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The Virtue of Home Ownership and the Vice of Poorly Secured Lending: The Great Financial Crisis of 2008 as an Unintended Consequence of Warm-Hearted and Bone-Headed Ideas

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The Virtue of Home Ownership and the Vice of Poorly Secured Lending: The Great Financial Crisis of 2008 as an Unintended Consequence of Warm-Hearted and Bone-Headed Ideas

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Abstract: This article utilizes a simple economic model of asymmetric information to model a pooling equilibrium in the housing market. There are two types of households in the model—disciplined and undisciplined. Disciplined households are able to distinguish themselves by saving a significant portion of their income for a down payment on a home leading to a stable equilibrium. A change in government policy which requires a rate of home ownership greater than the proportion of disciplined households causes the equilibrium to collapse. I argue that changes in U.S. housing policy driven by federal legislation had exactly this effect on the housing market and were the actual cause of the 2008 financial crisis.

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I. INTRODUCTION

In September of 2008, the financial system came alarmingly close to a total collapse. The government took control of Fannie Mae and Freddie Mac. The Fed pumped billions of dollars of cash into financial intermediaries that could not roll over their short-term debt as the repo market evaporated. Lehman Brothers failed. AIG collapsed from massive losses on OTC credit derivatives. Many large financial institutions failed, or were on the verge of insolvency. Stock market valuations of future growth shrunk, people decreased spending on consumption, firms stopped spending on investment, and unemployment grew.

The Great Crisis of 2008 had not been predicted by most experts, but one part of its aftermath was completely predictable. Politicians would stomp and yell and point fingers in a witch hunt to assess blame and divert attention from the real culprits—the members of Congress. For many decades a stable portion of about sixty percent of the population owned their own homes. Many pleasant attributes in the populace were correlated with home ownership. Compared with the population that did not own homes, home owners tended to have higher incomes, more retirement savings, more education, a higher incidence of sending their children to college, and be less likely to be involved in crime. Ergo, home ownership was perceived to be a good thing. As stated in The Financial Crisis Inquiry Report,

Increased access to credit meant a more stable, secure life for those who managed their finances prudently. It meant families could borrow during temporary income drops, pay for unexpected expenses, or buy major appliances and cars. It allowed other families to borrow and spend beyond their means. Most of all, it meant a shot at homeownership, with all its benefits; and for some, an opportunity to speculate in the real estate market.
Well-intentioned but not-so-well-educated legislators made the most common fundamental statistical mistake. They mistook correlations for causal relationships and assumed that home ownership caused good things.\textsuperscript{15} Congress instituted a campaign to increase the percentage of Americans who own the homes they live in.\textsuperscript{16} Congress pressured financial intermediaries to make loans to risky borrowers.\textsuperscript{17} Congress pressured financial intermediaries to make loans in bad neighborhoods with bad collateral.\textsuperscript{18} Under pressure from HUD and with legislative encouragement, financial intermediaries invented programs whereby individuals who were not responsible enough to save up a down payment for a house could get credit and purchase a home with no equity of their own invested in the home.\textsuperscript{19} Few people would be happy if Congress were to encourage Wall Street financiers to bet on the future with other people’s money and no risk to their own positions, but that’s exactly what Congress did for the bad credit risk segment of the population.

The unintended consequences of this bone-headed idea were two-fold.\textsuperscript{20} First, it put a lot of less responsible people in the position of having nothing to lose from walking away from their home purchase.\textsuperscript{21} With no equity of their own, they essentially had a free option to default.\textsuperscript{22} Responsible people would not default because they would loose both their equity, and their valuable good credit. Irresponsible people had no good credit to loose, not to mention zero equity. The situation was not problematic as long as housing prices grew, as the no-money-down purchasers would grow into positive equity positions.\textsuperscript{23} But at the first sign of weakness in the housing sector, the pyramid would collapse.\textsuperscript{24}
The collapse of the housing sector strained a weakening economy and weakened financial institutions.\textsuperscript{25} There were tremendous human costs as the economy lost more than eight million jobs in 2008 and 2009, and estimates of foreclosures since the collapse range from eight million to more than thirteen million.\textsuperscript{26} Commercial property was also hit hard,\textsuperscript{27} and many renters became victims of the crisis as well when their landlords were foreclosed on and they lost their apartments and security deposits.\textsuperscript{28} These factors stressed marriages and families and created poor environments for children. “For children, a repossessed house—whether rented or bought—is destabilizing. The impact of foreclosures on children around the country has been enormous.”\textsuperscript{29}

The complementary consequence of the plan to increase home ownership was to artificially create an unsustainable demand for housing which pushed housing prices up and resulted in over-building.\textsuperscript{30} This made the collapse of the pyramid all the more spectacular. Furthermore, the pressure that Congress put on financial intermediaries to make loans and increase the proportion of home owners in the population created enhanced opportunity for criminal fraud.\textsuperscript{31} Even without fraud, patently bad ideas such as NINJA loans (no income, no assets, no job) spread like wildfire.\textsuperscript{32} The combination of fraudulent loans, and bad loans combined with the unsustainable growth in housing prices and housing construction put banks and other financial institutions in a position of extreme stress that was unable to cope with the recession that occurred in 2008.\textsuperscript{33}

The relationship between increasingly bad loans and unsustainable growth in housing prices is well documented.\textsuperscript{34} In 2000 only two percent of originated mortgages were in the subprime market.\textsuperscript{35} By 2006 seventeen percent of mortgage originations were in the subprime market.\textsuperscript{36} Housing prices increased at an average annual rate of eight percent
from 2000 to 2005, with price increases of seventeen percent in 2005 alone. Some people panicked and bought homes beyond their ability for fear that they would be forever priced out of the market if they delayed home ownership.

II. ECONOMICS

A. Theory and Intuition

The economic analysis underlying my argument is based on two fields of research. One is the pioneering work of Nobel laureate George Akerlof who is credited with modeling information asymmetry. The other root is grounded in the information signaling work of Michael Spence who was also a co-recipient of the Nobel Prize with Akerlof and Joseph Stiglitz. Professor Akerlof used the market for used cars in 1970 as an expositional device for explaining that when product quality varies and sellers know more than buyers about the product quality, markets can fail in the sense that there would be willing buyers and sellers at given prices for goods of higher quality that will not trade. The bad products effectively drive the good products out of the market since the buyers have no way to determine the product quality and are willing to only pay for the average quality of the goods traded. Sellers know the quality and are therefore not willing to sell if their goods have a quality better than the average. The refusal to sell above average goods drives down the average quality of the goods sold until the only goods traded are the lowest quality goods—used cars that Akerlof referred to as “lemons.”

Spence’s work has been concisely summarized by Professor John Riley:
Spence suggested that difficulties in observing human traits correlated with labor productivity, and in monitoring productivity, would result in an equilibrium where wage offers were based on the educational credentials of the job seeker. That is, firms would use education as a screening device to sift out workers of lower productivity. As Spence emphasized, a crucial precondition for such an equilibrium is that those with greater productivity are also faster learners in school and hence have lower opportunity costs. Given this assumption, the higher productivity individuals, facing wage offers contingent upon educational performance, find it in their interest to accumulate higher credentials, and thereby provide a signal to potential employers.  

The relevance of both lines of research to the lending market is readily apparent. Individuals who want loans are effectively seeking to sell debt. After all, debt is merely a contractual promise to make future payments. These sellers of debt know more about the quality of the debt than purchasers. They know whether they honestly intend to repay and they know in detail their ability to repay. In less developed countries without good credit markets, borrowers have to rely on relatives for family loans or borrow from criminals who have other methods for assuring repayment. In the U.S., other methods have evolved such as credit ratings, strong legal protection of contracts, down payments, margin, performance bonds, and marketable collateral.

A signaling equilibrium can occur where the high quality group is able to signal to the buyer information about the true quality that the low quality group cannot replicate efficiently. Talk cannot be a signaling device because talk is cheap. In other words, the low quality sellers can replicate a positive talking signal by stating “my product is the best,” and therefore such signals are not credible. In the used car market, a credible signal could be provided by having a large firm with valuable assets; an established reputation that is valued in the market; and legally enforceable warranties. Thus Carmax can signal that their cars are likely to be superior to Joe’s Used Cars. In the
residential mortgage market, signals are established by having long and favorable credit histories and significant savings to invest in a large down payment. Indeed, “Data show that the best predictors of default are the size of the down payment and credit history . . . .” Low quality borrowers are not able to easily replicate this signal because it takes both time and discipline to establish both a favorable credit history and a substantial down payment.54

I will present a formal, but simple economic model to demonstrate what can happen when legislators interfere with the signaling equilibrium in an effort to increase home ownership, but first I will outline the economic intuition. Suppose there are two types of people—disciplined people and undisciplined people. Disciplined people are responsible, forward-looking people who are capable of saving and fearful of the consequences of bad decisions on future states of the world. Undisciplined people are not so responsible, unable to voluntarily save, and not worried about the consequences of bad decisions for future states of the world. In the economics literature undisciplined people are sometimes referred to as hyperbolic discounters, and also labeled myopic.55 56

Disciplined and undisciplined people look alike, but behave differently. Undisciplined people live from paycheck to paycheck and spend all of their income as fast as they receive it. Disciplined people save a positive fraction of their income and accumulate wealth. Disciplined people are thus able to use their accumulated wealth to pay for a significant fraction (perhaps twenty percent) of a housing purchase out of their own pockets and finance just the remainder with a mortgage loan. Undisciplined people are not able to do this. In a world in which down payments are a requirement to obtain a

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mortgage, a signaling equilibrium emerges in which only disciplined people are home owners and undisciplined people are never home owners.

Now suppose that the proportion of the population that is disciplined is exogenously determined and happens to be sixty percent, but Congress mandates that at least seventy percent of the population should own their homes. It’s obvious that this cannot occur unless loans are given to undisciplined people. These are individuals who have demonstrated that they are not responsible enough to save money, and yet they are being put in a situation in which they have a free option to collect wealth if housing prices rise and to walk away if housing prices do not rise. The new demand for home ownership by undisciplined people shifts the demand for housing out which necessarily increases the price of housing in place. The increased value of housing in place further makes investment in housing profitable, and leads to additional investment in more housing. When the economy is inevitably stressed, the undisciplined homeowners with nothing to lose walk away from their contractual obligations, and the housing market collapses.

Congress is to be blamed for placing a significant number of undisciplined people in homes they could not keep, and creating a housing bubble that also wiped out the equity of many disciplined homeowners when it burst. The bone-headed idea of solving problems of crime, education, and poverty by putting undisciplined people in owner-occupied housing has failed, and that failure has come with an enormous long-term cost. To quote Professor Kenneth Scott:

[The crisis] was fed by a government housing policy that continually pushed for lower lending standards to turn renters into home owners, even those whose marginal financial condition meant they could safely afford only rentals. This was in my view probably the most important single factor in the whole debacle. It came about because Congress desired to subsidize particular groups without direct on-budget expenditures but indirectly
through regulation and guarantees—thereby denying the existence of any subsidization—until the whole scheme collapsed.\textsuperscript{62} If Congress firmly believed in the virtues of home ownership, Congress should have devised clever schemes to motivate the market in that direction rather than attempting to mandate it.\textsuperscript{63} No one, not even Congress, can fight market forces.\textsuperscript{64} However, Congress could have waged a campaign to make a larger proportion of the population disciplined.\textsuperscript{65} This could be done subtly with educational campaigns about the benefits of saving and investing,\textsuperscript{66} but it could also be done more bluntly by taxing consumption spending and providing strong incentives to save and invest income.\textsuperscript{67} Instead of using payroll taxes to fund payments to the elderly, Congress could eliminate that program and use payroll taxes to fund accounts that individuals could access to use as collateral on loans.\textsuperscript{68}

\textbf{B. A Mathematical Model}

In order to keep the model from becoming overwhelmingly complex, it is necessary to make some simplifying assumptions for purposes of exposition.\textsuperscript{69} We will assume a two-period model in which consumers maximize their lifetime utility.\textsuperscript{70} Their lifetime utility is simply the sum of their discounted period utilities.\textsuperscript{71} Thus,

\begin{equation}
U(L) = U(1) + U(2)e^{-\gamma}, \text{ where } \gamma \text{ represents the consumer’s discount rate.}
\end{equation}

The value of $\gamma$ will differ across consumer types with undisciplined consumers having a higher absolute value for their $\gamma$.\textsuperscript{72} Consumers with a high value of $\gamma$ can be characterized as being spendthrifts who lack the discipline to invest for the future and spend all of their income as fast as they receive it.\textsuperscript{73} Individuals with a low value of $\gamma$
have a high degree of self-discipline and are willing and able to defer spending some of their income until later in exchange for a greater amount of purchasing power.\textsuperscript{74}

In order to continue developing a formal model of the consumer’s problem, we need to specify a functional form for the period utilities. The choice of a precise functional form is arbitrary, as any monotonic (order preserving) transformation of the utility function will yield the same solutions.\textsuperscript{75} We will choose a simple functional form with an intuitive property of diminishing marginal returns to consumption.\textsuperscript{76} For this we will define utility to be the square root of the value of consumption. To keep the model as simple as possible, there is only a single consumption good.\textsuperscript{77} Consumers receive a fixed income of $Y$ in period one and again receive a fixed income of $Y$ in period two. In period one the consumer can save a fraction, $S$, of $Y$. $S$ cannot be negative nor can it be greater than one. The restriction that $S$ cannot be greater than one is merely the logical conclusion that one cannot save more than has been earned in a given period. The restriction that $S$ cannot be negative simply means that consumers cannot borrow against their future income. This might seem unrealistic, but in actuality people have difficulty borrowing against future income without collateral or the ability to convey a valuable security interest.\textsuperscript{78} Indeed, this fact has been offered by John Lott as an explanation for the observation that the poor commit more crime.\textsuperscript{79} Antislavery and bankruptcy laws make it difficult for the poor to borrow against their human capital and thus conduct their “borrowing” in the form of crimes where the repayment is the expected penalty from getting caught.\textsuperscript{80}

Given these conditions, we can write an expression for utility in period one:
(2) \( U(1) = (Y(1-S))^{0.5} \).

