perceived probability of default upon announcement of the TARP program being opened up to life insurers. That the capital raised by life insurers during the crisis (and their probability of current or future acquisition or closing) ultimately was associated with TARP funding and weak fundamentals, suggests there may be a smoking gun that some life insurers during the crisis were at high risk of failure and of becoming a systemic problem, from the perspective of both the Treasury and the market, and, possibly, also, that of life insurers' state-based regulators.[70]

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[69] The relative rank of an insurer's ROA within its LIHCS can get at the desirability of injecting capital into that entity either because it is relatively profitable or because it is relatively weak; the growth rate of real net premiums written could serve as a proxy either for the investment opportunities of the life insurance entity or for financial constraints as in Koijen and Yogo (2015); the number of life insurer affiliates gets at the size of the LIHCS, which could be associated with the complexity or amount of capital transfers. Growth of real net premiums written is defined as the year-over-year growth in CPI-adjusted net premiums written, which in turn are based on the "Analysis of operations by line of business" page of the statutory financials as the sum of lines "1 Premiums and annuity considerations for life and accident and health contracts," "2 Considerations for supplementary contracts with life contingencies," and "1A Deposit-type funds," which only exists for years before 2001. Relative rank of ROA is defined as the rank of the life insurance entity's ROA in the LIHCS divided by the number of life insurance entities in that group.

[70] Other studies also found that stock prices and CDS spreads of life insurance holding companies were implying even higher probabilities of default during the crisis than those of their banking counterparts, and that default rates of banking and insurance institutions have a high correlation. See, for example, Barnes, Bohn, and Martin (2015), Klein (2009), Chen et al. (2013), and Cummins and Weiss (2014). See Bollio et al. (2010) for analysis showing that the banking and insurance sectors have become more interrelated and less liquid over time.

This paper demonstrates that the odds of distress for life insurance entities were elevated during the crisis, compared with those odds in previous business cycles and normal times and that the availability of TARP funds to LIHCS' ultimate parents and regulatory forbearance in the form of positive P&P may have relieved this pressure and acted as substitute forms of assistance. It is demonstrated that the relaxation of the financial constraint within LIHCS that came with receipt of TARP funds resulted in higher capital inflows during the crisis to life insurance entities and consolidated life groups with poor and deteriorating performance. In contrast, life insurance entities with poor and deteriorating performance with no access to TARP funds had significantly weaker capital inflows during the crisis.

The results in this paper appear robust to a variety of approaches to estimation that should support interpreting these results as plausibly causal. Still, as is common in economics, the natural experiment of receiving TARP funds is neither random nor exogenous. A less-ambitious interpretation of the results presented in this paper is that the random shock was the financial crisis years, and that the results show that life insurance entities and consolidated life groups with ultimate parents in receipt of TARP funds received greater capital inflows associated with poor and deteriorating performance on average than did life insurers not in receipt of TARP funds.

Future avenues of research could include a more precise parsing out of the ICT and TCT data, using data on capital structure going back in time from 2011, the first year such data are currently available. This would also enable a more real-time view of the organizational structure of LIHCS, which would enable a deeper understanding of the capital flow dynamics within the LIHCS during the business cycle more generally. Further, measures specific to life insurance entities' size, interconnectedness, financial constraint, and activities most highly correlated with Acharya's SRISK measure, as in Cummins and Weiss (2014), or more specific to the business cycle, as in Giglio, Kelly, and Pruitt (2016), could be developed to see whether capital flows were larger for life insurers with such characteristics during business cycles or times of financial stress, and to see whether, and, if so, how such flows depended also on ultimate parents' financial health and other LIHCS characteristics.

