

FINANCIAL COMPETITION AND REGULATION SINCE THE GREAT
RECESSION

by

Slade Mendenhall
A Dissertation
Submitted to the
Graduate Faculty
of
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in Partial Fulfillment of
The Requirements for the Degree
of
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A Dissertation submitted in partial fulfillment of the requirements for the degree of
Doctor of Philosophy at George Mason University

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DEDICATION

I dedicate this to my mother, Rebecka Mendenhall, without whose constant support none of this would have been possible.

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ABSTRACT

FINANCIAL COMPETITION AND REGULATION SINCE THE GREAT RECESSION

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In the first chapter of this work, "Commercial Bank Competition, Riegle-Neal, and Dodd-Frank," I employ a linear systems of equations technique to examine commercial banks competitiveness over the period since the passage of the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994, with particular attention to whether there are any observable changes in the state of competition since the passage of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, as one of the most commonly expressed concerns with Dodd-Frank has been that its increasing fixed compliance costs of regulation may have increased market power in the American banking system. Per the common wisdom, I find small pro-competitive effects of Riegle-Neal and small anti-competitive effects of Dodd-Frank.

In my second chapter, "The (Not So) Quiet Life of Commercial Bankers," I address a literature that has emerged in recent years in which it is contended that the growth of mutual and index funds has fostered oligopoly collusion in commercial

banking and airlines by solving the oligopoly defection problem. Focusing on the case of banking, this paper challenges a key pillar of their theory: the “quiet life” hypothesis, which claims that common ownership leads to the selection of executives who are less likely to exert high effort to maximize profits. An event study is conducted evaluating stock market responses to executive hiring announcements in order to discern whether executives hired in the six largest commercial banks are viewed by markets as less motivated than their predecessors. No evidence of such market perceptions is found.

In my final chapter, "The Role of Moral Hazard in the Housing Boom and Bust," I examine the nature of moral hazard relationships in housing regulation from the 1970s until the housing crash in 2007 and how policy played a role in promoting problems of asymmetric information. I describe the crisis as engendered by a three-tiered moral hazard relationship between borrowers and lenders, lenders and government-sponsored enterprises, and between government-sponsored enterprises and the federal government. Taking the perspective of ten years after the crisis, I examine the extent to which policies that promoted moral hazard problems have or have not changed, finding moral hazard relationships to have been partly mitigated by the Department of Housing and Urban Development's takeover of the GSEs but bringing with it the more long-term concerns that come with operating under a "soft budget constraint."

CHAPTER ONE

1 Introduction

An existing literature in regulation and banking examines the degree to which modern commercial banking constitutes a competitive industry and the effects of various policies on the degree of competition in that market (Gilbert, 1984; Bikker and Haaaf, 2002; Berger et al, 2003). In addition to numerous technical critiques noted in Gilbert's study, however, Shaffer (1993) notes that the correlations occasionally found in these studies “failed to provide a sharp benchmark for competitive returns.” Though other approaches to analyzing market structure in banking and mortgage lending have previously rejected the existence of monopoly power in these industries (Nathan and Neave 1989), I believe that the most fruitful approach for an aggregate study such as this has been that technique proposed by Bresnahan (1982) and Lau (1982) and applied in previous banking studies to the U.S. (Shaffer 1989), Canada (Shaffer 1993), Italy (Coccoresse 1998), Mexico (Gruben and McComb 2003), and China and South Korea (Park 2013).

The literature on commercial banking competitiveness is extensive, with appraisals of banks' monopoly power differing wildly according to specification. An early trend in it relied upon the non-formal structure-conduct-performance (SCP) paradigm and used Hirfendahl-Hirschman indices to determine competitiveness but has since come to be seen as afflicted by significant endogeneity problems. In response emerged the efficient structure (ES) hypothesis of high concentration endogenously

reflecting market share gains by banking firms (Smirlock, Gilligan, and Marshall 1984; Rhoades 1985; Smirlock 1985; Shepherd 1986).

Since the early 1990s, attempts to overcome endogeneity problems have led to variations on the SCP and ES approaches with different controls of X-efficiency and scale efficiency (Berger 1995; Frame and Kamerschen 1997). These modified approaches have found weaker evidence both for and against the existence of market power. An alternative view, the—efficiency hypothesis—emerged from Demsetz (1973) and Peltzman (1977) and claimed that market structure is determined endogenously by banks' performance; if a bank becomes more efficient than its competitors, its efforts at profit maximization will lead it to cut prices and thereby increase its market share.

A parallel, non-structural tradition in the New Empirical Industrial Organization literature on bank competition has offered numerous models including that of Iwata (1974), Bresnahan (1982) and Lau (1982), and Panzar and Rosse (1987). Overall, evidence as to the degree of banking market competition is highly model-dependent. Those studies relying upon the SCP paradigm consistently found market power but, as noted, are questionable on the basis of endogeneity issues. Those which try to control for those issues get much weaker results on the question. And formal models are sharply divided, with Panzar-Rosse H-statistic models consistently finding monopolistic competition or monopoly across various country studies and those employing the Bresnahan (1982) and Lau (1982) method more often finding perfect competition (Shaffer 1989; Shaffer 1993; Coccoresse 1998b; Gruben and McComb 2003; and Park 2013)—sometimes even in the same countries. Thus, one's view as to the baseline of

banking market competitiveness will likely be heavily influenced by one's views as to the relative merits of these models.

This study applies the Bresnahan-Lau model to the United States in the years spanning from 1984 to 2016, not in an attempt to merely restate previous findings about the general competitiveness characteristics of commercial banking but rather to test hypothesized effects on competitiveness of two important pieces of banking legislation: the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994 and the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010. Both acts, one a significant deregulation and the other a significant regulation, make this period a uniquely interesting case study in competitiveness and legislation.

The following section presents the theory for why each of these acts would be expected to affect competition in U.S. commercial banking. Section Three presents the model that will be used here to test competitiveness in the banking industry. Section Four describes the sample data. Section Five summarizes the details of our estimation and the empirical results. Section Six concludes.

2 Theory

There are substantial reasons to expect both of these pieces of legislation—Riegle-Neal and Dodd-Frank—to have had significant effects on banking market competitiveness. Riegle-Neal, signed into law September 29, 1994, “eliminate[d] most restrictions on interstate bank acquisitions and [made] interstate branching possible for the first time in seventy years. The act [permitted] bank holding companies (BHCs) to acquire banks anywhere in the nation as of September 29, 1995, subject to certain limitations, and [invalidated] the laws of thirty-six states that [allowed] interstate banking

only on a reciprocal or regional basis” (McLaughlin 1995). After June 1, 1997, it also permitted banks of different states to consolidate into a single, interstate bank. The nationwide reduction in the number of commercial banking institutions that followed was significant, as was the expansion in the number of branches and offices (Figs. 1-3).

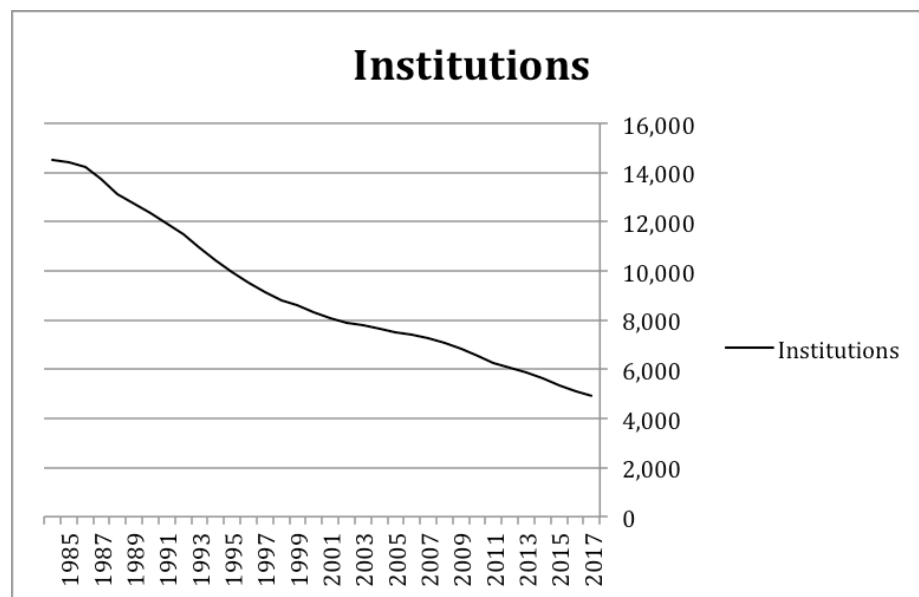


Fig. 1 Commercial Banking Institutions, 1984 – 2017.

Those who doubt the significance of Riegle-Neal, however, will likely note that the number of commercial banking institutions had been in continuous decline since 1984, and there was no dramatic departure from the prior trend line after 1994 in any of these categories. This is primarily explainable by reference to individual states' repeals of interstate banking laws during the 1980's. “Between 1985 and 1991,” Shaffer (1994) writes, “more than 4000 mergers occurred among U.S. commercial banks, a rate of consolidation more than four times greater than in previous decades. During the same

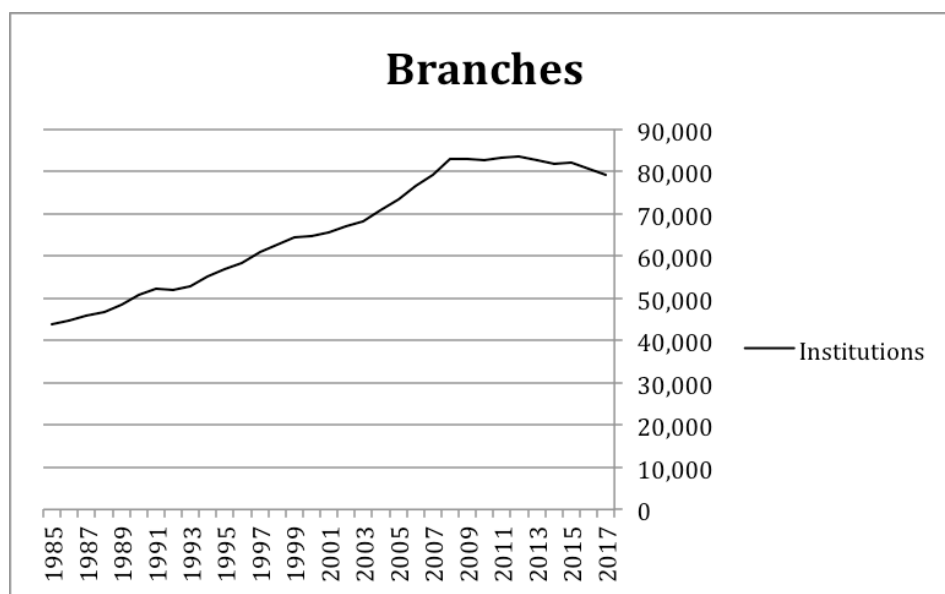


Fig. 2 Commercial Bank Branches, 1984 – 2017

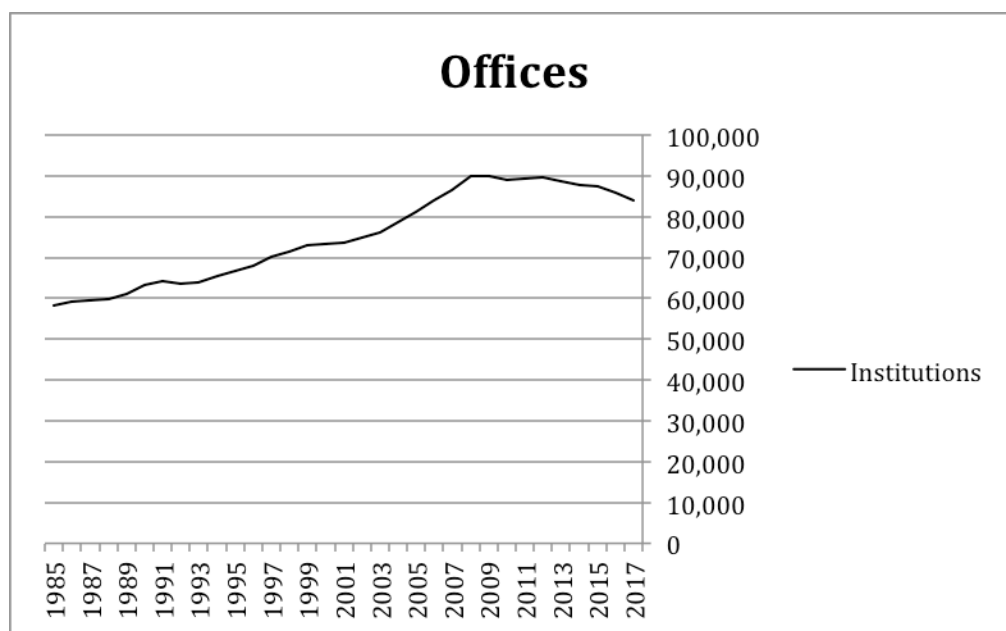


Fig. 3 Commercial Bank Offices, 1984 – 2017.

period, consolidation transferred control of more than \$350 billion in financial assets from smaller acquired banking institutions to the 100 largest U.S. depository institutions.” Thus, while some U.S. states forbade interstate banking prior to 1994, many had already opened their borders to out-of-state bank owners.

The erosion of borders was neither total nor unconditional, however. States that repealed interstate banking laws generally did so on reciprocal or regional bases. As McLaughlin (1995) notes, bank holding companies responded quickly to curtailments of branching laws in the 1980's by consolidating banks within states but in many cases choosing not to expand their holdings across state lines. Among those who did acquire out-of-state banks, only a smaller subset of those acquired banks in distant states, preferring, under the circumstances, to acquire other institutions in states bordering their own. Writing in the lead-up to Riegle-Neal, McLaughlin (1995) writes that “[t]hese findings provide a basis for projecting the likely speed and breadth of the 1994 federal reform's impact on U.S. banks. Specifically, they imply that federal reforms will speed industry consolidation by facilitating mergers of banks located in different states but may not lead immediately to the formation of coast-to-coast banking companies through bank acquisitions.”

Any observed trend of banking market consolidation following reduced barriers to entry, be they at the federal or state level, lends itself to two possible interpretations. The first, a negative one, arises from the traditional structure-conduct-performance paradigm and would typically perceive the rapid decline in the number of firms over this period and firms' rising market share as a threat to competition. The second, based on the notion of contestability as detailed by Baumol, Panzar, and Willig (1982) would take the reduction

of barriers to entry in the form of state-level repeals of branch banking laws and the passage of Riegle-Neal as enhancing competitiveness by eliminating legal restrictions to competition. Their model also advises us not to treat the number of firms in an industry as indicative of its competitiveness. This is consistent with the findings of Shaffer (1989), who strongly rejects the presence of collusion in the commercial banking market but, despite the continuous decline in the number of commercial banking firms after 1984, does not reject perfect competition. On the other hand, using an alternate technique known as the Panzar-Rosse H-statistic (Panzar and Rosse 1987), Yildirim and Mohanty (2010), analyze bank-level U.S. data from 1976 to 2005 and find an initial state of monopolistic competition in American commercial banking along with very limited and non-uniform effects of lowered geographic restrictions on the state of competition.

There is also reason to expect that Dodd-Frank, though not directly addressed to the subject of banking market structure and competition, may nonetheless also have competitiveness effects. The five years after its passage in 2010 showed a somewhat greater rate of decline in the number of banks (-18.1%) than the preceding five years (-13.3%), despite the financial crisis of 2008. There again, however, the change in the rate of failures is not a sufficiently dramatic departure from the general trend since 1984 to consider it significant, *prima facie*. Nor can we consider bank failures to be the whole story behind the decline in the number of banking institutions; both consolidations and growth account for notable shares of the apparent decline in the number of banks with less than \$10 billion in assets.

Nonetheless, there are structural and regulatory reasons to suspect diminished competitiveness since 2010, and the history of American banking regulation provides

ample precedent for regulation having arguably been used in a rent seeking manner which reduces competitiveness and contributes to financial weakening (Selgin 1989). Chousakos and Gorton (2017) measure bank health by Tobin's Q and deduce that persistently low Q's cannot be explained by broader macroeconomic conditions, suggesting, by their appraisal, a blameworthy role played by regulation. On the matter of precedent, Peltzman (1965) found significant diminution of entry into the banking sector as a result of the Bank Act of 1935, projecting that entry in the period 1936 to 1962 was cut in half by the resultant costs of entry—a clear case of banking regulations with sizeable compliance costs having demonstrable, adverse effects on contestability. Elliehausen states the case categorically: “The basic conclusion is similar for all of the studies of economies of scale: Average compliance costs for regulations are substantially greater for banks at low levels of output than for banks at moderate or high levels of output” (Elliehausen 1998, p. 29, *supra* n. 62).

Dodd-Frank has imposed considerable compliance costs on the commercial banking industry that are larger relative to the assets of smaller banks than they are relative to those of large banks, making smaller banks presumably more vulnerable to failure under the law. In a survey of approximately 200 small American banks, Peirce, Robinson, and Stratmann (2014) found that a large majority of respondents reported burdensome compliance costs, including hiring new personnel and contracting with outside compliance experts, leading banks to consider altering their product and service offerings, including but not limited to ending their provision of residential mortgage loans. They report that “[m]ore than eighty percent of respondents saw their compliance costs rise by more than five percent since 2010” (Peirce Robinson and Stratmann 2014),

and, consistent with the survey responses, commercial banks have notably withdrawn from the mortgage market, their market share decreasing from seventy-four percent in 2007 to fifty-two percent in 2014, with speculation persisting that in the long run they may exit entirely, returning to the days when banks concentrated on business loans and left mortgage lending to other sectors of the consumer financial services industry (Riquier 2016).

Further, Burns and Hogan (2019) find that non-salary expenses of bank holding companies showed a one-time increase after the passage of Dodd-Frank, whereas salary expenses increase with regulations. Together, they find that these amount to an average of more than \$50 billion per year in added noninterest expenses since Dodd-Frank's passage. Like the 1935 act analyzed by Peltzman, this has the potential to not only force existing banks out of the market but to raise structural barriers to entry, potentially—so we shall test—diluting the effects of contestability and decreasing competitiveness in the commercial banking market. The foregoing is nonetheless theorizing that must be subjected to the tools at our disposal.

3 Model

This approach takes as given the intermediation model of banking as described by Klein (1971) and Sealey and Lindley (1977). Alternatives exist, including but not limited to the “money creation” model (Aurenheimer and Ekelund 1982), Diamond-Dybvig (1983), and the two-product model put forth by Suominen (1994). None, however, are as descriptively accurate, and some (e.g., Diamond-Dybvig) indulge such significant abstractions and simplifications as to forbid consideration of competition in commercial

banking. The intermediation model takes labor and deposits as inputs, the dollar value of assets as its output, the wage rate and deposit interest rate as input prices, and the interest rate earned on assets as the output price.

Our model, a pure time series analysis, begins with some basic price theoretic assumptions: profit-maximization in a competitive market or a collusive one consists of setting marginal cost equal to perceived marginal revenue; under perfect competition, this will be coincident with the demand price; under collusion, it will coincide with the industry's marginal revenue. Bresnahan (1982) represents marginal revenue as $P + h(Q, Y, \alpha)$, where P is industry price, Q is aggregate output quantity, Y is a vector of exogenous variables, and α represents parameters of the demand system to be estimated. A firm's perceived marginal revenue function is represented by $P + \lambda h(Q, Y, \alpha)$. There, $h()$ is the semi-elasticity of market demand $Q / (\partial Q / \partial P)$ and λ is a parameter indexing the degree of market power, with $\lambda = 0$ signifying perfect competition and $\lambda = 1$, perfect collusion. As Shaffer (1993) notes, this makes $-\lambda$ a local estimate of the percentage deviation of aggregate output from a competitive equilibrium level. If $-hQ / (\partial Q / \partial P)$ measures the extent to which price deviates locally from marginal cost, while quantity deviates locally from the competitive output level by $\partial Q / \partial P$ times the price deviation, or $-\lambda Q$, then dividing by Q leave us $-\lambda$, the percentage quantity deviation from the competitive level.

In this study, λ will represent an average of the degree of market power over the total U.S. banking industry rather than being specific to any one local market. The value of $-\lambda$ will indicate an average of the percentage deviation of output from competitive levels in our sample, making $-\lambda < 0$ indicative of output below the competitive

equilibrium quantity, $-\lambda > 0$ suggest a quantity greater than competitive equilibrium (as in the “supercompetitive” results found in other studies using this model), and $\lambda = 0$ indicating our null hypothesis of perfect competition. Since ours is a pure time series test, this average should be estimated without bias so long as the distribution of asset quality is stable over time. It should thus be sufficiently general over geography and time to give an accurate representation of competition in U.S. commercial banking. The specification of λ also implies that banks are input-price-takers. We take this as a probable assumption with respect to labor and physical capital. For deposits, it would be true if either the deposit rate is regulated or there is effective competition for deposit funds. If banks have market power, our specification of λ will overstate the overall degree of market power by misattributing deposit power to the asset side. This only serves to make a finding of perfect competition, should one occur, even more meaningful.

Estimation of λ will require an inverse demand function specified as

$$Q = a_0 + a_1P + a_2Y + a_3PZ + a_4Z + a_5PY + a_6YZ + e \quad (1)$$

where Q is the quantity of banking services, P is the price of those services, Y is an exogenous variable (e.g. income), Z is another exogenous variable (e.g. the price of a substitute for banking services), and e is an error term. The interaction terms PZ , PY , and YZ allow for the rotation of the demand curve necessary to identify λ . Those aside, the equation provides a first-order local approximation of the demand curve.