Finally, any money invested can earn a constant rate of return of \( r \). In period two the consumer then spends all of their period two income, plus their period one savings including earned interest. We can express this as:

(3) \( U(2) = (Y(1+Se^r))^{0.5} \).

Everything in the model is exogenous except for the value of \( S \).\(^{81}\) Therefore, the consumer’s problem is to choose the optimal value of \( S \) so as to maximize their lifetime utility.\(^{82}\) We denote \( S^* \) as the value of \( S \) that solves this problem. The necessary conditions for \( S^* \) to be the solution to the problem of maximizing utility are that the first derivative of the lifetime utility function with respect to \( S \) be less than or equal to zero, with inequality only if \( S \) equals zero.\(^ {83}\) We denote the derivative of \( U(L) \) with respect to \( S \) as \( U(L)_S \) and write these joint conditions as:

(4) \( U(L)_S \leq 0, \ S \geq 0, \) and \( S \cdot U(L)_S = 0 \).

The algebraic steps required to derive the solution are given in a brief appendix at the end of the paper. The solution to the problem yields the following expression:

\[
S^* = \frac{e^{2(r-\gamma)} - 1}{e^r + e^{2(r-\gamma)}}.
\]

(5)
Examination of the numerator of equation (5) reveals that when $\gamma > r$, the first term is smaller than unity and the numerator is necessarily negative. Thus the equation cannot hold for large values of $\gamma$, which means that a consumer with a high rate of time preference will maximize their utility when $S=0$. If $\gamma < r$, the equation will hold for a positive value of $S$. As an illustration, consider the case where $r = 0.10$ and $\gamma = 0$. This is a situation in which an extremely disciplined saver can earn interest at the rate of ten percent. In this case, the optimal fraction of income to save from period one is about thirty-one percent. The result of this model is to clearly establish that we will have what economists call a pooling equilibrium in which different types of consumers will sort themselves, with high discount rate consumers electing not to save and more disciplined consumers electing to save.\(^{84}\)

The point of this exercise is to prove the argument formally and not just appeal to words. However, the formal result should be intuitively obvious. If the rate of time preference is greater than the rate of interest that can be earned, individuals will not save. If the rate of interest is greater than the rate of time preference, then individuals will save a portion of their income, and that portion will increase with the disparity between the rate of interest and the rate of time preference.

In reality, the market rate of interest will be endogenous and will depend on the distribution of disciplined and undisciplined consumers.\(^{85}\) Additionally, rather than simply having two types of people there will be a continuum of values for $\gamma$ for which people can be considered to be predisposed towards being more or less disciplined. In a stable equilibrium the value $r$ will separate those who are more marginally inclined to
save and to spend.\textsuperscript{86} The supply of funds will equal the demand for funds and everyone will be content with their choices.\textsuperscript{87}

\section*{C. Unintended Consequences of Disrupting Market Equilibrium}

We know from centuries of economic theory and empirical observation that when governments attempt to dictate prices and other contractual terms contrary to market forces, disaster results.\textsuperscript{88} If the government sets a price too low, we have shortages and inefficient solutions arise to the allocation problem.\textsuperscript{89} Such solutions include long lines and black markets where goods are traded at illegal prices.\textsuperscript{90} These solutions tend to create additional problems such as crime.\textsuperscript{91} If the government sets a price too high, we have wasted surplus.\textsuperscript{92} Competitive free markets set the price just right, so that the supply equals demand and the resources are channeled to their highest valued use.\textsuperscript{93}

In the context of the housing crisis, it is important to emphasize that price is merely one attribute of a contract which contains a much richer set of terms.\textsuperscript{94} Price is the economist’s abstract concept for a one-dimensional contract for homogenous widgets.\textsuperscript{95} Mortgage contracts are relatively homogenous which is why we were able to create a relatively liquid market and provide housing money at relatively low costs,\textsuperscript{96} but mortgages are not one-dimensional.\textsuperscript{97} Mortgages have different risks because consumers are not identical.\textsuperscript{98} In theory price can be adjusted to reflect risk differences, but in practice problems occur because the riskiness of each borrower is not easily observed due to information asymmetry.\textsuperscript{99}

Markets had worked out solutions to these credit-risk problems, and perhaps by trial and error established a twenty percent down payment as a relatively good solution.\textsuperscript{100}
Politicians hearing complaints that a twenty percent down payment was a barrier to home ownership for a large segment of the population, made a fundamental mistake. They thought they could “solve” the “problem” by lowering the price of houses. They did not actually lower house prices, but they mandated programs to provide less-qualified borrowers loans with little or no money down which effectively lowered the price of home ownership.

The fundamental point is merely that the existence of asymmetric information in the market whereby borrowers know more about whether they are good borrowers or bad borrowers naturally leads to a pooled signaling equilibrium. In order for this equilibrium to exist, good borrowers must be able to create a costly signal that bad borrowers cannot efficiently replicate. Because creating a good credit history and saving a significant down payment are costly and undisciplined households cannot efficiently mimic such signals, the equilibrium can exist. Treating these costly signals as barriers to home ownership that should be removed rather than prerequisites for home ownership that should be sustained destroyed the equilibrium and lead to an unstable and unsustainable housing market.

Evidence suggests that financial analysts understood the risks that were being taken by lenders, but underestimated the probability of a decline in housing prices. Housing prices are extremely sensitive to expectations of future rates of job growth. The high housing prices in 2005 were justified by modest expectations of growth in employment. It took only a small reduction in the modest optimism for the economy to shock housing prices, but as soon as a small shock occurred the collapse was inevitable given the proliferation of households with negative equity in housing.
This is not the first time government has attempted to help the poor by intervening in the market with the result of making the poor worse off.

Urban renewal programs were designed to stop urban decay, by tearing down old buildings and putting in their place new housing and facilities for new businesses. But the housing that was destroyed was low-income housing, and the housing with which it was replaced was largely housing for middle and upper-income households. Thus, the urban renewal programs unintentionally contributed to the plight of the poor—the shortage of housing which they could afford—and, over time, to homelessness.109

Other examples of unintended consequences are given by Steven Levitt and Stephen Dubner who report that “Well-intentioned laws have been backfiring for millennia.”110 They explain that debt relief programs in ancient times hurt the poor.111 The Americans with Disabilities Act disadvantaged people with disabilities, and the Endangered Species Act endangered species.112 According to these commentators, “[T]he law of unintended consequences is among the most potent laws in existence. Governments, for instance, often enact legislation meant to protect their most vulnerable charges but that instead ends up hurting them.”113

Unfortunately, this more recent attempt to manipulate the housing market also had very predictable unintended and harmful consequences. The efforts to increase home ownership by lowering lending standards created a short-term excess demand for housing which drove the prices up to unsustainable levels.114 These policies meddled with the market solution to the credit problem by putting a lot of irresponsible and undisciplined people in the position of having nothing to loose by defaulting on their home.115 This situation resulted in a huge excess supply of housing when the economy dipped and turned what could have been a normal and minor recession into a huge crash in the
housing market which strained the entire economy to the brink of collapse. "When will they ever learn?"

III. EMBEDDED OPTIONS IN MORTGAGES

A. Default Options

Homeowners with mortgages hold two distinct valuable options, both of which played a role in the housing crisis. Mortgagees have an option to default, and they also have an option to prepay. As the mechanics of options are not widely understood by those outside of the financial world, and also options have some properties that are counterintuitive, a brief primer on options will be given.

A call option gives the owner of the option the contractual right to buy a fixed amount of a product at a fixed price if exercised by the option’s expiration date. In the case of common stock, traded options contracts give the right to buy one hundred shares. Put options convey the right to sell rather than the right to buy. As the embedded options held by mortgagees are call options, we will focus on the mechanics of calls.

An option must specify the underlying asset, such as John Smith’s mortgage or common equity in Apple Computers; the expiration date; and the price at which the option can be exercised, which is called the exercise price or strike price. On February 14, 2011 an option on Apple with a strike price of $360 and an expiration date of May 21, 2011 was traded for $19.05. At the time, the Apple stock was selling for $359.04. Since the options contracts are based on a round lot of one hundred shares, but quoted for the price of a single share, what the data in this example really means is that a person
could pay $1,905 on February 14 for the option to purchase one hundred shares of Apple for $36,000 no later than May 21.

The intrinsic value of a call option is the greater of zero, or the stock price less the exercise price.\textsuperscript{126} In this numerical example the intrinsic value would be zero, because the stock is selling for less than the exercise price. The intrinsic value can be thought of as what the option would be worth if it were to expire immediately.\textsuperscript{127} If the intrinsic value of the option is positive, it means the stock price is selling for more than the exercise price and we say that the option is in-the-money.\textsuperscript{128} If the stock price is selling for less than the exercise price the option is out-of-the-money.\textsuperscript{129} If the stock is selling exactly at the option’s strike price the option is at-the-money.\textsuperscript{130} We also refer to options as near-the-money or deep-in and deep-out to indicate where the option stands relative to the price of the underlying asset.\textsuperscript{131}

One other piece of terminology can be helpful in understanding the mechanics of options. The time value of the option is the value that is created by having time to allow uncertainty about the future resolve itself.\textsuperscript{132} It is the value of being allowed to defer a decision until later without losing an opportunity.\textsuperscript{133} To be more precise, the difference between the price of the option (labeled option value in Figure 1) and the intrinsic value of the option is the time value.\textsuperscript{134} Options that are deep-in-the-money are more valuable than options that are near-the-money, but their time value is lower.\textsuperscript{135} This can be seen by looking at the graph below which shows how the actual value and the intrinsic value of an option vary with the price of the stock. The difference between the curve and the kinked line represents the time value of the option.\textsuperscript{136}
In the numerical example given above, the price of Apple would have to rise by ninety-six cents just to have the option be at-the-money. If someone bought the option for $19.05, the stock price would need to rise by an additional $19.05, or a total of $20.01, for the investor to just break even. Actually even at a stock price of $379.05 at expiration the option buyer would have a small loss due to the transactions costs as well as the forgone interest on the investment in the option. So the question is, why would someone pay $1,905 that will be a total loss unless the stock price increases by more than $20 over a three month period?

The answer to this question is that options put the option holder in a gamble in which losses are truncated, but gains are not. If an investor bought a share of Apple for $359.04 and held it for three months, as the price of Apple fluctuates, so does the value of the investment. If on the other hand the investor has an option which is at-the-money, the intrinsic value of the option—what it is worth at expiration—does not decline when the value of the stock drops. If the option expires at-the-money, or one dollar out-of-the-
money, or one hundred dollars deep-out-of-the-money, the results are all equal. On the other hand, every incremental increase in the value of the stock creates an equal incremental increase in the intrinsic value of the option. This truncation of losses with unlimited potential gains is the feature that makes the option valuable.

This also explains a counter-intuitive result about options. Most people are taught that risky assets are less desirable than riskless assets, so increasing risk tends to reduce value in the financial world. But in the world of options, increasing risk increases value. Consider two options which are both at-the-money. One is an option on a very stable stock with little historical price volatility. The other is on a very risky stock for which the price can fluctuate suddenly by large amounts based on changing market conditions. The first option is certain to expire near-the-money creating only the possibility of a small gain. The second one is likely to expire deep-out-of-the money or deep-in-the-money. Being deep-out-of-the-money is no different than being at-the-money, so a large price drop in the value of the stock does not hurt any more than a small price drop. However, a deep-in-the-money option is worth a lot more than one slightly in-the-money. This possibility of a large gain on a volatile stock without an offsetting possibility of an equally large loss is the feature that makes options more valuable the riskier the underlying asset.