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Figure 1: Additions to Capital and Surplus (in million $)
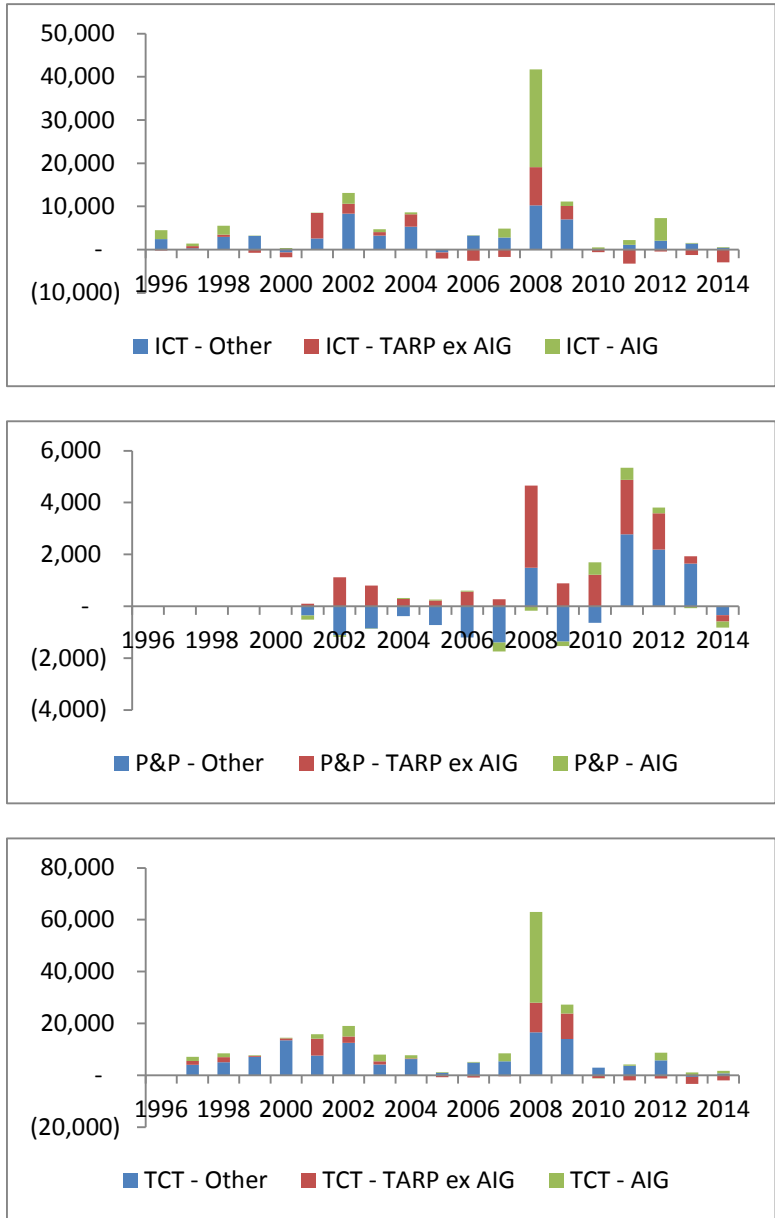
Source: SNL Financial and Author's Calculations