Shaffer (1993) as well as Mester (1987) and Berger, Hanweck, and Humphrey (1987) employ the translog cost function

$$\ln C = \beta_0 + \beta_1 \ln Q + \beta_2 (\ln Q)^2 + \beta_3 \ln W_1 + \beta_4 \ln W_2 + \beta_5 (\ln W_1)^2 / 2 + \beta_6 (\ln W_2)^2 / 2 \quad (2)$$

$$+ \beta_7 \ln W_1 \ln W_2 + \beta_8 \ln Q \ln W_1 + \beta_9 \ln Q \ln W_2$$

where C is total cost, W_1 is the interest rate paid on deposits and W_2 is annual wages and benefits to commercial bank employees. This implies the marginal cost function

$$MC = [C/Q][b_1 + b_2 \ln W_1 + b_3 W_1 + b_4 \ln W_2] \quad (3)$$

Estimation will also require a supply relation derived from the marginal cost function under the assumptions of banks being input-price-takers and profit-maximizers:

$$P = -\lambda Q/[a_1 + a_2 Z + a_3 Y] + [C/Q][b_1 + b_2 \ln Q + b_3 \ln W_1 + b_4 \ln W_2] \quad (4)$$

$$- b_5 RQ/[a_1 + a_2 Z + a_3 Y] + u$$

where R (or, alternately, D when we test for the effects of Dodd-Frank) is a dummy variable that will be used to differentiate the periods before and after the passage of these acts in the manner of a Chow test (Chow 1960), and u is an error term. With each variable, we can decompose the total divergence from the prior state of competition into the sum of (i.) our index variable for market power ($-\lambda$) and (ii.) the coefficient on the

dummy, careful to remember that the whole term is negated to indicate that, with profit-maximizing firms, market power and aggregate output should move inversely to one another:

$$-(\lambda + D) \quad (5)$$

We will thus measure any percentage increase or percentage reduction in market power as

$$R/\lambda \quad (6)$$

or D/λ , depending upon the dummy in question. For example, if output is found to be five percent below the competitive equilibrium level but after Riegle-Neal it is four percent below, that would be a twenty percent reduction in market power post-Riegle-Neal. Care must be taken in interpreting the results to distinguish what our analysis is claiming.

For the sake of thoroughness, we will also include a simpler secondary test of competitiveness, looking at the spreads between asset interest rates and deposit rates over the sample period. We hypothesize that if Riegle-Neal and Dodd-Frank have the pro-competitive and anti-competitive effects that we have predicted, we should observe a reduction in the average spread after 1994 and an increase after 2010.

4 Data

Using annual data from the FDIC and St. Louis Federal Reserve's FRED database, we are able to make general statements about the state of competitiveness over the thirty-one-year period in question. It is admittedly a relatively small window of time, but not

uniquely so among analyses of competition. Shaffer (1993) used the same methodology on a sample of twenty-four years; Alexander (1988), twenty-two; Nathan and Neave (1989), thirty-nine and thirty-three, in separate tests. The particular span of our window includes ten years prior to Riegle-Neal and twenty-three years after; twenty-six years prior to the passage of Dodd-Frank and seven years after. Whatever the estimation of the dummy variables' effects in our test, it could be argued that for Dodd-Frank it is too soon to make definitive claims as to the existence of effects on competition. Given the commonly held importance, however, of a healthy financial sector to macroeconomic performance (Schumpeter 1911; King and Levine 1993), it is nonetheless worthwhile to inquire as to the existence of even nascent deviations from the state of competition prior to Dodd-Frank.

For the purposes of our regression, P is the ratio of interest income to total assets, and its coefficients are expected to be negative.¹ Y is gross domestic product (GDP) and is expected to positively affect the level of aggregate demand. Z is the average annual interest rate on 3-month treasury bills²; if 3-month treasuries are properly taken as a substitute for bank loans, then the coefficient on Z should be positive. The interest rate on deposits, W_1 , is calculated as interest expenses divided by deposits, and its coefficient is

¹ Data on commercial banks' assets is drawn from the "Total Assets" variable in the FDIC's "Balances at Year End" data collection. Asset interest rates are calculated as the ratio of annual "Total Interest Income" to "Total Assets."

² GS3M, as reported by FRED. FRED only reports GS3M interest rates on a monthly basis. Annual averages are calculated by the author.

expected to be positive. Employee wages and benefits, W_2 , should also have a positive coefficient.³

There remains the matter of banks' physical capital: the stock value and annual expenditure on premises and equipment. Shaffer takes alternate approaches to this variable, excluding it from his 1989 study of American banking competitiveness but including it in an alternate specification in his 1993 study of the Canadian market. He finds no significant effect of doing so. We will include it for the sake of thoroughness. It uses another degree of freedom in a sample of thirty-one observations, making it somewhat costly, but given the annual variation in expenditure on premises and equipment observed in our sample, it is at least worthwhile to ensure that its inclusion does not significantly impact our conclusions. In doing so, we follow Hunter and Timme (1986), Mester (1987), Shaffer (1988), and Shaffer (1993) in measuring the price of physical equipment as the ratio of annual expenses on premises and equipment to the stock value of premises and equipment. All variables except interest rates are expressed in billions of chained 2009 U.S. dollars.

Finally, two shift terms, R and D , were included in formula 2 above in order to distinguish any discernible difference in the degree of commercial banking competition after the imposition of Riegle-Neal in 1994 and Dodd-Frank in 2010. R is set as 0 for the years 1984 to 1994 and 1 for 1995 to 2016. D is set as 0 for the years 1984 to 2010 and as 1 for 2011 to 2016. As to the sign of their coefficients, our hypothesis holds that of R to

³ Both W_1 and W_2 input data are calculated using FDIC commercial banking statistics.

be positive, given the decreased barriers to entry and exchange brought about by Riegle-Neal, and holds the coefficient on D to be negative, given prior observations as to the large, fixed compliance costs of Dodd-Frank and its particularly detrimental effects on small, independent banks.

5 Estimation and Results

The system, as estimated in Stata, is reported in Table 1. In its estimation, our approach was technically somewhat different than the one used in previous notable applications of this model, though the results should be the same. Whereas previous authors used the Full Information Maximum Likelihood (FIML) estimation in SAS, we simply used Stata to replicate the demand and translog cost functions, stored the coefficients of their independent variables as scalars, and generated combined variables for the supply relation estimate (λ), marginal cost (MC), and the supply relation interacted with the Dodd (D) and Riegle-Neal (R) dummies, respectively. In order to avoid serial autocorrelation issues, a one-year-lagged version of our P variable, asset interest rates, was then regressed on these combined variables. This two-stage approach should ultimately only affect the presentation in Table 1.

The fit to our model was very good in both the two-factor and three-factor specification, with R-squareds of 0.988 and 0.974, respectively, before the dummy variables are introduced. The same five variables are found to be significant in each: those of price on marginal revenue (a_1); aggregate income (a_2); the interaction term between the price variable and the interest rate on 3-month T-bills (a_3), Z; the coefficient

on $Z(a_i)$; and the interaction between aggregate income, Y , and $Z(a_i)$. With a downward sloping demand curve, the inequality $\partial Q/\partial P = a_0 + a_1Y + a_2Z < 0$ must hold, and either a_1 or a_2 must be statistically significant for us to identify λ . Both are significant in our regression, though the significance on a_1 is greater, holding at the one-percent threshold whereas a_2 is significant only at the ten-percent level after the dummy variables are applied.

6 Conclusion

The findings of this study broadly accord with our initial predictions of the effects of Riegle-Neal and Dodd-Frank. Looking at annual data from 1984 to 2016, our study upheld the null hypothesis of perfect competition in the American banking market. This is consistent with numerous studies which have all employed Bresnahan's (1982) methodology and found commercial banking in other countries as well as the United States to have been perfectly competitive or, in some cases, supercompetitive. It should be noted, however, that as it is the result of a time series study, this finding does not necessarily support any conclusions as to the state of commercial banking competitiveness today, nor at any one point in time; it simply says that an average of the degree of market power over this period suggests a level of output greater than that which would prevail in a perfectly competitive equilibrium. In light of the Riegle-Neal dummy variable's effects, it may well be argued that even with such highly competitive findings, the average degree of market power indicated here may be overstated due to somewhat less competitive conditions in the 1980's and early 1990's, before the repeal of interstate

Table 1

	2-Factor Model		3-Factor Momdel	
	No Shift	Shift	No Shift	Shift
AssetInterestRate	134016.4 (-67396.6)	233724.2** (-70583.8)	134016.4 (-67396.6)	233724.2** (-70583.8)
GDPBillionsofchained2009US	1.961*** (-0.267)	2.378*** (-0.298)	1.961*** (-0.267)	2.378*** (-0.298)
PZ	-11410.2 (-6396.4)	-14064.3* (-5679.5)	-11410.2 (-6396.4)	-14064.3* (-5679.5)
MonthTreasuryConstantMaturi	2185 (-1178.5)	2345.6* (-1050.1)	2185 (-1178.5)	2345.6* (-1050.1)
PY	-4.811 (-5.706)	-12.86* (-6.218)	-4.811 (-5.706)	-12.86* (-6.218)
YZ	-0.14 (-0.0722)	-0.150* (-0.0664)	-0.14 (-0.0722)	-0.150* (-0.0664)
lnQ	-287 (-608.4)	-443.5 (-433.3)	-15.78 (-730.9)	175.9 (-532.6)
lnQ_2	11.31 (-25.67)	18.64 (-18.27)	-1.242 (-33.7)	-12.1 (-24.41)
lnW1	463.8 (-787.1)	583.9 (-561.4)	135 (-819.7)	50.73 (-604.3)
lnW1_2div2	52.59 (-86.58)	65.24 (-61.68)	13.99 (-89.61)	17.16 (-66.05)
lnQlnW1	-39.5 (-66.17)	-49.27 (-47.23)	-13.61 (-71.75)	2.693 (-52.68)
Lag Asset Interest Rate	0.305*** (-0.0729)	0.202* (-0.0834)	0.258* (-0.105)	0.328** (-0.108)
λ	-0.00171 (-0.00105)	-0.00071 (-0.00109)	0.00123 (-0.00124)	-0.00104 (-0.00147)
Marginal Cost	-8.936*** (-0.979)	-10.97*** (-1.068)	32.08*** (-4.786)	30.30*** (-4.529)
Dodd-Frank		0.0176** (-0.00587)		0.000607 (-0.00783)
Riegle-Neal		-0.00359 (-0.00211)		0.00581* (-0.0024)
lnW2			54.52 (-643.2)	562.3 (-440.5)
lnW2_2div2			-67.93 (-36.26)	-28.93 (-25.27)
lnW1lnW2			-10.6 (-68.92)	45.88 (-47.14)
lnQlnW2			-15.06 (-54.88)	-54.24 (-37.53)
Intercept	-0.00925*** -0.00195	-0.0146*** -0.00253	0.0108*** -0.00234	-496.2 -2950.8
N	33	33	33	34
R-sq	0.983	0.988	0.974	0.96

Standard errors in parentheses

* p<0.05 ** p<0.01 *** p<0.001

banking laws. Curtailing the sample window to 1994-2010 or even 1994-2016 in order to test this possibility unfortunately leaves us with too small a sample size to achieve statistically significant results. However, overall, our findings do appear to reject Yildirim's and Mohanty's (2010) observation of some degree of monopoly power in U.S. banking and confirm those of Shaffer (1989), whose analysis of U.S. banking from 1941 to 1983 failed to reject perfect competition even during a period of continuous, nationwide interstate banking restrictions.

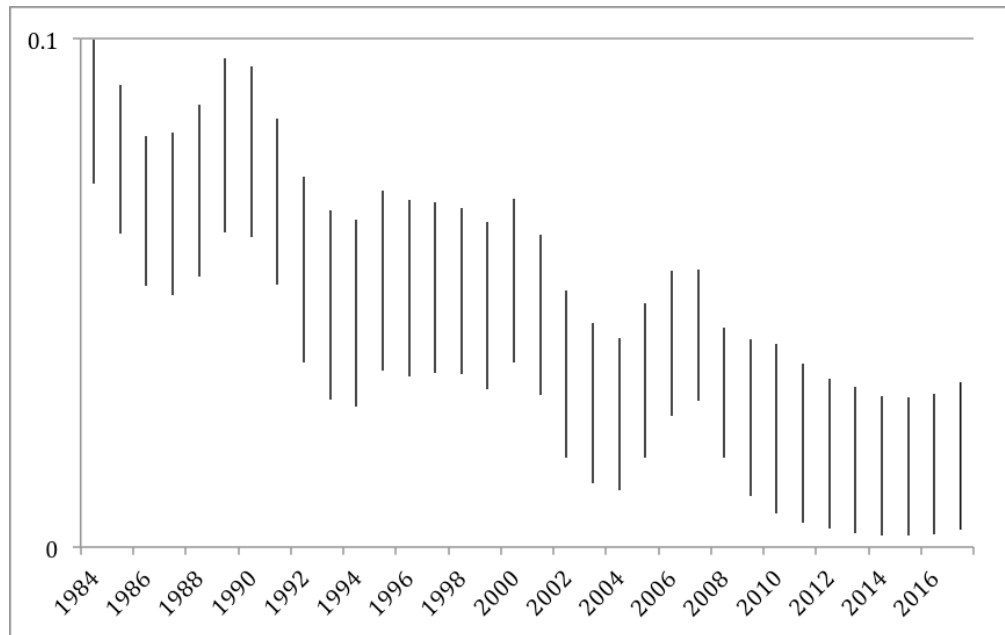


Fig. 4 Interest Rate Spreads, 1984 – 2017

Results from our use of two dummy variables, for Riegle-Neal and Dodd-Frank, have left us with both answers and further questions. Riegle-Neal was found to have small pro-competitive effects at the five percent level in our three-factor specification,

with its coefficient indicating a further increase in an already competitive level of output. This is where our finding differs from that of Yildirim and Mohanty (2010), who found no significant reduction in market power after the deregulatory period of 1988-1994. Our finding was further substantiated by a reduction of average interest rate spreads in the post-Riegle era (Fig. 4). The magnitude of the increased competitiveness after Riegle-Neal is admittedly smaller than may have been anticipated, but it may well be that the more than 4,000 consolidations of banks described by Shaffer (1994) had already moved the American banking market to a state of high competition and that Riegle-Neal merely affirmed an already extant condition.

Also consistent with our predictions, Dodd-Frank was found to have notable anti-competitive effects in our two-factor specification at the one-percent level. Whether the failure of this result to hold in the three-factor specification is a product of losing one degree of freedom by including capital price and the resultant decrease in the three-factor version's R-squared or whether capital price has indeed played a substantive role in this period we cannot yet say. The differential result that we have obtained from the two- and three-factor specifications—Dodd-Frank found to have an effect in one model, Riegle-Neal in the opposite—is perhaps the most interesting background feature of this study. The fact that interest rate spreads continued their long decline after Dodd's passage also works contrary to our hypothesis, but this finding remains open to the untestable challenge that they could have fallen yet faster in Dodd's absence. Nonetheless, it opens the door to a countersuit against our result.

Finally, previous studies have found the price of capital to have been roughly constant over time (Gilligan and Smirlock 1984) and to have not significantly affected this model in other contexts (Shaffer 1993). Our results appear to differ across specifications more than usual, suggesting the possibility that the volatility of the price of physical capital may have played a more significant role in this period than it did in other eras and banking systems. These hypotheses are beyond the ability of this model to assess in detail and beyond the scope of this paper but offer promising avenues of future research.

CHAPTER TWO

1 Introduction

A long price theory tradition on oligopolistic collusion presents a model consisting of a small number of firms which, through coordinated output plans, are able to subvert the profit-dissipating effects of competition by each agreeing to restrict their output below the competitive equilibrium quantity, thereby increasing the monopoly profits of each. The first inevitable objection to any depiction of this model is to point out that efforts at oligopolistic collusion are plagued by the defection problem and are therefore, in real world scenarios, difficult to create and maintain in the absence of acute monitoring which, in practice, is usually quite costly to perform. The second is that in the absence of significant barriers to entry, oligopolistic collusion and the high profit margins that it produces are likely to invite new entrants into the collusive market who will quickly dissipate the profit margins, thereby nullifying the attempt, or that, consistent with Baumol, Panzar, and Willig (1982) would-be competitors need only appear capable of entering the market to discipline would be monopolists or colluders into competitive behavior.

A recent wellspring of publications in law and economics, spurred by Azar, Schmalz, and Tecu (2017; henceforth “AST”), has introduced a caveat into this paradigm by noting that the first objection—that regarding the defection problem—could conceivably be solved if one person, firm, or association occupied the role of ultimate residual claimant to more than one of the oligopolistic firms. This Theory of Partial Ownership (henceforth “TPO”) contends that by virtue of holding some percentage of

outstanding shares in multiple firms within an oligopoly, major shareholders could enforce oligopoly behavior through intervention in the firms' management and thereby maximize joint profits from both firms. Specifically, this has led to the contention that, in recent years, the growth of index and mutual funds and those funds' collective ownership of multiple firms in the same industry—airlines and banking being frequently cited examples—have obviated the problems of defection and monitoring which typically undermine collusive behavior and generated significant anti-competitive behavior in certain American industries. Where the same parties hold residual claimancy in multiple firms in a market, they could—and it is frequently alleged, explicitly or implicitly, in this literature that they *do*—involve themselves in the management of the firms in order to coordinate and enforce joint-profit-maximizing output restrictions, thereby solving the defection problem and enabling the sort of collusive behavior which is most feared by antitrust regulators.

Despite these allegations of index funds having a decidedly collusive effect on the firms in which they own shares, however, the evidence for collusive behavior in the industries which are most notably implicated—airlines and banking—remains uncertain at best, and the current state of knowledge in industrial organization on the relationship between ownership and control is insufficient to justify any *prima facie* assumption that common ownership should be expected to lead to collusive behavior. Building on the challenges posed by O'Brien and Waehrer (2017) and Gramlich and Grundl (2017), both of which have proven compelling, this work is oriented towards a key assumption in the TPO literature: the “quiet life” theory of executive behavior. In a paper which argues for the TPO's relevance to the top six banks in the United States today, Azar, Raina, and

Schmalz (2016; henceforth “ARS”) claim that the means by which common owners have interfered in firm management is via the process of managerial hiring and promotion. Invoking John Hicks' (1935) “quiet life” theory of managerial behavior under monopoly, they contend that oligopolistic quantity restrictions have been achieved by common owners' successfully influencing the hiring and promotion processes in order to elevate managers who have a higher subjective cost of exerting effort—that is: lazier or less ambitious executives. They argue that these less motivated executives, by virtue of their lesser gusto, then naturally promote common owners' interests by failing to maximize output, which serves to be functionally equivalent to deliberate quantity restriction. This paper questions this image of some of the largest financial institutions in the world being run by executives who are carefully selected for having a high subjective cost of exerting effort. It offers considerable theoretical reasons to doubt the “quiet life” story, with respect to both the ease with which such a selection process could be conducted and the immunity from contestability that lazily run banks must be assumed to enjoy for the story to hold. Further, based on the TPO literature's assumption that these executives are, at the time of their hiring or promotion, observably less motivated, we contend that their hirings and promotions should be greeted negatively by stock markets. Using an event studies methodology based on eighteen years of hiring announcements for executives at the top six banks, we conduct an empirical test to determine whether market reactions bear this out.

In the following section, the literature on common ownership is surveyed along with relevant works on banking competition and the relationship of ownership to control in oligopoly contexts. Section Three offers a theoretical counter to allegations of

collusion in the U.S. commercial banking market, discussing problems with the “quiet life” theory of executive behavior under common ownership. It also discusses contestability, which, even in the presence of increased common ownership, should forbid the sorts of monopoly rent extractions claimed in the common ownership literature. Section Four uses a stock market event studies approach to check for empirical evidence on the “quiet life” theory of executive behavior under common ownership. Section Five concludes.

2 Background

The origins of the TPO appear to lie in Julio Rotemberg's 1984 working paper “Financial Transaction Costs and Industrial Performance,” in which he contended that “firms, acting in the interest of their shareholders,” could “tend to act collusively when their shareholders have diversified portfolios.” Rotemberg's exploration of this caveat to oligopoly models was extensive but purely theoretical, and he offered no probable examples linking common ownership to collusive behavior. O'Brien and Salop (2000) restated this possibility, though without mention of Rotemberg's working paper and without specifically pointing to index funds as a source of collusion, arguing that “[a] partial ownership interest could have competitive effects when one or more competing firms purchase some percentage of a rival firm's stock, or when two or more firms jointly invest in a venture that competes in the same market.” Their prime candidates for such behavior appear to have been the telecommunications and high technology industries, though no empirical investigation was pursued therein, no firm claim was made that this behavior was likely to result from partial ownership by institutional investors, and no

further literature immediately thereafter appears to have launched from that inquiry. The subject thus appears to have lain dormant until AST (2017 [2014]) extended the notion in their working paper “Anti-Competitive Effects of Common Ownership.” Contending that there exists a robust correlation between airline ownership and ticket prices, they have argued for the existence of a more general, hidden social cost which attaches to the investor diversification brought by recent years' growth in large index funds. Furthering their case for a general social cost of common ownership, ARS (2016)) have made an analogous case for a collusive effect of common ownership in commercial banking. Using a generalized Hirschman-Herfindahl Index (GHHI), they argue for a strong correlation between prices and industrial concentration.

Responding to these developments, a burgeoning literature in legal scholarship has argued for (or, in some cases, merely flirted with) the augmentation of antitrust laws to reduce common ownership in any one market which is prone to oligopolistic collusion. Anton et al (2016), using variation in common ownership from a mutual fund trading scandal, purport to find an inverse relationship between common ownership and management incentives to compete. Elhauge (2016) argues that existing patterns of ownership in certain industries violate Section 7 of the Clayton Act, which prohibits mergers and acquisitions which might substantially lessen competition. Most notably, perhaps, a working paper by Posner, Morton, and Weyl (2017) concurs that common ownership justifies litigation against institutional investors under Section 7 and calls for the Department of Justice and Federal Trade Commission to bring public suit against them on grounds that “[i]nvestors in firms in well-defined oligopolistic industries must choose either to limit their holdings of an industry to a small stake (no more than 1% of

the total size of the industry) or to hold the shares of only a single 'effective firm' per industry.” Based on simulations using empirical evidence, they find that such a rule would favorably increase competition, have minimal adverse consequences, and improve corporate governance. These claims and proposals, though still nascent, are already having an impact on policy makers' and advisers' views. A Council of Economic Advisors (2016) brief cited common ownership among the potential causes of an alleged overall decrease in competition across many sectors of the U.S. economy, a former Assistant Attorney General for Antitrust has testified before the Senate Judiciary Subcommittee on Antitrust that Justice officials have opened “more than one investigation” based on this theory, the European Commission has adopted an analysis from this literature in at least one Statement of Objection to a merger, and at least one antitrust complaint has cited the literature as support (O'Brien and Waehrer 2017). An article in the September 2017 edition of *The Atlantic* went so far as to ask “Are Index Funds Evil?” and insinuate that their role in markets may even be retarding macroeconomic growth (Portnoy 2017).