The reason that the time value is greatest for options at-the-money is that this is the point at which there is maximum benefit of truncated losses with the possibility unlimited gains. If the option is out-of-the money, the gains do not appear until the stock price appreciation has crossed a threshold. If the option is in the money, the losses are not
truncated until the stock price depreciation crosses a threshold. This can readily be seen by referring back to the earlier diagram.

Having an option at the money is analogous to having the opportunity to place a bet on a roulette wheel where the stakes will be refunded on a losing bet but the gambler can keep her winnings. The incentives are such that the gambler is encouraged to make a large wager on a high-risk, large-payout bet. This would be a valuable opportunity one would be willing to pay for, but Congress was giving it away for free to those low-income and poor-credit individuals who could not qualify for traditional mortgages.

A mortgagee’s option to default has the greatest value when the mortgagee has no equity. If a new home owner purchases a house with no down payment and the value of the house drops, the home owner can exercise the default option to get out of paying the previously agreed price for the home which is suddenly less valuable. A majority of states have anti-deficiency laws that prohibit or restrict mortgagors’ ability to pursue other assets owned by a defaulting mortgagee. In such states, the incentive to default as a rational response to the contractual terms of the mortgage when the home’s value moves out-of-the-money is potentially even more severe. When borrowers are required to put twenty percent down they begin with an option to default which is deep-out-of-the-money and unlikely to be exercised. The down payment mechanism was an effective and efficient mechanism for aligning incentives which was subverted by U.S. government policy designed to increase the percentage of home ownership.

In some areas housing prices did fall by more than twenty percent and one could argue that the down payment mechanism might not have been sufficient to prevent a crisis. But this is wrong for two reasons. First, with a requirement for a substantial down
payment, we would not have experienced the unsustainable demand for housing that
drove the prices up to unsustainable levels.¹⁶¹ Second, the proportion of no equity
positions out there was so large that a small drop in the value of housing prices created a
large glut of foreclosed homes and distressed sellers and led to a panic in the housing
market that caused home values to drop by more than would be expected from previous
recessions.¹⁶²

B. Prepayment Options

The option to default is not the only valuable option homeowners with mortgages
have. They also have an option to prepay without penalty.¹⁶³ This prepayment option is
something Americans take for granted without much thought, but in fact it is not a natural
occurrence.¹⁶⁴ A mortgage is a contract to make certain payments on certain dates and as
a matter of contract law one cannot pay off a loan early without interest and penalty
unless the contract provides for that.¹⁶⁵ However, in the U.S., most residential mortgage
contracts contain this provision and in some cases it is required by law.¹⁶⁶ This
regulation has unintended consequences which harm households in two distinct ways.

One way it harms households is in the form of higher interest rates which make
mortgages more expensive and home ownership less affordable.¹⁶⁷ The other way it
harms households is allowing homeowners to refinance at no cost which encourages
undisciplined homeowners to continually remove any appreciation in home value and
convert equity to cash.¹⁶⁸ I will discuss each of these separately.

The option to prepay without penalty does not come for free.¹⁶⁹ Interest rates on
mortgages are equivalent to prices for capital.¹⁷⁰ Interest rates are not set by legislatures,
they are determined in markets just like the prices of other goods and services. In a competitive market, the value of that promise to make future payments is equal to the amount of the loan at the time the transaction occurs.

However, markets are volatile and prices and interest rates fluctuate. After the loan is made, the value of the promise to repay can increase or decrease. If subsequent interest rates rise, the discounted value of those payments falls. Conversely if interest rates fall, the value of the discounted payments increases. From the perspective of the lender, she is making an investment which has roughly equal probability of increasing in value or decreasing in value with interest rate fluctuations.

However, with legal regulation that requires that the borrower be allowed to prepay without penalty the situation changes. When subsequent interest rates rise, the borrower will not prepay. When subsequent interest rates drop, the borrower will have an incentive to prepay via a refinance. Now the lender is in a different situation. The lender is investing in an asset which can drop in value if rates go up, but will not rise in value if rates go down. This is not such a good deal for the lender, and now the lender will not lend unless induced to do so because now the lender can extract a higher initial interest rate on the money. Indeed, because there are countries without such widely available prepayment rights there are markets for loans that do not allow prepayment for loans, and we know how much more expensive loans are with a prepayment option. The option to prepay costs American homeowners up to one half of a percent on the
loan. For a $200,000 loan, the difference in the monthly payment between a thirty year fixed rate of 4.5% and 4.0% is $58.54 which amounts to $702.48 annually.

The other problem created by bans on prepayment penalties is the ease with which undisciplined households can pull cash out of their homes. In theory there is nothing wrong with allowing individuals to refinance to get cash out of appreciated homes if they maintain reasonable collateral, such as twenty percent equity, in the home. However, during the housing boom many refinances were done to take cash out and without retaining significant equity positions in the homes. During the housing boom there was a documented increase in loan-to-value ratios, which was likely underestimated due to inflated appraisal valuations. In the Congressional testimony of Professor Zywicki he stated,

The ability to freely prepay and refinance one’s mortgage may help to explain the higher propensity for American consumers to default than in comparably-situated countries where prepayment is more difficult and thus cash-out refinancings are not as common.

This suggests that a ban or limitation on contractual agreements for prepayment penalties would encourage even more refinancing activity and further equity depletion than would otherwise be the case—thereby having the unintended consequence of increasing the number of foreclosures.

IV. MORAL HAZARD IN LENDING MARKETS

The fundamental problem with lending to borrowers without assets is that it misaligns incentives. Clearly an individual investing his own money has a powerful incentive to invest prudently. But an individual without any assets investing borrowed money has an incentive to take excessive risks rather than to invest prudently. If the gamble wins the individual makes a large profit, but if the gamble loses, the individual is no worse off than before given the ability to eliminate debts through bankruptcy.
This misalignment of incentives has been studied most intensively in the social science that is fundamentally based on studying how creatures respond to incentives—economics. The books *Freakonomics* and *Super Freakonomics* coauthored by the famous University of Chicago economist Steven Levitt unite seemingly disparate topics such as teachers and Sumo wrestlers and child car seats and suicide bombers under the unifying theme that “*People respond to incentives.*”¹⁹⁴ Indeed, in the epilogue to their second book, the authors even present empirical research demonstrating that animals can be taught to use money and will respond rationally to price changes, and even engage in prostitution *sua sponte.*¹⁹⁵

Economists describe the misalignment of incentives as a moral hazard.¹⁹⁶ Moral hazard is particularly acute in the insurance business, since an individual who is fully insured against a loss has different incentives than an individual without insurance.¹⁹⁷ A farmer without insurance is likely to be more careful with a kerosene lantern in a barn full of cured hay than a farmer who is fully insured against the loss of the barn and the hay. If hurricane and flood insurance were unavailable, we would surely see fewer expensive homes built in areas susceptible to such losses.¹⁹⁸

One economist who studied and wrote on moral hazard extensively was Nobel laureate Kenneth Arrow.¹⁹⁹ As Professor Arrow describes,

There is one particular case of the effect of differential information on the workings of the market economy (or indeed any complex economy) which is so important as to deserve special comment: one agent can observe the joint effects of the unknown state of the world and of decisions by another economic agent, but not the state or the decision separately. This case is known in the insurance literature as “moral hazard,” but ... insurance examples are only a small fraction of all the illustrations of this case and ... the case will be referred to here as the "confounding of risks and decisions." An insurance company may easily observe that a fire has occurred but cannot, without special investigation, know whether the fire was due to causes
exogenous to the insured or to decisions of his (arson, or at least carelessness). In
general, any system which, in effect, insures against adverse final outcomes
automatically reduces the incentives to good decision making.200

Additionally, he wrote:

In fact, it is not a mere empirical accident that not all the contingent markets needed
for efficiency exist, but a necessary fact with deep implications for the workings and
structure of economic institutions. . . . The very existence of insurance will change
individual behavior in the direction of less care in avoiding risks. The insurance
policy that would be called for by an optimal allocation of risk bearing would only
cover unavoidable risks and would distinguish their effects from those due to
behavior of the individual. But in fact all the insurer can observe is a result, for
example, a fire or the success or failure of a business, and he cannot decompose it
into exogenous and endogenous components. Contingent contracts, to speak
generally, can be written only on mutually observed events, not on aspects of the
state of the world which may be known to one but not both of the parties.201

The moral hazard problem is serious, but it can be mitigated.202 Insurance companies
commonly require deductibles and co-payments in order to prevent incentives from
becoming too misaligned.203 If an insured person has a large deductible, she still has a
strong incentive to use caution.204 Financial markets are another area in which moral
hazard occurs and market-based solutions have been developed.205

Futures contracts involve making a commitment to buy or sell a standardized
commodity or financial product at a predetermined price on a designated future date.206
A moral hazard problem would exist if individuals could make such commitments and
default on the obligation if the price moves against them. For example, if a producer of
wheat-based products makes a commitment to buy 5,000 bushels of a specified grade of
wheat at a price of $5 a bushel in six months, and the price in the spot market six months
later is $4 a bushel, the individual could default on the obligation and save $5,000 by
purchasing the wheat in the spot market. Moral hazard could occur if the system permits
individuals to make bets that they intend to collect on when the outcome is favorable but
they intend to renege on when the outcome is unfavorable. Futures markets have devised a system to prevent this from occurring. It is a system of margin and marking to market.

In this hypothetical, the individual making the commitment to buy is required to put up margin. The margin is essentially a performance bond. It is highly liquid collateral—either cash or U.S. Treasury debt—which is held by a broker and is always sufficient to cover losses from adverse price movements. Daily marking to market means that at the end of each trading day the clearing corporation determines the day’s settlement price—a price representative of the trades made during the final few minutes of trading—and any hypothetical losses require immediate deposits of additional margin or else the investor’s position will be liquidated. The investor grants the broker the legal authority to do this when she opens her account with the broker—it is in the fine print of all account agreements for accounts authorized to trade futures contracts. This system ensures that investors in futures contracts will not renege on their commitments, just as casinos make the same assurances by requiring the gamblers to put their cash on the table before the bets are accepted.

It has also been recognized in the corporate finance literature that a strong moral hazard problem exists between stockholders and bondholders. Stockholders in a company with a low value of assets and a large amount of debt are in a position similar to the holder of an at-the-money or out-of-the-money call option. Their incentive is to make excessively risky investments rather than prudent investments. With a cautious investment there is little to gain and little to lose. With a high risk investment there is a
lot to gain, and little to lose due to the truncation of losses associated with limited liability. Clearly lot to gain and little to lose dominates little to gain and little to lose.

An infamous example of this occurred early in the history of Fed Ex. Fed Ex was on the verge of default. CEO Fred Smith took $20,000 of corporate cash to Las Vegas and gambled with it. By luck, he won enough money to make the next interest payment and keep Fed Ex above water. Had he lost in Vegas, it would have simply meant that Fed Ex’s creditors would have received $20,000 less in liquidation. Gambling with other people’s money is never unprofitable, and sometimes hugely profitable. It is irresponsible, unethical, and immoral, but people—especially politicians—love to do it. Buying a risky asset with no money down and no securitized collateral is no different.

Economists have some skill at predicting how people will behave because economists do not try to predict how people ought to act; they predict how people’s behavior will change in response to incentives. An important insight from economics is that government intervention will affect behavior. If government policies make it unnecessary for households to exercise discipline and save for the purpose of purchasing a home and receiving the associated benefits, then people will respond by saving less. In discussing the management of the 2008 financial crisis, one senior economist emphasized:

[P]ublic protection changes private behavior. If the government protects depositors, the intermediaries lose any reason to search among potential intermediaries for those that seek out more assured investment projects. Similarly, the management of investment projects down play the possibility that they will be called in early. The twisting of various incentives falls under the rubric of moral hazard.
V. PATERNALISTIC GOVERNMENT

There is a large body of commentary that argues that an important role of government is to protect individuals from bad decision making.228 A few of the serious suggestions that have been made are: protect people who decide not to buckle seat belts by only selling cars with airbags;229 protect people who do not save for retirement by taxing them for social security;230 protect people who would lose money in the stock market by prohibiting trading or erecting barriers to trading.231 There are many problems with this view, but the housing and financial crises illustrate very clearly that when governments attempt to control market forces, disaster results.