Notes: The aggregates are calculated over the cleaned sample of life insurance entities from 1996 to 2014. ICT is internal capital transfer from column 5 under Schedule Y, Part 2—Summary of Insurer's Transactions with Any Affiliates. P&P is the difference between prescribed and permitted surplus and NAIC surplus under Notes to Financial Statements. TCT uses items from the Capital and Surplus Account and is the sum of line 50.1 and line 51.1, subtracting line 45. All additions are winsorized at the 1 percent level with respect to their ratios to total assets.
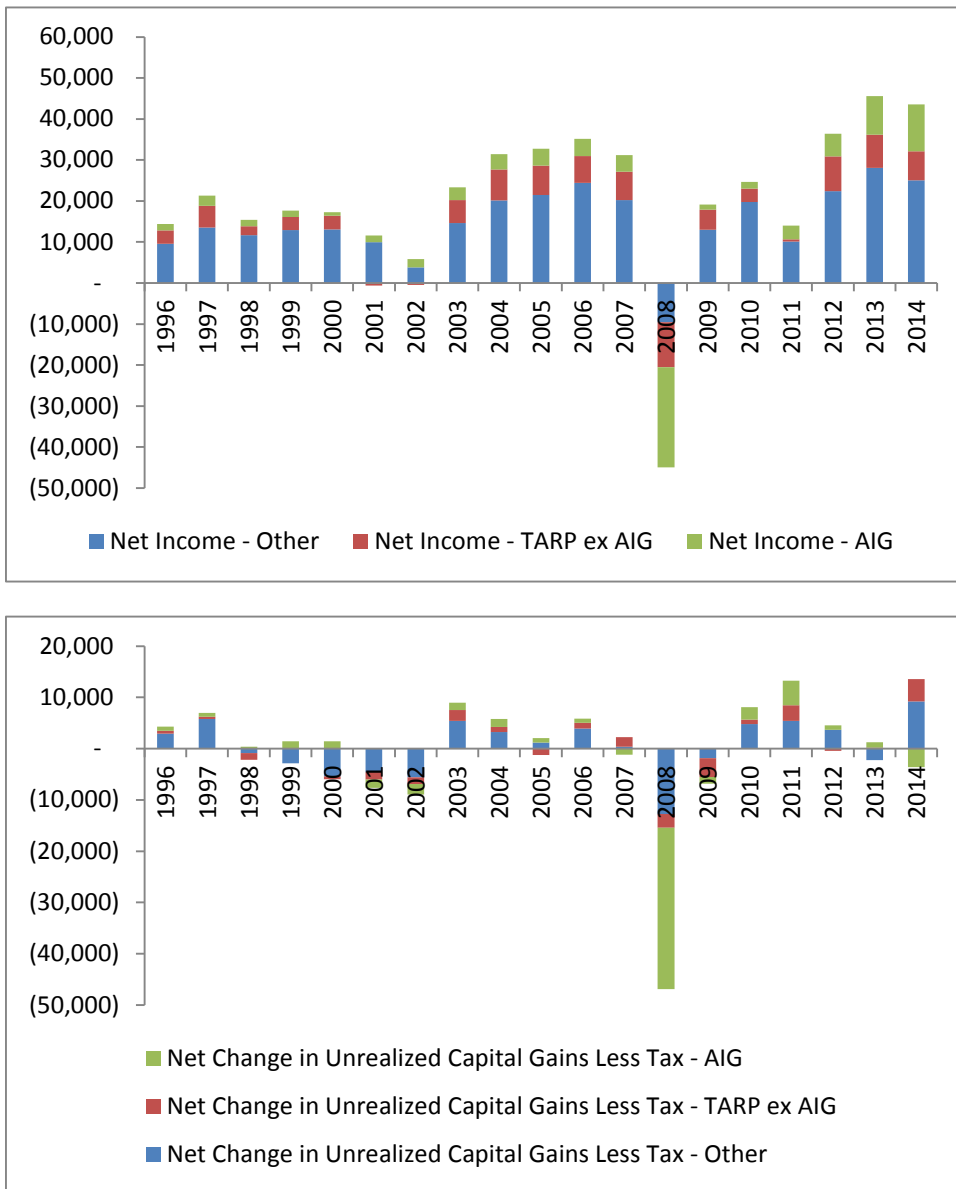
Figure 2: Additions to Capital and Surplus from Income (in million $)

Source: SNL Financial and Author's Calculations

Notes: The aggregates are calculated over the cleaned sample of life insurance entities from 1996 to 2014. Net Income and Change in Net Unrealized Capital Gains Less Tax are line 37 and line 38 from the Capital and Surplus Account. TCT is winsorized at the 1 percent level with respect to its ratio to total assets.

Figure 3: Additions to Capital and Surplus from TCT (in million $)

Source: SNL Financial and Author's Calculations

Notes: The aggregates are calculated over the cleaned sample of life insurance entities from 2000:Q4 to 2014:Q4. TCT uses items from the Capital and Surplus Account and is the sum of line 50.1 and line 51.1, subtracting line 45. TCT is winsorized at the 1 percent level with respect to its ratio to total assets.
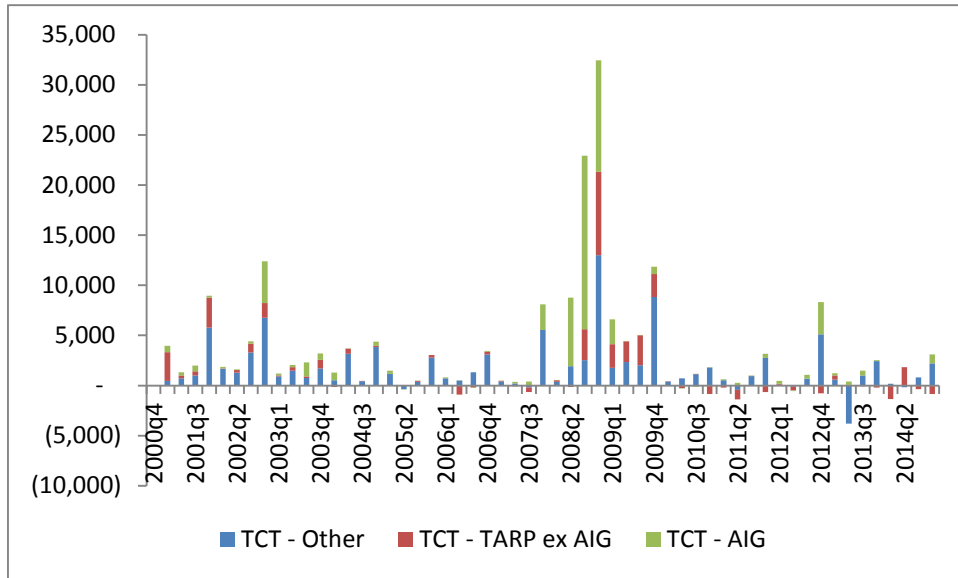
Table 1: Comparison of Sample Coverage between the Niehaus (2014)
Cleaning of ICT Data and More-Complex Cleaning Procedure Used in this Paper

