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An Economic Analysis of Mortgagor Protection Laws

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AN ECONOMIC ANALYSIS OF MORTGAGOR PROTECTION LAWS

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OVER the past decade real estate credit markets have been transformed from locally segmented mortgage markets into an integrated national capital market.[1] Integration of real estate credit markets with the national capital market has led lawyers, policymakers, and academics to reexamine the legal rules governing real estate finance, heretofore one of the most venerable areas of the law and one of the areas most impervious to change. Among the laws that have been subjected to particularly strong criticism are those that protect mortgagors from the adverse effects of mortgage default and foreclosure, such as prohibitions on deficiency judgments and statutory rights of redemption. These mortgagor protection laws have been attacked on the grounds that they increase the cost of home credit without any corresponding benefit to borrowers.[2]

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[1] See generally A. Downs, The Revolution in Real Estate Finance (1985) (discussing the revolution that occurred in the late 1970s and early 1980s in U.S. real estate finance and the institutions that provide it, including the greater integration of capital markets and the increased importance of secondary mortgage markets).

[2] See infra notes 26-35 and accompanying text. State mortgagor protection laws have also been criticized for impeding the growth of national mortgage markets. See, e.g., United States v. Stadium Apartments, 425 F.2d 358, 364 (9th Cir.) (refusing to borrow state statutory right of redemption as federal common law), cert. denied, 400 U.S. 926 (1970); Unif. Land Transactions Act, prefatory note, 13 U.L.A. 469, 470 (1986) (stating that variance in state real estate law is an impediment to secondary mortgage markets); G. Nelson & D. Whitman, Real Estate Finance Law § 8.8, at 631 (2d ed. 1985) (criticizing state foreclosure laws as a "luxury of federalism we can ill continue to afford"). For a critieal analysis of these arguments see

Debates over whether to repeal mortgagor protection laws have been informed by remarkably little theory and even less empirical evidence.[3] In this Article I attempt to fill this void by examining whether mortgagor protection laws can be justified as promoting economic efficiency.[4] In Part I, I briefly describe existing mortgagor protection laws and summarize the criticisms leveled against them. I argue that critics of mortgagor protection laws have erred in focusing their analysis on ex post considerations. Instead, I propose that the focus should be on reconceptualizing mortgagor protection laws as a form of insurance against the adverse effects of default and foreclosure. Viewed in this way, mortgagor protections might promote economic efficiency, even though, as an ex post matter, they are not frequently exercised by borrowers.

In Part II, I examine the costs of mortgagor protection laws. The few empirical studies that have examined mortgagor protection laws conclude that they generate substantial costs. My analysis of the costs of mortgagor protection laws proceeds on two fronts. First, I present and test a net present value simulation model of mortgage lending.

Schill, Uniformity or Diversity: Residential Real Estate Finance Law in the 1990s and the Implications of Changing Financial Markets, 64 S. Cal. L. Rev. — (forthcoming July 1991).

[3] See T. Sullivan, E. Warren & J. Westbrook, As We Forgive Our Debtors: Bankruptcy and Consumer Credit in America 143, 146 n.19 (1989) (observing that few empirical studies examine whether giving homebuyers additional mortgage protection would lead to higher interest rates, and stating that in the absence of empirical data, "the arguments about the high costs of additional consumer rights remain matters of faith on all sides"); see also infra notes 27-33 and accompanying text (summarizing existing studies on the effects of mortgagor protection laws).

[4] My focus in this Article is exclusively on issues of economic efficiency. The measure of efficiency used is Kaldor-Hicks efficiency. A given allocation of resources is Kaldor-Hicks efficient if those made better off could compensate those made worse off. To meet the requirements of Kaldor-Hicks efficiency, actual compensation need not be paid. See G. Downs & P. Larkey, The Search for Government Efficiency 7 (1986). I do not mean to imply by this emphasis on efficiency that the desirability of mortgagor protection laws depends exclusively on whether or not they promote economic efficiency. To the contrary, other values may be of great importance. Mortgagor protection laws may redistribute income from wealthy and middle-income homebuyers to those who are less fortunate. In addition, mortgagor protection laws, at least as applied to homeowners, may protect the "personhood" interest of the individual. Cf. Baker, Property and Its Relation to Constitutionally Protected Liberty, 134 U. Pa. L. Rev. 741, 762 (1986) (noting that a person might identify her personhood with a particular house); Radin, Property and Personhood, 34 Stan. L. Rev. 957, 1002-08 (1982) (noting that a home may be bound up with one's identity). Nevertheless, most criticisms of mortgagor protection laws have been based on efficiency grounds, thereby inviting a response in kind. Additionally, economic efficiency is an important, albeit not the exclusive, objective of our legal system.

The results of the simulation indicate that home mortgage loan interest rates are relatively insensitive to the existence of mortgagor protection laws and that the incremental costs of these laws are likely to be quite modest. Next, I use multiple regression analysis to estimate the effect of state mortgagor protection laws on state interest rates. I find that the results of the regression analysis are consistent with the net present value simulation: mortgagor protection laws have a much smaller effect on state interest rates than previous studies indicate.

Although I am unable to conclude definitively that the benefits of mortgagor protection laws exceed their costs because of the absence of data with respect to the benefits they generate, the relatively modest costs associated with state mortgagor protection laws do suggest that mortgagor protections may indeed promote economic efficiency. Nevertheless, the observation that mortgagor protections might be efficient does not necessarily justify government intervention. The desirability of government intervention on efficiency grounds requires identifying a market failure that government action can reduce or correct. In Part III, I examine whether the private market can be relied upon to supply an optimal level of mortgagor protections. I conclude that the market is unlikely to supply an efficient level of protection because of imperfect information on the part of both lenders and borrowers.

In Part IV, I examine what form of government intervention, if any, would be appropriate to correct this market failure. Government dissemination of information is unlikely to alleviate all of the problems generated by imperfect information. Mandatory mortgagor protection laws may promote efficiency, especially if the government is able to estimate and to require the level of protection that the market would provide if both lenders and borrowers were fully informed. Based upon my conceptualization of mortgagor protection laws as insurance, I propose that states choosing to adopt these laws limit their scope to homeowners. In addition, state legislators who wish to protect mortgagors, but do not favor statutory rights of redemption or deficiency judgment prohibitions, might consider adopting an alternative form of mortgagor protection—a compulsory system of mortgage foreclosure insurance.

I. RECONCEPTUALIZING MORTGAGOR PROTECTION LAWS

The historical development of real estate finance law has been characterized by legislative and judicial efforts to mediate the tension between the rights of creditors and borrowers. In the fourteenth and fifteenth centuries, a borrower who secured a loan with real property conveyed his or her property to the lender in fee simple subject to the condition that if the loan was repaid by a specified date, the lender's estate in land would end. If the borrower failed to repay the loan as promised, then title would remain vested in the lender. To ameliorate the harshness of these forfeiture provisions, courts of equity permitted borrowers to redeem their property after default by paying the lender the principal balance and accumulated interest. The uncertainty generated by a borrower's "equity of redemption," however, created difficulties for lenders who needed to know when they would be free to use or sell the land. In response, equity courts developed an action, the foreclosure of the equity of redemption, in which a lender could petition the court to cut off the borrower's equity of redemption, leaving the lender with an estate in fee simple.[5]

As the twentieth century draws to a close, real estate transactions have become a good deal more complicated. Nevertheless, the same tensions between mortgagor and mortgagee continue to shape and reshape legal doctrine. At present, few states permit the type of strict foreclosure that prevailed under the common law.[6] Instead, all states allow mortgagees to bring an action in court to foreclose mortgage liens. After a statutorily prescribed notice, a hearing is held at which evidence is presented with respect to the mortgagor's default, the amount of the unpaid loan balance, and any defenses of the mortgagor. If the judge finds that the mortgagor has defaulted under the terms of the loan, she will order the property sold at a foreclosure sale. At any time prior to the sale of the property, the mortgagor may redeem his property by paying the principal balance together with all accrued interest, penalties, late charges, and court costs. If the mortgagor fails to exercise his equity of redemption, the property will be sold to the highest bidder at a public sale conducted by the court or its

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[5] For a more detailed description of the historical development of the doctrine of "strict foreclosure," see G. Nelson & D. Whitman, supra note 2, §§ 1.2-1.3, at 6-9.

[6] Only two states permit strict foreclosure. See Conn. Gen. Stat. § 49-15 (1983); Vt. Stat. Ann. tit. 12, § 4528 (1973).

agent. This purchaser takes title to the property free of any interests that were subordinate to the foreclosed mortgage. The mortgagor and junior lienors retain only those property interests expressly provided for by statute or common law.[7]

Just over half of the states permit mortgagors and mortgagees to agree to a power of sale foreclosure in lieu of a judicial foreclosure.[8] A power of sale foreclosure allows the mortgagee, if such power is expressly provided for in the mortgage documents,[9] to sell the property without resorting to a judicial proceeding. Mortgagees generally favor power of sale foreclosures because they are quicker and less costly than judicial foreclosure.