Congress sought to protect undisciplined households who chose not to save money for a down payment on a house by encouraging the creation of programs that would make loans available to people without credit and without collateral.232 This gave those individuals a free option to speculate on the housing market by purchasing a home.233 If the home value rose they would have some equity, or they would do a cash-out refinancing and in an undisciplined manner spend the appreciated value immediately.234 If the home value declined they would walk.235 The situation created an artificial increase in the demand for housing which pushed prices up to unsustainable levels, and when prices began to drop a little the floor collapsed due to the large number of homeowners who had nothing to lose and much to gain by defaulting.236

In a provocatively titled article, Libertarian Paternalism is an Oxymoron, Professor Gregory Mitchell rebutted the justifications advanced by Professors Cass Sunstein and Richard Thaler for soft forms of paternalism.237 Professor Mitchell observes:
[I]t is impossible by definition for a third party to make judgments about another individual's utility, because the ranking of preferences is purely subjective with no objective goal implied or possible. The most that can be said about individual welfare from evidence of an individual's irrational choice behavior is that, based on revealed preferences, the individual failed to maximize his or her own subjective utility. This evidence cannot mean that a third party could do better than, or even as well as, the individual with respect to the maximization of ordinal utility. Only the individual can order his or her own preferences for purposes of maximizing subjective utility.  

Mitchell sarcastically concludes by suggesting that his article might “serve some debiasing function and help libertarians to form rational beliefs about the desirability of libertarian paternalism.”

In just the last decade we have witnessed numerous examples of government protection failing. Government did not protect people from the fraud perpetrated by Enron and Arthur Anderson. Politicians screamed “Never again!,” but Bernard Madoff operated a fifty to sixty billion dollar Ponzi scheme while under investigation by the SEC for giving investment advice without registering as an investment advisor. Even after Madoff turned himself in, other large Ponzi schemes have come to light. As a result of poor decisions by employees of Freddie Mac and Fannie Mae, government regulators took control of the government sponsored enterprises (GSE’s). As an example of protection, the regulators unnecessarily decided to wipe out the GSE preferred stockholders, many of whom were small regional banks that had been pressured to invest in the preferred stock of Fannie and Freddie and whose stockholders suffered the consequences of “protection.”

In yet another act of protection, Congress passed the Tarnished Asset Relief Program without having any understanding of what they were doing. Congress could not have possibly understood what it was doing because it gave the Treasury unprecedented
discretion and ambiguous, if not contradictory, guidance as to how to allocate the money.\textsuperscript{248} Indeed, Treasury first proposed to use the funds to purchase tarnished assets, but quickly changed course and used the money to invest equity in banks.\textsuperscript{249} The final costs of the TARP legislation are unknown, but all estimates are quite large.\textsuperscript{250}

It is then highly ironic that Congress decided to protect us from more TARP-like Acts of Congress by passing the Dodd-Frank bill,\textsuperscript{251} which is purported to put an end to “too big to fail.”\textsuperscript{252} Yet no one today seriously believes that the largest American banks are not too big to fail.\textsuperscript{253} The inevitable conclusion that follows from all of this is that governments are inept at protecting people from poor decisions.\textsuperscript{254} This should not be surprising. After all, governments are comprised of people, and if people make some bad decisions then governments must also make some bad decisions.\textsuperscript{255} There is no way to throw a bunch of bad decision makers together in a black box called government and expect the output to be transformed into good decisions. That would be alchemy.

The fundamental problem with government decision making is that it is decision making by committee, and committees operate according to how they want the world to be rather than accepting the world as it exists.\textsuperscript{256} Markets allow goods and services to flow to their highest-valued use unabated.\textsuperscript{257} Committees try to impede and redirect forces.\textsuperscript{258} That is a fool’s errand, like trying to stop high tide.

If relying on Congress to protect us from poor decisions is a bad idea, what is the alternative? The polar extreme would be to make individuals more responsible, and accountable, for their own welfare.\textsuperscript{259} Forcing people to live with the consequences of their mistakes will cause them to learn from their mistakes and make fewer of them in the long run.\textsuperscript{260} Insuring people against losses from mistakes creates a moral hazard whereby
individuals lack the incentive to exercise care.\textsuperscript{261} More mistakes are made, more losses are incurred, and costs are greater.\textsuperscript{262}

Nearly two decades ago Dean Lawrence Mitchell drew on the literature from child development psychology to argue that corporate morality would be improved by relaxing constraints on corporate directors.\textsuperscript{263} Dean Mitchell observed that children do not develop into morally autonomous individuals until they move through a developmental process that culminates with the relaxation of constraints on their behavior.\textsuperscript{264} Children placed in a confining environment become stilted moral characters, but children placed in an enabling environment develop into socially responsible individuals.\textsuperscript{265} Mitchell further observed that other literature in psychology found the same processes to be applicable to adults.\textsuperscript{266} Drawing on this literature he argued that government imposed constraints on corporate directors relieves them of feelings of responsibility and accountability for their decisions.\textsuperscript{267} Relaxing constraints will therefore improve decision making and foster feelings of responsibility and moral accountability for decision making.\textsuperscript{268} Mitchell effectively argued that, “managers should be enabled to exercise broader discretion in order to learn more responsible behavior.”\textsuperscript{269}

Drawing in part on Mitchell’s work, I previously wrote:

Suppose, hypothetically, that government could protect individuals from making bad decisions. Whether it should is likely to depend on the level of abstraction and simplification one uses for analysis. A simple model of one market in isolation holding everything else constant might be used to investigate first level effects. If we assume that the government has an opportunity to reverse one bad decision made at one time by one individual and thereby make that individual better off at that point without changing anything else, then we may reach one conclusion. But if we recognize that by protecting individuals from bad investment decisions we influence future behavior, we may reach a different conclusion.
Protecting individuals from bad decisions has detrimental effects. It reduces their incentive to make good decisions by lowering the costs of bad decisions.\textsuperscript{270} In short, paternalistic intervention in the market by the government to help the needy has long-term costs arising from distorting behavior.\textsuperscript{271} It discourages good behavior such as investing in human capital and saving and encourages bad behavior such as reckless decision making and spending.\textsuperscript{272}

The argument that one role of government is to protect individuals from their own poor decisions and mistakes has been forcefully rebutted by Professors Jonathan Klick and Gregory Mitchell.\textsuperscript{273} They begin by quoting the ethicist Daniel Wikler who asks the question whether if restricting the liberties of the cognitively challenged individuals in their best interests is justified, then might it also be justifiable for those of exceptional intelligence to restrict the liberty of those with normal intelligence?\textsuperscript{274} In a summary of their research, Professors Klick and Mitchell state, \textsuperscript{275}

[W]e argue that there will often be long-run costs of paternalistic regulations that offset short-run gains because of the negative learning and motivational effects of paternalistic regulations. An appreciation of the role of learning and motivation in the development of rational behavior, and the necessary concomitant that individuals differ in their propensities to act rationally, suggests two broad limitations on the force and scope of irrationality-based arguments for paternalism. First, individual and situational variation in irrational tendencies will often make debiasing interventions, or no intervention at all, more efficient than paternalistic interventions. Second, paternalistic interventions may exacerbate irrational tendencies by creating moral and cognitive hazards. Moral hazards arise because paternalistic regulations reduce an individual's motivation to act deliberately and carefully, and motivation level mediates many psychological biases. What we term "cognitive hazards" arise when paternalistic regulations interfere with information searches, educational investments, and feedback that would occur in the absence of paternalistic interventions and that are important to the individual's development of effective decision-making skills and strategies.
When people make mistakes that have bad consequences for them, they experience regret.\textsuperscript{276} Feelings of regret are strong and persistent. People with regrettable experiences develop regret aversion.\textsuperscript{277} Regret aversion is a powerful influence that causes people to exercise caution and avoid similar mistakes.\textsuperscript{278} Under these conditions, rational people will internalize all costs of mistakes and expend their own resources avoiding mistakes up to the point at which the marginal cost of caution equals the marginal benefit of mistake avoidance.\textsuperscript{279}

Tort liability literature informs us that it is optimal to place liability for accidents with those who can most cheaply avoid them.\textsuperscript{280} Investors have the best information about their needs, objectives, and tolerance for risk and can more cheaply avoid bad decisions than can an agency regulator that lacks this household-specific information.\textsuperscript{281} Making households responsible for their own decisions and not helping them out will be more economically efficient.\textsuperscript{282} Households will have the proper incentives to learn from mistakes and exercise care in avoiding mistakes.\textsuperscript{283} The key to economic efficiency is proper incentive alignment.\textsuperscript{284}

It might sound callous to suggest that households that make mistakes must suffer the consequences. It could be somewhat frightening to know that poor choices could result in homelessness and hunger. However, fear is a powerful motivator and removing fear removes motivation.\textsuperscript{285} Again, motivation is an important ingredient for incentive alignment. I am not suggesting that we let children die of hunger because their parents made some bad choices. However, I am suggesting that we at least hold the line at not giving homes to people who do not save a reasonable down payment to invest. Lack of saving is a strong signal of undisciplined will power that will manifest itself in
opportunistic defaults which have proven to be disastrous for the entire American economy. 286

VI. VOTING REFORM

Professor Todd Zywicki has gone so far as to suggest that solution to our problems requires radical change in the political process. 287 A proposal he is in agreement with is to repeal the Seventeenth Amendment which provides for election of U.S. Senators by direct popular vote. 288 Repeal would put the elections back into the hands of state legislatures. 289 Zywicki’s argument is that the original role of the Senate was one of moderating special interest groups, and using a public choice framework Zywicki builds a compelling case for the proposition that special interest groups seeking to redistribute wealth to their constituents were responsible for passing the Seventeenth Amendment. 290 With passage of the Seventeenth Amendment, there would no longer be monitoring of Senators’ behavior by state legislators and Senators could more easily be captured by special interest groups. 291 I will suggest that Professor Zywicki’s proposed reform is not radical enough.

The politics of income redistribution is another example of moral hazard with similarities to the problems underlying the housing collapse. There is no denying that reasonable arguments can be advanced for wealth redistribution. 292 But putting decisions of wealth redistribution into the hands of people without wealth creates clearly misaligned incentives. For a majority of the population to appropriate an extraordinarily disproportionate fraction of income from a minority of the population to give to themselves is a form of legalized theft. 293 This government sanctioned theft then
provides a strong disincentive to invest and create additional income by the net losers in the system, and also reduces incentives to work for the net gainers. The continuous pressure on the politicians to provide more and more “free” goods such as healthcare, housing, food, and education results in pressure to appropriate increasingly larger sums from the minority. The constant friction leads to an erosion in incentives which is detrimental and has long-run adverse consequences.

It is human nature to want more without sacrificing anything. Our society has evolved to a situation in which politicians implicitly buy votes by giving away free goods to those who will vote for the politicians. Unfortunately, goods are never free. By definition, all goods are costly, there is some opportunity cost for each good produced and delivered. Voting for free stuff really means voting to make someone else pay for it, or taking away something from others—government sanctioned theft. Since it is logically impossible for politicians to give everyone more for free than they pay for in taxes, politicians concentrate the gifts on those voters who are cheapest to buy. The poor with no assets, no savings, and no investment in education can be bought for cheap. The political rhetoric might be taxing the rich to support the poor because it is the right thing to do, but this is circular reasoning since “right” is defined to be whatever argument one wants to make. The reality is goods are taken from a few and given to many in exchange for votes.

The problem with giving everyone equal voting rights is that those with nothing to lose have misaligned incentives. People with no jobs, no assets, no income, and no education do not really care if the economy is destroyed in the long-run. These are negative equity or out-of-the-money option individuals who have nothing to lose and
much to gain by voting for fiscally irresponsible politicians, politicians who are playing in a sandbox filled with other people’s money.\textsuperscript{306}

Modern lobbyists have become adept at capturing politicians,\textsuperscript{307} and Zywicki’s arguments notwithstanding, it is not clear that returning the election of U.S. Senators to the state legislators would sufficiently insulate the electoral process from the moral hazard of voting to take and receive. An alternative would be repeal of the Twenty-Fourth Amendment which would allow states to levy a tax on voting,\textsuperscript{308} or establish voting criteria based on some type of vesting.\textsuperscript{309} It need not be a wealth based criteria. States could experiment and utilize different voting requirements for attaining the right to vote as long as the requirements did not abridge rights based on race, color, sex, or age of individuals over eighteen in accordance with the limits set by the Fifteenth, Nineteenth, and Twenty-Sixth Amendments.\textsuperscript{310}

Examples of ways people might establish a vested interest in society could be based on having a minimal positive net worth, a college degree, military service, community service in an organization such as the Peace Corps, or other signals that one has some type of investment at risk.\textsuperscript{311}

In a previously published article I wrote,

The idea that people should earn the right to vote should not be summarily dismissed. Rights that are given away are not as valuable as rights that are earned. All people should be treated with common courtesy, but they should earn treatment with respect.