Year	Number of Life Insurance Entities	Number of Groups	Number of Affiliates	Average Number of Affiliates per Group
	Sample in Niehaus (2014)			
2006	593	300	3,356	11.2
2007	594	316	3,446	10.9
2008	596	319	3,427	10.7
2009	599	316	3,736	11.8
2010	608	321	3,822	11.9
2011	544	290	3,748	12.9
	Sample in This Analysis			
1996	816	442	3,620	8.2
1997	841	441	3,863	8.8
1998	818	418	4,196	10.0
1999	796	407	4,376	10.8
2000	945	548	4,593	8.4
2001	999	559	4,722	8.4
2002	953	522	4,802	9.2
2003	871	498	4,296	8.6
2004	850	482	4,258	8.8
2005	813	466	4,370	9.4
2006	792	451	4,459	9.9
2007	743	430	4,478	10.4
2008	733	423	4,389	10.4
2009	715	412	4,415	10.7
2010	698	405	4,263	10.5
2011	680	387	4,756	12.3
2012	667	372	5,000	13.4
2013	655	359	5,044	14.1
2014	647	356	5,333	15.0

Source: Niehaus (2014), SNL Financial and Author's Calculations

Table 2: List of TARP Recipients and Affiliated Life Insurance Entities 2008-2009