Arguments have not been universally supportive of the Rotemberg/Azar/Posner line of reasoning, however. O'Brien and Waehrer (2017) contend that the conclusions of the TPO literature are not as firmly established as its authors would claim, arguing that the specific relationship between prices and the now-popular modified Hirschman-Herfindahl Index (MHHI) is not demonstrated by the evidence; that the weak descriptiveness of the model offered by AST should encourage caution as to any conclusions based on their tests; that market shares and the MHHI are endogenous, leading factors other than common ownership to affect both price and the MHHI in ways

that are likely to produce false positive relationships between price and common ownership; that these studies fail to adequately correct for endogeneity between factors that drive prices and affect institutional investors' decisions; and that policy prescriptions emerging from this literature are dramatically outpacing economists' progress in demonstrating the empirical grounding and relevance of the studies' claims. They claim that these points firmly invalidate any claim of a causal relationship between common ownership and collusive behavior. Gramlich and Grundl (2017), challenging ARS, forego measures of industry concentration such as the GHHI or MHHI, analyzing instead the weights that firms place on one another's profits in the commercial banking industry. They find small and mixed results, with the sign of competitive effects varying according to specification. And Kwon (2017), contrary to Anton et al. (2016), finds that common ownership increases executives' incentives to compete against industry rivals. Citing institutional investors' use of relative performance evaluations (RPEs), he finds that executives' rewards become more dependent upon their firms' performance relative to natural competitors as common ownership increases. He theorizes that large institutional investors' devotion to improved corporate governance is creditable for pushing for the adoption of superior corporate governance practices such as RPEs. Finally, BlackRock (Novick et al. 2017), though clearly having vested interests of its own in these questions, has produced a thorough summary of the debate highlighting the “fragile” evidence offered by existing literature and contending that antitrust proposals introduced by those wary of common ownership would be detrimental to asset owners, capital markets, and investors both large and small.

In legal scholarship, the most notable voices of caution have been Rock and Rubinfeld (2017a, 2017b). Their first analysis questions the merits of existing economic evidence on this topic, challenges Elhauge's (2016) legal interpretation of Section 7 and its applied relevance to these questions, and emphasizes the trade-offs between promoting competition and encouraging institutional investors' involvement in corporate governance. Rock and Rubinfeld (2017b) argue that the proposals of Posner, Morton, and Weyl (2017) to limit ownership shares would be excessive and likely to produce a chilling effect. Both papers develop a model for a “safe harbor” for institutional investors with investment shares less than 15 percent, limiting them to no board representation and “normal” corporate governance participation. Patel (2017) argues that “whether and the extent to which common ownership will actually generate competitive harm in a given market depends on numerous factors... [making] the mere fact that institutional investors' significant equity holdings generate high levels of common ownership by itself... insufficient to conclude that this common ownership results in substantial competitive harm.” He proceeds to argue that common ownership should be evaluated on a case-by-case basis and not rely upon modified concentration measures as descriptive of industry behavior.

More broadly, the literature on commercial banking competitiveness is extensive. Berger et al (2003) surveys this literature and its more recent developments and implications, as do Gilbert (1984) and Bikker and Haaf (2002). An early trend in it relied upon the non-formal structure-conduct-performance (SCP) paradigm and used Hirschman-Hirschman indices to determine competitiveness but has since come to be seen as afflicted by significant endogeneity problems similar to those criticized by

O'Brien and Waehrer (2017) in AST. In response emerged the efficient structure (ES) hypothesis of high concentration endogenously reflecting market share gains by banking firms (Smirlock, Gilligan, and Marshall 1984; Rhoades 1985; Smirlock 1985; Shepherd 1986). Since the early 1990s, attempts to overcome endogeneity problems have led to variations on the SCP and ES approaches with different controls of X-efficiency and scale efficiency (Berger 1995; Frame and Kamerschen 1997). These modified approaches have found weaker evidence both for and against the existence of market power. An alternative view, the “efficiency hypothesis,” emerged from Demsetz (1973) and Peltzman (1977) and claimed that market structure is determined endogenously by banks' performance; if a bank becomes more efficient than its competitors, its efforts at profit maximization will lead it to cut prices and thereby increase its market share. A parallel, non-structural tradition in the New Empirical Industrial Organization literature on bank competition has offered numerous models including that of Iwata (1974), Bresnahan (1982) and Lau (1982), and Panzar and Rosse (1987). Overall, evidence as to the degree of banking market competition is highly model-dependent. Those studies relying upon the SCP paradigm consistently found market power but, as noted, are questionable on the basis of endogeneity issues. Those which try to control for those issues get much weaker results on the question. And formal models are sharply divided, with Panzar-Rosse models consistently finding monopolistic competition or monopoly across various country studies and those employing the Bresnahan (1982) and Lau (1982) method more often finding perfect competition (Shaffer 1989; Shaffer 1993; Coccoresse 1998b; Gruben and McComb 2003; and Park 2013)—sometimes even in the same countries.

Thus, one's view as to the baseline of banking market competitiveness will likely be heavily influenced by one's views as to the relative merits of these models. Another significant point of contention in the related industrial organization literature is the relationship of ownership to control in the context of oligopoly with divergent interests among owners, a point which O'Brien and Waehrer (2017) note is assumed in the current common ownership literature, starting with O'Brien and Salop (2000), rather than actually demonstrated. A literature exists arguing that horizontal combination or oligopolists' partial ownership of one another's firms will raise prices (Reynolds and Snapp 1986) and may lead to improvements in efficiency (Williamson 1968; Farrell and Shapiro 1990), but it appears to be entirely free of the more complicated ownership-and-control dimension which is so crucial to the validity of the claims made against common ownership.

3 Theory

In setting out to evaluate the TPO, having a bit of caution as to the conclusiveness of econometric evidence even when the models used are much more descriptive than those in this literature, we will set aside the legal scholars' allegations that anything yet discovered constitutes conclusive proof of conspiratorial crimes having been deliberately committed by the firms in question and limit ourselves to considering the argument that some collusive effect is achieved by the diminution of incentives for shareholders to push managers to behave competitively. As we do, we take as given the critiques of the TPO literature offered by O'Brien and Waehrer (2017) and intend only to build upon them with a different but complementary line of reasoning. In TPO theory, the mechanism that

is often argued to do most of the work in producing collusive outcomes is not active price-setting conspiracy but a passive reduction of shareholder's inducements of managers to behave competitively. In AST, this is referred to as “the indirect channel” of “doing nothing.” “[T]he claim,” they write, “that common ownership causes higher prices is very different from the claim that any shareholder actively and consciously pursues an anticompetitive agenda, communicates with managers of portfolio firms to compete less aggressively against each other, or even incites collusion. Indeed, any such notion is neither implied by our empirical results thus far, nor do the results depend on it, nor does the underlying theory suggest collusive behavior” (AST, 2017).

Along the same lines, ARS (2017) argues that “the fact that concentrated ownership is related to higher prices for banking products need not be driven by collusion... Managers who—through either conscious calculation, intuition, or pure luck—propose broad strategic plans that correctly represent shareholder interests will tend to be selected to run the firms, and managers that fail to propose such strategic plans will tend to be selected out.” This “quiet life” theory is somewhat striking for its implication that managers under common ownership simply stumble into behavior which is optimal from the standpoint of common shareholders. Granted: it is not a new argument in the theory of monopoly. Hicks (1935) similarly contended that if “variation in monopoly profit for some way on either side of the highest profit output may be small... the subjective costs involved in securing a close adaptation to the most profitable output may well outweigh the meagre gains offered. It seems not at all unlikely that people in monopolistic positions will very often be people with sharply rising subjective costs; if this is so, they are likely to exploit their advantage much more by not bothering

to get very near the position of maximum profit, than by straining themselves to get very close to it. The best of all monopoly profits is a quiet life.”

Demsetz (1973) countered Hicks' argument, however, noting that “[i]n a world in which information and resource mobility can be secured only at a cost, an industry will become more concentrated under competitive conditions only if a differential advantage in expanding output develops in some firms,” resulting in both an increase in concentration and an increased rate of return for those firms. These cost advantages, Demsetz argues, may result in economies of scale, downward shifts in the marginal cost curve, or better products that satisfy demand at a lower cost. Crucially, he notes that a potentially significant source of short-term monopoly profits is superior entrepreneurial ability, and to the extent that such efforts succeed, they may earn limited periods of monopoly power which may be associated with increased concentration. In a test of the relationship between industrial concentration and collusion, he finds that policy measures devoted to countering this process are liable to destroy the incentive for innovation and improved managerial approaches.

Thus, an exclusive focus on findings of positive profit margins over time can be interpreted as support for two opposite theories: one in which successively better, more skilled and ambitious managers are being hired and one in which managers selected are progressively less energetic and capable. However, belief in its explanatory power in the case of the TPO requires an even stronger set of assumptions than Hicks adopted. Not only would individuals in monopolistic firms have to be assumed to have sharply rising subjective costs of pursuing profit maximizing strategies but, in the absence of explicit collusion (which ARS stress that they are not claiming), if an increase in common

ownership is said to have meaningfully promoted such complacency, a process of turnover in management must be assumed to have been pursued in which either eligible candidates' higher subjective costs of profit maximization were observable *ex ante* or a successful process of trial and error was conducted in the hiring process, resulting in the preservation of managers with such higher subjective costs. In either case, the influence of common owners in that process is assumed to have dominated the incentive contracts that would have maximized firm profits and been preferred by all shareholders who did not own shares in any of the firm's natural competitors. In fact, as observed by Shapiro (2015) and O'Brien and Waehrer (2017), according to the proportional control assumption of the TPO as it is usually presented, a single common owner holding one percent of a firm should have nearly perfect control, which would induce the firm to maximize industry rather than firm profits whereas 10,000 other non-common-owners holding 99% of the shares would see their interests overruled. Thus, any regard given by managers to a common owner automatically results in collusion. In a passive, “doing nothing” explanation for collusion, we are left to assume that any epsilon share of the firm being held by a common owner is such a tonic to managers that they instantly begin to indulge their “quiet life” upon his acquisition of any positive portion of its equity.

A number of evidentiary and theoretical hurdles must be overcome by such a view of the circumstance. The first point, offered by Kwon (2017), is a significant positive correlation between common ownership and the use of RPEs, a finding which runs directly opposite to what the TPO would predict. It would seem that the greater the role played by common owners in an industry, the more managers' pay is based upon their firm having outperformed industry rivals. Second, in the absence of any evidence, it

seems difficult to believe that among the pool of high-performing candidates from whom high-level executives are generally chosen, candidates' subjective costs of pursuing profit-maximizing strategies would be *ex ante* observable or that a candidate for such a position would compete for it by signaling high subjective costs of performance at the outset. Indeed, a formidable signal extraction problem would trouble any common owners who sought to hire or promote the highest-subjective-cost candidate from among a pool of contenders who, not knowing that they are being selected for their complacency, would presumably be exerting the utmost effort to seem hardworking and competent when vying for those positions. For this “quiet life” version of the TPO to be descriptively accurate, we are left with the nearly inexplicable picture of common owners who successfully select managers for their lack of vigor despite managers' likely presumption that they would be rewarded for greater efforts and soliciting themselves for hiring or promotion on that basis. Then, as if to spite themselves, the common owners make greater use of RPEs and incentive contracts to elicit fiercer competition against industry rivals in a manner contrary to joint-profit-maximization. Finally, despite these greater incentives offered to them to compete, managers remain complacent and compete less vigorously. The numerous apparent contradictions and convoluted assumptions required here surely call for a better theory of market participants' behavior.

TPO proponents could argue in turn that the greater use of RPEs arises from other, non-common owners' fear of common owners' influence and insistence upon policies which maximize firm profits in order to ward against the potentially perverse influences of common owners in shareholder deliberations. Insistence upon such policies by non-common owners would seem somewhat more plausible than Kwon's explanation

for the correlation between common ownership and RPE usage: that common owners' corporate governance divisions insist upon incentive contracts which promote individual firm performance even when it would not seem to maximize their own profits. It is certainly easy to see how non-common owners would benefit from stronger incentive contracting and a greater use of RPEs for managers whenever one or more of their fellow shareholders may have an incentive to push for policies that do not maximize the value of their firm in particular. Granting any power whatsoever to non-common owners, however, would require abandoning the proportional control assumption to which the TPO advocates appear wedded, thereby weakening a significant pillar of their models and inviting questions as to why they should be so passive to the hiring of observably high-subjective-cost candidates to upper management.

A further gap in the existing literature is that little account appears to be taken as to why, if common owners holding shares in multiple firms within one industry leads to behavior which does not maximize firm profits and if the optimality of that choice is contingent upon their ownership of shares in multiple natural competitors, any active investor or group of investors does not buy up shares in one of those firms, push the firms to expand output, and take advantage of an easy profit opportunity. Indeed, the strongest and most direct remedy to the concerns of TPO proponents, if they are descriptively accurate, would seem to be that other object of regulators' concern: the corporate raider in the takeover market (Manne 1965; Fama and Jensen 1983). His entry into the market and the unambiguously pro-competitive incentive that he would face as a non-common-owner to hire hardworking managers or to drive present managers to work harder should threaten to divert to him whatever profit margin collusive firms could secure for

themselves via quantity restrictions, passive or otherwise. The apparent absence of any such countervailing effort by investors in the takeover market, if not explicable by reference to any barrier to entry which would prohibit them from doing so, implies either an untapped profit opportunity of which investors are ignorant or that market participants have determined that no such stable margin exists to be reaped. With academicians' humility, we are disinclined to assume that motivated professional investors have failed where disinterested academics, albeit skilled ones, have succeeded and thus choose to defer to the latter explanation.

Finally, characteristics of the markets in which common-owned firms compete must be considered. At the outset, we mentioned the two arguments which are most often tendered regarding the infeasibility of collusive output restrictions: the defection problem and contestability. The TPO literature has concentrated on the defection problem but has not made a significant case for why the firms run by these high-subjective-cost managers are immune from contestation, which taken alone should seriously complicate any effort at passive joint profit maximization among a few common owned firms in a market with low barriers to entry. Indeed, the concept of contestability shows up nowhere in ARS nor in AST. This constitutes a significant blind spot in their theory. Even if common-owned firms are restricting output and raising prices, a successful effort at collusion—even passive collusion via the “quiet life”—would require that their product markets be uncontestable. Baumol, Panzar, and Willig (1982) present the argument for contestability, concluding that the only significant obstacle to potential market entrants disciplining current participants into competitive behavior is sunk costs. If large capital costs are required for a firm to enter an industry, then those could be seen as such a deterrent sunk

cost, but an excessive focus on the costs of physical capital is likely to be misleading in such considerations. As Ellig, Kaufman, and Rustici (1995) demonstrate, even massive capital investments do not prohibit contestability from functioning as modeled so long as contingent contracts are possible. If potential entrants are able to write contracts assuring would-be clients competitive prices contingent upon their entry into the market, then the disciplining effect holds even without the capital acquisition. Thus, the only sunk costs to be overcome are sunk contracting costs—legal fees. Neither theoretical nor empirical literatures offer ample grounds for the assumption that such costs are prohibitive of entry into either of the industries to which the TPO has been applied.

Thus, how exactly the managers of common owned firms are permitted to enjoy their quiet life without losing market share to other firms that would be induced to enter by allegedly stable, increased profit margins is unclear. In the case of the airline industry, Beckenstein and Campbell (2017) find that after twenty-five years of what regulators at the Department of Transportation first called the “Southwest effect” of significantly lowering prices by entering new markets, Southwest Airlines still has the effect of lowering one-way market fares an average of \$45 by offering nonstop service and by \$17 for connecting service for a given city-pair market. Even in markets where Southwest already operates, they find that its introduction of nonstop service has the effect of reducing fares by an average of 15% and increasing traffic by 28-30%. Anecdotally, evidence also suggests that two new market entrants, Spirit Airways and Frontier Airlines, have dramatically reduced major airlines' fares by entering new markets in recent years, notably bringing the average one-way fare from Detroit to Philadelphia

from over \$300 (and sometimes closer to \$400) down to \$183 in less than a year (Maidenberg 2017; Bureau of Transportation Statistics 2018).

In the case of banking, though the aforementioned literature on banking competition is admittedly mixed on the question of monopoly power and leaves much to one's modeling preferences, the U.S. banking market is undoubtedly more contestable in the past twenty-five years, since the passage of the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994, than it ever was before, with the U.S. commercial banking market being effectively open from coast to coast with currently more than 4,900 institutions. Granted: charters for new commercial banking institutions have dwindled nearly to a halt since 2009, but it is difficult to see how common ownership could have contributed to that phenomenon (Statista, 2017). To the contrary, a rise in stable monopoly profits should induce more entry, not less. More likely culprits for the decline in new charters are the Federal Reserve's tightening of monetary policy in late 2008 (Sumner 2013) and, subsequently, the (for a small commercial bank) high fixed compliance costs of new banking regulations imposed by Dodd-Frank (Hogan and Burns 2019; Peirce, Robinson, and Stratmann 2014). However, trends in new commercial bank charters have largely followed the ebb and flow of the economy at large since the passage of Riegle-Neal, and the low economic growth observed since the Great Recession is arguably the dominant cause. Thus, the only period in which one could argue that contestability in the sense of new market entrants was notably diminished would be from 2009 onward, but that does nothing to explain why common-owned banks would have been immune from the threat of competition from the more than 80,000 branches of

5,000 commercial banking institutions already in the U.S. market during the period in which common ownership is said to have fostered collusion.

In sum, the TPO has so concentrated its efforts on a potential solution to the oligopoly defection problem that it has ignored the fact that even if collusion were to prove stable between these large, common-owned banks on which they have focused, the potential for undercutting by non-common-owned banks remains viable, and if such contestation is possible then the "quiet life" could not be quiet for long without a loss in market share and profitability. If some cause can be given for why barriers to entry forbid non-common-owned banks (or, for that matter, firms such as credit unions which offer close substitutes for commercial bank services) from challenging common-owned banks, then it must be offered as part of the story for these arguments to be complete. If it is, however, a new hurdle is placed in the path of the TPO as the collusion-fostering effects of common ownership must then be distinguished from those of more traditionally understood barriers to entry such as regulatory compliance costs (particularly formidable for smaller banks; see Elliehausen 1998, pg. 29, *supra* n. 62) or legal limitations on firms' product offerings (by commercial banking substitutes), the potential of which to yield monopoly rents to large and well established market participants in many industries is already well known. Put simply, either there are low barriers to entry, which should leave the door open to contestation by non-common-owned banks, or there aren't, in which case any observed monopoly profits (if not simply the result of dynamic adjustments) remain explicable by reference to better established factors than the still uncertain workings of common ownership and the undemonstrated claims of a quiet life said to prevail in the C-suites of some of the world's largest banks.

4 Evidence on the “Quiet Life” Theory

4.1 Hypothesis

The “quiet life” theory of executive behavior under common ownership offers us some testable propositions. Namely, it implies that selection for executives during the period in which common ownership has prevailed has generally been in favor of less diligent, less motivated executives, and that the selection of these executives has resulted in reductions in the volume of business pursued by commercial banks and, as a result, higher profits for those banks which are common owned. The empirical prediction offered by such a view is that when one firm sees a change in management, markets should accord a greater value to rival firms, which can now be expected to reap the rewards of reduced competition from that firm.

An existing literature on executive turnover offers mixed findings on markets' responses to executive turnover. Beatty and Zajac (1987), sampling from 209 large corporations, find that announcements of turnover in its CEO position are usually associated with reductions in a firm's stock value, that CEO successors generally have a significant effect on subsequent production and investment decisions, and that the same is true whether the new CEO is promoted from within or hired from outside the firm. A number of studies, by contrast, have found slightly in favor of positive market responses to joint firing and replacement announcements (Chung et al 1987; Furtado and Rozeff 1987; Worrell and Davidson 1987). And Worrell, Davidson, and Glascock (1993) found, in another large-sample study, that executive departure announcements which offered information about permanent replacements were associated with positive market responses and that those without permanent replacement announcements generally had no

response, indicating a neutral stock market reaction to firings but a positive effect of hiring announcements. Warner, Watts, and Wruck (1988), looking at changes in a firm's own stock price as a result of management turnover, note that stock market reactions to management announcements can indicate whether the market deems the change to be significant but cautions us that even if the change is a response to poor performance and is unanticipated we may be limited in making firm predictions due to the inextricable dual revelations which are entailed in such announcements: those of

1. a negative evaluation of management performance of which investors may have been unaware, and
2. a real, positive component which results if the management change is in shareholders' interests.

If the latter, positive effect is greater in magnitude than the former, negative effect, then a positive price change can result from the announcement. If not, then some negative effect will result.

Our analysis, of course, differs from those in its focus on movements in *rival* firms' stock prices in response to turnover in a bank's management suite. To that end, we can say that under competitive conditions, in the absence of any assumed effects of common ownership, turnover announcements in one firm should offer a dual revelation with regard to rival firms that

1. they have been more competitive, relative to that close competitor, than was previously known (a positive component) but that now, and

2. the rival has improved its management and will likely compete more vigorously against it (a negative component).

“Quiet life” assumptions of the TPO, however, will invert these predictions: turnover in a rival firm's management would indicate that

1. the competitor which is now experiencing turnover has been competing more vigorously than is profit-maximizing from the industry's standpoint, and
2. that firm can now be expected to pursue business expansion less vigorously than in the past, thereby increasing joint profits.