Requiring that individuals have a vested interest in order to vote does not mean returning to the days when only property owners could vote. Not only might that be too high of a threshold, but the definition would also be difficult to delineate. However, one could establish a set of criteria any one of which would qualify an individual to fully participate.\textsuperscript{312}
VII. CONCLUSION

Home ownership is an asset portfolio choice, not a right. It is not to be given away for free with an option to abandon. It is something to be earned, and something that requires taking risks. Communism was a failed experiment. The income inequality that necessarily occurs in capitalism is not a failure of capitalism but a sign of success. Those who desire home ownership should work, save, invest, take risks, learn from mistakes, and exhibit patience. Those who are impatient and seek immediate home ownership without saving a substantial down payment are not worthy of home ownership, but will gladly sell their vote to someone willing to make it happen using other people’s money.
Equation (5) is derived by taking the first derivative of lifetime utility with respect to S and setting the result equal to zero since a necessary condition for an extreme value which is not an endpoint of the function is that the first derivative equal zero. If the extreme value is an endpoint, S will be zero. Lifetime utility as a function of S is:

\[ U = (Y(1-S))^{0.5} + e^{-\gamma}(Y(1+Se^r))^{0.5} \]

Differentiating with respect to S and setting the result equal to zero yields,

\[ -\frac{1}{2}Y[Y(1-S)]^{-0.5} + \frac{1}{2}e^{-\gamma}[Y(1+Se^r)]^{-0.5}Ye^r = 0 \]

Multiplying by 2/Y and collecting exponents on base e gives,

\[ -[Y(1-S)]^{-0.5} + e^{-\gamma}[Y(1+Se^r)]^{-0.5} = 0 \]

Rearranging yields,

\[ e^{r-\gamma} = \frac{[Y(1+Se^r)]^{0.5}}{[Y(1-S)]^{0.5}} \]

Square both sides and cancel Y/Y to obtain,

\[ e^{2(r-\gamma)} = \frac{1+Se^r}{1-S} \]

Multiply both sides by the quantity (1-S), subtract 1 from both sides, and collect S terms:

\[ e^{2(r-\gamma)} - 1 = S(e^r - e^{2(r-\gamma)}) \]

This is then rearranged to solve for S and get equation (5),

\[ S^* = \frac{e^{2(r-\gamma)} - 1}{e^r + e^{2(r-\gamma)}} \]
ENDNOTES

1 See Financial Crisis Inquiry Comm’n, Financial Crisis Inquiry Report at 371 (2011) [hereinafter Report] (“But the Fed was running out of options. . . . In short, the financial system was slipping away from its lender of last resort.”).


3 See Report, supra note 1, at 359 (stating that in response to the unavailability of short-term lending the Federal Reserve lent banks $150 billion during the two week period starting September 19th).


5 See Jonathan G. Katz, Who Benefitted from the Bailout?, 95 Minn. L. Rev. 1568, 1575 (2011) (“What made AIG integral to the global banking system was its derivatives business . . . . When it collapsed, the notional value of AIG open derivatives contracts was $2.7 trillion . . . .”).


7 Cf. Reinhart, supra note 4, at 74 (“The economic downturn was remarkable in many aspects. . . . In 2008, U.S. households suffered the worst one-year decline in household net worth relative to income in a century of recordkeeping—an amount equal to about a year of nominal GDP in that year.”).

8 Cf. Kenneth E. Scott, Lessons from the Crisis, 8 (John M. Olin Program in Law and Economics, Stanford Law School, working paper #385 Nov. 2009) (“The media, participants and politicians have put forth a host of favorite culprits, usually shifting blame to someone else . . . .”).

9 Cf. id. at 16 (“[The crisis] came about because Congress desired to subsidize particular groups without direct on-budget expenditures but indirectly through regulation and guarantees—thereby denying the existence of any subsidization—until the whole scheme collapsed.”).


12 See David A. Dana, A Simple Approach to Preventing the Next Housing Crisis—Why We Need One, What One Would Look Like, and Why Dodd-Frank Isn’t It, 38 Fordham Urb. L.J. 721, 730 (2011) (“The ownership-society school of social policy and popular commentary teaches that by owning homes, people achieve greater personal and familial success, communities become more stable, and social ills are reduced.”).

13 Cf. Stern, supra note 11, at 1103 (“Protective legislation and government home buying assistance convey the message that housing is an optimal, low-risk investment.”).
14 REPORT, supra note 1, at 83.
15 Cf. MICHAEL O. FINKELSTEIN & BRUCE LEVIN, STATISTICS FOR LAWYERS, 31 (2001) (“Correlation does not necessarily imply causation.”).
16 See PETER J. WALLISON, DISSENT FROM THE MAJORITY REPORT OF THE FINANCIAL CRISIS INQUIRY COMMISSION 11 (American Enterprise Institute 2011) (describing 1992 legislation that was “probably stimulated by a desire to increase home ownership”).
17 See id. at 2 (“[T]he sine qua non of the financial crisis was U.S. government housing policy, which led to the creation of 27 million subprime and other risky loans—half of all mortgages in the United States—which were ready to default as soon as the massive . . . housing bubble began to deflate.”).
18 See id. (“Initiated by Congress in 1992 and pressed by the U.S. Department of Housing and Urban Development (HUD) in both the Clinton and George W. Bush administrations, the U.S. government’s housing policy sought to increase home ownership in the United States through an intensive effort to reduce mortgage underwriting standards.”).
19 See id. at 48-49 (documenting how HUD controlled government sponsored entities (GSE’s) including Fannie Mae and Freddie Mac to lower underwriting standards in order to enable low income borrowers with little savings and poor credit histories to obtain mortgages).
20 The term “bone-headed” was used by William Isaac, former chair of the Federal Deposit Insurance Corporation to refer to the Treasury Department’s decision to wipe out the preferred stock of Fannie Mae and Freddie Mac. Most of this was held as a safe asset on the books of federally insured banks. Tara N. Rice and Jonathan Rose, When Good Investments Go Bad: The Contraction in Community Bank Lending after the 2008 GSE Takeover 9 n.14 (Board of Governors of the Federal Reserve System working paper, Jan. 14, 2011).
21 See Scott, supra note 8, at 4 (“Borrowers, with little or no down payments (or remaining equity), had nothing much to lose financially. (Indeed in about half the states, mortgage loans are legally non-recourse; the buyer can walk away without any personal liability.”).
22 See Mark Klock, Financial Options, Real Options and Legal Options: Opting to Exploit Ourselves and What We Can Do About It, 55 ALA. L. REV. 63, 76 (2003) (explaining that default options enable a debtor with no assets to take high risk gambles with other people’s money).
23 See Todd J. Zywicki and Joseph Adamson, The Law & Economics of Subprime Lending, 80 U. COLO. L. REV. 1, 26-27 (2009) (explaining that the incentive on a home owner to go into foreclosure occurs when the home’s value decreases).
24 See WALLISON, supra note 16, at 2 (“If the U.S. government had not chosen this policy path—fostered the growth of a bubble of unprecedented size and an equally unprecedented number of weak and high-risk residential mortgages—the great financial crisis of 2008 would never have occurred.”).
25 See generally REPORT, supra note 1, at 389-401 (describing and documenting how the deflated housing bubble damaged the economy and resulted in the failure of numerous banks).
26 Id. at 402.
See id. at 408 (“Renters, who never bought into the madness, are also among the victims as lenders seize property after landlords default on loans. Renters can lose the roof over their heads as well as their security deposits.”).

See MISHKIN & EAKINS, supra note 2, at 173 (“The growth of the subprime mortgage market, in turn, increased the demand for houses and so fueled the boom in housing prices, resulting in a housing price bubble.”).


MISHKIN & EAKINS, supra note 2, at 438 (“A particular infamous variant of the no-doc loan was dubbed the NINJA loan because it was issued to borrowers with No Income, No Job, and No Assets.”).

See WALLISON, supra note 16, at 31 (“[T]he financial crisis was the result of the losses suffered by financial institutions around the world when U.S. mortgages began to fail in large numbers . . . .”).

MISHKIN & EAKINS, supra note 2, at 338.

Id.

Id.

Id.

See ROBERT J. SHILLER, IRRATIONAL EXUBERANCE 17-18 (2nd ed. 2006) (“People have been afraid that the price of housing would soon rise beyond their means and that they might never be able to afford a house, and so have rushed to bid on homes.”).

See MISHKIN & EAKINS, supra note 2, at 140 (reporting that Akerlof received the Nobel prize and developed the theory of adverse selection under asymmetric information).

See Joseph E. Stiglitz, Information Change in the Paradigm of Economics, 92 AM. ECON. REV. 460, 460 (2002) (Nobel lecture stating, “The research for which George Akerlof, Michael Spence, and I are being recognized is part of a larger research program which today embraces a great number of researchers around the world”).

George A. Akerlof, The Market for "Lemons": Quality Uncertainty and the Market Mechanism, 84 Q. J. ECON. 488, 490 (1970) (explaining conditions that can lead to an equilibrium in which no transactions occur at any price level).

Id.

Id. at 489.

Id.


See MISHKIN & EAKINS, supra note 2, at 18 (“[A]n individual can obtain funds in a financial market in two ways. The most common method is to issue a debt instrument, such as a bond or a mortgage . . . .”).

See id. (stating that a bond “is a contractual agreement by the borrower to pay the holder of the instrument fixed dollar amounts at regular intervals . . . until a specified date . . . .”).
See generally Akerlof, supra note 41, at 497-99 (describing problems with credit markets in underdeveloped countries).

See id. at 499-500 (describing institutions which mitigate problems of trust including guarantees, brand names, chains, and licensing practices).


Stiglitz, supra note 40, at 471.

See George A. Akerlof, Behavioral Macroeconomics and Macroeconomic Behavior, 92 AM. ECON. REV. 411, 413 (2002) (“In some markets, asymmetric information is fairly easily soluble by repeat sale and by reputation.”).

See MISHKIN & EAKINS, supra note 2, at 144-45 (explaining that reputation and collateral reduce the adverse selection problem in credit markets and lies behind the saying, “Only the people who don’t need money can borrow it.”).

See HAL R. VARIAN, INTERMEDIATE MICROECONOMICS 575 (8th ed. 2009) (“An individual with hyperbolic discounting discounts the long-term future more heavily than he discounts the short-term future.”).


See Scott, supra note 8, at 4 (“In effect, buyers were renting at the low initial rates, with an option to purchase at the reset date.”).

See WALLISON, supra note 16, at 15-16 (“[T]he 1997-2007 [housing] bubble grew larger and extended longer in time than previous bubbles because of the government’s housing policies, which artificially increased the demand for housing by funneling more money into the housing market than would have been available if traditional lending standards had been maintained . . . .”); cf. Zywicki and Adamson, supra note 23, at 37 (“It has now become evident that the regulatory pressures imposed by the government to "push" lenders to extend more credit to higher-risk borrowers was simultaneously being met by Fannie Mae and Freddie Mac efforts to "pull" lenders to issue more mortgages to high-risk borrowers.”).

See MISHKIN & EAKINS, supra note 2, at 739 (explaining that the subprime market increased demand which drove up prices and caused an increase in home construction).

See REPORT, supra note 1, at 391-92 (“Nationwide, home prices dropped 32% from their peak in 2006 to their low point early in 2009.”).

See id. at 389 (“Seventeen trillion dollars in household wealth evaporated within 21 months . . . .”).

Scott, supra note 8, at 15-16.

Cf. STEVIN D. LEVITT & STEPHEN J. DUBNER, FREAKONOMICS 12 (2005) (“Incentives are the cornerstone of modern life.”).

Cf. Daniel J. H. Greenwood, Telling Stories of Shareholder Supremacy, 2009 MICH. ST. L. REV. 1049, 1058 (“As the common Wall Street aphorisms put it, "don't fight the tape" because "the markets can stay irrational longer than you can stay solvent.”).

66 Cf. *id.* at 15-16 ("[B]oosting financial literacy skills may well be critically important for economic and social welfare not only of this generation, but of those to come. Finding out which sorts of programs and financial decision-making structures are most effective, as well as cost-effective, is a task of supreme importance.").


70 This is a common model used in economics. See, e.g., Paul Willen, *New Financial Markets: Who Gains and Who Loses*, 26 ECON. THEORY 141, 144-45 (2005) (utilizing a two-period model maximizing lifetime expected utility).