One of the primary objectives of mortgage foreclosure law is to have the sheriff, judge, or trustee sell the property for a price that equals its fair market value. For several reasons, however, this rarely occurs. Public auctions are less than optimal environments for maximizing the price offered for real estate. Because of its unique character, real property is not an extremely fungible asset. Frequently, properties must be marketed for long periods of time before they generate high bids. In addition, foreclosed properties are seldom available for inspection prior to the foreclosure sale, thereby increasing a potential purchaser's risk. Furthermore, purchasers must generally pay cash for the property at the time of the auction or shortly thereafter. These impediments typically result in the mortgagee purchasing the property at the foreclosure sale for a nominal bid.[10]

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[7] See infra notes 17-22 and accompanying text (describing statutory rights of redemption).

[8] See, e.g., Ark. Stat. Ann. §§ 18-50-101 to -116 (Supp. 1989); Cal. Civ. Proc. Code § 2924 (West 1989).

[9] Typically, in states that permit power of sale foreclosures, the property is secured by a deed of trust rather than a mortgage. The borrower conveys the property securing the loan to a trustee who holds title in trust for the lender. In the event that the borrower defaults under the loan, the property may be sold by the trustee at a public sale after notice has been given to the borrower. By adding this third party, the deed of trust increases the likelihood that the foreclosure sale will be conducted in a manner that minimizes conflicts of interest.

[10] See Wechsler, Through the Looking Glass: Foreclosure by Sale as *De Facto* Strict Foreclosure—An Empirical Study of Mortgage Foreclosure and Subsequent Resale, 70 Cornell L. Rev. 850, 870 (1985) (finding, based on a study of 118 foreclosure sales occurring in Onondaga County, N.Y. in 1979, that mortgagees purchased the property 75% of the time). One of the reasons mortgagees typically purchase properties at foreclosure sales is that they do not have to pay additional cash: they can bid up to the outstanding loan balance without owing any additional cash.

In the unusual case of the foreclosure sale obtaining a price in excess of the amount owed to the foreclosing mortgagee,[11] the surplus is paid first to junior lienors who have been joined in the foreclosure action, and then any remaining funds are paid to the mortgagor. When the foreclosure sale price is less than the debt owed to the mortgagee, the mortgagee may proceed against the borrower for a deficiency judgment in the amount of the shortfall if the terms of the loan allow such an action.

Many states have adopted mortgagor protection laws to alleviate the hardships that accompany mortgage foreclosure. Frequently, mortgagor protection laws may not be waived by the mortgagor.[12] One form of mortgagor protection, anti-deficiency judgment legislation, addresses the problem of personal liability by limiting the ability of mortgagees to sue mortgagors for deficiencies that remain after the foreclosure sale. Some states, for instance, prohibit deficiency judgments if the mortgagor used the loan proceeds to purchase a residence.[13] Other states prohibit deficiency judgments only when a particular type of foreclosure process is utilized, most commonly a power of sale foreclosure.[14] A number of states, while permitting mortgagees to sue mortgagors for deficiency judgments, regulate how the judgment can be obtained and its amount. For example, some states require that mortgagees seek deficiency judgments at the same time they foreclose on the mortgage.[15] Others limit the amount of the deficiency judgment to the difference between the principal bal-

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[11] One of the reasons sale prices in excess of debt are unusual is that such a result indicates that the mortgagor has equity in the property. Provided that transaction costs are less than the amount of mortgagor equity, a profit-maximizing mortgagor should sell the property and pay off the mortgagee rather than submit to foreclosure.

[12] See, e.g., Valinda Builders v. Bissner, 230 Cal. App. 2d 106, 40 Cal. Rptr. 735 (1964) (deficiency judgment protection not waivable at time loan is made); Mace v. Norwood, 155 Kan. 302, 124 P.2d 497 (1942) (statutory right of redemption not waivable).

[13] See, e.g., Ariz. Rev. Stat. Ann. § 33-814(G) (1990) (prohibiting deficiency judgments when the trust property is 2.5 acres or smaller and is used as a one or two family residence); Cal. Civ. Proc. Code § 580b (West 1976) (prohibiting deficiency judgments when a purchase money mortgage or deed of trust is foreclosed, if the property is used as a dwelling by the borrower).

[14] See, e.g., Cal. Civ. Proc. Code § 580d (West 1976) (prohibiting deficiency judgments when the property is foreclosed under a power of sale).

[15] See, e.g., Mont. Code Ann. § 71-1-222 (1989) (one action for recovery on debt secured by a mortgage); Nev. Rev. Stat. Ann. § 40.430 (Michie Supp. 1989) (same).

ance and the property's fair market value at the time of foreclosure, as opposed to the foreclosure sale price.[16]

Roughly half of the states have adopted a second form of mortgagor protection—the statutory right of redemption.[17] Under the typical statutory right of redemption, the mortgagor and other persons with an interest in the property[18] are permitted, *after* the foreclosure sale, to buy back the property from the foreclosure sale purchaser. The redemption price is usually the price obtained at the foreclosure sale.[19] The period of time during which statutes allow the mortgagor to exercise his statutory right ranges from three months to two years after the foreclosure sale.[20] In addition, most states permit the mortgagor to remain in possession of the property throughout the redemption period.[21] As with anti-deficiency judgment laws, however, statutory rights of redemption may apply only to certain types of borrowers and certain methods of foreclosure.[22]

Statutory rights of redemption have been justified on several grounds. To begin with, allowing mortgagors to remain in possession of their property during the redemption period eases the inevitable

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[16] See, e.g., N.Y. Real Prop. Acts. Law § 1371 (McKinney 1979) (court determines market value); S.C. Code Ann. §§ 29-3-660 to -740 (Law. Co-op. 1976) (defendant may request appraisal).

[17] See A. Axelrod, C. Berger & Q. Johnstone, Land Transfer and Finance: Cases and Materials 296 (3d ed. 1986).

[18] Among those who might have an interest sufficient to permit them to redeem the property are junior lienors and life tenants. See G. Nelson & D. Whitman, supra note 2, § 8.5, at 619.

[19] In addition to the foreclosure sale purchase price, the purchaser at the foreclosure sale is also usually entitled to reimbursement for the costs of the sale and interest on the sales price from the date of the sale to the redemption. See, e.g., Iowa Code Ann. § 628.11 (West 1950 & Supp. 1990); Kan. Stat. Ann. § 60-2414(a) (1983). But see Mo. Rev. Stat. § 443.410 (1978) (mortgagor must pay the amount of the debt, with interest, and other items to foreclosure sale purchaser).

[20] Compare Wyo. Stat. § 1-18-103 (1989) (three month redemption period) with S.D. Codified Laws Ann. § 21-52-13 (1987) (redemption period may be extended to two years).

[21] See, e.g., Ropfogel v. Enegren, 7 Kan. App. 2d 644, 646 P.2d 1138 (1982); G. Nelson & D. Whitman, supra note 2, § 8.4, at 616.

[22] See, e.g., Idaho Code § 45-1508 (Supp. 1990) (no statutory right of redemption when deed of trust foreclosed); Mont. Code Ann. §§ 71-1-228, 71-1-301 to -321 (1989) (no statutory right of redemption in power of sale foreclosure of property with less than 30 acres); see also Bauer, Judicial Foreclosure and Statutory Redemption: The Soundness of Iowa's Traditional Preference for Protection over Credit, 71 Iowa L. Rev. 1, 5 n.11 (1985) (descriptions of variations among state statutory right of redemption laws).

disruption of foreclosure.[23] In addition, the redemption right gives mortgagors who may have encountered temporary financial difficulties the chance to recover their property once they have gotten themselves back on their feet.[24] Furthermore, at least in theory, the existence of a statutory right of redemption should encourage purchasers at foreclosure sales to bid up the price to fair market value in order to avoid the risk of the property being redeemed at an artificially low foreclosure price several months later.[25]

Anti-deficiency judgment laws and statutory rights of redemption have been harshly criticized by scholars and policymakers. Virtually all critiques of these mortgagor protection laws examine them from an ex post perspective, finding that they create high costs that are passed on to borrowers without generating any substantial benefits for those borrowers.[26] For example, Mark Meador, in examining the effect of state laws on interest rates for home mortgage loans,[27] found

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[23] See Bauer, supra note 22, at 70-71; Wechsler, supra note 10, at 860 n.71.

[24] See Poteat, State Legislative Relief for the Mortgage Debtor During the Depression, 5 Law & Contemp. Probs. 517, 526 (1938).

[25] See Bauer, Statutory Redemption Reconsidered: The Operation of Iowa's Redemption Statute in Two Counties Between 1881 and 1980, 70 Iowa L. Rev. 343, 412 (1985); Poteat, supra note 24, at 526. Federal laws also may afford foreclosed-upon mortgagors an opportunity to reacquire their homes. Several federal appellate courts have interpreted the Bankruptcy Code to give mortgagors protection against low foreclosure sale prices. See Durrett v. Washington Nat'l Ins. Co., 621 F.2d 201, 203 (5th Cir. 1980) (setting aside a foreclosure sale that brought less than 58% of the market value of the property as a fraudulent conveyance, and stating that the court was unable to find any sale yielding less than 70% of fair market value that was approved by the courts); see also, e.g., In re Hulm, 738 F.2d 323 (8th Cir. 1984) (adopting the *Durrett* rule that the price received at a foreclosure sale is not necessarily "reasonable equivalent value" for purposes of determining whether a fraudulent conveyance has occurred). One commentator has found that there is no correlation between mortgage loan interest rates and jurisdictions that are subject to the *Durrett* rule. Schuchman, Data on the *Durrett* Controversy, 9 Cardozo L. Rev. 605, 607 (1987).