Given that investors are assumed to be forward-looking and concerned with future profitability rather than past performance, the second effect can be assumed to dominate, and announcements of turnover in the management of one firm should result in increased valuations of its competitors. To state our predictions clearly,

- H_0 : Upon announcements of executive appointments at the six largest U.S. banks during the period in question, rival firms' stocks will be met neutrally or disvalued by stock markets,

as against the prediction which is implied by the TPO literature that

- H_1 : Upon announcements of executive appointments at the six largest banks during the period in question, rival firms' stock prices will see positive movement on stock markets.

4.2 Sample and Estimation

To examine this question, we start by looking at executive hirings in the six largest U.S. commercial banks—those examined by ARS—since 2000, the full window of time across which common ownership has been alleged by the TPO literature to have created collusive behavior. The utmost effort has been made to include every occupant of the positions of chairman, president, CEO, CFO, COO, CRO, CAO, and commercial or retail banking division heads, for whom public hiring announcements could be found in corporate press releases, business media, regulatory filings, and biographical summaries. In order to discern markets' responses to managerial changes, we look both at changes in the firm's own share price and changes in the other firms' share prices on the days on which executive turnovers are publicly announced. That is: one announcement dummy variable was created that isolates the effect of a bank announcement on that bank's stock price, and another was made to capture the effect that of bank's announcement on the other banks' stock prices. In the event of multiple executive changes being made on the same day, in light of the difficulty of deriving the relative weight placed on each change separately, we code them as one change in personnel. Some experimentation was done with a count variable, to account for multiple hires on a given day, but this did not provide additional explanatory power. Thus, we signified a hire with a dummy variable for ease of interpretation. Also, in the event of managerial appointments resulting from a merger, the difficulty of extricating market perceptions of management changes from changes in the value of the newly combined and restructured firm, its cost and asset structures, etc., leads us to drop those observations as well.

After these considerations are made, there are eighty-four permanent (that is, non-interim) executive appointments included: seventeen for Bank of America, twenty for Citigroup, twelve for J.P. Morgan Chase, eleven for Wells Fargo, eleven for U.S. Bancorp, and thirteen for PNC Financial Services Group. Of these, given that an existing literature has established some significance of outsider versus insider succession on shareholder wealth (Beatty and Zajac 1987; Warner, Watts, and Wruck 1988; Worrell and Davidson 1987), it is worth noting that seven observations, or one-twelfth of the sample, consist of outside hires and that all others consist of internal promotions or hiring from other divisions of the firm. On the assumption that promoting a high-subjective-cost candidate to a position of greater power would be greeted by the stock market with the same distaste as hiring such a candidate from outside of the company, candidates who are promoted from within are treated as separate entries from their previous post and thus sometimes appear multiple times on the roll. We hold these entries to be no less telling of markets' responses to executives' relative expected performance. Presumably, if markets perceive a newly promoted executive as less willing than his predecessor to exert the utmost effort to maximize firm profits, they will assume his low motivation to have an even greater effect on company profits in his new, augmented role than it did in his previous position and will greet the allocation of more power to him as they would if he were an outside hire bearing such indicators.

Further, since we are concerning ourselves solely with the relative value of the previous executive to his successor, we can restrict our attention to hiring and promotion announcements rather than departure announcements. Only once a replacement is announced can shareholders evaluate the relative value of one executive to another,

making stock price movements around the hiring or promotion announcement the only relevant consideration. The abovementioned observation in the literature that departure announcements which do not include replacements are greeted neutrally by stock markets supports this choice (Worrell, Davidson, and Glascock 1993). Fortuitously for us, though, executive departure announcements in the banking industry almost invariably come with simultaneous announcements of permanent replacements, and the use of interim executives is rare.

In order to test for market effects of executive hiring announcements, we look to stock price movements as reported on the New York Stock Exchange both before and after each announcement is made. The most common approach to doing so in the literature on stock prices and managerial change is to look at the two-day announcement period of “day 1”—one day pre-announcement—to “day 0”—the day of the announcement (Lubatkin et al 1989; Warner, Watts, and Wruck 1988). Worrell, Davidson, and Glascock (1993), however, broaden their test to thirty days in order to account for the possibility of early leaks of information that might render the two-day test unrepresentative. For the sake of robustness and with little marginal cost of doing so, we opt to apply both a two-day and thirty-day test of our own to this sample.

In order to conduct the event study, two separate sets of data were combined. First, daily times series, beginning January 1, 2000, of New York Stock Exchange prices were collected into panel data with a series for each bank; JPMorgan, PNC, Wells Fargo, Bank of America, Citigroup, and U.S. Bancorp. Second, announcement data, containing the banking institution and any executive hiring news by date, was merged with the former. Thus, we have a panel data set with banks' daily closing prices and a dummy

variable for any date associated with an executive hiring announcement. To illustrate the series, Fig. 5 shows the first quarter of 2000, wherein only Wells Fargo has a hiring announcement.

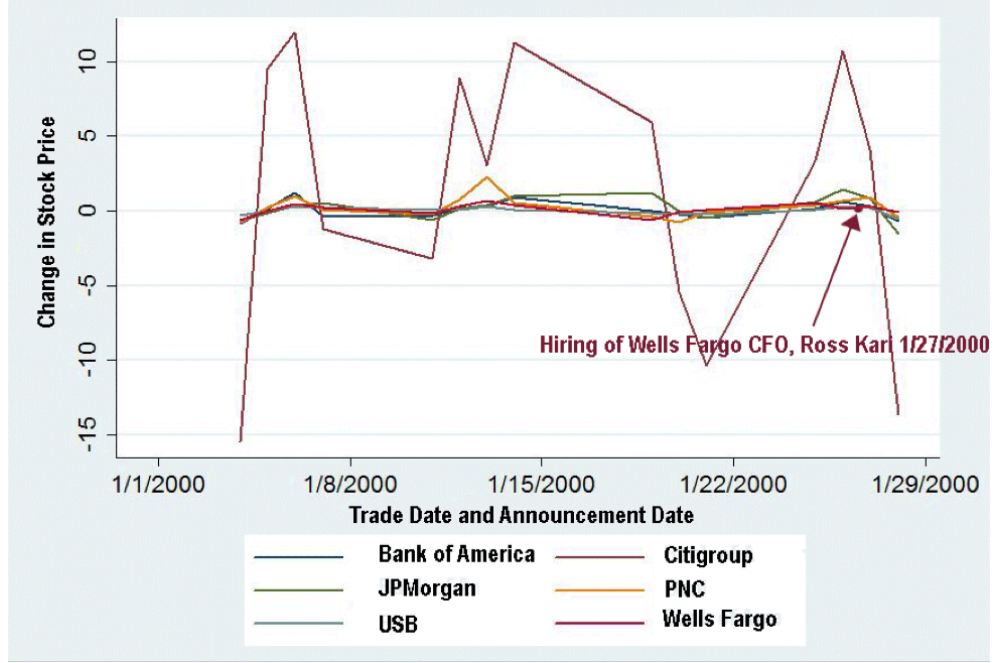


Fig. 5 Stock price movements of the “Big Six” banks, Q1 2000.

Thus, it follows that the following random effects model estimates the change in stock price due to a hiring announcement, *ceteris paribus*:

$$\begin{aligned} \text{StockPrice}_{it} = & \beta_0 + \beta_1(\text{TwoDay})_{it} + \beta_2(\text{TwentyEightDay})_{it} + \\ & \beta_3(\text{Announcement})_{it} + \alpha_i + e_{it} \end{aligned} \quad (1)$$

Note that the α_i variable accounts for the bank’s institutional factors or differences in business practices that are time-invariant. That is: any individual heterogeneity is

explained by controlling for this fixed effect using some panel model design. One side effect of the features of panel models is that they cannot be used to investigate time-invariant causes of the dependent variables. Technically, time-invariant characteristics of the individuals are perfectly collinear with the person [or entity] dummies. However, the underlying differences between the banks, even as it pertains to hiring and firing practices, do not influence the estimate on the coefficient β_1 , which represents the change in stock price due to the announcement of a hired executive. According to the theory, this marginal effect should be either statistically positive or statistically indistinguishable from zero if the market investor's impact on hiring decision and stock price swamps that of the colluding investor. The error captures any other explanatory power that is not correlated with the hiring announcement. There are a number of models which handle the i.i.d. problem associated with the fixed effect. This paper considers Ordinary Least Squares, with dummy variables to control for the fixed variable, the fixed effect transformation, and the random effects model. Principally, the first two tests are the same, though the former contains a trade-off of interpretative clarity for computational intensity. The question becomes whether the best treatment is a fixed effect model or a random effects model. The fixed effect model contains a time de-meanned within transformation, thus eliminating the time-invariant component of each variable. The rationale behind a random effects model is that, unlike in fixed effects, the variation across entities is assumed to be random and uncorrelated with the predictor or independent variables included in the model.

4.3 Results

After running a Hausman test, used to determine the correct panel model—fixed effects or random effects—we cannot reject the null that the random effects model is appropriate. The independence of α_i , as determined by the Hausman test and selection of the random effects model, suggests that the announcement variable is random and uncorrelated with any institutional behavior. Moreover, the random effects model is often used when explanatory variables, such as the price lagged differences, are random and have a distribution. The following table contains the results for models using both announcement types. That no coefficient on the announcement data is statistically different from zero is supportive of the view that market treatment of executive hirings is no different than is generally observed in the existing literature on executive turnover and that, by extension, if executives are being selected for being progressively more passive and less energetic than their predecessors, there is no evidence of it having a positive or negative effect upon the market's assessments of firm value.

	(1)	(2)
	D.close	D.close
d2_close	0.493*** (0.00339)	0.493*** (0.00339)
d28_close	0.0000592 (0.00103)	0.0000522 (0.00103)
announce_d	0.0302 (0.166)	
announce_to_others		0.0805 (0.121)
_cons	0.00155 (0.00945)	0.00115 (0.00947)
N	21492	21492
Standard errors in parentheses		

*** p<0.001"		
** p<0.01		
* p<0.05		

Table 2 Results of two random effects models run using two-day and twenty-eight-day announcement periods. No effect of executive hiring announcements is found on the respective bank's own share price nor upon those of its competitors.

To be clear, the bank announcement has no discernible effect on its own stock price nor on the stock prices of other banks. This is the differentiating aspect of the two models, respectively. That is: the announcement variable in model one, which looks for a price effect on the announcing bank, has no effect, nor does the second model, which examines the effect of the announcing bank on the other banks. Were the market to believe that some collusive effort favored market over firm profits, then hiring executives who are perceived by investors as likely to be more passive and less motivated than their predecessors would presumably elicit a negative market response in the own-bank's share

price and positive responses in competitor banks' share prices. As there is no evidence of this, it is, as of yet, presumptive to consider the quiet life as anything more than a theoretical possibility. That the model includes the difference in stock prices from two days prior to the close and the twenty-eight days prior to that serves an additional purpose, beyond merely remaining faithful to the literature. It demonstrates that any event finding is independent of any serial correlation or deterministic process. Thus, it is noteworthy that the two-day window does offer similar explanatory power on the bank's stock price, at the 99.9% level of confidence, regardless of the announcement type.

Conclusion

The effects of common ownership on the performance of individual firms and industries at large remains an open question. Comprehensive tests of the relationship between common ownership and equilibrium price using a systems estimation technique under proper control scenarios such as that proposed by O'Brien and Waehrer (2017) have yet to be offered in the current literature on this topic but would go much further towards answering the substantive questions at play than the index-based approaches which have been employed thus far. Nonetheless, the theory that economists have offered in support of the TPO seems to rest crucially on the “quiet life” view of executive behavior under common ownership. On the assumption that markets respond efficiently to all available information, such a scenario suggests that an industry described by the TPO should evince notably different stock price responses to executive turnover than are generally observed across many industries in the existing literature. Namely, we should see positive price effects on share prices of close rivals when one firm in that industry experiences

executive turnover. Based on the test offered here, it appears that the banking industry, at least, does not offer such indicators. For the TPO to remain viable in the face of this counterevidence, one of three things must hold: either some flaw in this test must be found (e.g. a compelling reason why markets would fail to recognize a phenomenon where economists have succeeded), an alternate interpretation of this evidence must be offered, or some alternate falsifiable argument which does not involve managerial selection must be offered to explain how common owners are effecting collusion. Posner, Morton, and Weyl (2017) have certainly offered their own: explicit, behind-closed-doors collusive agreement. Economists' greater reticence to embrace such theories without evidence is commendable and in keeping with the standards of their science, but to the extent that the test offered here brings their “quiet life” theory into question, it seems prudent that TPO advocates either consider looking for other means of reaching their conclusions or reconsider the conclusions themselves.

CHAPTER THREE

1 Introduction

It is an oft-cited statistic in political discourse and economic history that the 1990's witnessed the single longest economic expansion in the history of the United States, lasting a full 120 months before the Dot-com bubble burst in March 2001, precipitating a nominally severe (at \$9 trillion) but nonetheless brief economic downturn. Though the lessons of the 2001 crash, advising against “irrational exuberance” surrounding new technologies and faddish investment theories, were repeated in the financial press many times in the months and years that followed, the seeds of the next crisis were already being sown not in a new or exotic investment trend but in one steadfast and traditional: American homeownership. After tempering slightly in the early 1990's, mortgage debt outstanding in the U.S. had been on the rise since early 1996, encouraged by a bipartisan effort to marshal an array of federal policies designed to expand homeownership among voters in general and racial minorities in particular. After the November 2001 conclusion of the dot-com recession and the economic aftermath of the September 11, 2001, terrorist attacks, mortgage debt outstanding by individuals in the U.S. began a steep five-year rise from Q1 2002 to Q1 2007 during which it increased nearly 89%.⁴ Meanwhile, the

⁴ Board of Governors of the Federal Reserve System (US), Mortgage Debt Outstanding by Type of Holder: Individuals and Other Holders [MDOTHIOH], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/MDOTHIOH>, August 12, 2017.

S&P/Case-Shiller National Home Price Index showed, from November 2001 to July 2006, an increase of nearly 63%.⁵

The ensuing housing industry crash and recession, leading to more than \$7 trillion of losses in household wealth, proved considerably more onerous in its length and severity, lasting eighteen months, reducing U.S. GDP by roughly \$640 billion, and bringing the official U-3 unemployment rate to a peak of 10% in late 2009.⁶

Housing starts, which peaked in January 2006 at 2,273, fell to just 478 in August of 2009 before the Federal Reserve's purchases of mortgage-backed securities via Quantitative Easing (QE1) introduced a targeted stimulus to the American housing industry.⁷

As macroeconomic advisor David M. Smick poignantly asked, however, “[W]hy a near-global stock market meltdown and a collapse of lending simply because of some mortgage foreclosures? After all, the problem loans amounted to, at worst, \$200 billion in

⁵ S&P Dow Jones Indices LLC, S&P/Case-Shiller 20-City Composite Home Price Index [SPCS20RNSA], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/SPCS20RNSA>, August 12, 2017.

⁶ The U-3, or official unemployment rate, is the number of unemployed individuals as a percentage of the total labor force. Board of Governors of the Federal Reserve System (US), Households and Nonprofit Organizations; Total Financial Assets, Level [TFAABSHNO], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/TFAABSHNO>, August 8, 2017; U.S. Bureau of Economic Analysis, Real Gross Domestic Product [GDPC1], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/GDPC1>, August 8, 2017; U.S. Bureau of Labor Statistics, Civilian Unemployment Rate [UNRATE], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/UNRATE>, August 8, 2017.

⁷ U.S. Bureau of the Census, Housing Starts: Total: New Privately Owned Housing Units Started [HOUST], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/HOUST>, August 8, 2017.

exposure in a global market worth hundreds of trillions.”⁸ Smick answers: “[T]he issue here was not the size of the subprime mess... the issue was where the toxic waste was located... Ultimately, the issue was information, or the lack of it.”⁹

This, however, leaves us with the question of why so many profit-seeking professional investors assumed the volumes of risk that they had with uncharacteristic laxity. It cuts against an image of cautious, tight-fisted lenders and of highly informed, carefully discriminating traders equipped with the best informational tools and the motivations to use them. That is what this paper explores, focusing on the inordinate assumption of bad debt and unprofitable investments which, we contend, were largely the result of political efforts to absolve the American housing and mortgage lending industries of all risk as part of a broader effort to stimulate American homeownership. In particular, we explore the role of asymmetric information and particularly that of moral hazard in driving both the supply and demand of mortgage debt. We argue that government policy driven by the political pursuit of broadened homeownership and the perceived benefits which it yields to incumbent politicians established a multi-level system of proverbial safety nets that distorted incentives and fundamentally diminished the necessary ingredient of risk in the housing industry. The result was a three-tiered nexus of moral hazard relations between (i.) the federal government and government-sponsored enterprises (GSEs), (ii.) GSEs and the lending industry, and, finally, (iii.) between borrowers and lenders.

⁸ Smick, David M. *The World Is Curved: Hidden Dangers to the Global Economy*. New York: Portfolio. 2008. pg. 10.

⁹ *Id.*, pg. 12

To be clear, this is not a “moral hazard theory of the Great Recession.” Its intention is narrower than that. The recession as a whole is a complex phenomenon, the logic of which entails considerations beyond both the housing industry and asymmetric information—most notably monetary and fiscal policy actions undertaken by the Federal Reserve before, during, and after the crisis. What proceeded in housing markets in response to these policy moves, however, is, this paper contends, impossible to properly understand without reference to moral hazard and the policies which exacerbated it. Understanding the political, institutional structures which gave rise to these problems will help us to discern whether and to what extent these incentive-incompatible policies have been carried over into the post-Great-Recession era. If the fundamental institutions which gave rise to such problems have been altered, we may be able to say that the risk of an episode like that of 2007-2009 recurring has decreased; if they have not, then the absence of an asset bubble like that which peaked in 2007 may merely be the result of a difference in relative prices and returns on investment, which can change with much greater fluidity than institutional structures.

The following section will explore the moral hazard relationships fostered between the federal government and GSEs in the lead-up to the housing crisis. Section Three will explore moral hazard in the relationship between GSEs and commercial lenders. Section Four will explore that between commercial lenders and borrowers. Section Five will explore the extent to which the legal and institutional relationships which created or exacerbated these asymmetric information problems have been either changed or maintained in the aftermath of the recession. Section Six concludes.

2 Who Guarantees the Guarantors?

Whether at the level of the Federal Reserve and its effects on lenders and the financial sector as a whole, between government-sponsored enterprises (GSEs) Fannie Mae and Freddie Mac and lenders, or between the federal government and the GSEs, there exists a pattern in each of their relationships. The pattern consists of a permitting factor (or factors) that gives actors leeway to act irrationally and a compelling factor that motivates or requires them to engage in said behavior. I shall refer to these factors as “the window” and “the push.” Discussions of the actions of Fannie Mae and Freddie Mac tend, by my estimation, to focus predominantly on the push.¹⁰ The policy mandates imposed in 1992 against Fannie and Freddie by the HUD-enforced Federal Housing Enterprise Financial Safety and Soundness Act (FHEFSSA)¹¹ required that specific percentage quotas of their annual loan purchases be devoted to “underserved” low-income and inner-city households, starting at 30% in 1992, rising to 42% in 1995, and reaching 50% in 2000, with the incoming Bush administration setting a target of 56% by 2008.¹² To call them “mandates” seems to downplay the eagerness with which Fannie and Freddie’s leadership accepted the terms, vastly expanding loan volumes (Fig. 1) to acquire impressive short-term profits (Fig. 2) along with salaries and bonuses to reflect them. Ultimately, however,

¹⁰ See Sowell, Thomas. *The Housing Boom and Bust*. New York: Basic Books. 2010; see also Norberg, Johan. *Financial Fiasco: How America's Infatuation with Home Ownership and Easy Money Created the Economic Crisis*. Washington: Cato Institute. 2009.

¹¹ Pub.L. 102-550, title XIII, Sec. 1332, (d)(1) of 106 Stat. 3941, 12 U.S.C. 4501

¹² Wallison, Peter J. and Edward J. Pinto. “Free Fall: How Government Policies Brought Down the Housing Market.” *Financial Services Outlook*. American Enterprise Institute. April 26, 2012. (http://www.aei.org/wp-content/uploads/2012/04/-free-fall-how-government-policies-brought-down-the-housing-market_113947314103.pdf.)

they were legally required terms of doing business issued to a company immensely subject to Congressional oversight¹³ and on whose boards of directors, at all times, five out of eighteen members are appointed by the president of the United States.¹⁴ The aspect of this situation that tends to be neglected is the permitting factor, the window. Where blame often pools and the story is said to end at the level of Fannie and Freddie, it is important to ask what policy conditions made their increased acquisition of risk possible. Writings on the crisis are rife with deliberation as to whether the possibility of government bailout for investment banks gave way to riskier strategy on the part of executives.¹⁵

¹³ In the House of Representatives, GSEs are overseen by the House Financial Services Committee, pursuant to Rules of the House of Representatives - X, Organization of Committees (1)(h). ("Rules of the House of Representatives, One Hundred Fourteenth Congress." Office of the Clerk, U.S. House of Representatives. January 6, 2015. Accessed online August 10, 2017. <http://clerk.house.gov/legislative/house-rules.pdf>.) In the Senate, they are overseen by the Senate Committee on Banking, Housing, and Urban Affairs, pursuant to Standing Rules of the Senate, XXV, (d)(1), "Rules of the Senate - XXV, Standing Committees (d)(1)" ("U.S. Senate Committee on Rules & Administration." Accessed online August 10, 2017. <https://www.rules.senate.gov/public/index.cfm?p=RuleXXV>.)

¹⁴ See Federal Home Loan Mortgage Corporation Act, Public Law No. 91-351, 84 Stat. 450. Approved July 24, 1970. As amended through July 21, 2010. <http://www.freddiemac.com/governance/pdf/charter.pdf>; see also Federal National Mortgage Association Charter Act, Title III of National Housing Act, 12 U.S.C. 1716 et seq. As amended through July 21, 2010. <http://www.fanniemae.com/resources/file/aboutus/pdf/fm-amended-charter.pdf>.