71 See VARIAN, supra note 55, at 574-75 (presenting the exponential discounting model as a standard economic model).

72 If \( \gamma \) is zero, then the marginal rate of substitution of period one consumption for period two consumption (the amount of additional period one consumption the consumer needs to exactly compensate for a one unit reduction in period two consumption) is one meaning that the consumer is indifferent between consuming today or consuming later. If \( \gamma \) is equal to one, then the marginal rate of substitution is approximately 0.3679, indicating that the consumer only needs about 37¢ today to compensate for a $1 loss in the future. This would indicate a strong preference for consumption in the present over deferred consumption.

73 See Emily C. Lawrance, *Poverty and the Rate of Time Preference: Evidence from Panel Data*, 99 J. POL. ECON. 54, 72 (1992) ("[H]igh rates of time preference may reduce investment in education . . . . Poor households are likely to possess relatively high rates of time preference and, consequently, relatively high marginal propensities to consume.").

74 See *id.* at 55 (finding that people who are more inclined to defer gratification invest more in education and have higher lifetime incomes).

75 See VARIAN, supra note 55, at 55-57 (explaining that because only the ordering of preferences matters any positive monotonic transformation of the utility function will preserve the ordering).

76 See *id.* at 51-52 (describing the behavior underlying a diminishing marginal rate of substitution).

77 See *id.* at 182 (describing a simple intertemporal model with a single consumption good).
See Mark Loewenstein & Gregory A. Willard, The Limits of Investor Behavior, 61 J. Fin. 231, 256 (2006) (concluding that investor behavior is constrained by the “broader economic intuition developed from the assumptions of limited asset liability, market clearing, and limited withdrawals from the storage technology.”).

See John R. Lott, Jr., A Transaction-Costs Explanation For Why the Poor Are More Likely to Commit Crime, 19 J. LEGAL STUD. 243, 244 (1990) (“In principle, it should be possible for any borrower to use his human capital to secure loans. In practice, however, these loans are quite rare because the bankruptcy and antislavery laws make it impossible for the lender to realize this "collateral" in the event of default.”).

Id. at 245.


See VARIAN, supra note 55, at A9 (explaining optimization in economic problems).

See Peter Ireland, The Kuhn-Tucker and Envelope Theorems, 6 (2010) (stating the first order necessary conditions for solution of the problem) available at https://www2.bc.edu/peter-ireland/ec720/notes1.pdf.

See Spence, supra note 50, at 441-42 (discussing signaling equilibrium with pooling).

See Louis Kaplow, Discounting Dollars, Discounting Lives: Intergenerational Distributive Justice and Efficiency, 74 U. CHI. L. REV. 79, 113 n.73 (2007) (“[T]he market interest rate is endogenous because it depends on the intergenerational distribution.”).

See STEVIN D. LEVITT & STEPHEN J. DUBNER, SUPER FREAKONOMICS 140 (2009) (observing that the unintended consequences of well-intended laws have been backfiring on governments for millennia).

See JOSEPH E. STIGLITZ, PRINCIPLES OF MICROECONOMICS 114-116 (2d ed. 1997) (explaining that permitting tenants to rent at below-market rates both causes housing shortages and dilapidation of neighborhoods).

See Michael Brewer, Note: Planning Disaster: Price Gouging Statutes and the Shortages They Create, 72 BROOKLYN L. REV. 1101, 1128 (2007) (price controls lead to black markets with prices higher than would occur without regulation).

See Mark Thornton, Alcohol Prohibition Was a Failure (CATO.ORG, July 17, 1991) available at http://www.cato.org/pubs/pas/pa-157.html ("More crimes were committed because prohibition destroys legal jobs, creates black-market violence, diverts resources from enforcement of other laws, and greatly increases the prices people have to pay for the prohibited goods.").

(regulators setting prices too high “encourages inefficiency or economic waste, results in resource misallocation and officially sanctions undesirable behavior.”).

93 See Richard S. Whitt and Stephen J. Schultze, The New “Emergence Economics” of Innovation and Growth, and What It Means for Communications Policy, 7 J. ON TELECOMM. & HIGH TECH. L. 217, 225 (2009) (“In a free market economy, the thinking goes, a natural resting point is reached, where supply equals demand, resources are put to their most efficient use, and the welfare of society is optimal. Such a market is deemed optimally efficient.”).

94 See Charles C. Tu, How Does a New Sports Stadium Affect Housing Values? The Case of FedEx Field, 81 LAND ECON. 379, 383 (2005) (“In the hedonic model, housing is treated as a bundle of attributes . . . . Because no separate markets exist for individual housing attributes, the values of those features cannot be directly observed.”).

95 See ROBERT S. PINDYCK & DANIEL L. RUBINFELD, MICROECONOMICS 252-53 (5th ed. 2001) (“Price-taking behavior typically occurs in markets where firms produce identical, or nearly identical, products. When the products of all of the firms are perfectly substitutable with one another-that is, when they are homogeneous-no firm can raise the price of its product above the price of other firms without losing most or all of its business.”).

96 See Patricia A. McCoy, Rethinking Disclosure in a World of Risk-Based Pricing, 44 HARV. J. ON LEGIS. 123, 126 (2007) (“[P]rices for prime mortgages with comparable features are highly competitive and trade within a relatively narrow band. Similar mortgages have roughly homogeneous prices.”) (internal citation omitted).

97 See id. at 127 (“A subprime lender, for example, may differentiate prices according to a complex matrix of factors, including credit scores, loan-to-value ratios, debt ratios, and prepayment risk.”).

98 See id. at 126 (“The subprime market charges different borrowers different prices for the same product, ostensibly based on their individual risk.”).

99 See id. at 127 (“At this point, it is important to add a caveat: in reality, "risk-based pricing" is a misnomer. "Risk-based pricing" implies that pricing is accurately calibrated to credit risk. In reality, prices in the subprime market are only partly based on differences in borrowers’ risk.”).

100 See Scott, supra note 8, at 3 (lending changed so that, “Conventional down payment requirements of 20% dropped to as low as 3.5% for the GSEs (and to zero for some private originators) . . . .”).

101 See id. (“[S]ignificant down payments were viewed as “barriers” for low-income families.”).

102 See id. (“New products were invented, to make mortgages more “affordable” for buyers with very limited income or resources . . . .”).

103 See Ben Bernanke, Speech at Moorhouse College, April 14, 2009 (“Unfortunately, much of this [mortgage] lending was poorly done, involving, for example, little or no down payment by the borrower or insufficient consideration by the lender of the borrower’s ability to make the monthly payments.”) available at http://www.federalreserve.gov/newsevents/speech/bernanke20090414a.htm.

asymmetric information between lenders and borrowers will lead to good borrowers incurring costs to distinguish themselves from bad borrowers and results in a separating equilibrium).

105 See id. at 657-58 (stating that costly loan commitments provide a credible signal for quality borrowers).

106 See Kristopher Gerardi et al., Making Sense of the Subprime Crisis, 2008 BROOKINGS PAPERS ON ECON. ACTIVITY 69, 141-42 (Fall) (concluding from their research that analysts understood that housing prices could fall and understood the consequences of this, but assigned extremely low probabilities to such events).


108 See id. at 14 (finding pre-crash housing market behavior was grounded in economic fundamentals).

109 STIGLITZ, supra note 89, at 556.

110 LEVITT & DUBNER, supra note 88, at 140.

111 Id.

112 Id. at 139.

113 Id. at 138-39.

114 See Wallison, supra note 16, at 93 ("U.S. government’s housing policies were the major contributor to the financial crisis of 2008. These policies fostered the development of a massive housing bubble between 1997 and 2007 . . . .").

115 See Todd J. Zywicki, Testimony Before U.S. House of Rep. Committee on Fin. Services on Proposed Copnsumer Financial Protection Agency at 5 (July 15, 2009) ("[T]hese [home mortgage] loans were foolish not because consumers did not understand them. They were foolish because lenders failed to appreciate the incentives that rational, fully-informed consumers would have to default on these loans if circumstances changed.").

116 See Wallison, supra note 16, at 9 ("[T]he financial crisis of 2008 would [not] have ensued, but for the role played by the housing policies of the U.S. government over the course of two administrations.").

117 PETE SEEGER, Where Have All the Flowers Gone?, on THE RAINBOW QUEST (Folkways1960).

118 See generally Zywicki, supra note 115, at 8-28 (describing how the mortgage crisis resulted from the strong incentives that were in place to exercise default, and how the crisis could have been exacerbated by the exercise of prepayment options which both cost consumers in higher payments and make it easier for consumers to constantly drain any equity out of their homes).

119 See Oren Bar-Gill, The Law, Economics and Psychology of Subprime Mortgage Contracts, 94 CORNELL L. REV. 1073, 1086 (2009) ("Recent reforms and existing reform proposals do not address the exclusion of the prepayment option (nor the default option) from the APR definition.").
121 Id. at 796.
122 Id. at 795.
123 See WILLIAM F. SHARPE ET AL., INVESTMENTS 601 (6th ed. 1999) (enumerating the variables that identify an option).
124 This data was collected by the author from Yahoo Finance on February 14, 2011. Unfortunately, free historical data on option prices is not publicly available. The site which provides current data is: http://biz.yahoo.com/n/z/z0002.html.
125 Historical stock price data can be obtained at Yahoo Finance: http://finance.yahoo.com/q/hp?s=AAPL&a=01&b=14&c=2011&d=01&e=14&f=2011&g=d.
127 Id.
128 See JOHN C. HULL, OPTIONS, FUTURES, & OTHER DERIVATIVES 154 (4th ed. 2000) (showing that the intrinsic value equals the stock price minus the exercise price when the stock price is greater than the exercise price and this is in-the-money).
129 See Mark Klock, Lessons Learned from Bernard Madoff: Why We Should Partially Privatize the Barney Fifes at the SEC, 42 ARIZ. ST. L.J. 783, 804 (2010) (“If the market price of a stock is below the strike price of a call option, that option is said to be out-of-the-money because it would not be reasonable to use the option to purchase stock at a higher contracted price than the stock could be purchased for at market.”).
128 See id. at 71 (“[T]he field of real options is the application of option pricing theory to valuing the retention of flexibility in decisionmaking. Other things equal, decisions that retain flexibility to alter them are more valuable than decisions that lock one into inflexibility.”) (internal citation omitted).
134 See Damian Laurey, Untangling the Stock Option Cost Sharing Loophole, 55 TAX LAW. 761, 773 (2002) (“The time value (or speculative premium) is the excess of an option's fair value over its intrinsic value.”).
135 See Krawiec, supra note 130, at 18 (“For options, delta moves non-linearly from zero to one as the option moves from far out-of-the-money to deep in-the-money. In other words, the closer an option is to the money, the faster delta changes.”) (this discussion is
relevant because the slower delta changes, the closer the option value function is to the asymptotes of zero and one and the smaller the difference between option value and intrinsic value).

136 See STEPHEN A. ROSS ET AL., CORPORATE FINANCE 686 (9th ed. 2010) (stating that the difference is called a time premium).

137 $360 - $359.04 = 96¢.

138 $359.04 + $20.01 - $360 = $19.05.

139 See Klock, supra note 129, at 805 (“Prior to expiration, an option will be even more valuable because losses are truncated and gains are not.”).

140 See Klock, supra note 126, at 56 (explaining how truncated losses balanced against unlimited possible gains creates positive value for options).

141 See HULL, supra note 128, at 154 (showing that since a rise in the stock price will put an at-the-money option in the money and the intrinsic value of an in-the-money option equals the stock price minus the fixed strike price, a one dollar increase in stock price will create a one dollar increase in intrinsic value for the at-the-money or in-the-money option).

142 Cf. Joseph A. Grundfest and Peter H. Huang, The Unexpected Value of Litigation: A Real Options Perspective, 58 STANFORD L. REV. 1267, 1277 (2006) (“[I]t makes sense for an investor to purchase a call option to buy a share of stock for $100 even though its current price is $90 - provided that the option’s price is low enough and its volatility (meaning the chance of some surprising good news coming to the market before the option expires) is high enough . . . .”).


144 See RICHARD A. BREALEY & STEWART C. MYERS, PRINCIPLES OF CORPORATE FINANCE 583 (7th ed. 2003), 583 (“Always remember that an option written on a risky (highvariance) asset is worth more than an option on a safe asset. It’s easy to forget, because in most other financial contexts increases in risk reduce present value.”).

145 There is a fairly simple mathematical explanation for this. Viewing Figure 1, it can be seen that the slope of the curve representing the option’s value approaches zero as the option moves deep out-of-the-money and approaches one as the option moves deep in-the-money. When the option is near the money, the slope is about 0.5. The slope of this curve represents the change in the option’s value for a change in the underlying asset value. When the option is unlikely to pay off, the change in option value for a small change in asset value is about zero. When the option is deep in-the-money, the change is nearly one-for-one. When the option is only slightly in-the-money, the change in option value for a change in asset value is much less.