[26] See, e.g., Dietrich, The Montana Judicial and Non-Judicial Foreclosure Sale: Analysis and Suggestions for Reform, 49 Mont. L. Rev. 285, 322 (1988) (redemption statutes increase cost of credit); Platt, Deficiency Judgments in Oregon Loans Secured by Land: Growing Disparity Among Functional Equivalents, 23 Willamette L. Rev. 37, 49 (1987) (arguing that "the debtor's statutory right to redeem is chimerical" and that it succeeds only in lengthening the foreclosure proceeding and increasing lender costs).

[27] Meador, The Effects of Mortgage Laws on Home Mortgage Rates, 34 J. Econ. & Bus. 143 (1982). Meador examined the effects of both laws prohibiting deficiency judgments and laws extending the time for foreclosure. The variable for laws that extend the time for foreclosure includes the statutory right of redemption, as long as the mortgagor is allowed to remain in possession of the property during the redemption period. See id. at 145. Meador examined the effects of these laws on interest rates for the period 1973 to 1976. Id. at 143 n.1.

that the existence of a law prohibiting deficiency judgments added 13.87 basis points[28] to the interest rate charged on loans secured by newly constructed homes.[29] Meador's estimates also indicate that the existence of a statutory right of redemption that increased by eleven months the time it took to complete the foreclosure process would add 17.42 basis points to the interest rate charged by lenders.[30] A separate study by Austin Jaffe analyzed data from 1975 to 1980.[31] Jaffe concluded, similarly, that statutory rights of redemption were significantly related to higher home mortgage loan interest rates.[32] A more recent analysis of data from 1980 to 1986 concluded that a twelve month statutory right of redemption increased the losses incurred by private mortgage insurers by 21.05 basis points and that anti-deficiency judgment laws increased losses by 35.85 basis points.[33]

In addition to the costs they generate, mortgagor protection laws, especially statutory rights of redemption, are often criticized for failing to assist mortgagors. In particular, commentators point out that few mortgagors redeem their properties after foreclosure.[34] Furthermore, statutory rights of redemption probably chill, rather than pro-

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[28] A basis point is equal to one one-hundredth of a percentage point.

[29] Meador, supra note 27, at 146. For loans secured by existing homes, Meador estimated that anti-deficiency judgment laws increased the interest rate by 22.65 basis points. Id.

[30] See id. Meador found that the existence of a three month extension of the foreclosure period raised the interest rate by 4.75 basis points (new home). Among states with statutory rights of redemption, the mean redemption period is 11 months. Meador also reported that for loans secured by existing homes, the interest rate increased 38.81 basis points for an 11 month statutory right of redemption (10.04 basis points for three months). Id.

[31] See A. Jaffe, Mortgage Foreclosure Law and Regional Disparities of Mortgage Financing Costs 25-26 (Pennsylvania State University, College of Business Administration Working Paper No. 85-05, 1985).

[32] Id. at 25-26. Despite this conclusion, Jaffe's regression analysis shows that in only one of the six years under study was the relationship between statutory rights of redemption and interest rates statistically significant at the 90% confidence level. See id. at 23.

[33] Clauretie, State Foreclosure Laws, Risk Shifting, and the Private Mortgage Insurance Industry, 56 J. Risk & Ins. 544, 551 (1989).

[34] See, e.g., Platt, supra note 26, at 49 (arguing that absent some extraordinary stroke of luck, "the debtor's statutory right to redeem is chimerical"); Shattuck, Security Transactions, 36 Wash. L. Rev. 303, 311 (1961) (0.4% of mortgagors in Washington State redeemed from 1956-1960); Note, Foreclosures, Redemptions and Homeowners, 1975 U. Ill. L.F. 335, 351-52 (1.4% and 0.8% of mortgagors redeemed in Cook County, Illinois in 1964 and 1974, respectively). But see Bauer, supra note 25, at 369 (10.4% of mortgagors in two Iowa counties redeemed from 1881-1980); Comment, Oregon's Statutory Right of Redemption—Any Redeeming Qualities?, 16 Willamette L. Rev. 891, 903-04 (1980) (9.8% redemption rate in three Oregon counties over an eight to ten year period during the 1970s).

mote, bidding at foreclosure sales because of uncertainty over whether or not the mortgagor will redeem the property.[35]

Ex post critiques of mortgagor protection laws miss an important economic function of the laws that can be appreciated only from an ex ante perspective. The benefits generated by these laws may have little to do with the number of times statutory rights of redemption are actually exercised or whether these rights induce purchasers at foreclosure sales to bid up prices. Rather, mortgagor protection laws may promote economic efficiency by serving as a form of insurance against the adverse effects of mortgage default and foreclosure.

Most people are thought to be risk-averse. Insurance reduces the risk associated with a venture and promotes economic efficiency by pooling together a large number of uncorrelated, individual risks. Each individual contributes to a fund out of which losses are indemnified, thereby eliminating or minimizing her own risk or level of uncertainty.[36] Insurance also minimizes the aggregate level of risk in society by virtue of the law of large numbers: as the number of pooled risks increases, the probability of an unfortunate event occurring becomes more readily predictable.[37]

Insurance promotes economic efficiency by serving as an intermediary between people with high and low marginal utilities for capital. Most people exhibit a declining marginal utility for money.[38] Insured individuals pay their premiums out of "low" utility dollars. These

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[35] See Durfee & Doddridge, Redemption From Foreclosure Sale—The Uniform Mortgage Act, 23 Mich. L. Rev. 825, 841 n.51 (1925) (redemption deters bidders because people want to purchase property for immediate use); Platt, supra note 26, at 49 (statutory rights of redemption discourage bidders); Washburn, The Judicial and Legislative Response to Price Inadequacy in Mortgage Foreclosure Sales, 53 S. Cal. L. Rev. 843, 931 (1980) ("The existence of the statutory redemption right often hinders the foreclosure sale and depresses the price.").

[36] C. Williams & R. Heins, Risk Management and Insurance 246 (6th ed. 1989).

[37] See D. Bickelhaupt, General Insurance 69-70 (11th ed. 1983) (emphasizing that "*actual results tend to equal expected (probable) results* as the number of independent events increases"); E. Vaughan & C. Elliot, Fundamentals of Risk and Insurance 18 (2d ed. 1978) ("In addition to eliminating risk at the level of the individual through transfer, the insurance mechanism reduces risk . . . for the economy as a whole."). One commentator has written:

> Applied to insurance, the law of large numbers means that as one increases the number of insured persons possessing independent and identically-valued risks, one increases the accuracy of prediction of expected loss for each individual. . . . [I]ncreasing predictive accuracy reduces the effective risk faced by the insurer, since the level of aggregate risk is a function of the variance of expected outcomes.

Priest, The Current Insurance Crisis and Modern Tort Law, 96 Yale L.J. 1521, 1540 (1987).

[38] R. Cooter & T. Ulen, Law and Economics 58-60 (1988).

low utility premiums, in turn, are paid out as high marginal utility dollars to individuals who have suffered events entitling them to a recovery.[39] In this way, insurance can maximize the marginal utility of capital among people and across time periods.[40]

In addition, insurance can promote economic efficiency by affecting the incentives to engage in productive activities and by stimulating loss prevention activities. In the absence of insurance, a risk averse individual might avoid high risk activities with positive expected values, preferring instead safer, yet potentially less productive, investments.[41] By enabling the investor to minimize her risk, insurance increases the likelihood that she will invest in activities with the highest expected values.[42] Shifting the risk of loss from individuals to firms may also increase loss prevention efforts. The cost of collecting data or devising loss minimization strategies will often exceed the benefits for any one individual. Insurance providers, however, face the aggregation of many individual losses and thus receive a large benefit from loss prevention investments, the cost of which may then be spread throughout the insured population.[43]

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[39] D. Bickelhaupt, supra note 37, at 86.

[40] Some lawyers and economists suggest that insurance promotes economic efficiency by helping individuals equalize their marginal utility of money in different states of the world. Assuming that most people experience a declining marginal utility of money, a person facing the risk that he will have less money in a future state will maximize total utility by shifting money from the present to the future state. Insurance permits this shifting of assets when the change in state is brought about by the occurrence of an insured risk. See Priest, supra note 37, at 1539; Schwartz, Proposals for Products Liability Reform: A Theoretical Synthesis, 97 Yale L.J. 353, 362 (1988).

[41] Business entities and extremely wealthy individuals may not require insurance to make efficient investment decisions because they can frequently diversify their own assets or self-insure. See infra text accompanying notes 147-48.

[42] Cf. Kaplow, An Economic Analysis of Legal Transitions, 99 Harv. L. Rev. 509, 527-28 (1986) (stating that insurance mitigates the risk of investments); Schill, Intergovernmental Takings and Just Compensation: A Question of Federalism, 137 U. Pa. L. Rev. 829, 851-52 (1989) (stating that compensation may be a form of insurance used to promote efficient levels of investment). Insurance may provide incentives to engage in inefficient conduct as well, however. See infra texts accompanying notes 149 and 158-59 (discussing the risk of a moral hazard).

[43] Examples of loss prevention activities include investigations of fraudulent claims, research into the causes of loss generating events, and the development of standards to prevent losses. See M. Greene & J. Trieschmann, Risk and Insurance 30 (6th ed. 1984).