¹⁵ For a popular example, Andrew Ross Sorkin, *Too Big to Fail* (New York: Viking 2009) provides a broad-scale look at this dynamic. For an economic analysis, Russ Roberts' "Gambling with Other People's Money." Gary Stern's and Ron Feldman's book, *Too Big to Fail: The Hazards of Bank Bailouts* (Washington: Brookings Institution. 2004), provides a pre-crisis look at the history of the concept. Lawrence A. Cunningham, "Too Big to Fail: Moral Hazard in Auditing and the Need to Restructure the Industry before It Unravels." 106 Columbia Law Review 1698-1748 (2006) looks at moral hazard in auditing and gives an eerily prescient warning less than a year before the financial crisis. And Maureen O'Hara and Wayne Shaw, "Deposit Insurance and Wealth Effects:

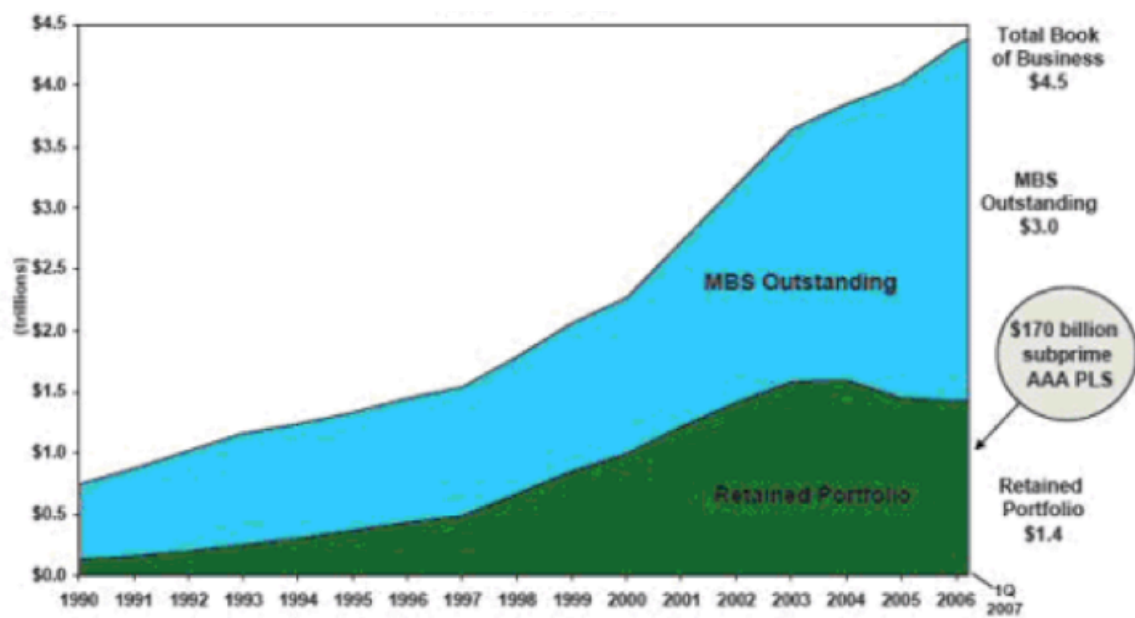


Fig. 6 GSEs volume of business, 1990-2007. (Source: OFHEO.)

The case of Fannie and Freddie is unique in that much of their risky operations were required as a matter of law, with their executives' goals being to acquire established quotas of assets that are, by their very nature, unreliable. Where moral hazard prevailed at this level was thus not in the GSEs' choice of investments but in their sources of capital, where investors were made secure in lending to Fannie and Freddie by the implicit promise of government rescue.

The Value of Being "Too Big to Fail." 45 *Journal of Finance*, 1587-1600 examines the wealth effects on bank equity values of a bank being declared "too big to fail."

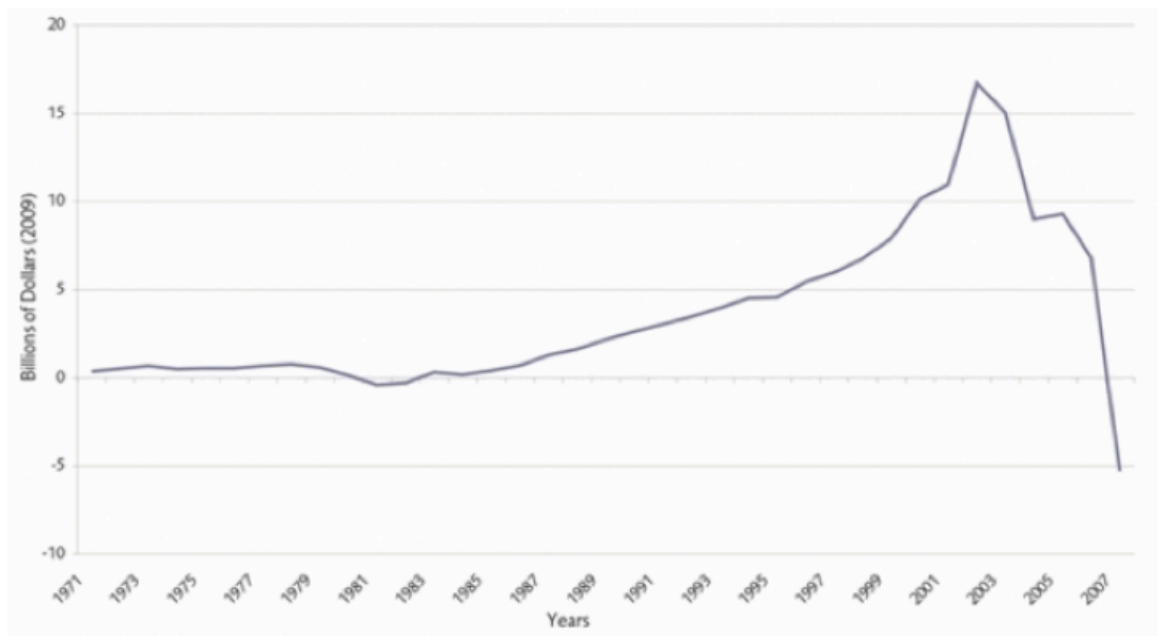


Fig. 7 GSE Profitability, 1971-2007. (Source: OFHEO.)

Whereas perhaps no two corporations have ever been so frequently and indistinguishably entangled with their own regulators as Fannie and Freddie, the housing giants remained to great extent publicly-held corporations that acquired their capital by the same measures of corporate finance as any other: the issuance of equity and debt. Due to its impact on Wall Street and its role in the fall of certain large financial institutions, the securitization, sale, and subsequent trading of many of Fannie's and Freddie's mortgages has received a greater share of attention in studies of the crisis than the GSEs' activity in the debt market, but it was there that they received most of their working capital from bondholders, institutional investors, and the central banks of China, Japan, South Korea, India, and Taiwan. Indeed, China had accumulated over \$500 billion in mortgage bonds from Fannie and Freddie and only lost its status as the biggest holder of

American GSEs' debt in January of 2017.¹⁶ This large debtholder status led then-Secretary-of-the-Treasury Henry Paulson to later reveal that he was in regular conversation with Chinese ministers and officials in an effort to influence their decisions as to whether to sell or hold their shares in the GSEs.¹⁷

The GSEs, in issuing a combination of short-term and long-term obligations, were thereby afforded a flexibility that corresponded well with the sometimes short-term or long-term nature of the mortgages that they held. This made the two companies very active and consistent participants in the debt market. The anomaly of their history in the lead-up to the crash and what distinguished them from other publicly financed companies was their ability to continue acquiring greater and greater risk (Fig. 3a-b) with immunity from the market forces that would traditionally drive up interest rates on their bonds and slow inflows of financial capital (Fig. 4). As a result, the risk premium which we would anticipate being reflected in the debt and equity prices of any purely private enterprise did not manifest. Their spreads versus treasuries are low and continuing to fall from 2000 through mid-2003, remaining steadily low through 2007 at an average of 35 basis points (.35%) over Treasuries in sharp contrast to most AAA corporate debt that averaged 70 points over T-bills. Their five-year debt between 2000 and the ultimate intervention of the Treasury in their collapse in September 2008 remained at all times below 1 percent, with particular lows between 2003 and 2006 of roughly one third of a percent.¹⁸

¹⁶ Putzier, Konrad. "Is the Great Chinese Fannie and Freddie Selloff Finally Over?" The Real Deal. April 17, 2017.

¹⁷ Peston, Robert. "Russia 'Planned Wall Street Bear Raid.'" BBC News. March 17, 2014. <http://www.bbc.com/news/business-26609548>.

¹⁸ Roberts, 2010

The fact that Fannie and Freddie continued to be able to issue debt at steady interest rates just marginally higher than that of the U.S. Treasury speaks either to investors' belief that, despite roughly \$1 trillion being devoted to subprime and other non-traditional mortgages between 2005 and 2007 alone, the two companies were as dependable as the federal government (a seemingly unlikely proposition) or that, in the event of catastrophe, a backer as dependable as the U.S. Treasury (of which, in the U.S. economy, there is only one) would guarantee their debt (more likely).

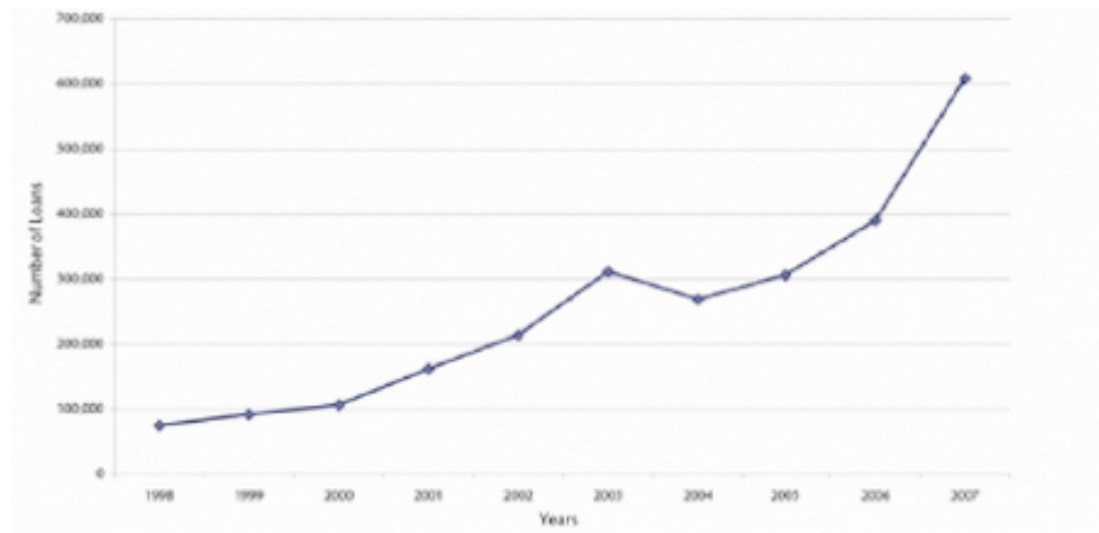


Fig. 8 Total home-purchase loans bought by GSEs with > 95% loan-to-value ratios, 1998-2007. (Source: “Profiles of GSE Mortgage Purchases,” HUD, 2006)

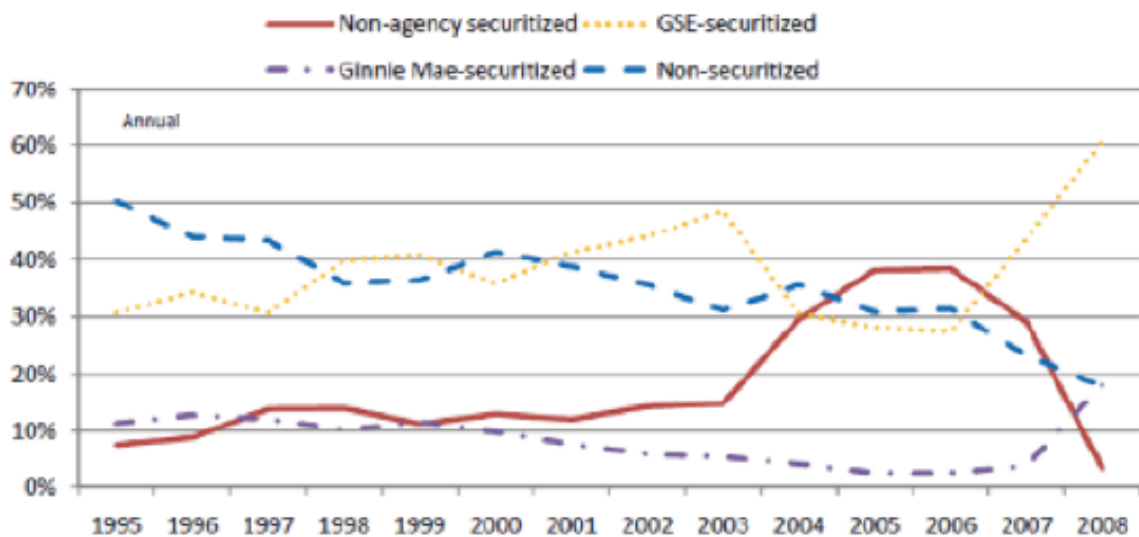


Fig. 9 Share of Total Residential Mortgage Originations, 1995-2008 (Source: Inside Mortgage Finance, 2009)

Considerable debate has been heard over the validity of the concept of an “implicit guarantee” said to have been afforded to GSEs in the lead-up to the crisis.¹⁹

Unfortunately, much of that debate has been entirely in the form of post-facto academic discussions of incentives such as this one. Warnings of its potential threat, such as that by Chairman of President Bush’s Council of Economic Advisors, Gregory Mankiw, who

¹⁹ This was a complaint heard prophetically from Alan Greenspan in 2004 (Andrews, Edmund L. “Fed Chief Warns of a Risk to Taxpayers.” *New York Times* . February 25, 2004. <http://www.nytimes.com/2004/02/25/business/fed-chief-warns-of-a-risk-to-taxpayers.html>), from Nobel Laureate Vernon L. Smith (Smith, Vernon L. “The Clinton Housing Bubble.” *The Wall Street Journal* . December 18, 2007. <http://online.wsj.com/article/SB119794091743935595.html>), and in business publications such as *The Economist* (“Fannie and Freddie Ride Again.” *The Economist* . July 5, 2007. http://www.economist.com/node/9441402?story_id=E1_JQQTQDN.)

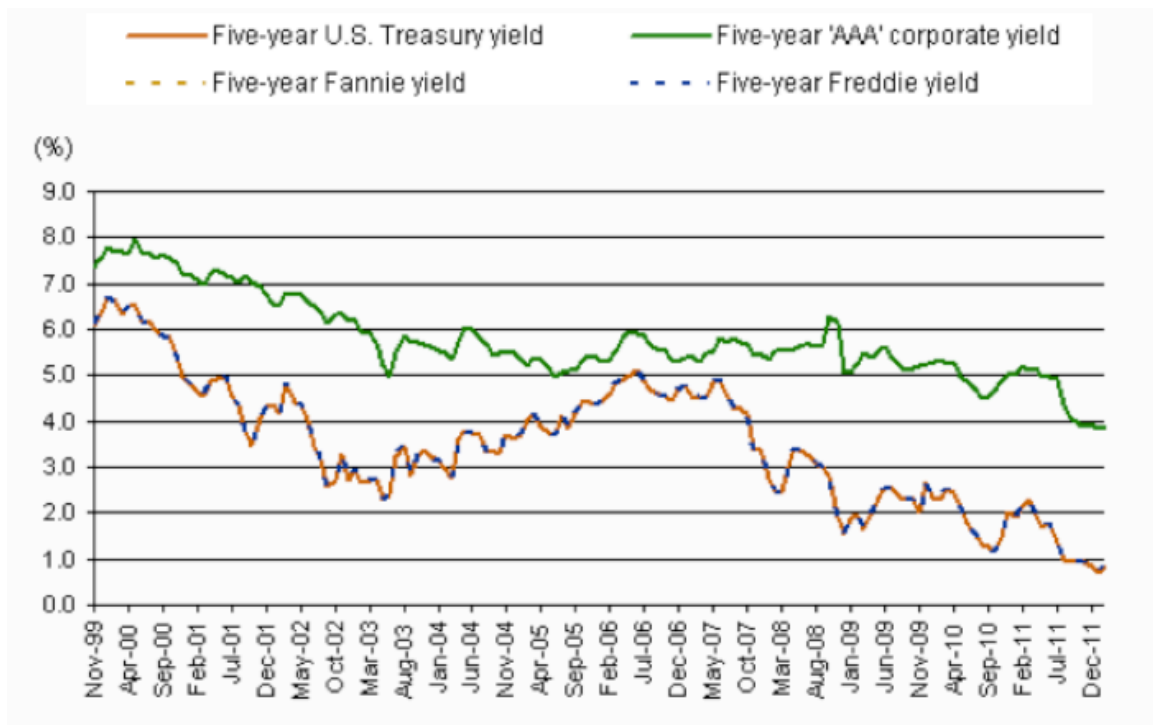


Fig. 10 Comparison of yields on five-year Treasuries versus Fannie, Freddie, and AAA corporate yields (Source: Standard & Poor's, 2012).

compared its systemic risk to the S&L crisis of the 1980s, may have been considered by policymakers, but clearly couldn't stand against the GSEs' growing tide of political support.²⁰ As for the general intellectual environment in organizations prior to the crash, despite insinuations such as that by Congressman Barney Frank that, "there is no explicit guarantee, there is no implicit guarantee, there is no wink-and-nod guarantee" of government bailout or assistance, executives and investors had learned through repeated experience over recent decades that the Treasury and Federal Reserve considered it a

²⁰ Sowell, pg. 45

central policy goal to maintain economic stability and would go to great lengths to do so.²¹

The so-called “Greenspan put” had proved a reliable backstop to wide-scale bad investments and economic shocks over the years, dating back to 1987’s “Black Monday”, the Gulf War, Mexican peso crisis, Asian crisis, collapse of Long-Term Capital Management, millennium bug scare, and Dot-com crash. Conditions were scarcely different under Greenspan’s protege and successor, Ben Bernanke. Thus, bondholders had never and, they presumed, would never face the full wrath of an economic downturn without the monetary authority padding their fall and picking them up again. One oft-told story regarding this period concerns a conference held by Bank of England’s Executive Director of Financial Stability and future BoE Chief Economist Andy Haldane, who inquired among the heads of numerous major British banks as to why the stress tests that they performed on their institutions were so mild and ignored any possibility of real catastrophe. One very frank executive stood to reply that it was costlier than it was worth for them to perform such tests, as it was understood among their ranks that in the event of real crisis, they would always be bailed out. Haldane denied the possibility of any bailout and scolded them. Nonetheless, within a few years, the executives were vindicated in their cost-saving decision when bailouts came just as they had predicted.²²

Nonetheless, one could argue that past rescues have no bearing on the future, that government gave no verbal encouragement for investors to feel this way, that an implicit guarantee is no guarantee at all, and that government policies can thus bear no liability if

²¹ Sowell, pg. 48

²² Roberts, Russ. “Gambling With Other People’s Money.” The Mercatus Center. May 2010. <http://mercatus.org/sites/default/files/publication/RUSS-final.pdf>.

investors acted upon such blind assumptions. To make these objections, there are two explicit pieces of evidence that must be overcome: one from the Treasury, one from the Fed. The first consists of a small direct line of credit provided by the Treasury to Fannie and Freddie, along with special legal privileges not afforded to other financial institutions, such as the freedom to hold only a 2.5% capital cushion as against the 4% buffer required for other financial institutions.²³

The limited size of this line of credit is an insubstantial point. It was an established vehicle that could certainly have been expanded should all parties have agreed to it. What is significant is that the culture between Fannie and Freddie and the Treasury was such that special privileges had and could be afforded whenever it was deemed prudent. As for the Fed's explicit offering of assistance, one need only look to what Gerald O'Driscoll refers to as the "Greenspan Doctrine": the chairman's professed stance that asset bubbles cannot be detected and that monetary policy should not be used to offset them; should they collapse, however, the Fed should, "mitigate the fallout when it occurs and, hopefully, ease the transition to the next expansion."²⁴ Essentially: "Inflate and I won't stop you; bust and I'll soften the blow." One could scarcely ask for a policy more primed to generate moral hazard, all the more so when it involves investment in government-sponsored enterprises that are closely aiding Congress and two presidential administrations in the achievement of "affordable housing", a goal carrying massive bipartisan political weight. It is understandable how

²³ Congressional Budget Office (CBO). "Measuring the Capital Positions of Fannie Mae and Freddie Mac." June 2006. pg. 17. (<https://www.cbo.gov/sites/default/files/109th-congress-2005-2006/reports/06-23-fanniefreddie.pdf>)

²⁴ O'Driscoll, Gerald P. Jr. "Subprime Monetary Policy," *The Freeman Online*. November 2007. <http://www.thefreemanonline.org/features/subprime-monetary-policy/>.

managers of private investment firms would be led to see the potential profits from this to be formidable and the downside risk to be fully guarded-against.

By the time that public revelations of the GSEs unsteadiness led to rising interest rates on their debt and a lack of confidence in their prospects at the onset of the 2007 recession, the deep-seated incentive problems that had progressively developed within Fannie Mae and Freddie Mac and between the GSEs and their creditors over the course of the previous years were a *fait accompli*. Even the upward adjustment of their bond rates was small in light of the size of the companies' vulnerable positions, though it was sufficient to tip the scale in the direction of capital outflows and threaten the firms' solvency. From March to July 2008, the firms became insolvent, forcing them into government "conservatorship" in September of that year, a euphemism for GSE bankruptcy. The Federal Reserve began funding the continuance of the companies' operations and the Treasury guaranteed 100% of their obligations, making clear to institutional investors and the general public that debt by the mortgage giants should be treated the same as U.S. government debt.²⁵

3 Aiding the Underserved

A seemingly innocuous piece of news ran in the business day section of the September 30, 1999 edition of the New York Times. It read:

²⁵ Paulson, Henry M. Jr. "Statement by Secretary Henry M. Paulson, Jr. on Treasury and Federal Housing Finance Agency Action to Protect Financial Markets and Taxpayers." U.S. Department of the Treasury. September 7, 2008.