146 See Bradford Cornell, The Incentive To Sue: An Options-Pricing Approach, 19 J. LEGAL STUD. 173, 179 (1990) (“[T]he value of litigation options rises as the uncertainty of the payoff increases . . . .”).

147 See Klock, supra note 22, at 68 (explaining the value of a hypothetical call option at-the-money).

148 See Klock, supra note 126, at 6 (analogizing this situation with a casino that refunds losses and allows gains beyond some threshold to be kept).
See id. (analogizing this situation with a casino that allows gains to be kept and refunds losses in excess of some deductible).

See id. (“An analogy to holding a call option at-the-money is the right to enter a casino or poker game in which winnings were permitted to be kept while losses were refunded in full. This right would be valuable and individuals would be willing to pay admission to enter the casino or game.”).

A story, perhaps apocryphal, illustrates this idea. It seems that Federal Express was near financial collapse within a few years of its inception. The founder, Frederick Smith, took $20,000 of corporate funds to Las Vegas in despair. He won at the gaming tables, providing enough capital to allow the firm to survive. Had he lost, the banks would simply have received $20,000 less when the firm reached bankruptcy.


See Klock, supra note 22, at 6 (“This [option] right would be valuable and individuals would be willing to pay . . . .”).

See Scott, supra note 8, at 2-3 (“Congress from about 1977 on embarked on a program to expand mortgage lending to minorities and LMI (low and moderate income) groups. . . . The goal was to push home ownership rates ever higher, and it involved pushing credit standards ever lower.”).

See Zywicki and Adamson, supra note 23, at 29 (“This temptation [to default on a mortgage] is especially strong for those homeowners who put little or nothing down or borrowed against their home equity.”).

See id. at 27-28. In reviewing empirical studies of home mortgage default models these commentators conclude:

[E]ven though interest rates generally rise uniformly across the country, the foreclosure rate is lower for residential real estate where price appreciation has been higher. This suggests that in deciding whether to default the primary consideration by homeowners is the amount of equity they have accrued in their property (which might be lost in the event of a foreclosure), rather than “payment shock” resulting from an unexpected rise in interest rates. Similarly, those who have drawn against accumulated home equity through home equity loans or junior liens exhibit a greater propensity to default than those who have retained their equity.

Id. (internal citations omitted).

See Scott, supra note 8, at 4 (“Indeed in about half the states, mortgage loans are legally non-recourse; the buyer can walk away without any personal liability.”).

See Zywicki, supra note 115, at 5-6 (describing incentives under California’s anti-deficiency laws).

Cf. id. at 6 (“[E]mpirical evidence suggests that many of the terms that have drawn much criticism (such as low-documentation loans) proved to be problematic only when combined with other provisions that reduced borrower equity, such as nothing-down.”).

Cf. id. at 5 (“The consumer side of the financial crisis, by which I refer to problems of high levels of default (on mortgages and credit cards) and foreclosure (on mortgages), was caused not by consumer ignorance but misaligned incentives and rational consumer response to them.”).
See MISHKIN & EAKINS, supra note 2, at 175 (stating that housing prices fell by more than twenty-five percent during the crisis).

See Zywicki and Adamson, supra note 23, at 45 (“[T]he availability of "cheap money" had an effect of pushing up market prices more dramatically in recent years in areas with higher percentages of subprime lending.”).

See id. at 46. Scholars Zywicki and Adamson write:

[T]he presence of a larger number of speculators [with no equity in their investments] in a given market will exacerbate a downward cycle of falling home values as they are more likely to exercise their default option. If foreclosure becomes sufficiently widespread in a community, it can negatively impact the amenity value of home ownership by destabilizing neighborhoods, the local tax base, and the quality of schools and other government services, which will create further incentives for other homeowners to default. When combined with local economic recessions, as such situations often are, this dynamic can be devastating for established communities.

Id.

See Zywicki, supra note 115, at 19 (“[I]n the United States, the plain vanilla mortgage would apparently be a 30-year self-amortizing FRM [fixed rate mortgage] with an unlimited right to prepay.”).

See Richard K. Green and Susan M. Wachter, The American Mortgage in Historical and International Context, 19 J. ECON. PERSPECTIVES 93, 101 (2005) (“The U.S. mortgage market is one of only three in which fee-free prepayment is widely available, and in only a few other countries, prepayment is of limited availability. Refinancing a mortgage is clearly much easier in the United States.”).

See Paul Bennett et al., Structural Change in the Mortgage Market and the Propensity to Refinance, 33 J. MONEY, CREDIT & BANKING 955, 959 (2001) (“Unlike most other fixed income instruments, the standard mortgage contract typically includes the unrestricted right to prepay or call the loan at any time.”).

See Prentiss Cox, A New Horizon: Legal Reforms, New Regulatory Models, Predications: The Importance of Deceptive Practice Enforcement in Financial Institution Regulation, 30 PACE L. REV. 279, 286 (2009) (“Several states, such as Iowa, prohibit or restrict the imposition of prepayment penalties on mortgage loans.”).

See Zywicki, supra note 115, at 24 (“The traditional American right to prepay and refinance a mortgage is relatively unique in the world. Available empirical evidence indicates that American consumers pay a substantial premium for this unlimited prepayment right.”).

See id. at 27 (explaining how cash-out refinancings preceding the crisis exacerbated the crises when home values subsequently dropped).

See id. at 19 (“[C]onsumers in the United States pay . . . 20-50 basis point premium for the right to prepay.”).

See MISHKIN & EAKINS, supra note 2, at 72 (describing how equilibrium interest rates change in response to market factors).

See id. at 37 (describing a simple loan).

See id. at 42 (equating the present value of the payments on a fixed-payment loan to the loan value).

See id. at 64 (describing fluctuations in interest rates from the 1950s to 2008).

See id. at 55 (“Changes in interest rates lead to capital gains and losses . . . .”)

See id. at 298 (“[A]s interest rates in the market rise, the value of bonds with fixed interest rates falls.”).

See id. (“[A]s interest rates available in the market on new bonds fall, the value of old fixed-interest-rate bonds rises.”).

See FRANK J. FABOZZI, BOND MARKETS, ANALYSIS AND STRATEGIES 77 (3rd ed. 1996) (“[F]or small changes in yield, the percentage price change is symmetric . . . .”)

See id. at 329 (“When the prevailing market yield for comparable bonds is higher than the coupon interest on the bond, it is unlikely that the issuer will call the bond.”).

See id. at 327 (“[T]he price appreciation potential for a callable bond in a declining interest-rate environment is limited. This is because the market will increasingly expect the bond to be redeemed at the call price as interest rates fall.”); id. at 229 (“[S]omeone who invests in a mortgage has granted the borrower an option to prepay the mortgage and the debtor will have an incentive to do so as market rates fall below the contract rate.”).

See id. at 327 (“If an investor receives sufficient potential compensation in the form of a higher potential yield, an investor would be willing to accept call risk.”).

See Zywicki and Adamson, supra note 23, at 18-20 (summarizing studies).

See Zywicki, supra note 115, at 24.

$200,000/[(1-1/(1+0.045/12) ^{360})/(0.045/12)]=1,013.37; $200,000/[(1-1/(1+0.04/12) ^{360})/(0.04/12)]=954.83; $1,013.37-$954.83=$58.54.

See Zywicki, supra note 115, at 27 (explaining that cash-out refinancings during the housing bubble kept home equity low and exacerbated the housing crisis).

See Scott, supra note 8, at 9 (“There is nothing intrinsically unsound about lending on collateral, but lending on collateral-appreciation was the real problem.”).

See Allen Holzer, Restructuring the Tax Treatment for Home Equity Draws: Implementing Consumption Tax Fundamentals to Preserve Home Equity, 24 BYU J. PUB. L. 225, 225 (2010) (“One of the root causes of this crisis is excessive withdrawals of home equity. Individuals who borrowed against their equity used the loan proceeds on consumer expenditures, non-mortgage debt, and home repairs. The downstream effects of wasteful spending of home equity contributed to the devastation of our economy.”).


See id. at 5 (blaming the financial crisis on misaligned incentives resulting from lending to borrowers with strong incentives to default).
Presumably, this is the basis for the legal requirement of full disclosure under the Securities Act. See 15 USCS §77k(c) (“the standard of reasonableness shall be that required of a prudent man in the management of his own property”).


See Klock, supra note 22, at 76 (explaining the gambler’s incentives gambling on borrowed money).

LEVITT & DUBNER, supra note 88, at xiv.

Id. at 213-15.

See, e.g., IVO WELCH, CORPORATE FINANCE 674 (2009) (equating moral hazard with a conflict of interest).

See MISHKIN & EAKINS, supra note 2, at 516 (“[M]oral hazard plagues the insurance industry.”).

See id. (“Moral hazard occurs when the insured fails to take proper precautions to avoid losses because losses are covered by insurance.”).

See Klock, supra note 126, at 9 (citing some of Nobel laurate Kenneth Arrow’s contributions to the moral hazard literature).


See MISHKIN & EAKINS, supra note 2, at 527-529 (describing various methods insurance companies use to minimize moral hazard).

See ROBERT COOTER & THOMAS ULEN, LAW AND ECONOMICS 238 (6th ed. 2012) (“Insurance companies employ various means to reduce moral hazard, notably coinsurance, deductibles, and experience rating.”).

See VARIAN, supra note 55 at 725 (explaining that insurance companies use deductibles to force consumers to take some risk of loss to provide the incentive to exercise some care against loss).

See generally MISHKIN & EAKINS, supra note 2, at 145-51 (describing moral hazard in financial markets and contractual solutions to the problem).

See SHARPE ET AL., supra note 123, at 655-56 (explaining how futures contracts are created).

Cf. JOHN C. HULL, FUNDAMENTALS OF FUTURES AND OPTIONS MARKETS 20 (4th ed. 2002) (“If two investors get in touch with each other directly and agree to trade an asset in the future for a certain price, there are obvious risks. One of the investors may regret the deal and try to back out.”).

Cf. id. (“One of the key roles of the exchange is to organize trading so that contract defaults are avoided.”).

See generally id. at 20-23 (explaining futures contract margin requirements and marking to market).
See SHARPE ET AL., supra note 123, at 659 ("Whenever a futures contract is signed, both buyer and seller are required to post initial margin.").

See id. ("[B]oth buyer and seller are required to make security deposits that are intended to guarantee that they will in fact be able to fulfill their obligations; accordingly initial margin is often referred to as performance margin.").

See HULL, supra note 207, at 22 (explaining that marketable securities will be accepted in lieu of cash at a fraction of their value and that the margin levels are set to cover the price volatility of the underlying asset).

See id. ("A futures contract is in effect closed out and rewritten at a new price each day.").

See SHARPE ET AL., supra note 123, at 660 ("If the investor does not (or cannot) respond [to a margin call], then the broker will close out the investor’s position by entering a reversing trade in the investor’s account.").

See Roberta Romano, A Thumbnail Sketch of Derivative Securities and Their Regulation, 55 MD. L. REV. 1, 19 (1996) ("The logic of the margin formula is that the initial margin amount should cover all likely daily changes in the value of a contract, thereby ensuring that, under daily marking to market, all of a customer’s probable losses will be covered.").

See, e.g., MISHKIN & EAKINS, supra note 2, at 145-46 (explaining the conflicts of interest between stockholders and bondholders arising from moral hazard).

See Klock, supra note 22, at 68 ("The classic pedagogical example of an embedded option is common stock in a leveraged firm.").

See STEPHEN A. ROSS ET AL., FUNDAMENTALS OF CORPORATE FINANCE 807 (8th ed. 2008) ("The equity in a leveraged corporation can be viewed as a call option on the assets of the firm. This gives the stockholders a strong incentive to increase the volatility of the return on the firm’s assets . . . .").

See, e.g., BREALEY ET AL., supra note 192, at 482-83 (setting out such a hypothetical and stating, “This is a wild gamble and probably a lousy project. But you can see why the owner would be tempted to take it anyway. Why not go for broke?”).


Id.

Id.

Id.

See LEVITT & DUBNER, supra note 63, at 16 ("Economics is, at root, the study of incentives: how people get what they want, or need, especially when other people want or need the same thing. Economists love incentives.").

See STEVEN M. SHEFFRIN, RATIONAL EXPECTATIONS 89-90 (2nd ed. 1996) (explaining that any change in government policy will necessarily change the behavioral relationships).

Cf. WALLISON, supra note 16, at 53 (observing that government goal of increasing home ownership was achieved by lowering requirements for saving significant down payments).

Reinhart, supra note 4, at 84.