Viewed from an ex ante perspective, mortgagor protection laws may serve an insurance function.[44] Many of the causes of mortgage default, such as unemployment and falling house values,[45] are beyond the control of individual borrowers. Mortgagors, especially those who live in states with volatile economies, may place a high value on mortgagor protections, such as an entitlement to be free from personal liability,[46] the ability to remain in possession of the property during the foreclosure and redemption periods, or the ability to repurchase their homes within a certain period after the foreclosure sale. Mortgagor protection laws may also promote economic efficiency by minimizing the risk of homebuying, leading to higher levels of individual well-being and a more optimal level of housing consumption.

II. An Empirical Examination of the Cost of Mortgagor Protection Laws

In Part I, I propose that mortgagor protection laws might promote economic efficiency as a form of insurance against the adverse effects

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[44] Other debtor protections such as the bankruptcy discharge have also been compared to insurance. See Sullivan, Warren & Westbrook, Limiting Access to Bankruptcy Discharge: An Analysis of the Creditors' Data, 1983 Wis. L. Rev. 1091, 1142 (stating that bankruptcy discharge serves an insurance function for the debtor). In fact, mortgagor protections may fill a gap in the insurance function provided by bankruptcy law: bankruptcy law frequently exempts a portion of the value of a debtor's home from the claims of unsecured creditors, but leaves the home unprotected from the claims of a secured lender such as a mortgagee. See T. Sullivan, E. Warren & J. Westbrook, supra note 3, at 142-43 (observing that lack of homeowner protection from mortgagees may be "surprising").

[45] See infra text accompanying note 76.

[46] Prohibitions on deficiency judgments with respect to personal property secured finance transactions have been justified on the ground that creditors would otherwise fail to maximize the resale value of the collateral; if creditors can reach the assets of debtors in addition to repossessing collateral, the creditors may not have sufficient incentives to maximize the sales price of the collateral. As Schwartz shows in a recent article, however, this rationale for anti-deficiency judgment legislation is seldom justified. Because creditors face the risk that borrowers will have insufficient assets to cover deficiency judgments, creditors should, in most circumstances, maximize their recovery by selling the collateral for the highest possible price. Schwartz, The Enforceability of Security Interests in Consumer Goods, 26 J.L. & Econ. 117, 125-29 (1983). The conclusion that borrowers will maximize sale priees is particularly true in the context of real property mortgage markets. As discussed supra text accompanying notes 6-9, the process of mortgage foreclosure is heavily regulated by state law. In states that require judicial foreclosure, the sale of the mortgaged property is not influenced by the mortgagee, except to the extent that the mortgagee is a bidder at the foreclosure sale. Even in states that permit foreclosure by power of sale, typieally sheriffs or trustees conduct the sale for the express purpose of limiting conflicts of interest that might arise out of the mortgagee's participation. See supra note 9.

of default and foreclosure.[47] In this Part, I examine the costs generated by mortgagor protection laws. Although a full cost/benefit analysis of mortgagor protection laws would examine benefits as well as costs, unfortunately no data exist to shed light on how much people would offer to pay for protection. Nevertheless, if the costs of mortgagor protection laws are as high as lawyers and economists have argued, it would be questionable whether the benefits would ever be sufficient to make these laws efficient. Should the cost of laws such as statutory rights of redemption and deficiency judgment prohibitions be small, however, the likelihood that they would promote, rather than detract from, the objective of economic efficiency would substantially increase.

A. Net Present Value Simulation Model

One method of estimating the magnitude of costs generated by mortgagor protection laws is to create and to test a model of expected returns to lenders. In this Subpart I construct a net present value[48] model of lender return in which the only risk a lender faces is the risk of borrower default. The model assumes that a lender extends a self-amortizing loan to the borrower. As is typical with home mortgage loans, the borrower may prepay the loan at any time with no penalty. In the event that a borrower defaults on his mortgage loan, the lender will foreclose the mortgage lien and, if possible, pursue a deficiency judgment against the borrower. Let:

V = the initial principal balance of the loan;
T_m = the term of the loan;
T = the year in which the loan is prepaid;
L_t = the principal balance of the loan in any year t;
C_o = the net cost to the lender of originating the loan;
C_t = the annual cost to the lender of servicing the loan;[49]
r = the lender's cost of funds;

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[47] Laws mandating mortgagor protections would be efficient only if the private market failed to generate an optimal level of protection. In Part III, I examine why private markets may fail to provide an efficient level of mortgagor protection.

[48] Net present value is equal to the sum of all positive and negative projected cash flows associated with an investment, discounted to present value. See S. Maisel, Real Estate Finance 452 (1987).

[49] C_t is assumed to increase each year by a set inflation rate 'π'. $C_t = C_1 (1 + \pi)^t$.

M = the annual lump sum payment by the borrower to the lender;[50]

d_t = the probability that the borrower will default in any year t;

R_t = the revenue received by the lender from the foreclosure sale and deficiency judgment;[51]

h = the time between the borrower's last payment and the date the lender receives R_t; and

F_t = the cost to the lender of foreclosing the mortgage and bringing a deficiency judgment action.[52]

The net present value of a mortgage may be obtained by adding together each of the cash flows to the lender described below:

(1) $-V - C_o$, constituting the disbursement by the lender of the loan principal and the cost of origination;

(2) $\sum_{t=1}^{T} \frac{(M-C_t)(1-\sum_{s=1}^{t} d_s)}{(1+r)^t}$, representing the discounted value of the regularly scheduled payments received by the lender for the years that the borrower remains in good standing;

(3) $(1-\sum_{t=1}^{T-1} d_t)(\frac{L_T}{(1+r)^T})$, representing the discounted value of all loan prepayments received by the lender; and

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50 $M = \frac{iV}{1-\frac{1}{(1+i)^{T_m}}}$, where i is the annual interest rate charged by the lender to the borrower. The net present value model assumes annual lump sum mortgage loan payments rather than monthly payments. The mathematical results are similar to those that would be obtained by using a monthly payment convention.

51 $R_t = \theta(L_t)$, where θ is the proportion of the loan balance recovered by the lender by virtue of the foreclosure sale and deficiency judgment.

52 F_t is assumed to increase each year by a set inflation rate 'π'. $F_t = F_1(1+\pi)^t$.

(4) $\sum_{t=1}^{T-1} \frac{d_t(\frac{R_t}{(1+r)^h})-F_t}{(1+r)^t}$, being equal to the discounted value of all net revenue received by the lender from the foreclosure sale and deficieucy judgment.

In sum:

$$NPV= -V-C_0 + \sum_{t=1}^{T} \frac{(M-C_t)(1-\sum_{s=1}^{t} d_s)}{(1+r)^t} + (1-\sum_{t=1}^{T-1} d_t)(\frac{L_T}{(1+r)^T}) + \sum_{t=1}^{T-1} \frac{d_t(\frac{R_t}{(1+r)^h})-F_t}{(1+r)^t}$$

In the analysis that follows, I assume that the net present value of a loan will equal zero.[53] Several variables are held constant throughout the analysis:

$V = \$80,000$[54]	$d_1 = 0.09\%$[55]
$T_m = 30$ years	$d_2 = 0.64\%$
$T = 9$ years[56]	$d_3 = 0.97\%$

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[53] This is consistent with an assumption of competitive markets.

[54] This value of V is based upon a purchase price of $100,000 and a loan-to-value ratio of 80%.

[55] Values for default probabilities were obtained by adjusting a conventional loan default curve to reflect current default rates. See Peters, Pinkus & Askin, Prepayment Patterns of Conventional Mortgages: Experience from the Freddie Mac Portfolio, 1 Secondary Mortgage Markets 6, 10 (1984) (displaying conditional rates of default for loans in the Federal Home Loan Mortgage Corporation portfolio). In order to present a "worst possible case" scenario, I have chosen to err on the side of using default rates that are in excess of actual default rates.

[56] Relatively few loans are held to maturity because borrowers prepay them to move elsewhere, obtain a lower interest rate, or default. Because prepayments are closely tied to changes in interest rates, computing an average life for mortgage loans is an extremely complex procedure. See Becketti, The Prepayment Risk of Mortgage-Backed Securities, Fed. Reserve Bank of Kan. City Econ. Rev., Feb. 1989, at 43, 48-55; Hu, Prepayment Projections, 48 Mortgage Banking 55 (1987). Estimates of an average mortgage life range from seven to twelve years. See E. Baldwin & S. Stotts, Mortgage-Backed Securities: A Reference Guide for Lenders and Issuers 285 (1990) (FHA experience shows an average life of 12 years); Interview with Lyle Gramley & Richard Peach, Senior Staff Vice President and Chief Economist & Staff Vice President, respectively, of Mortgage Bankers Association, in Washington, D.C. (July 17, 1990) (average life of seven years for conventional mortgages).

C_o = \$1,250[57] d_4 = 1.35%
C_t = \$90[58] d_5 = 1.20%
r = 10% d_6 = 0.58%
π = 5% d_7 = 0.11%
d_8 = 0.05%

Mortgagor protection laws are assumed to affect only three variables in the net present value simulation model. Statutory rights of redemption are likely to increase the time (h) between the last payment received by the lender and the date the lender ultimately receives the proceeds from the foreclosure sale.[59] Statutory rights of redemption might also increase foreclosure costs (F_t) if the lender purchases the property and the borrower later redeems. Finally, the proportion of the loan balance ultimately recovered by the lender (θ) may be reduced by mortgagor protection laws: statutory rights of redemption may chill bidding at the foreclosure sale, and anti-deficiency judgment laws may reduce or eliminate money judgments against the borrower.[60]

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[57] See Mortgage Bankers Ass'n of Am., The Cost Study 34 (1988) (average net loan production income/loss entry).