“In a move that could help increase home ownership rates among minorities and low-income consumers, the Fannie Mae Corporation is easing the credit requirements on loans that it will purchase from banks and other lenders... Fannie Mae, the nation’s biggest underwriter of home mortgages, has been under increasing pressure from the Clinton Administration to expand mortgage loans among low and moderate income people and felt pressure from stock holders to maintain its phenomenal growth in profits. In addition, banks, thrift institutions and mortgage companies have been pressing Fannie Mae to help them make more loans to so-called subprime borrowers. These borrowers whose incomes, credit ratings and savings are not good enough to qualify for conventional loans, can only get loans from finance companies that charge much higher interest rates? anywhere from three to four percentage points higher than conventional loans.”²⁶

Just a few weeks short of nine years later, that same section would tell of the bailout of Fannie and Freddie, the severing of their chief executives, and the massive potential cost to taxpayers of their irrational business model and resultant failure. These institutions had not always been so indiscriminate in their activities, however, and understanding how the transition was made is a crucial part of their story.

Fannie Mae, a creation of Roosevelt’s New Deal, and Freddie Mac, created later in order to compete with Fannie and forbid it monopoly status in the market for mortgage

²⁶ Holmes, Steven A. “Fannie Mae Eases Credit to Aid Mortgage Lending.” *The New York Times*. September 30, 1999. <http://www.nytimes.com/1999/09/30/business/fannie-mae-eases-credit-to-aid-mortgage-lending.html>.

underwriting, were partially privatized into GSEs by President Lyndon Johnson in 1968 under the Housing and Urban Development Act.²⁷

Their operations continued mostly unchanged after privatization, with both companies continuing to guarantee gradually increasing percentages of the nation's housing debt and Freddie Mac initiating the practice of mortgage securitization and sale, a measure initially undertaken for the purpose of helping to channel capital from regions of the country with large amounts of financial capital (mostly on the East Coast) to areas with high demand for housing and low volumes of loanable funds (primarily the West). In the late 1980s, however, with the arrival of the Savings & Loan Crisis and the collapse of many S&Ls across the nation, the two GSE's stepped in to fill their shoes, expanding their operations to pick up the necessary slack in the mortgage market and increase loan volumes.²⁸

Their purchases during this time were strictly governed both by the terms of their regulation by the Department of Housing and Urban Development and by a thick book of guidelines dictating the terms of loans that Fannie and Freddie would guarantee, with criteria regarding the loan-to-value ratio, borrower credit history, and size of down-payment among other factors.²⁹ If lenders did not comply with standards, they could be

²⁷ 12 U.S.C. 1701x

²⁸ See Kling, Arnold. "Freddie Mac and Fannie Mae: An Exit Strategy for the Taxpayer." Cato Briefing Paper No. 106. September 8, 2008.

<https://object.cato.org/sites/cato.org/files/pubs/pdf/bp106.pdf>; see also Roberts, Russ. "Kling on Freddie and Fannie and the Recent History of the U.S. Housing Market." EconTalk. The Library of Economics and Liberty. September 29, 2008. http://www.econtalk.org/archives/2008/09/kling_on_freddie.html.

²⁹ Authority for regulation of the GSE's by HUD was established under the Housing and Urban Development Act of 1968, Pub. L. 90-448, 82 Stat 476. The terms of the federal homeownership assistance program established by that act are laid out in 12 U.S.C. 1715z and 1701w, 101. Detailed stipulations for repurchasing within the bounds set by

forced to repurchase the loans and/or have privileges revoked by the GSE. As a result of these criteria, Fannie and Freddie were able to weather downturns in housing prices in the 1980's without considerable difficulty. The vast majority of loans were "conforming" and there was a sizable equity cushion to pad the fall.³⁰ Experience taught a simple lesson: a high rate of conformity in the companies' assets was a formidable safeguard against fluctuations in the housing market.

Their portfolios were not perfect, however, nor without political tailoring. Policy guidelines dictated by the Department of Housing and Urban Development required that a "reasonable portion" of their loans be given to low- and moderate-income households. In fact, the Secretary of HUD is specifically directed by the authorizing legislation to ignore economic soundness when considering the insurance of mortgages in declining urban areas.³¹ Fortunately, the ambiguity which characterized much of the mandate allowed for the occasional deference to political agendas without endangering the companies' overall standings.³² All of this would change, however, with 1992's passage of the Housing and Community Development Act of 1992³³ and, specifically, Title XIII of the bill: the Federal Housing Enterprises Financial Safety and Soundness Act (FHEFSSA), which disposed of the conventionally vague requirements, imposing in their place a strict interim quota of "30 percent of the total number of dwelling units financed

legislation were thereafter published in Fannie Mae's and Freddie Mac's annual seller's guide. For a fuller examination of the 1968 Act, see Coan, Carl A. S. "The Housing and Urban Development Act of 1968: Landmark Legislation for the Urban Crisis." *The Urban Lawyer*, Vol. 1, No. 1, 1969, pp. 1-33.

³⁰ Roberts, 2008

³¹ 12 U.S.C. 1715n, 103

³² Roberts, 2008

³³ 106 Stat. 3941, 12 U.S.C. 4501 et seq.

by mortgage purchases of the enterprise.”³⁴ This portion was to be allotted to either (1) low- and moderate-income housing or (2) housing in the inner cities. The thirty-percent quota was a starting point, however, to be increased at the HUD secretary's discretion, and after 1995 it would begin its gradual increase to ever more critical levels.³⁵

Previously, lenders had been limited by Fannie’s and Freddie’s book of rules regarding 20% down-payments and income requirements for borrowers.³⁶ With the passage of FHEFSSA, along with continual pressures from Congress and the Clinton Administration, the conditions under which banks and other mortgage originators operated had been changed, moving the market away from 20% down-payments and eroding income requirements, leading to the increased popularity of many alternative loan types conceived in previous years in states such as California, Arizona, and Nevada. There, they had allowed borrowers to keep up with the rise of land prices that had been rapidly driven up by land use regulations since 1970. Now permeating throughout the national housing market, once-marginally-significant adjustable rate loan variants such as no-doc (in industry terms, “liar loans”), reversible, low-down-payment (meaning less than 5%) and, worse, no-down-payment mortgages skyrocketed in popularity, making homes that would once have been inaccessible to those purchasing them temporarily affordable. In 2001, the share of existing mortgages categorized as subprime or, slightly better, “Alt-A,” was less than 10 percent. In 2006, it was 23 percent. The implementation of a negative real interest rate by the Fed after the dot-com bust and terror attacks of 2001

³⁴ Pub. L. 102-550, title XIII, Sec. 1332, (d)(1) of 106 Stat. 3941, 12 U.S.C. 4501

³⁵ Wallison and Pinto, 2012

³⁶ 12 U.S.C. 1715z and 1701w, 101

generated massive volumes of liquidity in the American economy while, at the same time, generating conditions such that individuals would lose purchasing power by saving, encouraging a considerable increase in spending that went disproportionately into the housing sector and these high-risk loan variants. From mid-2003 to mid-2007, commercial spending on final goods and services rose by 5 to 7 percent; on real estate, it rose between 10 and 17 percent.³⁷

Intriguingly, this establishes a circumstance in which the factor that served as the “push” for GSEs—or their compelling factor—becomes the “window”—or permitting factor—for banks and lending institutions. The fact that GSEs were required by law to designate given percentages of their portfolios to high-risk mortgages created a massive moral hazard crisis in which lenders began issuing increasingly risky loans with the knowledge that the standards that had existed previously to forbid them from having such loans guaranteed had been lowered or, in some instances, eliminated. With GSEs holding more than a third of all resold loans in the nation and, in the early 2000's, over half of the outstanding mortgage debt in the United States³⁸, a change in their policy is apt to generate wide-scale changes in lender behavior.

The guarantees of Fannie and Freddie along with political pressure did more than spur a rise in subprime loans; it led to the generation of progressively worse subprime loans. By 2006, more than half of subprime loans were stated-income, no-doc “liar loans”, and borrowers—even those who reported income honestly—were committing as much as 40 percent of their incomes to monthly mortgage payments, well above the 25

³⁷ White, Lawrence. “How Did We Get Into This Financial Mess?” Cato Briefing Papers No. 110. November 18, 2008. <http://www.cato.org/pubs/bp/bp110.pdf>.

³⁸ Kling, 2008

percent national average that had remained a rule of thumb for decades.³⁹ Adjustable-rate mortgages (ARM) outpaced fixed-rate from year to year. From 2002 to 2005, the percentage of new mortgages nationwide that were interest-only skyrocketed from 10 percent to 31 percent; in the nation's major cities, where housing prices were high, they reached 40 percent; in infamously pricey San Francisco, they reached 60 percent.⁴⁰ Greater numbers of people were taking riskier loans to acquire assets whose value was becoming severely inflated.

Attempts to mitigate or even challenge the adverse effects of these factors—Fannie's and Freddie's guarantees and the political drive to, by all means necessary, expand homeownership—were met with forceful opposition. In the wake of the 2004 accounting scandal at Freddie Mac, when it was discovered by the Office of Federal Housing Enterprise Oversight (OFHEO) that losses were being carefully swept under the rug to maintain the illusion of profitability, President Bush expressed concern about the viability of the GSEs and the need to curb the volume of their activities. Seventy-six House Democrats responded with a letter to the president, deploring the fact that “an exclusive focus on safety and soundness is likely to come, in practice, at the expense of affordable housing.” Not to be outdone, Republican Senator Kit Bond called for an investigation of OFHEO, tried to have its budget dramatically cut, and sought to replace its leadership.⁴¹ The culture was such that any party attempting to honestly examine the risks at Fannie and Freddie did so at their own peril.

³⁹ Sowell, pg. 18

⁴⁰ Sowell, pg. 20

⁴¹ Sowell, pp. 52-53

Beyond Fannie's and Freddie's simply allowing down-payment requirements to be lowered, the Federal Housing Administration compelled private lenders who dealt with low-income borrowers (the FHA's primary beneficiaries), as well as private mortgage insurers, to lower requirements under threat of losing their competitive standing. This is not to deny or downplay the eagerness of many lenders in engaging in cavalier business practices; it is to say that, regardless of their preferences, the incentive structure provided to them required them to lower their standards in order to remain competitive. In the spirit of trying to maintain its "market share" (a dubious concept for what is supposed to be a social welfare program)⁴², the FHA pursued a policy of trying to keep the down-payment requirements of loans that it guaranteed always below that of private lenders and guarantors, creating a race-to-the-bottom effect. By 2004, the interest rate on the FHA's most popular program was 3%, with debate pending on lowering it to zero.⁴³

The FHA, however, was knowingly engaging in these practices at a loss to itself. It is an indefensible proposition to suggest that the FHA genuinely viewed their activities as financially viable and likely to see sufficient rates of repayment. As late as September 2007, with the subprime meltdown well underway and with the explicit admission that the costs of this New Deal relic were poised to exceed revenues within a year, a bill passed the House which proposed to expand the FHA's operations further and raise the

⁴² Federal Housing Administration. "FHA-Insured Single-Family Mortgage Market Share Report."

(https://portal.hud.gov/hudportal/HUD?src=/program_offices/housing/rmra/oe/rpts/fhamktsh/fhamktqtrly.) Accessed online August 14, 2017.

⁴³ Roberts, 2010

value of loans that it could guarantee, all using taxpayer dollars.⁴⁴ Thus, private lenders were being made to keep pace with an institution the solvency of which was guaranteed by the government's ability to tax. This alone would have made it difficult for lenders, were it not for other factors that hastened the fall of standards.

Any attempt to single out individual compelling factors by which government policy encouraged lenders to lower standards runs the considerable risk of ignoring the pervasive political culture existent within Congress and the Executive Branch during the Clinton and Bush administrations. Every sound bite, State of the Union speech, and oversight committee hearing in which politicians extolled the bipartisan dogma of expanding “affordable housing” established the political and regulatory environment in which lenders operated. Where words were not enough to drive the self-interested operators of banks, mortgage companies, and thrift institutions to join in the cause, actions were taken to provide additional motivation. Two actions in particular stand out: (1) the reinvigoration of the Community Reinvestment Act of 1977⁴⁵ and (2) HUD lawsuits against lenders with discrepancies in loan approval rates between applicants of different races.

A creation of the Carter Administration, the Community Reinvestment Act (CRA) was a measure to fight inner-city decline by striving to eliminate discrimination by mortgage lenders against minority borrowers. The CRA required any institution receiving

⁴⁴ Berlau, John. “The Subprime FHA.” The Competitive Enterprise Institute. October 15, 2007. <https://cei.org/content/subprime-fha>.

⁴⁵ P.L. 95-128, 91 Stat. 1147, title VIII of the Housing and Community Development Act of 1977, 12 U.S.C. 2901 et seq.

FDIC insurance to provide mortgage loans to low-income borrowers within its region of operation. Clearly crafted with political motivations and in a spirit contrary to a purely profit-maximizing approach to business, the bill was fortunately enacted with a rather ambitious and decentralized system of enforcement. As a result, banks extended the minimum effort required of them, opening branches in inner-city neighborhoods where they otherwise may not have, but never issuing financially imprudent loans to an extent that could pose a formidable threat to their profitability. It can be loosely inferred that the Carter Administration was aware of the risks that full enforcement would pose and thus did not pursue it too thoroughly, but regardless of their foresight or lack thereof, a political gain was achieved at little cost to the industry involved.

In 1995, the Clinton Administration was in need of a similar gain. Instead of crafting an innocuous act of its own, however, it applied an amendment to the CRA, giving it enforcement powers by which the government could forbid banks with inadequate CRA scores from opening new branches or merging with other banks.⁴⁶ In the year prior, branch-banking laws that forbade banks doing business across state lines had been eliminated by the Riegle-Neal Act⁴⁷, creating profitable merger opportunities that could not be capitalized upon without CRA compliance. Banks quickly hired CRA officers and learned to monitor their statistics carefully to remain in keeping with the Act's mandates. Some did so by issuing millions of dollars in subprime loans

⁴⁶ 60 CFR Pt. 25

⁴⁷ Pub. L. No. 103-328; 108 Stat. 2379

where they otherwise would not. Some met compliance by investing in large volumes of mortgage-backed securities based upon subprime loans. Many did a combination of both.

Where politically motivated regulations attempt to divert business away from profitability for the pursuance of social agendas, interest groups are sure to be found. Such was the case with the CRA, which permitted citizens' groups such as the later infamous Association of Community Organizations for Reform Now (ACORN) to challenge and harass the activities of banks and Wall Street firms, holding up regulatory approval with complaints that would be withdrawn only after the lowering of lending standards, expansion of credit, lowering of down-payment quotas, and, nearly as often, a sizable donation by the bank to the citizens' group's coffer.

As Lawrence White notes, "No doubt a small share of the total current crop of bad mortgages has come from CRA loans. But for the share of the increase in defaults that has come from the CRA-qualifying borrowers (who would otherwise have been turned down for lack of creditworthiness) rather than from, say, would-be condo-flippers on the outskirts of Las Vegas—the CRA bears responsibility."⁴⁸ While it can carry little macroeconomic blame, in localized areas, its impact has been considerable on both borrowers and lenders. The greatest property appreciations in the United States between 1993 and 1998 occurred in the same kinds of inner-city neighborhoods in which the CRA was enforced. In the wake of the downturn, they became some of the most severely affected.⁴⁹

⁴⁸ White, 2008

⁴⁹ Roberts, 2010

Another “push” by which regulators set the tone for lenders, compelling them to lower standards in the mortgage market, was in the courts. Starting in 1993, HUD officials sought legal recourse against banks that declined higher percentages of minority applicants than white applicants. Attorney General Janet Reno warned that those banks that “closely examine their lending practices and make necessary changes to eliminate discrimination” would “fare better in this department’s stepped-up enforcement effort than those who do not.” She urged them to preempt prosecution by complying with expectations, “Do not wait for the Justice Department to come knocking.”⁵⁰ Rather than endure adverse publicity and costly lawsuits, banks began lowering down-payment requirements, credit standards, and income qualifications.

The crucial element to recognize in both of these measures is that there was never a demonstrable level of racial prejudice in mortgage lending.⁵¹ True, there were discrepancies between approval rates among various races, but those discrepancies were very much in keeping with differences in the financial standings of the applicants. Whether due to incomes, credit ratings, or the size of down-payments, white applicants had traditionally shown a higher rate of compliance than black applicants. To allege bias on racial grounds, however, one would have to explain two confounding factors: (1) the fact that black applicants were turned down more often black-owned banks and (2) that applicants listed as Asian or Pacific Islander received the highest rate of loan approval of all, considerably higher than whites.⁵² As a result of the flawed assumption of racial bias,

⁵⁰ Sowell, pg. 112

⁵¹ Benson, George J. “The Community Reinvestment Act: Looking for Discrimination That Isn’t There.” Policy Analysis No. 354. Cato Institute. October 6, 1999.

⁵² Sowell, pg. 38, 104

policies enacted to eliminate that bias did not simply equalize approval rates across racial lines; they required that vast numbers of unqualified individuals receive loans where they would otherwise have been turned down, imposing considerable risk on the portfolios of banks and mortgage lenders.

To summarize: during the period from 1992, with the passage of FHEFSSA, to the crash in 2007, in the relationship between GSE's and lenders, HUD and lenders, and the FHA and the marketplace, government policy encouraged moral hazard by permitting and, ultimately, compelling lenders to issue and resell lower quality loans. As with the culture on Wall Street, there were no doubt many instances of malfeasance, the so-called "predatory lenders" who encouraged unaffordable loans in the hopes of foreclosing on properties that had since increased in value, grabbing sizable amounts of equity in the process. However, as in all industries, such actors are a small minority and careful analysis must be performed to understand the incentives that drove vast numbers of lenders to the same bad decisions that would ultimately devastate their industry. This summary, though brief, has detailed several of those distorting factors. One question remains, however, in regards to the last party to be considered, their motivations, and the factors that shaped them. That is the borrowers, who will be the subject of this paper's fourth part.

3 “In the Money”

All bubbles must, by definition, burst at some point. Whether market forces and monetary policy are such that the bubble is cut short, risk is minimized, and recovery is swift and judicious, or whether such forces carry on the malinvestment over the course of years, creating massive economic distortions in the process, at some point, an end must come. When it does, numerous factors can weigh heavily on the extent and nature of its damage. When the subprime crisis came to fruition in 2007, interest rates corrected (to the extent that they would), and the massively inflated prices of housing were made to adjust, the ways in which loans had been administered and the legal framework of lending in most of the United States would play considerable roles in the market’s response.

The American economy from 2000 to 2001 had been dealt the double-blow of the Dot-com crash and a panic in the wake of the September 11th terror attacks. In keeping with its long-held policy of increasing liquidity in times of crisis, the Federal Reserve, between 2001 and 2003, incrementally lowered its interest rate from 6.5 percent to 1 percent, where it would remain for over a year (Fig. 5).⁵³ In conjunction with the now-decade-old “affordable housing” agenda of the legislative and executive branches, the pervasively low rates would permit banks and other lenders to offer the increasingly popular high-risk loan variants at lower initial rates, making it an ever more opportune time to invest in real estate or upgrade one’s living situation beyond what would otherwise be affordable. In 2001, adjustable-rate mortgages were, on average, 1.13

⁵³ Board of Governors of the Federal Reserve System (US), Effective Federal Funds Rate [FEDFUNDS], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/FEDFUNDS>, August 12, 2017.

percent lower than their 30-year fixed-rate counterparts. By 2004, that gap had grown to 1.94 percent. As a result, the proportion of new borrowers on adjustable rates (one-fifth in 2001) had doubled in three years' time.⁵⁴ Proportions of loans issued with subprime status would rise from 7 percent to 19. Other alternative loan types would increase in popularity from 3 to 14 percent of the market.⁵⁵ This low-interest-rate environment would be a driving force encouraging the sharp increase in home prices during this period.