Name	Type	Total Assets (in million $)	NEI (in million $)	NDI (in million $)	TARP	Note
JPMorgan Chase & Co.	Ultimate Parent	2,175,052.00	25,471.00	14,513.00	28oct2008 - 25,000 million (CPP);	Banc One Kentucky Insurance Co (99872)
Banc One Kentucky Insurance Co (99872)	Life Insurer	4.15				stopped reporting after 2008.
Lincoln National Corporation	Ultimate Parent	163,136.00	225.00	416.00		
Lincoln Life & Annty Co. of NY (62057)	Life Insurer	8,541.12				
Lincoln National Life Ins Co. (65676)	Life Insurer	120,901.52			10jul2009 - 950 million (CPP);	
First Penn-Pacific Life Ins Co (67652)	Life Insurer	1,904.73				
Securitas Finl Life Ins Co. (94072)	Life Insurer	2.72				
Citigroup Inc.	Ultimate Parent	1,938,470.00	72,258.00	(56,142.00)		
American Health & Life Ins Co. (60518)	Life Insurer	1,571.79			28oct2008 - 25,000 million (CPP);	
National Benefit Life Ins Co. (61409)	Life Insurer	755.15			31dec2008 - 20,000 million (TIP);	
Primerica Life Insurance Co. (65919)	Life Insurer	6,717.76				
Sears Life Insurance Co. (69914)	Life Insurer	77.88				
Hartford Financial Services Group, Inc.	Ultimate Parent	287,583.00	667.00	1,981.00		
Hartford Life & Accdt Ins Co. (70815)	Life Insurer	14,751.83				
Hartford Life & Annty Ins Co. (71153)	Life Insurer	65,743.90			26jun2009 - 3,400 million (CPP);	
American Maturity Life Ins Co. (81213)	Life Insurer	64.80				
Hartford Life Insurance Co. (88072)	Life Insurer	134,500.40	-	2,328.00		
Hartford Intl Life Reassurance (93505)	Life Insurer	1,125.04				
Wells Fargo & Company	Ultimate Parent	1,309,639.00	31,978.00	(52,022.00)	28oct2008 - 25,000 million (CPP);	
Centurion Life Insurance Co. (62383)	Life Insurer	1,660.66				
Bank of America Corporation	Ultimate Parent	1,817,943.00	62,581.00	(24,753.00)	28oct2008 - 15,000 million (CPP);	Balboa Life Insurance Co of NY (10097) and
General Fidelity Life Ins Co. (93521)	Life Insurer	214.43			09jan2009 - 10,000 million (CPP);	Balboa Life Insurance Co. (68160) were
Balboa Life Insurance Co of NY (10097)	Life Insurer	18.29			16jan2009 - 20,000 million (TIP);	acquired by BANK OF AMERICA GRP from
Balboa Life Insurance Co. (68160)	Life Insurer	43.25				BALBOA INS GRP in 2009.
Goldman Sachs Group, Inc.	Ultimate Parent	884,547.00	14,121.00	(1,520.00)		First Allmerica Finl Life Ins (69140) was
Columbia Capital Life Re Co. (12276)	Life Insurer	139.58			28oct2008 - 10,000 million (CPP);	acquired by GOLDMAN SACHS GROUP
Cmnwlth Annty & Life Ins Co. (84824)	Life Insurer	5,567.19				from HANOVER INS GRP in 2009.
First Allmerica Finl Life Ins (69140)	Life Insurer	1,751.05				
First M&F Corporation	Ultimate Parent	1,596.87	(0.12)	(78.81)	27feb2009 - 30 million (CPP);	
First M & F Insurance Co. (63117)	Life Insurer	2.26				
BB&T Corporation	Ultimate Parent	152,015.00	2,820.00	(1,028.00)	14nov2008 - 3,133.6 million (CPP);	
First Virginia Life Ins Co. (63568)	Life Insurer	6.90				
Morgan Stanley	Ultimate Parent	658,812.00	12,821.00	2,575.00	28oct2008 - 10,000 million (CPP);	Longevity Insurance Co. (68446) was
Longevity Insurance Co. (68446)	Life Insurer	7.59				acquired by Morgan Stanley from SCOR

Name	Type	Total Assets (in million $)	NEI (in million $)	NDI (in million $)	TARP	Note
American International Group, Inc.	Ultimate Parent	860,418.00	6,355.00	(1,918.00)		
American General Life Ins Co. (60488)	Life Insurer	41,285.38				
Amer Intl Life Assr Co. of NY (60607)	Life Insurer	7,194.44				
American Life Ins Co. (DE) (60690)	Life Insurer	88,285.06				
SunAmerica Annuity & Life Assr (60941)	Life Insurer	24,660.36				
Delaware American Life Ins Co. (62634)	Life Insurer	84.05				
Merit Life Insurance Co. (65951)	Life Insurer	836.09			25nov2008 - 40,000 million (SSFIP);	
Amer Genl Life & Accdt Ins Co. (66672)	Life Insurer	9,845.50			31dec2008 - 40,431 million (FRBNY);	Pacific Union Assurance Co. (81612)
Amer Genl Life Ins Co. of DE (66842)	Life Insurer	9,935.41			31dec2009 - 5,344 million (SSFIP);	stopped reporting after 2008.
American General Assurance Co. (68373)	Life Insurer	213.29			31dec2010 - 2,199 million (SSFIP);	
SunAmerica Life Insurance Co. (69256)	Life Insurer	26,885.13			31dec2011 - 20,292 million (SSFIP);	
U.S. Life Insurance Co. NYC (70106)	Life Insurer	5,739.42				
Variable Annuity Life Ins Co. (70238)	Life Insurer	56,041.22				
Western National Life Ins Co. (70432)	Life Insurer	49,928.13				
Pacific Union Assurance Co. (81612)	Life Insurer	30.06				
First SunAmerica Life Ins Co. (92495)	Life Insurer	7,978.94				
AGC Life Insurance Co. (97780)	Life Insurer	11,345.97				

Source: SNL Financial, U.S. Treasury, Compustat and Author's Calculations

Appendix: Schedule Y, Part 2, Cleaning

The data start with 397,342 observations.