[58] See id. at 46 (total direct servicing expenses entry).

[59] This would occur if the lender were to purchase the property at the foreclosure sale and hold it until the redemption period expired. In this way, the lender might be able to minimize the discounting due to uncertainty and thus maximize the sales price. Such a strategy, of course, would have to be balanced against the costs of holding the property, which may be substantial, e.g., interest, vandalism, and depreciation.

[60] It is conceivable that mortgagor protection laws might also increase default rates. Mortgagor protection laws might raise the cost of credit, thereby making it harder for borrowers to afford their monthly payments. In addition, mortgagor protections might induce moral hazard, leading borrowers to be less diligent in making their payments. It is unlikely, however, that mortgagor protections would increase the default rate. As my empirical analysis in the next section indicates, the increased cost of credit attributable to mortgagor protections is likely to be quite small. See infra text accompanying note 84. In addition, as I discuss in Part IV, problems of moral hazard are likely to be quite limited in the context of mortgage default and foreclosure. See infra text accompanying notes 158-59. Recent empirical data support the conclusion that the existence of mortgagor protection laws does not increase foreclosure rates. See Clauretie, The Impact of Interstate Foreclosure Cost Differences and the Value of Mortgages on Default Rates, 15 Am. Real Est. & Urb. Econ. A.J. 152, 164 (1987) (stating that statutory rights of redemption are negatively related to foreclosure rates; the existence of deficiency judgment prohibitions is not significantly related to foreclosure rates). Similarly, when I replace the interest rate variable with delinquency rates in the regression model contained in the next Subpart, see infra text accompanying notes 65-84, I find that mortgagor protection laws are negatively related to delinquency rates.

To examine the costs generated by changes in the variables serving as proxies for the effects of mortgagor protection laws, I estimate a base case that assumes that these laws do not exist. The respective values of h, F_1, and θ in the base case are 3 months, $275, and 98%.[61] The interest rate that must be charged by a lender to break even under the base case is 10.52%.

Table I shows the break-even interest rates and the annual debt service payments that result from varying the values of h, F_t, and θ. The results indicate that holding h and F_t constant, and decreasing the proportion of the loan balance recovered by a mortgagee from 98% to 88% and 78%, would increase the break-even interest rate by five and twelve basis points, respectively. In other words, for a lender to break even, borrowers would have to pay an additional $43 to $86 per year in debt service payments. If the effect of the laws was to decrease the proportion of the debt recovered to 78%, increase legal costs from $275 to $3,000, and lengthen the foreclosure process by a year, the break-even interest rate would climb by eighteen basis points. Annual debt service payments would increase by only $134, or $11.17 per month, in this particularly gloomy scenario.

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[61] Estimates of h and F_1 are based on figures reported for Texas. See D. Jankowski, The National Mortgage Servicer's Reference Directory 1-6 to 1-7 (6th ed. 1989) (tables listing optimum foreclosure time frames and fees allowed by the Federal National Mortgage Association). The estimate that lenders recover 98% of the loan balance at foreclosure is consistent with recent empirical evidence. See Fed. Home Loan Bank Board, Invited Working Paper No. 30, The Costs of Mortgage Loan Foreclosure: Case Studies of Six Savings & Loan Associations 7 (1980) (study commissioned by Federal Home Loan Bank Board reporting that in three states with varying levels of mortgagor protection laws, the foreclosure sales price exceeds the loan balance by amounts ranging from $72 to $250 per $1,000 loan balance); Mortgage Bankers Ass'n of Am., News Release, Lenders Lose on Mortgage Foreclosures, Survey Shows (Dec. 19, 1984) (stating that the average loss on conventional mortgage loan foreclosure is $400 to $1,000 based upon a principal balance of $41,716); cf. T. Sullivan, E. Warren & J. Westbrook, supra note 3, at 309 (reporting that a survey of bankruptcies filed in 1981 shows that debt extended by savings and loans and private mortgage companies is almost fully secured).

TABLE I: NET PRESENT VALUE SIMULATION RESULTS

Foreclosure Costs (F_1)	Time to Complete Foreclosure (h)	Break-even Interest Rate (i)	Annual Debt Service ($)
	Proportion of Loan Balance Recovered (θ) = .98		
275	.25	10.52	8,853
275	1.25	10.57	8,891
275	2.00	10.61	8,918
600	.25	10.52	8,856
600	1.25	10.57	8,894
600	2.00	10.61	8,920
3000	.25	10.54	8,872
3000	1.25	10.59	8,910
3000	2.00	10.64	8,936
	Proportion of Loan Balance Recovered (θ) = .88		
275	.25	10.57	8,896
275	1.25	10.62	8,930
275	2.00	10.66	8,954
600	.25	10.58	8,898
600	1.25	10.63	8,932
600	2.00	10.66	8,956
3000	.25	10.60	8,914
3000	1.25	10.65	8,949
3000	2.00	10.68	8,972
	Proportion of Loan Balance Recovered (θ) =.78		
275	.25	10.64	8,939
275	1.25	10.68	8,969
275	2.00	10.71	8,990
600	.25	10.64	8,941
600	1.25	10.68	8,971
600	2.00	10.71	8,992
3000	.25	10.66	8,957
3000	1.25	10.70	8,987
3000	2.00	10.73	9,008

The net present value simulation indicates that holding all other factors constant, mortgagor protections that increase the time to complete the foreclosure process, increase the cost of foreclosure, and decrease the amount recovered by a lender in the event of a default have a rather small effect on the interest rate required by a lender, at least as compared to the effects reported in the studies summarized in Part I. The relative infrequency of default explains, at least in part, the relative insensitivity of interest rates to changes in legal variables. Mortgagor protections generate actual costs only when a borrower defaults on his loan and the lender forecloses; if mortgagors rarely default, then the expected costs will be small. Despite regional variations, default and foreclosure rates for conventional home mortgage loans in the United States are relatively low.[62]

B. Multiple Regression Analysis

Multiple regression analysis reinforces the results of the net present value simulation. If mortgagor protection laws generate substantial costs, economic theory suggests that lenders in a competitive market will pass these costs along to borrowers.[63] Empirical studies of mortgage markets consistently show that interest rates for home mortgage loans vary across states and regions.[64] To the extent that mortgagor

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[62] As of the fourth quarter of 1989, less than 1% of all conventional home loan mortgagors were over two months late in making debt payments and only one-half of one percent of all conventional mortgages were in foreclosure. During the fourth quarter, fewer than .2% of one percent of conventional home loan mortgages went into foreclosure. See Mortgage Bankers Ass'n of Am., National Delinquency Survey (Feb. 22, 1990) (Traditional table for Conventional Loans). Default and foreclosure rates for loans insured by the Federal Housing Administration were much higher. See id. (Traditional table for all FHA Loans) (reporting that 2.4% of all FHA loans were in arrears by 60 days or more; .39% went into foreclosure during the fourth quarter of 1989).

[63] The ability of lenders to pass along costs to borrowers assumes that the demand for mortgage loans is not perfectly elastic. If lenders were unable to pass the costs along to borrowers for any reason such as interest rate ceilings, they might instead ration credit or require increased downpayments. During the time period under study, there is no reason to believe that lenders faced any impediment to passing the costs of mortgagor protections, if any, to borrowers. See infra note 65 (discussing federal preemption of state interest rate ceiling laws).

[64] L. Grebler, D. Blank & L. Winnick, Capital Formation in Residential Real Estate: Trends and Prospects 221, 229-30 (1956); Fredrikson, The Geographic Structure of Residential Mortgage Yields, *in* 2 Essays on Interest Rates 187, 195-96 (J. Guttentag ed. 1971); Longbrake & Peterson, Regional and Intra-Regional Variations in Mortgage Loan Rates, 31 J. Econ. & Bus. 75, 80-81 (1979); Ostas, Regional Differences in Mortgage Financing

protection laws generate substantial costs, one would hypothesize that at least a portion of the interstate variation in home mortgage loan interest rates is attributable to the existence of these laws.

In this Subpart I test the hypothesis that state mortgagor protection laws are causally related to increased interest rates for home mortgage loans. I begin by specifying a reduced form model of the determinants of state interest rates. The rate of interest charged by lenders for mortgage loans is determined by a combination of forces within state, regional, and national economies. Conditions within a state that increase the risk of mortgage default should be positively related to higher interest rates. Similarly, laws that increase the expected cost of mortgage default should also be positively related to increased interest rates.[65]

Costs: A Reexamination, 32 J. Fin. 1774, 1778 (1977); Schaaf, Regional Differences in Mortgage Financing Costs, 21 J. Fin. 85, 93 (1966).