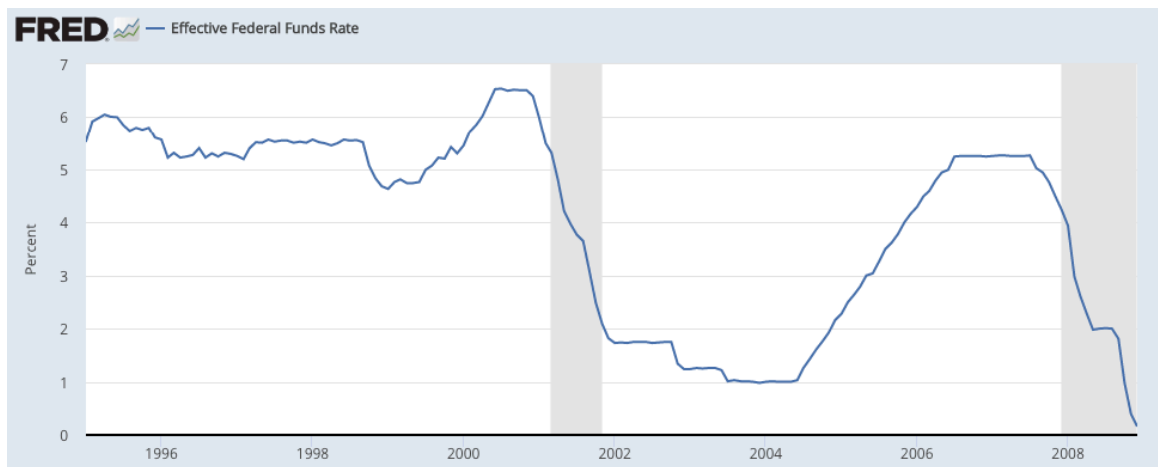


Fig. 11 Federal Funds Rate, January 1995-December 2008 (“FEDFUNDS”, Board of Governors, FRED)

From 2000 to 2005, the median sale price of single-family homes rose by 50 percent. In New York, the rise was 79 percent; Los Angeles, 110 percent; San Diego, 127 percent. The Case-Shiller National Housing Index demonstrates that this rise was merely the

⁵⁴ White, 2008

⁵⁵ Sowell, pg. 42

second half of an upward trend in home prices that began mildly in 1992, with formidable growth occurring from 1996 onward (Fig. 6).⁵⁶ This rise was not disbursed evenly throughout the United States, however. It was particularly acute in certain (usually large, metropolitan) areas of the country. In each city, the value lost in the crash was generally proportional to the previous rise.⁵⁷ The default of mortgages on non-owner-occupied homes was indicative of a pattern of speculative second- and third-home purchases which had emerged under this low-interest-rate environment, and states with high numbers of non-occupant owners such as Florida and Nevada saw correspondingly high rates of foreclosure.⁵⁸

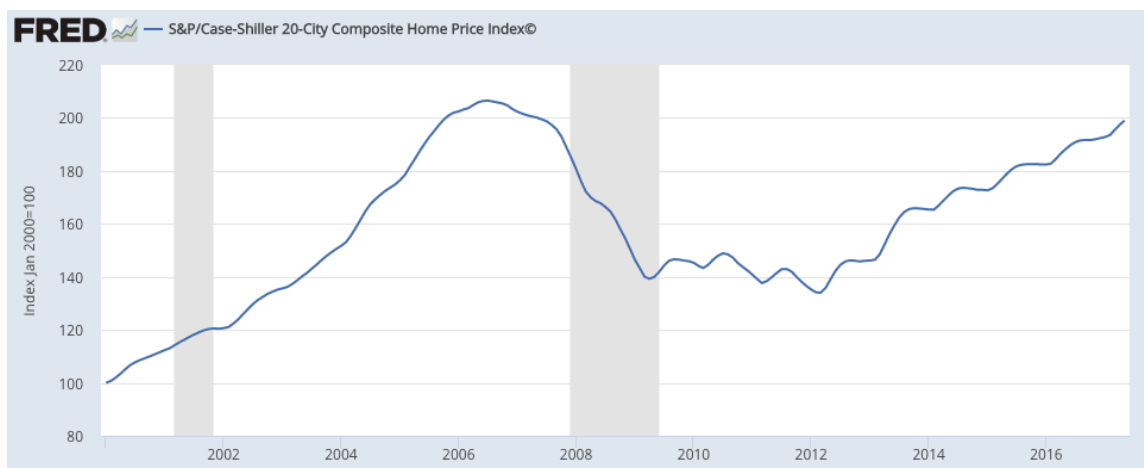


Fig. 12 S&P/Case-Shiller 20-City Composite Home Price Index, 2000-2016

(“SPCS20RNSA,” S&P Dow Jones, FRED)

⁵⁶ S&P Dow Jones Indices LLC, S&P/Case-Shiller U.S. National Home Price Index [CSUSHPINSA], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/CSUSHPINSA>, August 8, 2017.

⁵⁷ Sowell, pg. 1

⁵⁸ Robinson, Breck L. and Richard M. Todd. “The Role of Non-Owner-Occupied Homes in the Current Housing and Foreclosure Cycle.” Working Paper No. 10-11. Federal Reserve Bank of Richmond. May 2010. https://www.richmondfed.org/~media/richmondfedorg/publications/research/working_papers/2010/pdf/wp10-11.pdf. Accessed November 2, 2017.

In conjunction with FHA policy, the prevailing political trend continued to support the lowering of down-payment requirements during this period with the 2003 signing of the Bush-sponsored American Dream Down Payment Assistance Act, which pledged to provide federal assistance to an estimated 40,000 families per year with their down payments and closing costs. As Russ Roberts expertly describes, however, the lowering of or federal assistance with down payment requirements has three effects that all encourage a bubbling effect in the housing market. It “[1] allows people who normally wouldn’t have accumulated a sufficient down-payment to buy a house, it [2] encourages homeowners to bid on larger, more expensive homes rather than cheaper ones, and [3] it encourages prospective buyers to bid more than a house is currently worth if the house is expected to appreciate in value.” All of these effects have two basic qualities: (1) increasing the demand for housing and (2) increasing the likelihood of default in the event of a downturn in prices.⁵⁹

When the downturn in home prices began in mid-2005, the low down-payment requirements in particular would have nearly as large an effect on the rate of default as they had on the increase in prices, making it economical for large numbers of borrowers to walk away from their mortgages. As lenders had long understood, the purpose of down-payments to mitigate the risk of default by ensuring that homeowners have some personal stake in the home and are, therefore, less likely to eventually walk away from their obligation. The higher the down-payment, the greater the value by which home

⁵⁹ Roberts, 2010

prices would have to fall in order to exceed the value of their investment and make it rational for homeowners to default.

In the 1980's, two economists at Freddie Mac, Chet Forster and Robert Van Order, created what would become the company's standard model for buyer-equity behavior, detailing the likelihood of homeowners with various sizes of down payments to default.⁶⁰ Its logic was straightforward: given the option of either selling or foreclosing, a mortgage borrower who has trouble making his payments is more likely to sell if his house can be sold for more than the outstanding balance on the loan (referred to as default being "out of the money") and is more likely to default if the outstanding loan balance exceeds the market value of the house (default being "in the money"). Given that an owner-occupant takes into account the cost of relocating himself and his family as well as any ties (such as a job) that may motivate him to remain where he lives, he is less likely to default than a speculator who bought the house solely as an investment.

These principles, no doubt, prove true in many instances where borrowers are able to acquire loans at very little personal cost or investment. They are exacerbated, however, when the requirements are so low and the potential gains in equity so great as to encourage home purchases not for the consumption of housing services but for the purposes of speculation.⁶¹ Distinctly different market arrangements invariably attract

⁶⁰ See Foster, Chet and Robert Van Order. "An Option-Based Model of Mortgage Default." *Housing Finance Review*, 1984, vol. 3, no. 4, pp. 351-77; see also Foster, Chet and Robert Van Order. "FHA Terminations: A Prelude to Rational Mortgage Pricing. *Journal of the American Real Estate and Urban Economics Association*, 1985, vol. 13, no. 3, pp. 273-91.

⁶¹ Deng, Yongheng and John M. Quigley and Robert Van Order. "Mortgage Terminations, Heterogeneity and the Exercise of Mortgage Options." *Econometrica*, vol. 68, no. 2, March 2000, pp. 275-307.

different kinds of participants whose responses to downturns in the market may differ greatly from those who purchase goods for personal consumption. Significantly, “[A] survey by the National Association of Realtors found that, during the housing boom, homes were bought as investments, rather than to live in, by 28 percent of home buyers in 2005 and by 22 percent of home buyers in 2006.”⁶² The composition of America’s homebuyers and their incentives had shifted in response to changes in the market’s required down payments, interest rates, and massive potential equity gains. Such homeowners were not likely to weather the hard times to come with great endurance, particularly in the context of a legal framework largely ambivalent to borrower default.

One of the strikingly underappreciated permitting factors of the mortgage crisis is the legal character of the “non-recourse” loan. Whether lenders can pursue the remaining balance on mortgage loans in the court system or demand borrowers’ other assets as payment is largely a matter of state law that is not uniform throughout the U.S. In twenty states, including those with infamously high default rates in the 2007 crisis such as California, Nevada, Arizona, and Georgia, mortgage loans are non-recourse. Homeowners whose debt on their property has exceeded its value can proverbially “turn in the keys” without fear of banks or mortgage lenders seeking the remainder of their debt by other means.⁶³ Seven other states permit non-judicial foreclosure in this manner

⁶² Sowell, pg. 26

⁶³ Orlando, James. “Comparison of State Laws on Mortgage Deficiencies and Redemption Periods.” OLR Research Report. Connecticut General Assembly. 2010-R-0327. July 29, 2010. <https://www.cga.ct.gov/2010/rpt/2010-R-0327.htm>. Accessed online August 12, 2017.

as an option for borrowers. In those states, it accounts for a majority of default proceedings.⁶⁴

The option to default without recourse is a very valuable escape route for borrowers, particularly for those with very low down payments, whose equity in a property can be lost by even a slight downturn in its value. Importantly, however, it also poses a significant risk for lenders who have traditionally defended themselves from widespread default with strict lending criteria that had been drastically eroded in this period. To illustrate the contrast: a study by Richmond Federal Reserve Bank economists Ghent and Kudlyak revealed that states that permitted lenders to seek alternative recourse during the downturn saw a significantly lower rate of default than those that did not. Specifically, they find that “[a]t the mean of the default option at the time of default, borrowers in non-recourse states are 32% more likely to default than borrowers in recourse states. At the mean of the default option for all observations, the probability of default is 6% higher in non-recourse states than in recourse states.”⁶⁵ Similarly, Canada’s legal system typically does not afford a non-recourse status to loans.⁶⁶ Lenders there are free to take borrowers to court for alternative compensation should they default. Canada also enjoys greater mortgage compliance, a Canadian Bankers Association study finding the average rate of 90 days mortgage arrears in Canada from 2000 to 2014 to be 0.34% as

⁶⁴ Roberts, 2010

⁶⁵ Ghent, Andra C. and Marianna Kudlyak. “Recourse and Residential Mortgage Default: Theory and Evidence from U.S. States.” Working Paper Series. WP 09-10R. June 10, 2010.

⁶⁶ See “Comparing Canada and U.S. Housing Finance Systems.” Canada Mortgage and Housing Corporation. Last modified November 28, 2014. https://www.cmhc-schl.gc.ca/en/corp/nero/jufa/jufa_018.cfm. Accessed online August 12, 2017.

against the U.S.'s 0.84% during the same period.⁶⁷ This is not to afford this particular legal rule with full credit for the discrepancy in how Canada and the United States fared the housing crisis—indeed, the relatively more relaxed lending standards in the U.S. likely did most of the work in creating that discrepancy⁶⁸—but borrower liability is likely an important element in helping us to understand the demand side of the market for subprime loans.

In summation, the relationship between borrowers and lenders was complicated by several factors: a Federal Reserve which offered untenably low interest rates that permitted very attractive and increasingly risky loan structures, the initial terms of which could not be maintained when rates adjusted to better reflect the true availability of capital in the economy; a political climate that strove to lower down-payment requirements and offer federal financial assistance to promote homeownership; and a legal environment that was, in most of the country and particularly the most disastrously affected areas, particularly lax towards those who defaulted on mortgage obligations. All of these elements taken separately lent themselves to making moral hazard in the relationship between borrowers and lenders possible. Taken together, they made it practically inevitable.

⁶⁷ Canada Mortgage and Housing Corporation (CMHC), “Mortgage Arrears Nudged Downward Again in 2014.” Housing Observer Online. July 24, 2015. https://www.cmhc-schl.gc.ca/en/hoficlincl/observer/observer_008.cfm. Accessed online August 12, 2017.

⁶⁸ MacGee, James. “Why Didn't Canada's Housing Market Go Bust?” Economic Commentary. Federal Reserve Bank of Cleveland. December 2, 2009.

4 Ten Years After, What Has Changed?

With more than a decade now separating us from the 2006 peak of the U.S. housing market and the 2007 market crash which brought down major subprime holders such as Lehman Brothers and Bears Stearns, it seems an appropriate landmark to look back and ask how and to what extent the policy environment which gave rise to the moral hazard problems herein described has changed and how much of it remains the same. If few of the institutional rules which contributed to the housing boom and bust have changed, then the absence of a similarly unsustainable boom (assuming that there is not one) must be credited to a difference in relative prices or the relative returns on investment in certain asset classes. This would suggest that all that is needed to reprise that experience is a price change—a conclusion which would not bode well for macroeconomic stability. If, however, meaningful reforms have altered the relationships we have detailed here, then the risk of an identical crisis should be seen as correspondingly diminished. In assessing the extent to which the basic structure has changed or maintained, we will assess the relationships in the order that we addressed them above, starting with that between the federal government and GSEs, then between GSEs and commercial lenders, and finally between commercial lenders and borrowers.

4.1 The Federal Government and GSEs

To a considerable extent, the element of moral hazard in GSE decision making was essentially nullified once it entered conservatorship. The notion of the federal government covering GSE losses and guaranteeing their liabilities was no longer a potentiality capable of influencing risk-taking but rather a certainty. That said, once they

entered the government's possession and had the explicit guarantee of taxpayer backing, the GSEs were no less capable of continuing to finance the expansion of homeownership and generate the political profits to incumbent politicians that their management had long been devoted to producing. On the other hand, the widely recognized need for more prudent policy in the secondary market for residential mortgages provided an impetus for policy makers to show restraint and an intention to reform.

Illustrating the continued force of these contradictory goals, as a crisis culminated which had largely been driven by politicians' and the GSEs goal of expanding homeownership, Treasury Secretary Henry M. Paulson's initial statement announcing the GSEs entry into conservatorship stressed, first and foremost, that “the primary mission of these enterprises now will be to proactively work to increase the availability of mortgage finance, including by examining the guaranty fee structure with an eye toward mortgage affordability.”⁶⁹ Paulson announced that the GSEs would continue to increase their purchases of mortgage-backed securities for at least another fifteen months, then reducing them by ten-percent per year until they reached some unstated lesser size at an unstated future date. Through a Preferred Stock Purchase Agreement, the Treasury and FHFA guaranteed that the GSEs would maintain a positive net worth throughout this process in the interest of GSE bondholders and mortgage borrowers. Paulson also announced that the Treasury would establish a new secured lending credit facility for Fannie Mae, Freddie Mac, and the Federal Home Loan Banks as well as a plan to purchase GSE-held mortgage-backed securities, citing the very small spreads between these mortgage-backed securities and U.S. treasuries as evidence of their being a good investment for taxpayers.

⁶⁹ Paulson, 2008

In a darkly comedic turn, amidst many promises of government guarantees and rescue, Paulson credits them all as having been necessitated by “ambiguities in the GSE Congressional charters, which have been perceived to indicate government support for agency debt and guaranteed MBS” and stresses that “[m]arket discipline is best served when shareholders bear both the risk and the reward of their investment.”⁷⁰

As to the governing structure of the GSEs, debate was heard in committee over a provision in the failed Federal Housing Finance Reform Act of 2007 which would have reduced the number of board members at each GSE from eighteen to between seven and thirteen and eliminated the requirement of presidential appointees on their boards. An amendment striking this provision was presented by Rep. Paul Kanjorski (D-PA) and openly endorsed by both the National Association of Home Builders and the National Association of Realtors, presented by Kanjorski on the grounds that executive appointees were crucial to their pursuit of the GSEs “public missions.”⁷¹ The legislation as a whole did not pass the Senate, but the episode demonstrated the opposition to reducing political involvement in GSE governance and the endorsement of that involvement by organized lobbies of builders and realtors. Pursuant to the conservatorship begun September 2008, the Federal Housing Finance Agency (FHFA), newly created under the Housing and Economic Recovery Act of 2008, subsumed Fannie and Freddie to oversee their governance as divisions of the Department of Housing and Urban Development (HUD) rather than as independent entities. Board size was reduced to between nine and thirteen

⁷⁰ *Id.*

⁷¹ See Congressional Record—House, Vol. 153, Pt. 9, pg. 13197. Accessed online August 12, 2017.

members, and whereas the director of Ginnie Mae (GNMA) would still be appointed by the president of the United States, all board members for Fannie and Freddie would be elected by their respective common stockholders.⁷² The elimination of presidentially appointed slots on their boards would, taken alone, indicate reduced political presence, but their subsumption into a major executive branch bureaucracy would appear to have substituted for that more conspicuous and politically noxious exercise of power without loss of political influence.

Subsequent events, however, further demonstrated the inability of the federal government to commit to a certain course of action. Whereas it initially defaulted on politicians' and bureaucrats' many assurances that there was no guarantee of GSE losses, this time it defaulted on its commitment to Fannie and Freddie's shareholders by altering the terms of its agreement with Fannie and Freddie *ex post*, seizing all profits by both companies in every quarter since August 2012 on the justification that it needed to protect taxpayers from expected future losses and reporting that both were in a "death spiral." As of 2017, however, a lawsuit by GSE shareholders led to the release of internal Treasury documents revealing that the Treasury fully expected both GSEs to become profitable in the near future and have led to the accusation by shareholders that the Treasury's appropriation of their profits constituted a seizure of property without remuneration.⁷³

⁷² See 12 U.S.C. 1723, Sec. 308

⁷³ See Miller, Mary John. "Information Memorandum for Secretary Geithner: Potential GSE Restructuring and Transition Options." Department of the Treasury. Washington, D.C. December 12, 2011. pg. 1, 19; *see also* Morgenson, Gretchen. "U.S. Foresaw Better Return in Seizing Fannie and Freddie Profits." *The New York Times*. July 23, 2017. <https://www.nytimes.com/2017/07/23/business/fannie-freddie-treasury-lawsuit.html>.

With the GSEs having repaid the amount of their federal bailout in full as of 2012, the current Treasury claim on their profits appears to be indefinite.

In terms of its role as a facilitator of expanding home mortgage debt backed by taxpayer dollars, the GSEs have made a conspicuous priority of transferring credit risk away from themselves and reducing taxpayers' exposure, with Freddie Mac advertising that in Q1 2017 it had transferred “a portion of credit risk on nearly 30 percent of the total outstanding single-family credit guarantee portfolio” and that it was “scheduled to return \$2.2 billion to taxpayers in June 2017 for a total of \$108.2 billion in dividends paid to the Treasury.”⁷⁴ Fannie Mae similarly announced a net and comprehensive income of \$2.8 billion in Q1 2017, that it will have paid a total of \$162.7 billion in dividends to the Treasury, and that it “continues to increase the role of private capital in the mortgage market and reduce the risk to Fannie Mae’s business, taxpayers, and the housing finance system through its credit risk transfer transactions.”⁷⁵

In principle, however, it is unclear that much more has transpired than the GSEs becoming more formally integrated into HUD as off-budget federally owned corporations and justifying their continued existence by presenting themselves as profit-making investments by the government. Boccia argues that the advertisement of GSE profit-making for the government under the prevailing cash-flow approach and their contentions

⁷⁴ Freddie Mac (FHLMC). “News Release: Freddie Mac Reports Net Income and Comprehensive Income of \$2.2 Billion for First Quarter 2017.” Freddie Mac. May 2, 2017. <http://www.freddiemac.com/investors/financials/pdf/2017er-1q17release.pdf>. Accessed online August 12, 2017.

⁷⁵ Fannie Mae (FNMA). “Fannie Mae Reports Net Income of \$2.8 Billion and Comprehensive Income of \$2.8 Billion for First Quarter 2017.” Fannie Mae. May 5 2017. http://www.fanniemae.com/resources/file/ir/pdf/quarterly-annual-results/2017/q12017_release.pdf. Accessed online August 12, 2017.

that they help to reduce the federal deficit are illusory distractions from the continued taxpayer exposure to potential federal losses from GSE mortgage purchases.⁷⁶ The Budget and Accounting Transparency Act of 2014⁷⁷, which sought to remedy this illusion by insisting upon GSE adherence to federal accounting practices was passed in the House but died in the Senate. In the absence of similar legislation, their seemingly permanent recognition as being in temporary conservatorship leaves them immune from federal accounting standards until Congress elects to change their status.⁷⁸ Boccia notes that the difference is dramatic, leading to claims that GSEs would have reduced 2013 outlays and the deficit by \$97 billion under the cash-flow approach, which ignores taxpayer risks and taxpayer subsidies provided to the secondary mortgage market, when CBO calculations of fair-basis value reduce this to \$5 billion for the same year and recognize the profits yielded to Treasury as an intra-governmental transfer without any effect on the deficit.⁷⁹

If this image of the current status of the GSEs is accurate—that of once-semi-private entities now fully incorporated into the executive bureaucracy that oversees them—then the state of moral hazard in this relationship is somewhat ambiguous. To the extent that their actions and agendas are driven by the GSEs managers and that those

⁷⁶ Boccia, Romina. “Revealing Fannie Mae and Freddie Mac's Budget Costs: A Step Toward GSEs Elimination.” Backgrounder No. 2892. Heritage Foundation. March 16, 2014.

⁷⁷ H.R. 1872 [113th]

⁷⁸ Ligon, John L. “Hensarling Housing Finance Plan: A Welcome Step Toward Solving the Fannie and Freddie Mess,” Heritage Foundation Issue Brief No. 3995, July 22, 2013, <http://www.heritage.org/research/reports/2013/07/hensarling-housing-finance-plan-welcome-step-to-solve-the-fannie-and-freddie-mess>.

⁷⁹ Lucas, Deborah. “The Budgetary Cost of Fannie Mae and Freddie Mac and Options for the Future Federal Role in the Secondary Mortgage Market,” Congressional Budget Office, testimony before the Committee on the Budget, U.S. House of Representatives. June 2, 2011. <http://www.cbo.gov/publication/41487>. Accessed online August 12, 2017.

managers are rewarded for generating more business in the secondary mortgage market, then there is room for those managers to assume risks on the assumption that the government will bear their future losses. To the extent, however, that their policies are dictated by FHFA and HUD, then they assume the character of any other tax-financed public bureaucracy and the notions of financial profits become largely irrelevant. Indeed, the Treasury's total seizure of GSE shareholders' returns on an indefinite basis suggests that this latter scenario is more descriptive. This does not mean that GSE guarantees will cease to generate moral hazard one rung down, on the level of commercial lenders; it simply means that they themselves will not primarily pursue financial profits in the moral-hazard-induced manner of private actors who stand to profit but not to lose; rather, they will, should their current status prevail, conform more to the incentives and behavior typically held in public choice literature to characterize public bureaucracies: maximizing budgets and the volume of business that they conduct rather than maximizing profits or the utility of residual claimants.⁸⁰

4.2 GSEs, the Fed, and Commercial Lenders

Relative to the evolution in the relationship between the federal government and GSEs, that between GSEs and private commercial lenders has been less clear. The share of first lien mortgage originations by GSEs has notably increased relative to pre-crisis levels, having hovered between thirty and thirty-five percent of new mortgages between 2004

⁸⁰ See Mises, Ludwig von. *Bureaucracy*. New Haven: Yale University Press. 1944; see also Niskanen, William A. Jr. *Bureaucracy and Representative Government*. Chicago: Aldine-Atherton. 1971.

and 2006 but growing to roughly sixty-five percent in 2008 and perpetually hovering between forty-five and sixty-five percent in the years since. Meanwhile, the share of originations by the FHA and those insured by the Department of Veterans Affairs grew dramatically over this period, both of which are securitized by Ginnie Mae, whose securities are in turn guaranteed by the Treasury. Private label securitization, which constituted roughly 40% of the market in 2005-2006, disappeared during the crisis and, unlike private label securitization in other asset classes—automobiles, credit cards, collateralized loan obligations, etc.—has scarcely returned, remaining below one percent of the market. Finally, portfolio loans by credit unions, savings and loans, and commercial banks reached a low of about twelve percent in 2009 and have since averaged roughly twenty percent of the market. As of Q1 2017, GSEs and government agencies held nearly eighty percent of the market in securitizing first lien origination and issued over ninety-seven percent of residential mortgage-backed securities.⁸¹

The consolidation of the mortgage securitization business into the hands of GSEs, the FHA, and the VA makes government standards for loan securitization all the more deterministic of the standards which commercial lenders will, in turn, apply in the conduct of their business. Significant efforts do appear to have been made to reform the portfolios of the GSEs, with 1.07 percent of Fannie Mae's portfolio and 0.98 percent of Freddie Mac's reported to be seriously delinquent as of April 2017, down from a peak of roughly six percent in Q1 2010.⁸² Serious delinquency rates in single-family loans have

⁸¹ “Housing Finance at a Glance: a Monthly Chartbook.” Urban Institute. June 2017. pg. 8. https://www.urban.org/sites/default/files/publication/91506/june_chartbook_2017.pdf. Accessed online October 28, 2017.