Step 1: Maximum Row Number: 339 cases where RowNumber = 9999999 is the only row reported, but all have Totals = 0. Therefore, these are kept and treated as unaffiliated companies. Including these 339, there are 3,551 cases where the maximum row number is 1. There are 208 with non-zero totals. These observations are dropped. Then, 18,094 observations with RowNumber = 9999999 (placeholder rows) are dropped, leaving 379,040 observations.

Step 2: NAIC Group Number: we use real-time NAICGroupNumber from SNL Data Wizard. There are 13,867 reporters that do not have NAICGroupNumber, and we use their NAICCode as their group numbers.

Step 3: Changing Groups: When an insurer changes groups, it should report both its old group structure and its new group structure in Part 2. We confirm that when this happens the reporting entity does not separate the two groups in its reported structure, and it is impossible to separate the two groups by codes. We identify group changers by real-time NAICGroupNumber, and 31,989 such group changers are dropped. However, we find some insurers that report more than one group but are not captured by the NAICGroupNumber, so we manually drop these cases. On top of that, we find some groups where every insurer of the group reports the same structure, which includes companies belonging to some other group, so we manually clean out these outsider companies. After the cleaning, there are 346,858 observations left.

Step 4: Identifiers: we use a variety of ways to identify and correct errors in NAICCompanyCode, FederalIDNumber, and Name.

Step 5: No NAICCompanyCodes: We drop groups where all NAICCompanyCodes are 0. There should be at least one insurer in every group, so these must be errors in reporting. Therefore, 3,255 observations are dropped in this step, leaving 343,603 observations.

Step 6: Self Reporting: We then look to see whether companies report on themselves, as they should. There are 23,076 observations where the entity did not report on itself. There are also 85 observations where all of the NAICCompanyCodes in the group correspond to the reporting entity. After dropping these cases, 320,442 observations remain.

Step 7: Mode: we make sure that one NAICCompanyCode corresponds to only one FederalIDNumber and that one FederalIDNumber corresponds to only one name every year. We use frequency to establish this one-to-one correspondence.

Step 8: Consolidation: There are a number of instances where the same company is reported multiple times by the same reporting entity. These instances should be consolidated. This causes 17,665 observations to be eliminated, leaving 302,777 remaining observations.

Step 9: Inconsistency: We check to see whether internal capital transactions are reported consistently across insurers in the same group and across reporting structures of the same size (insurers reporting structures of different sizes are dealt with later in the Subset check). In instances where the majority of reports are consistent, we replace the values of the minority with those of the majority. In cases where there is no majority value among the reports, we drop the reporting entities. This causes us to drop 8,441 observations, leaving 294,336 remaining observations.

Step 10: Sum to Zero: Within each group, each of the internal capital transactions should sum to zero across all affiliates. The threshold is $1,000 for groups of fewer than 15 affiliates, and $1,000 for groups of 15 or more affiliates. There are 5,349 observations within groups where one or more of the transactions do not sum to zero across the group (1,486 for SHDiv, 208 for CapContri, 7 for PurSalExchOfInv, 5 for IncGuarC, 241 forMgmtSrvsC, 3,355 for IncReinsC, 37 for AnyOtherC, and 10 for Totals000C). These observations are deleted, leaving 288,987 observations.

Step 11: Duplicate Set: We identify reporting entities that report the same structure and delete the duplicate structures. We use a threshold of 50 percent. This causes us to delete 190,494 observations, leaving 98,493 remaining.

Step 12: Subset: Next, we eliminate occurrences where the reporting entity reports only a subset of the complete group structure. We use a threshold of 50 percent. This causes 12,792 observations to be deleted, leaving 85,701 remaining.

Step 13: Overlap: If we have two structures of the same group remaining, but one is not a subset of the other, we consolidate any overlapping companies and combine the two structures into one. This step eliminates 357 observations, leaving us with 85,344.

Step 14: Group Sum to Zero: Here we look to make sure that each of the internal capital transactions sums to zero on the group level (previously, we checked it on the reporting-entity level). The threshold is $1,000 for groups of fewer than 15 affiliates, and $1,000 for groups of 15 or more affiliates.

Step 15: Subgroup: lastly we eliminate occurrences where one group structure is the subset of another group structure. We use a threshold of 50 percent. This causes 265 observations to be deleted, leaving 85,079 the final number of observations. We could have disregarded this step and treated these as duplicates across groups, but given the small number of observations affected, whether to perform this step should not be an important decision.