[65] Unlike some empirical studies, my model of state mortgage loan interest rates does not include a variable for lenders' cost of funds. See, e.g., A. Jaffe, supra note 31, at 18-19; Longbrake & Peterson, supra note 64, at 76; Zabrenski, Barth & Marlow, Determinants of Regional Mortgage Rates Under Varying Economic Conditions, 22 Q. Rev. Econ. & Bus. 81, 88 (1982). These studies examined the determinants of state mortgage loan interest rates prior to the integration of mortgage markets with general credit markets. See Schill, supra note 2. Even when mortgage markets were segmented, this variable had little explanatory power. See A. Jaffe, supra note 31, at 18. With integration, mortgage originators are no longer reliant upon local sources of funds. Instead, they may import unlimited funds from other areas by selling mortgages in the secondary mortgage market.

My model also does not explicitly include variables for loan-to-value ratios and term-to-maturity, which are sometimes used in other studies. See, e.g., id. at 13; Meador, supra note 27, at 146; Ostas, supra note 64, at 1775; Zabrenski, Barth & Marlow, supra, at 87. These variables are already controlled for by virtue of the nature of the dependent variable. See infra note 68.

Finally, some studies have examined the effect of interest rate ceilings on state interest rates. I do not include this variable for two reasons. First, in 1980 Congress precmpted state interest rate ceilings on most single family home loan mortgages. See Depository Institutions Deregulation and Monetary Control Act of 1980, Pub. L. No. 96-221, § 501(a)(1), 94 Stat. 132, 161 (codified at 12 U.S.C. § 1735f-7a (1988)). Although Congress permitted states to reinstate their laws prior to 1983, only 15 chose to do so. See Schill, supra note 2. Second, it is unlikely that usury ceilings would have affected interest rates even in the 15 states that reenacted their laws. During the time period under study, mortgage loan interest rates were modest and credit plentiful. See Lea, Sources of Funds for Mortgage Finance, 1 J. Housing Res. 139, 158 (1990) (observing that by the mid to late 1980s, "mortgage credit became readily available to borrowers at market-determined prices"); Roth, Volatile Mortgage Rates—A New Fact of Life?, Fed. Reserve Bank of Kan. City Econ. Rev., Mar. 1988, at 16-17 (graph showing decline of interest rates in late 1980s from their high levels at the beginning of the decade).

The dependent variable used in the multiple regression analysis is the average state effective interest rate[66] for 90% loan-to-value, conventional[67] mortgage loans secured by newly constructed homes.[68] Quarterly observations from each state are used for the period of June 1987 to December 1989. The state risk variables included in the model are: per capita household income (INCOME),[69] the unemployment rate (UNEMP),[70] the proportion of the state's population employed in agriculture (AGRPCT),[71] the standard deviation of conventional mortgage delinquency rates for the period 1986-1989

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[66] The effective interest rate of a mortgage loan is calculated by summing the contract rate and the initial fees and charges assessed by lenders, all amortized over a 10 year period.

[67] A conventional mortgage loan is one that is not insured by the federal government. For purposes of this study, a conventional loan will also bear a fixed interest rate.

[68] The source of the state interest rate data is the monthly survey of home mortgage loan originators conducted by the Federal Home Loan Bank Board (FHLBB). Under the Financial Institutions Reform, Recovery, and Enforcement Act of 1989, Pub. L. No. 101-73, sec. 512, § 21, 103 Stat. 183, 406 (to amend 12 U.S.C. § 1441 (1988)), responsibility for conducting the survey has shifted to the newly constituted Federal Home Finance Agency. The FHLBB conducted two interest rate surveys each month—one of the commitment rates offered by lenders, the other of the rates of loans actually closed by lenders. Several empirical studies have used data from the loans-closed survey. See, e.g., Meador, supra note 27, at 145; Zabrenski, Barth & Marlow, supra note 65, at 86. In this study, I utilize the FHLBB loan commitment survey. The loan commitment survey collects interest rate data on loans with maturities of over 15 years for various loan-to-value ratios. See Zabrenski, New Measures of Mortgage Rates and Lending Policies, Fed. Home Loan Bank Board J., June 1978, at 14. I chose to use the loan commitment data rather than the loans-closed data because it permitted better control over loan-to-value ratios. The dependent variable used in the multiple regression analysis is the effective interest rate for loans with 90% loan-to-value ratios. This rate was selected because of the likelihood that if state mortgagor protection laws increased expected costs, the effect would be greatest for loans with the highest degree of risk, and high loan-to-value ratios are frequently found to increase the risk of default. See Jackson & Kaserman, Default Risk on Home Mortgage Loans: A Test of Competing Hypotheses, 47 J. Risk & Ins. 678, 683-84 (1980); Waller, Residential Mortgage Default: An Empirical Note on Changes in Property Value and Debt over Time, 8 Housing Fin. Rev. 155, 162 (1989). Data from the loan commitment survey confirms that lenders charge higher interest rates for loans with 90% loan-to-value ratios than for loans with 75% loan-to-value ratios.

[69] Data for several of the variables used in the regression analysis was obtained from computerized data files maintained by the WEFA Group ("WEFA") (located at 401 City Avenue, Suite 300, Bala Cynwyd, Pennsylvania 19004). INCOME is contained in WEFA's RMAC data base and is based on United States Bureau of the Censns Current Population Reports.

[70] WEFA, supra note 69, RMAC data base, based upon data from the Bureau of Labor Statistics.

[71] Id.

(DELINQSD),[72] and the change in conventional mortgage foreclosure rates over the preceding four quarters (CH4FCIC).[73] To test the effect of state mortgagor protection laws on the dependent variable, two independent variables are included in the model. The existence of a state law prohibiting a mortgagee from obtaining a deficiency judgment when it uses the predominant method of foreclosure is represented by the dummy variable NDEFJUD.[74] A second variable, REDDAYS, represents the length, in days, of any statutory redemption period applicable to the predominant means of mortgage foreclosure.[75]

A positive relationship is expected between the risk variables UNEMP, AGRPCT, DELINQSD, CH4FCIC, and state mortgage loan interest rates. Lenders price mortgage loans based on their current estimation of future risks. These projections are based, in part, on current conditions and historical trends. High unemployment rates, for instance, have been shown to be significantly related to mortgage default.[76] Therefore, one would expect high unemployment rates to be positively related to higher interest rates. There should also be a positive correlation between high levels of agricultural

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[72] WEFA, supra note 69, REMP data base, based upon data from the Mortgage Bankers Association.

[73] Id.

[74] NDEFJUD takes on a value of one if the state prohibits a mortgagee using the state's predominant method of foreclosure from suing the borrower for a deficiency judgment. Otherwise, the variable takes on a value of zero.

[75] If a state has no statutory right of redemption, the value of REDDAYS is zero. Included in the REDDAYS variable are time periods that are not technically post-foreclosure statutory rights of redemption, but that the state mandates to accomplish similar purposes. A small number of states establish periods of time either before the foreclosure sale takes place or after the foreclosure sale, but before judicial confirmation of the sale, during which a mortgagor can redeem his property. These redemption periods are additions to the mortgagor's equitable redemption rights. See, e.g., Ind. Code § 32-8-16-1 (1979 & Supp. 1990) (90 day automatic stay of foreclosure sale); Ohio Rev. Code Ann. § 2329.33 (Anderson 1981 & Supp. 1989) (debtor can redeem after sale and before court confirmation); Wis. Stat. Ann. § 846.10 (West 1977 & Supp. 1990) (12 month redemption period before sale).

[76] See Campbell & Dietrich, The Determinants of Default on Insured Conventional Residential Mortgage Loans, 38 J. Fin. 1569, 1578 (1983); Sullivan & Rogers, Residential Mortgage Delinquencies and Foreclosures: Improvement's Underway, Fed. Reserve Bank of Atlanta Econ. Rev., Dec. 1983, at 34, 36; T. Holloway & R. Rosenblatt, Problem Loans: Trends, Causes, and Outlook for the Future 25 (Apr. 1990) (unpublished manuscript); cf. T. Sullivan, E. Warren & J. Westbrook, supra note 3, at 98-102 (reporting that a majority of wage-earning households filing for bankruptcy had experienced an interruption in income and a decline in earnings prior to bankruptey).

employment and increased risk in mortgage lending. Farm economies are frequently subjected to jolts attributable to volatile food prices and climatic conditions, which in turn lead to high levels of foreclosure and economic distress.[77] In addition, one would expect volatile rates of mortgage delinquencies and foreclosures to increase the risk of mortgage lending and, therefore, to be positively related to higher interest rates. With respect to INCOME, the relationship between income and interest rates is difficult to predict. On the one hand, higher levels of household income might increase the ability of mortgagors to pay their debts, thereby reducing the risk of default and the interest rate charged for loans. On the other hand, higher levels of income probably lead households to purchase more expensive homes, perhaps resulting in credit overextension and a heightened risk of default. Furthermore, if household income in a particular state increases disproportionately as compared to other states, more home loan mortgage credit would likely flow to that state. The increased flow of mortgage credit to particular states may lead to less overall diversification in the mortgage market, thereby increasing levels of risk. Lenders might compensate for this increased risk by charging higher interest rates in states with higher demand. Therefore, it is impossible to predict, ex ante, the expected relationship between household income and interest rates.

Home mortgage loan interest rates are determined by a combination of state, regional, and national variables. Not all of these forces are measured by the five risk and two state law variables in the regression model. To capture the effect of macroeconomic factors on state interest rates, I include in the model ten time-dependent dummy variables ("DTIME02, DTIME03, . . . DTIME11").[78] In addition, I include eight regional dummy variables ("DREG2, DREG3, . . . DREG9") that serve as a flexible control for unmeasured, subnational economic forces.[79]

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[77] See, e.g., Despair, Violence Down on the Farm, U.S. News & World Rep., Jan. 17, 1983, at 13 (discussing wave of foreclosures in farm states); Winter of Despair Hits the Farm Belt, U.S. News & World Rep., Jan. 20, 1986, at 21 (same).