⁸² *Id.* at 24.

decreased in all agencies, though Fannie and Freddie's delinquency rates are only part of the story: VA and FHA loans remain roughly two to four times higher, respectively.⁸³ The median and mean combined loan to value ratios of newly originated mortgages have risen significantly since the crisis, a product of FHA purchase originations becoming an increasingly significant factor in the market. These, however, much like the subsumption of Fannie and Freddie by HUD, indicate a greater above-board role for housing agencies in the present and potentially the future; they do not necessarily indicate a greater role for moral hazard in the form of private actors increasing their risk profile on the assumption that government would cover their losses. On that dimension, the GSEs have arguably done more to limit their promotion of moral hazard than the Federal Reserve.

Where the greatest moral-hazard-inducing policy arguably lies for lenders is at the aggregate level. The Federal Reserve's acquisition of \$3.5 trillion in assets throughout three phases of Quantitative Easing included nearly \$1.8 trillion in mortgage-backed securities, which it has only lately and reluctantly begun to sell.⁸⁴ That acquisition served as as a bailout to the housing industry analogous in intention to but monumentally greater than those which were given via fiscal means to other industries after the crash. The Fed's purchases of MBSs and its refusal to mark assets on its balance sheet to present market values have served to keep housing prices aloft and afforded the industry a recovery that was not shared by most of the economy. Each round of quantitative easing came after declines in the Case-Shiller Home Price Index, serving to reduce the downside risk of

⁸³ *Id.* at 25.

⁸⁴ Board of Governors of the Federal Reserve System (US), Mortgage-backed securities held by the Federal Reserve: All Maturities [MBST], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/MBST>, October 29, 2017.

those holding mortgage-backed assets.⁸⁵ Certainly, this central bank bailout was not equally shared in by all mortgage lenders: fifteen out of the top 20 mortgage originators in 2006 did not exist by the end of 2012, including all of those which were specialized mortgage lenders (as opposed to diversified commercial or investment banks).⁸⁶ Citing the enactment of stricter regulations and lower profit margins in the mortgage market, however, commercial banks have significantly diminished their market share in mortgage lending from a high of seventy-four percent of the market in 2007 to fifty-two percent in 2014, with some analysts claiming that a total withdrawal of commercial banks from residential mortgage origination in the coming years is not out of the question.⁸⁷ The void in the mortgage market left by departing banks is already being filled in part by credit unions and most notably by independent mortgage bankers. Having experienced the sharpest contraction in business during the housing crisis⁸⁸, independent mortgage bankers have grown from commanding twenty-three percent of the market in 2007 to forty-three percent by 2014.

⁸⁵ S&P Dow Jones Indices LLC, S&P/Case-Shiller U.S. National Home Price Index [CSUSHPINSA], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/CSUSHPINSA>, October 30, 2017.

⁸⁶ O'Brien, Matthew. "Busted: 75% of the Biggest Home Lenders in 2006 No Longer Exist." *The Atlantic*. October 22, 2012. <https://www.theatlantic.com/business/archive/2012/10/busted-75-of-the-biggest-home-lenders-in-2006-no-longer-exist/263924/>. Accessed October 20, 2017.

⁸⁷ Riquier, Andrea. "Big Banks Are Fleeing the Mortgage Market." *MarketWatch*. February 12, 2016. <https://www.marketwatch.com/story/big-banks-are-fleeing-the-mortgage-market-2016-02-12>. Accessed November 2, 2017.

⁸⁸ Harvey, James. "Trends in Residential Mortgage Loan Origination and their Impact on Community Banks." *Financial Industry Perspectives*. Federal Reserve Bank of Kansas City. December 2009. <https://www.kansascityfed.org/publicat/fip/prs09-12.pdf>. Accessed November 2, 2017.

Thus, on the one hand, large commercial banks were the clear winners in receiving both explicit fiscal bailouts through TARP and favorable policies from the Federal Reserve which functioned as a bailout of their own at a time when most major independent mortgage bankers were being driven out of business. On the other, the net effect of mortgage lending regulations since the crisis has been to push commercial bankers out of the mortgage market to the benefit of independent mortgage bankers and, to a lesser extent, credit unions. Declaring either large commercial banks or large independent mortgage bankers to be clear-cut winner of any rent-seeking battle in this case is therefore difficult. There is some evidence that small commercial banks may be bearing a greater burden of post-crisis banking regulations and that monopoly power may have increased in commercial banking as a result⁸⁹, but in light of commercial banks' cessation of much of the mortgage market it is difficult to see how their bailouts and successful rent-seeking efforts spell a greater moral hazard threat in the housing sector specifically.

Commercial bankers were vindicated in having acted on the implicit premise that their losses would be covered by bailouts, but future profitability for commercial banks in residential mortgage origination has seemingly been curtailed by new regulation. Large independent mortgage bankers were made extinct by the housing crisis and allowed to

⁸⁹ Mendenhall, Slade. "Commercial Bank Competition, Riegle-Neal, and Dodd-Frank" (May 14, 2017). Available at SSRN: <https://ssrn.com/abstract=2967998>. Accessed online November 2, 2017. *See also* Stratmann, Thomas, Hester Peirce, and Ian Robinson. "How Are Small Banks Faring under Dodd-Frank?" Mercatus Working Paper. Mercatus Center. February 27, 2014. <https://www.mercatus.org/publication/how-are-small-banks-faring-under-dodd-frank>. Accessed online November 2, 2017.

fail, but a new generation of such firms has rapidly assumed commercial banks' lost market share. A more micro-level analysis may—and likely would—reveal *certain* private actors to have won out from this restructuring of the market, but no broad heading of private mortgage originators appears to have won out over the other. Nor is it clear that the pattern of policy responses has an unambiguous effect on moral hazard in mortgage lending: commercial bankers who were bailed out are seeing their market share waning, and independent mortgage bankers whose predecessors were made to bear the full brunt of their malinvestments are resurgent. Meanwhile, securitization of mortgages, which played such a significant role in generating moral hazard at the level of mortgage lenders, is being increasingly monopolized by GSEs, the FHA, and the VA as private label securitization has gone all but extinct, but a diminishing share of these agencies assets appear to be seriously delinquent. The net effect of policy at this level thus appears to be truly ambiguous.

4.3 Lenders and Borrowers

In assessing the sources of moral hazard in the relationship between borrowers and lenders above, three factors were cited: (i.) untenably low interest rates offered by the Federal Reserve, which encouraged speculative borrowing and home purchases along with increasingly risky loan structures; (ii.) a political climate aimed at lowering down-payment requirements and use federal policy to steer more Americans into homeownership; and (iii.) laws regarding the recourse nature of mortgage loans. Let us consider them in turn.

The Fed's low-interest rate environment has become a central subject of debate along multiple dimensions: concern as to the possible creation of asset bubbles, the risk of rising inflation, a possible connection to low growth rates, etc. The existence of another housing bubble or any other bubble is an empirical question which cannot be determined by a theoretical discussion such as this. Even the emergence of a negative real interest rate is *a priori* unclear, as it hinges upon having some idea of the natural rate of interest, and it remains theoretically possible that—whether as a result of new regulation or some other real variable—the natural rate of interest is indeed similarly low. Empirical estimations of the natural rate in this period indeed range from -1.4%⁹⁰ to 1.5%⁹¹, with the modal estimate around 0.5%⁹².

The presence of a negative real interest rate as a permitting factor in the housing market is thus not clear. Nor do the kind of speculative second- and third-home purchases that characterized the mid-2000's seem to be present in the current market. Second home purchases have risen since 2009, and the share of whole loans on second homes on banks'

⁹⁰ Barsky, Robert, Alejandro Justiniano, and Leonardo Melosi. "The Natural Rate and its Usefulness for Monetary Policy Making." Federal Reserve Bank of Chicago. 2014. <https://www.brookings.edu/blog/up-front/2015/10/19/the-hutchins-center-explains-the-natural-rate-of-interest/>. Accessed online November 2, 2017.

⁹¹ Hamilton, James D., Ethan S. Harris, Jan Hatzius, and Kenneth D. West. "The Equilibrium Real Funds Rate: Past, Present, and Future." NBER Working Paper No. 21476. August 2015. <http://www.nber.org/papers/w21476.ack>. Accessed November 2, 2017.

⁹² Holston, Kathryn, Thomas Laubach, and John C. Williams. "Measuring the Natural Rate of Interest: International Trends and Determinants." Working Paper 2016-11. Federal Reserve Bank of San Francisco. <http://www.frbsf.org/economic-research/files/wp2016-11.pdf>. Accessed November 2, 2017. *See also* Lubik, Thomas A. and Christian Matthes. "Calculating the Natural Rate of Interest: A Comparison of Two Alternative Approaches." Economic Brief. Federal Reserve Bank of Richmond. October 2015. https://www.richmondfed.org/-/media/richmondfedorg/publications/research/economic_brief/2015/pdf/eb_15-10.pdf. Accessed online November 2, 2017.

books have increased, indicating an increased private willingness to finance second home purchases.⁹³ From 2009 to 2013, seventy percent of second home purchases had more than twenty percent down, as compared to forty-four percent of first-home purchases. Second-home purchases, which had multiplied fifteen times over from 1998 to mid-2005, stood at just below four times their 1998 levels in 2013.⁹⁴

The composition of new residential mortgages has also changed dramatically since the 2000's. The share of the market which was composed of adjustable-rate mortgages was all but wiped out by the crash. Having reached a peak of 42% of all mortgage originations in 2005, it fell to one percent in 2009 and has since hovered in the single digits. New home buyers, perhaps wary of the fates of ARM holders during the crash and able to take advantage of favorable mortgage rates under the Fed's zero interest rate policy, do not appear to have been initially enticed by adjustable rate structures in which their interest payments could only increase. Whether borrowers have learned a lesson and are more aware of the risks attached to ARMs or whether already low interest rates over the last decade eliminated the advantage of adjustable over fixed rate structures is unclear, but a resurgence of ARMs in 2017 home purchases⁹⁵ and scholarly evidence⁹⁶

⁹³ "Second Homes: Recovery Post Financial Crisis." Economic and Strategic Research. Fannie Mae. April 7, 2014. <http://www.fanniemae.com/resources/file/research/datanotes/pdf/housing-insights-040714.pdf>. Accessed November 2, 2017.

⁹⁴ *Id.*

⁹⁵ Olick, Diana. "Homebuyers rush to riskier mortgages as home prices heat up." Realty Check. CNBC. October 3, 2017. <https://www.cnbc.com/2017/10/03/rising-heat-in-home-prices-makes-buyers-rush-to-riskier-mortgages.html>. Accessed June 15, 2018.

⁹⁶ Moench, Emmanuel, James Vickery, and Diego Aragon. "Why Is the Market Share of Adjustable-Rate Mortgages So Low?" *Current Issues in Economics and Finance*, Vol. 16, No. 8. December 2010. Federal Reserve Bank of New York.

both suggest that the preference for fixed rates is being driven primarily by the term structure of interest rates and the relative prices of different mortgage arrangements than by borrowers being once bitten and twice shy.

Whereas these metrics suggest a move away from the conditions which gave rise to the housing crisis, the political drive on the part of federal politicians and regulators to promote homeownership appears to have returned, albeit in a more tempered fashion. The GSEs and FHFA have not altered their stated purpose of increasing homeownership in the American economy. In 2014, a new set of lending rules were issued with the stated intention of loosening credit standards for borrowers with lower credit ratings, argued to have been necessitated by banks' stringent lending standards and fear of legal liability for reselling mortgages that may go bad in the future.⁹⁷ The effects of this policy change are not yet entirely clear, but the reasoning behind them mirrors pre-crisis policy by treating private curtailment of risk as a nuisance that can be circumvented through policy directed at lowering standards. In 2017, policy changed further when Fannie Mae raised its accepted debt-to-income ratio from 45 percent to 50, claiming that fifteen years of data suggested no added risk of doing so despite federal qualified mortgage standards setting the safe maximum at 43 percent for private lenders.⁹⁸

https://www.newyorkfed.org/research/current_issues/ci16-8.html. Accessed June 15, 2008.

⁹⁷ Reckard, E. Scott and Tim Logan. "Fannie Mae, Freddie Mac Reach Deal to Ease Mortgage Lending." *Los Angeles Times*. October 17, 2014. <http://www.latimes.com/business/la-fi-fannie-freddie-loans-20141018-story.html>. Accessed online November 2, 2017.

⁹⁸ Ramirez, Kelsey. "Fannie Mae Raises debt-to-income ratio to further expand mortgage lending." *HousingWire*. June 9, 2017. <https://www.housingwire.com/articles/40382-fannie-mae-raises-debt-to-income-ratio-to-further-expand-mortgage-lending>. Accessed online June 15, 2018.

In a parallel to housing policy's use for social planning aims in the pre-crisis era, in the middle of the 2016 election cycle the Obama administration announced significant reforms to the Department of Housing and Urban Development's Section 8 voucher program, increasing voucher payments to tenants in pricier neighborhoods and decreased them in lower income neighborhoods with the apparent intention of encouraging movement by lower income and minority families to higher income and predominantly white neighborhoods. A representative of New York's Housing Preservation and Development Department responded, saying, "This city is in the midst of a housing crisis... That means there are few housing alternatives and our neediest residents will have no choice but to accept a rent hike—or leave town."⁹⁹ HUD also announced in mid-2016 the creation of the National Housing Trust Fund, an affordable-housing program designed to channel funds through state governments to low-income residents. The Democratic Party platform of 2016 also touted the party's goal of all Americans getting "a fair shot at homeownership," supporting first-time homebuyers, preserving the 30-year fixed rate mortgage, and assisting those future homebuyers who will have lower down payments.¹⁰⁰ On the other hand, the Republican platform, while still stressing the value of homeownership, placed a greater priority on "guarding against the abuses that led to the housing collapse" and "promot[ing] responsibility on the part of borrowers and

⁹⁹ Kusisto, Laura. "Obama Administration Unveils Proposed Changes to Section 8 Subsidy Program." *The Wall Street Journal*. June 15, 2016. <https://www.wsj.com/articles/obama-administration-unveils-proposed-changes-to-section-8-subsidy-program-1466031245>. Accessed online November 2, 2017.

¹⁰⁰ "Expanding Access to Affordable Housing and Homeownership." *The 2016 Democratic Platform*. <https://www.democrats.org/party-platform#affordable-housing>. Accessed online November 2, 2017.

lenders.”¹⁰¹ The rhetoric marks a departure from the affordable housing agenda of Republicans under the Bush administration, and the Trump administration's pursuit of reductions in mortgage interest deductions¹⁰² reinforce this, but whether these differences in messaging and marginal changes in policy indicate that a categorical goal of expanding homeownership will no longer be a bipartisan agenda is unclear.

The difference between these affordable housing policies and those of the pre-crisis era, however, is that the most effectual policies currently being proposed are not directed primarily towards home owners but towards renters. Vague allusions to policies meant to help future generations of home buyers aside, there is decidedly less in the way of policy proposals meant to expand ownership or to secure the losses of those who lend freely to at-risk borrowers. The Obama era amendments of Section 8 policy were more directed at subsidizing renters than property owners, as was the establishment of the National Housing Trust Fund. Thus, here again, one might debate the merits of these policy approaches, but aside from Fannie's and Freddie's lowering of lending standards—the merits of which depend on one's evaluation of the empirical evidence they claim in their support—it is in no way apparent that they promote moral hazard *per se*.

As for the recourse nature of mortgage loans since the crisis, there have been a few mixed changes in existing legal rules. In 2009, Nevada abolished deficiency

¹⁰¹ “Responsible Homeownership and Rental Opportunities.” Republican Platform 2016. [https://prod-cdn-static.gop.com/media/documents/DRAFT_12_FINAL\[1\]-ben_1468872234.pdf](https://prod-cdn-static.gop.com/media/documents/DRAFT_12_FINAL[1]-ben_1468872234.pdf). Accessed online November 2, 2017.

¹⁰² Mascaro, Lisa and Jim Puzzanghera. “House tax bill will cap mortgage interest deduction, leave 401(k) Unchanged.” Chicago Tribune. November 2, 2017. <http://www.chicagotribune.com/news/nationworld/politics/ct-gop-tax-cut-plan-20171102-story.html>. Accessed November 2, 2017.

judgments for mortgage loans made after October 2009.¹⁰³ In 2010, California, a nonrecourse state, shielded borrowers who withdrew equity from their homes so long as the equity was used for home improvements.¹⁰⁴ In 2012, California further amended its law to include refinances as being exempt from deficiency rulings.¹⁰⁵ Michigan¹⁰⁶ and Ohio¹⁰⁷ each passed new statutes in 2012 and 2013, respectively, regarding post-solvency covenants, prohibiting recourse against a borrower beyond the stated collateral should the borrower become insolvent as well as contractual provisions requiring the borrower to remain solvent for a particular length of time. Unsurprisingly given a turbulent political climate surrounding the issue, legislation regarding loan recourse has, since the housing crisis, been in favor of limiting borrowers' liability rather than limiting moral hazard.

5 Conclusion

Moral hazard proved a caustic unintended side effect of the system of relationships which were generated by the bipartisan agenda to increase homeownership during the 1990s and 2000s. Across multiple tiers—the federal government to GSEs, GSEs to lenders, and lenders to borrowers—implicit or explicit guarantees by public institutions eliminated the element of risk from economic actors' calculations and contributed to a systematic pattern of malinvestment that culminated in a housing crisis that brought severe consequences for the American economy.

¹⁰³ Nev. Rev. Stat. 40.459.

¹⁰⁴ CCP 1917.006.3.

¹⁰⁵ CCP 580c.

¹⁰⁶ MCL 445.1591 (2012).

¹⁰⁷ ORC 1319.07-1319.09 (2013).

Since the crisis, the political demand for increased homeownership has not disappeared, but it is unclear that the same forms and degrees of moral hazard which prevailed at the peak of the crisis persist. With GSEs being subsumed into the Department of Housing and Urban Development, the FHA and VA expanding their origination activities, and federal bureaucracies having taken on a more explicit, above-board role in the securitization of new mortgages, the net effect for moral hazard is somewhat ambiguous. To the extent that Fannie and Freddie are allowed to pursue profits in their current semi-public, semi-private form, they may choose to do so and pass all risks on to the taxpayer. To the extent that they are forbidden from retaining profits going forward, they can be expected to behave according to bureaucratic incentives and similarly maximize their own market share. Empirically, they appear to be applying stricter standards in their securitization of loans, but such variables are not set in stone and may shift when and if the political will dictates it again.

At the level of GSEs, the Fed, and commercial lenders, the moral hazard lesson is mixed. Large commercial banks were bailed out but have since lost market share in mortgage origination relative to other institution types, seemingly as a result of the costs of regulation attached to operating in that market. Meanwhile, large independent mortgage banks, not being regulated by the Federal Reserve and therefore ineligible or disfavored to receive its support, were made extinct by the crisis. A new generation of such firms, however, has emerged and received the lion's share of what banks have ceded in the mortgage market, making the moral hazard lesson somewhat of a mixed bag. That these categorizations could obscure an alternate story of large commercial banks winning

out against smaller ones or individual actors' preferences prevailing is entirely possible but beyond this paper's purview.

Finally, at the level of lenders and borrowers, the permitting factor of low interest rates has been maintained, though it is unclear to what extent that policy has been “loose” or simply reflective of low productivity. The political rhetoric in support of expanded homeownership persists, though with less fervor. Actual policy moves to promote an affordable housing agenda have not been so numerous as statements to that effect, and political pressure to lend to at-risk borrowers has not returned in significant force. Federal affordable housing policies have been channeled more towards assisting renters than promoting ownership, carrying much of the same political appeal but less risk of severe long-run political consequences. And to the extent that recourse laws have been changed, they have not been changed to limit risk but to ensure borrowers' security from the full consequences of failure to repay.

Overall, the subsequent development in moral hazard relationships are mixed. However, it is important to recognize the fluidity of the enactment of rules which led to the crisis and the fluidity with which they were relaxed, as both point to the possibility of a similar fluidity in existing bureaucratic or legal provisions being newly enforced much as the CRA was fortified long after its enactment, standards being relaxed again just as Fannie and Freddie repurchasing standards were, and political pressure on lenders to support the affordable housing agenda being revitalized should the costs and benefits to incumbent politicians and regulators change as they are wont to do. Nothing of post-recessionary policy responses has the character of unchangeable constitutional rules that would place the tools and institutions which were instrumental in producing the last crisis

beyond the reach of those whose wielded them, nor have they changed the underlying incentives which made doing so optimal in the first place. Thus, whatever we might claim about the extent to which policy has changed in the decade since the recession, it appears an inescapable conclusion that our strongest immunities against the reemergence of such policies and their consequences are an ominous lot: the persistence of relative prices, the success of countervailing narrow interests, and popular political memory.

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