See, e.g., Russell Korobkin, Libertarian Welfarism, 97 CALIF. L. REV. 1651, 1685 (2011) ("Legal policymakers can use findings of empirical research from the field of

229 49 USCS § 30127(c)(1).
230 See generally Social Security Act of 1935.
231 See JOHN MAYNARD KEYNES, THE GENERAL THEORY OF EMPLOYMENT, INTEREST, AND MONEY 159-60 (1st Harbinger ed. 1964). Mr. Keynes wrote:
It is usually agreed that casinos should, in the public interest, be inaccessible and expensive. And perhaps the same is true of Stock Exchanges ... The introduction of a substantial Government transfer tax on all transactions might prove the most serviceable reform available, with a view to mitigating the predominance of speculation [in stock markets].

Id.
232 See Wallison, supra note 8, at 2-3 (attributing the financial crisis to Congressional legislation in 1992 designed to increase home ownership, the implementation of which led to competition for poor borrowers and brought about a decline in underwriting standards).

233 Cf. id. at 10 (“A low downpayment for a home may signify the borrower’s lack of financial resources, and this lack of “skin in the game” often means a reduced borrower commitment to the home.”).

234 See Zywicki, supra note 115, at 27 (“When home prices were rising, many consumers refinanced their mortgages to withdraw equity from their homes. These “cash-out” refinancings became increasingly common during the duration of the housing boom . . . .”.

235 See Zywicki and Adamson, supra note 23, at 29 (“As house prices fall, mortgage walking has begun to spread beyond the subprime market.”).

236 Cf. Gerardi et al., supra note 106, at 159 (“Lawrence Summers noted the long tradition of financial messes made because people observed that over a long period the strategy of writing out-of-the-money puts had proved consistently profitable, and so continued the strategy until inevitably a problem occurred.”) (Comments and Discussion).

237 See Gregory Mitchell, Libertarian Paternalism Is an Oxymoron, 99 NW. U.L. REV. 1245, 1246 (2005) (noting defects in the argument for Sunstein and Thaler’s paternalistic policies); but see Sunstein and Thaler, supra note 228, at 1159 (advocating for paternalism).
Mitchell, supra note 237, at 1267.

Id. at 1277.

See, e.g., John C. Coffee, Jr. and Hillary A. Sale, Redesigning the SEC: Does the Treasury Have a Better Idea?, 95 VA. L. REV. 707, 712-713 (2009). These commentators observe:

[Re]peated waves of scandals have followed: the 2000 dot-com crash, the 2001-2002 accounting irregularity scandals that culminated in the bankruptcy of Enron and WorldCom, the New York Attorney General-led investigation of securities analyst conflicts of interest that resulted in a global settlement in 2003, the 2003-2004 "market timing" scandal involving mutual funds, the stock option backdating investigation that began in 2006, and lastly, and most important, the current financial crisis that first surfaced in the U.S. housing market in 2007, then spread to derivatives, and has now paralyzed most major financial institutions.

Id.

See, e.g., Mark Klock, Two Possible Answers to the Enron Experience: Will It Be Regulation of Fortune Tellers or Rebirth of Secondary Liability?, 28 J. CORP. L. 69, 87-88 (2002) (observing that regulators, legislators, and courts failed to protect the public from Enron’s fraud).


See Klock, supra note 129, at 809 (“Allen Stanford’s large Ponzi scheme was reported to the SEC by a former vice president of the company and was ignored.”).

See, e.g., David Reiss, Fannie Mae and Freddie Mac and the Future of Federal Housing Finance Policy: A Study of Regulatory Privilege, 61 ALA. L. REV. 907, 908-09 (2010) (“As part of its response to the ongoing credit crisis, the federal government recently placed Fannie Mae and Freddie Mac, the government-chartered, privately-owned mortgage finance companies, in conservatorship.”).

See Rice and Rose, supra note 20, at 2 (describing the unexpected distribution of losses from these investments regarded as very safe).

See Katz, supra note 5, at 1568 (suggesting that Congress created TARP in a panic with enormous discretion to the Treasury Department and ambiguous or even contradictory guidance on how to use a huge sum of money).

Id.

Id.

Id.

See id. at 1591 (“The true costs of the secondary-market interventions and guarantees provided by the Fed and other agencies cannot be predicted at this time. In fact, it may be years before even a rough calculation is possible.”); see also Jia Lynn Yang and Zachary A. Goldfarb, Price Tag Rises for Wall Street Bailout, WASH. POST, Feb. 14, 2012, at A12 (stating that the current administration’s estimate of the bailout cost is $54 billion).


See David S. Evans and Joshua D. Wright, The Effect of the Consumer Financial Protection Agency Act of 2009 on Consumer Credit, 22 LOY. CONSUMER L. REV. 277, 315 (2010) (“Regulators are, moreover, typically insulated from the incentives to mitigate these errors through education or other means that private actors face in competitive markets.”).

See id. (“[R]egulators are human and subject to some of the same “cognitive biases” as everyday consumers. . . . [B]ecause regulators are just as likely to suffer from cognitive biases as consumers, regulatory "nudges' have significant potential to do more harm than good.”).


See VARIAN, supra note 55, at 311 (explaining that a competitive market is Pareto efficient).

Cf. Mitchell, supra note 256, at 2005 (“In short, the question of whether group judgments and decisions tend to be more or less biased than individual judgments and decisions is enormously complex and defies a simple answer.”).


See id. at 144 (“If investors bear the consequences of the realizations of their decisions, they will exercise their decision making more responsibly.”).

See id. at 100 (“[P]aternalistic protection . . . . creates a moral hazard problem in which people lose market incentives to devote the appropriate resources to managing their own affairs.”).

See Jonathan Klick and Gregory Mitchell, Government Regulation of Irrationality: Moral and Cognitive Hazards, 90 MINN. L. REV. 1620, 1636 (2006) (“Ex post paternalism reduces the risk of thoughtless action, because the government will insulate the decision maker from the consequences of the thoughtless choice. Thus, ex post paternalism operates as a form of social insurance for irrational behavior.”).


Id. at 478.
See id. (citing the work of Lawrence Kohlberg).

See id. at 479 (“The constraining power of the state thus denies the context for full moral personhood on the part of corporate actors and consequently relieves them of moral responsibility for their actions on the corporation’s behalf.”).

See id. at 481 (“[W]e generally should not expect corporations to exhibit any such responsibility until we remove the confining ethical constraints we have imposed upon and with them . . . .”).

Klock, supra note 259, at 143.

Id. at 132-33.

See id. at 133 (“Protecting individuals from bad decisions has detrimental effects.”).

See id. (“It reduces their incentive to make good decisions by lowering the costs of bad decisions . . . . This also reduces the importance of making informed decisions and lowers the payoff associated with educating and informing oneself and researching and analyzing potential investments relative to remaining uninformed.”).

See Klick and Mitchell, supra note 262, at 1624-25 (“We question the generality of the claim that short-run inefficiencies associated with psychological biases justify paternalistic government regulations.”).

Id. at 1620.

Id. at 1625-26.

See BARRY SCHWARTZ, THE PARADOX OF CHOICE 147 (2004) (“Anytime you make a decision and it doesn’t turn out well, or you find an alternative that would have turned out better, you’re a candidate for regret.”).

See generally id. at 157-60 (discussing regret aversion).

See id. at 164 (stating that anticipation of regret will motivate people to take decisions seriously and avoid repeating mistakes).

Cf. id. at 131 (“Just about everyone seems to appreciate that thinking about trade-offs makes for better decisions.”).

See COOTER & ULEN, supra note 203, at 210 (discussing, in the context of tort liability, how economic efficiency would require car passengers to fasten seat belts rather than have manufacturers install automatic fasteners if it is less expensive).

Cf. Klock, supra note 259, at 154 (“Regulations designed to deter trading in order to protect investors from themselves are of questionable value to the protectees . . . .”).

See Klick and Mitchell, supra note 262, at 1635 (“[H]olding people accountable for their judgments and decisions can likewise move behavior toward the rational norm.”).

See Klock, supra note 259, at 146 (“[I]n the long-run [shareholders] learn from their mistakes and, like children, will develop better if allowed to err and be held accountable and responsible.”).

See Oliver E. Williamson, Assessing Contract, 1 J. L. ECON. & ORGANIZATION 177, 193 (1985) (observing that ex ante incentive alignment is important for efficiency).

See Brent T. White, Underwater and not Walking Away: Shame, Fear, and the Social Management of the Housing Crisis, 45 WAKE FOREST L. REV. 971, 995 (2010) (“The voices of those who have actually faced foreclosure suggest another powerful emotion that may be keeping homeowners from defaulting: fear.”); ANDREW S. GROVE, ONLY THE PARANOID SURVIVE: HOW TO EXPLOIT THE CRISIS POINTS THAT
See *id.* at 1018 (“[E]liminating the credit threat would encourage default among underwater homeowners.”).


Id.

Id.


See *id.* at 1041 (“A second characteristic of the movement to direct election was that it made monitoring a senator's behavior more difficult. As monitoring became more difficult, it became easier for senators to sacrifice their constituents' concerns for their own desires and those of special-interest groups.”).

See Sergio Pareja, *Taxation Without Liquidation: Rethinking “Ability to Pay”*, 8 WIS. L. REV. 841, 856 n.91 (“The list of conceivable reasons why people might support this is extensive. For example, the rich arguably should pay more taxes because they benefit more from a stable society.”).


See *id.* at 349-50 (“The classic argument against generalized wealth redistribution - that taking resources away from the wealthy will undermine incentives for hard work . . . . in the future.”).

See Richard A. Posner, *Rational Choice, Behavioral Economics, and the Law*, 50 STAN. L. REV. 1551, 1575 (1998) (“If you give a worker childbirth coverage, she'll like it (endowment effect); but if you don't give it to her, she'll dislike it (more precisely, won't want to pay for it in lower wages).”).


See STIGLITZ, *supra* note 89, at 40 (“[I]t is possible to get more of one thing only by sacrificing some of another. The “cost” of one more unit of one good is how much you have to give up of the other.”).

See David W. Barnes, *The Incentives/Access Tradeoff*, 9 NW. J. TECH. & INTELL. PROP. 96, 111 (2010) (“The marginal costs of supplying another consumer are generally positive for private goods. Marginal costs are generally positive, because sharing a unit of the good that has already been provided is not feasible, as it is for a non-rivalrous public good. Another unit must be produced.”).

A candidate who pledges to extend public sanitation services to a currently unserved part of the county has essentially promised to relieve each of the voters in that jurisdiction of the expense of private trash collection. If that promise is the deciding factor in some voters' decisions to support the candidate, then the candidate has functionally "bought" these votes for the price of collecting the garbage. Even when the monetary value of a promise is not directly calculable, as long as it is targeted at a voter's self-interest - rather than, say, his civic republican concern for the general welfare - the vote in effect has been bought with public funds.

Id.

Cf. John R. Lott, Jr., Should the Wealthy Be Able to “Buy Justice”? 95 J. POLITICAL ECON. 1307, 1314 (1987) (stating that rational prosecutors with budget constraints will pursue the cases that are the cheapest to prosecute).


See generally Klock, supra note 126, at 3-14 (discussing the incentives for people in a situation of nothing to lose when conditions worsen while preserving the opportunity to gain if conditions improve).

See Harper v. Virginia Bd. of Elections, 383 U.S. 663, 685 (1966) (Harlan, J., dissenting) (“[P]eople with some property have a deeper stake in community affairs, and are consequently more responsible, more educated, more knowledgeable, more worthy of confidence, than those without means, and that the community and Nation would be better managed if the franchise were restricted to such citizens.”).

Cf. Tom Baker and Sean J. Griffith, How the Merits Matter: Directors’ and Officers’ Insurance and Securities Settlements, 157 U. PA. L. REV. 755, 797 (2009) (“[S]ecurities settlements are funded by other people's money. Recognition of this fact is often accompanied by the view that other people's money is easy money.”).

Jack Abramoff claimed in an interview to have one hundred members of Congress beholden to him. 60 Minutes, Nov. 6, 2011.

The Twenty-Fourth Amendment prohibits poll taxes in elections for federal office. U.S. CONST. amend. XXIV, § 1.

See Harper, 383 U.S. 663, 675 (Black, J., dissenting) (“Property qualifications existed in the Colonies and were continued by many States after the Constitution was adopted.”).

See Klock, supra note 22, at 106 (suggesting some possible qualifications for acquiring voting rights).

Id.

But see David S. Kirk and John H. Laub, Neighborhood Change and Crime in the Modern Metropolis, 39 CRIME & JUST. 441, 475 (2010) (“Some have likened home ownership to citizenship and characterized it as a political right . . . .”).