[78] Estimated coefficients in the multiple regression model are robust in the seuse that including a long-term bond rate in place of the time period dummy variables does not change their sign or significantly affect their magnitude.

[79] A more completely specified panel model would include a dummy variable for each state to control for unmeasurable state-specific effects. Unfortunately, I cannot include individual

Table II contains the results of the multiple regression analysis. The second column presents parameters estimated by ordinary least squares.[80] All of the risk and legal variables except for household income are significantly different from zero at the 90% or 95% confidence levels. All of the coefficients, except the one representing the proportion of the state's population employed in agriculture, have the expected positive sign.[81] With respect to the legal variables, a law prohibiting deficiency judgments is estimated to increase home mortgage loan interest rates by 6.7 basis points. Statutory rights of redemption are estimated to add .02 basis points per day, or 6.5 basis points for an average redemption period of eleven months.

The multiple regression analysis uses pooled time series and cross section data to estimate the effect of state law variables on home mortgage loan interest rates. Using time series data to estimate parameters according to the ordinary least squares model, however, frequently generates biased significance tests because of the problem of serial correlation in the error term.[82] To correct for first-order serial correlation, I transformed the data using the two-step Cochrane-Orcutt method.[83] The respecified coefficients are presented in the third column of Table II.

As expected, the standard errors for the corrected multiple regression coefficients are larger than they were in the ordinary least squares model, resulting in diminished levels of statistical significance. The coefficient for the anti-deficiency judgment law dummy variable is even smaller than it was using ordinary least squares, although one can no longer say with 90% confidence that it is different from zero. The coefficient for statutory rights of redemption, however, remains statistically significant at the 90% level. A one day statutory redemp-

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state dummy variables because the legal variables are time invariant and would therefore be perfectly co-linear with such a set of variables.

[80] See J. Johnston, Econometric Methods 123-32 (2d ed. 1972).

[81] One possible explanation for the negative sign of AGRPCT is the recovery, after several years of distress, experienced by the agricultural sector during the time period under study. See Robbins, New Decade Finds New Hope on Farm, N.Y. Times, May 18, 1990, § A, at 1, col. 2 (discussing agricultural recovery beginning in 1987).

[82] Serial correlation occurs when the value of a variable at time t is correlated with its value at time t-1. If such a relationship among the prediction errors exists, one of the assumptions of the ordinary least squares model—that residual errors are random—is violated. Serial correlation commonly results in underestimated standard errors and therefore inflated t statistics. See J. Johnston, supra note 80, at 122.

[83] See J. Kmenta, Elements of Econometrics 314-16 (2d ed. 1986).

TABLE II: MULTIPLE REGRESSION ANALYSIS

Independent Variable	OLS Model	Transformed OLS Model
Intercept	10.86775[b]	10.86719[b]
	(0.15138)	(0.21621)
UNEMP	0.01895[b]	0.01924[b]
	(0.00975)	(0.01138)
DELINQSD	0.14796[b]	0.14614[a]
	(0.05618)	(0.08890)
CH4FCIC	0.07977[b]	0.05461[b]
	(0.02900)	(0.02910)
INCOME	−0.00016	0.00018
	(0.00239)	(0.00364)
AGRPCT	−0.2488[b]	−0.02325[a]
	(0.01014)	(0.01566)
NDEFJUD	0.06743[a]	0.05417
	(0.05069)	(0.07955)
REDDAYS	0.00019[b]	0.00022[a]
	(0.00009)	(0.00014)
DREG2	−0.09328[a]	−0.11148
	(0.04877)	(0.07630)
DREG3	−0.02835	−0.05344
	(0.05333)	(0.07818)
DREG4	−0.12091	−0.15439
	(0.07794)	(0.11829)
DREG5	−0.10655[b]	−0.12936[b]
	(0.04153)	(0.06445)
DREG6	−0.12098	−0.14032
	(0.07550)	(0.10899)
DREG7	−0.13865[a]	−0.15318
	(0.07104)	(0.10015)
DREG8	−0.17550[b]	−0.19324[b]
	(0.05242)	(0.07790)
DREG9	−0.06430	−0.07298
	(0.07835)	(0.11747)
DTIMEO2	0.16126[b]	0.16015[b]
	(0.04661)	(0.03434)
DTIMEO3	−0.01850	−0.01932
	(0.04608)	(0.03342)
DTIMEO4	−0.74090[b]	−0.74477[b]
	(0.04646)	(0.03384)
DTIMEO5	0.54657[b]	0.54637[b]
	(0.04612)	(0.03342)
DTIMEO6	−0.12800[b]	0.12668[b]
	(0.04615)	(0.03347)
DTIMEO7	−0.07113	−0.07142[b]
	(0.04604)	(0.03331)
DTIMEO8	0.40907[b]	0.41119[b]
	(0.04628)	(0.03366)
DTIMEO9	−0.43261[b]	−0.43389[b]
	(0.04603)	(0.03323)
DTIME10	−0.30080[b]	−0.30115[b]
	(0.04622)	(0.03359)
DTIME11	−0.32386[b]	−0.32404[b]
	(0.04597)	(0.03308)
Observations	462	462
$\bar{R}^2$	0.698	N/A
Durbin-Watson	1.146	N/A

Note - Standard Errors are reported in parentheses. One-tailed significance tests are used for UNEMP, DELINQSD, CH4FCIC, AGRPCT, NDEFJUD, REDDAYS.

[a] Estimated coefficient is significant at 90% level.

[b] Estimated coefficient is significant at 95% level.

tion period is estimated to add .022 basis points to a home mortgage loan, or 7.3 basis points for a typical eleven month redemption period.

The results of multiple regression analysis reinforce the conclusions drawn from the net present value simulation, which suggest that the results of earlier empirical studies are exaggerated. Mortgagor protection laws may lead to higher home loan mortgage rates, but the magnitude of the increase in credit costs is likely to be modest. Whereas Meador's results indicate that an eleven month statutory redemption period would increase new home loan rates by 17.42 basis points, my results indicate that the rise in interest rates would be less than half that size. Similarly, Meador found the existence of a law prohibiting deficiency judgments to contribute 13.87 basis points to a loan's interest rate; I fail to find the effect of such a law on interest rates to be statistically significant.[84]

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[84] A failure to find that anti-deficiency laws are a statistically significant cause of increased interest rates does not, however, rule out the possibility that their effect on interest rates might be large. Given the relatively large standard error of the NDEFJUD variable, I am unable to reject Meador's estimate with a 95% level of confidence. Nevertheless, the net present value simulation analysis suggests that the magnitude of the effect is smaller than the effect estimated by Meador.

Several possible explanations exist to account for the difference in the results obtained in this Article and those estimated by Meador. First, Meador examined interest rate data from 1973 to 1976, whereas I have used data from 1987 to 1989. Over the past ten years, mortgage markets have been transformed by the secondary mortgage market. Most home mortgage loans originated are now sold in the secondary market, and these secondary mortgage market agencies generally do not fully price the expected costs that are attributable to state mortgagor protection laws. See Schill, supra note 2. Therefore, the full costs of mortgagor protection laws might not be reflected in state interest rates and instead might be externalized to citizens of other states. Such externalization would lead me to underestimate the magnitude of the costs. Second, Meador utilized a somewhat different model and a different source of data for home loan interest rates. Third, instead of using state interest rates, Meador used interest rates for Standard Metropolitan Statistical Areas (SMSAs) as his dependent variable. This specification of his dependent variable may have biased his results, since several SMSAs span more than one state. Fourth, Meador used time series data, yet apparently failed to investigate and correct for serial correlation. This failure to adjust for serial correlation may have led to biased significance tests. Finally, a large proportion of borrowers who receive loans with loan-to-value ratios over 80% are required to purchase private mortgage insurance. Private mortgage insurance reduces the risk to the lender of mortgage default. To examine whether private mortgage insurance might bias my results, I ran the regression model with a different dependent variable—interest rates for loans with loan-to-value ratios of 75%. Because these loans typically are not covered by private mortgage insurance, one would expect to find the coefficients for the legal variables significantly higher than those reported for 90% loan-to-value loans if such a bias existed. The results of this regression show that the size of the estimated coefficient for NDEFJUD was slightly greater than the estimate reported for 90%

Given the small magnitude of costs associated with these laws, at least relative to the estimates of most lawyers and economists, it is plausible that mortgagor protection laws promote the objective of economic efficiency by functioning as a form of insurance against the adverse effects of mortgage default and foreclosure. The remainder of this Article addresses whether government intervention in mortgage markets is necessary to generate an optimal supply of mortgagor protections and, if so, how that intervention should be structured.

III. MORTGAGOR PROTECTIONS AND PRIVATE MARKETS

In Parts I and II of this Article, I suggest that when viewed as a form of insurance, mortgagor protections might promote, rather than detract from, the objective of economic efficiency. Borrowers might be better off paying a modest amount in higher debt service costs in return for protection against the adverse effects of default and foreclosure. Even if these protections do promote economic efficiency, government intervention, in the form of mandating mortgagor protections, would be justified only if: (1) a market failure exists; (2) the market failure generates contract terms that do not include efficient mortgagor protections; and (3) government intervention could correct the market failure.[85]

In analyzing whether mortgage markets might fail to provide an efficient level of mortgagor protections, I adopt a simplified model of mortgagor-mortgagee interaction. I conclude that mortgagees are likely to offer mortgagors an appropriate level of mortgagor protec-

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loan-to-value ratio loans, whereas the estimate for REDDAYS was smaller. Neither estimate, however, was significantly different from zero at the 90% confidence level.

[85] See Scott, Rethinking the Regulation of Coercive Creditor Remedies, 89 Colum. L. Rev. 730, 767 (1989). For the purposes of this analysis, I adopt Scott's norm of expanded choice. Prohibitions on consensually agreed upon contract terms, including nonwaivable terms such as mortgagor protection laws, that effectively narrow freedom of contract violate this norm and therefore require special justification. See id. at 766; see also Goetz & Scott, The Limits of Expanded Choice: An Analysis of the Interactions Between Express and Implied Contract Terms, 73 Calif. L. Rev. 261, 266 (1985):

> [T]wo key suppositions underlie this notion of Expanded Choice: (1) that state-supplied terms are mere facilitators, specifying terms that the parties could formulate themselves if unrestrained by time and effort costs; (2) that the availability of state-supplied terms is neutral in that it raises no barriers beyond the existing resource costs to the use of alternative terms by atypical parties.

Cf. Schwartz, supra note 40, at 360 n.12 (whose analysis assumes validity of "methodological individualism").

tions as long as mortgagors accurately estimate the risk of mortgage default and mortgagees have full information with respect to the likelihood of borrower default. As these assumptions are relaxed, a role for government emerges to ensure that mortgagors obtain an optimal level of protection against default and foreclosure. In Part IV, I examine alternative ways in which this government intervention might be structured.

A. A Model of the Mortgagor-Mortgagee Interaction

To analyze the appropriateness of government intervention in mortgage markets, I first develop a model of mortgagor-mortgagee behavior based upon eleven assumptions. Five of these assumptions remain constant throughout the analysis: (1) the benefits of mortgagor protections exceed their cost;[86] (2) a relatively large number of potential sources for mortgage funds exist in every housing market;[87] (3) mortgagees are less averse to risk than mortgagors;[88] (4) mortgagees can offer more than one set of mortgage terms to each customer; and (5) mortgagors have varying levels of aversion to risk.

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[86] The assumption that the benefits of mortgagor protections exceed their costs is critical to this Part. Although I admit that this assumption is unproved, Part II shows that the costs of mortgagor protections are likely to be quite modest. In the absence of data on how much consumers value these protections, I conclude in Part II that my results are consistent with the hypothesis that the benefits of these protections exceed their cost. My objective in this Part of the Article is to examine whether the private market would be likely to provide these protections if they were efficient.

[87] In recent years, the number of mortgage loan originators has increased dramatically. Home loan mortgages are currently originated by a large number of institutions including savings and loan institutions, commercial banks, credit unions, and mortgage banks. In addition, in recent years geographical lending limits for mortgage originators have been liberalized. Further, mortgage markets are generally considered to be competitive. See S. Maisel, supra note 48, at 229 ("Most local markets have sufficient competition so that lenders cannot make an excessive markup over the secondary market rate."); Lasko, Housing Finance in the USA in the 1990s, Housing Fin. Int'l, Aug. 1989, at 4, 4 (stating that the mortgage market is "one of the most efficient and competitive marketplaces in existence").

[88] Individual home loan borrowers are much more likely to be risk averse than lending institutions. Whereas the average individual borrower has little opportunity to diversify risk because of the comparatively limited nature of his assets, lending institutions are generally able to reduce risk by diversifying their investments. In addition, as the recent insolvency of a large proportion of the savings and loan industry demonstrates, managers of these financial institutions have exhibited substantial risk-loving behavior. See L. White, The Problems of The FSLIC: A Policy Maker's View 12-13 (June 1989) (unpublished paper prepared for the Contemporary Policy Issues Session of the Western Economic Association Conference) (copy on file with the Virginia Law Review Association) (discussing the factors that encouraged risk-taking behavior in the savings and loan industry).

The remaining six assumptions will be sequentially relaxed in the analysis that follows: (6) the mortgage market operates with zero transaction costs; (7) all mortgagors shop for price terms; (8) all mortgagors shop for mortgagor protection terms; (9) mortgagees cannot discriminate among mortgagors who shop and those who do not shop; (10) mortgagees accurately estimate the probability that any particular mortgagor will default on his loan; and (11) mortgagors accurately estimate their own risk of mortgage default and foreclosure.

B. Transaction Costs and Shopping

Given the assumptions of the mortgagor-mortgagee interaction model, mortgagees should offer an infinite variety of mortgagor protections to potential borrowers. Because borrowers have varying levels of risk aversion and wealth, they are likely to demand different amounts of protection. Mortgagees are likely to provide these protections, charging mortgagors for the marginal costs they generate. Once the assumption of zero transaction costs is relaxed, however, it becomes quite unlikely that an infinite variety of mortgagor protections would be offered. The costs of negotiating and drafting individualized transactions are apt to dwarf the benefits of the protections. Instead of customized mortgagor protections, lenders would probably offer mortgagors a limited menu of standardized choices.[89] Although standardized choices might be inefficient in a world of zero transaction costs, there is no reason to believe that they would result in a suboptimal supply of mortgagor protections once significant transaction costs are taken into account.

In contrast, relaxing the assumption of universal shopping for price and nonfinancial terms should not affect the supply of mortgagor protection terms. As Alan Schwartz and Louis Wilde show in their seminal examination of warranty and security interest markets, loan markets may be price competitive even though large numbers of con-

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[89] In effect, this already occurs in mortgage markets with respect to the financial terms offered by mortgagees. Most lenders offer a menu of loan choices ranging from such old standards as the 30 year fixed rate mortgage to more esoteric instruments such as the adjustable rate mortgage, the graduated payment mortgage, and the reverse annuity mortgage. For a description of alternative mortgage instruments, see Kaufman & Erdevig, Improving Housing Finance in an Inflationary Environment: Alternative Residential Mortgage Instruments, *in* Housing and the New Financial Markets 359 (R. Florida ed. 1986).

sumers do not actively shop for price.[90] As long as a "sufficient" number of knowledgeable shoppers exist to maintain a competitive equilibrium and creditors are unable to discriminate among shoppers and nonshoppers, contract prices are likely to be competitive. In effect, the shoppers create a "pecuniary externality" for consumers who either do not shop or fail to comprehend the terms of the contract.[91]

The structure of home mortgage loan markets generally facilitates price shopping. In many areas, newspapers periodically list mortgage originators and the rates they offer for a variety of loans. In addition, most lenders provide rate information over the telephone, and some even maintain 24-hour mortgage loan rate hotlines. Empirical data also support the proposition that mortgage markets evidence a substantial amount of shopping. According to one survey of homebuyers, over one-third of the respondents indicated that they, or some outside party acting on their behalf, considered more than one lender prior to borrowing.[92] Therefore, it seems likely that there are a sufficient number of shoppers to make home mortgage loan prices

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[90] Schwartz & Wilde, Imperfect Information in Markets for Contract Terms: The Examples of Warranties and Security Interests, 69 Va. L. Rev. 1387 (1983) [hereinafter Schwartz & Wilde, Imperfect Information]; Schwartz & Wilde, Intervening in Markets on the Basis of Imperfect Information: A Legal and Economic Analysis, 127 U. Pa. L. Rev. 630 (1979) [hereinafter Schwartz & Wilde, Intervening in Markets].

[91] Schwartz & Wilde, Intervening in Markets, supra note 90, at 638.

[92] 2 Peat, Marwick, Mitchell & Co., Real Estate Closing Costs: RESPA, Section 14(a), at XIV.13 (1980) (study commissioned by the U.S. Dep't of Hous. & Urban Dev.); see also D. Hempel, A Comparative Study of the Home Buying Process in Two Connecticut Housing Markets 61 (University of Connecticut Center for Real Estate and Urban Economic Studies Report No. 10, 1970) (reporting that 46% of homebuyers in Hartford contacted more than two lending institutions; 39% of homebuyers in Southeastern Connecticut consulted more than two lenders); Colton, Lessard, Modest & Solomon, National Survey of Borrowers' Housing Characteristics, Attitudes and Preferences *in* 1 Alternative Mortgage Instruments Research Study III-1, III-85 (1977) (reporting that 54% of respondents to the survey contacted two or more financial institutions); Dunn & McFall, Sending out the Right Signals, Mortgage Banking, Dec. 1986, at 21, 22 (reporting that research shows 50% of mortgagors "shop around" for a mortgage); Hempel & Jain, House Buying Behavior: An Empirical Study in Cross-Cultural Buyer Behavior, 6 Am. Real Est. & Urb. Econ. A.J. 1, 11 (1978) (reporting that the mean number of banks contacted to arrange financing ranged from 2.71 to 3.27 in two Connecticut housing markets). But see Eskridge, One Hundred Years of Ineptitude: The Need for Mortgage Rules Consonant with the Economic and Psychological Dynamics of the Home Sale and Loan Transaction, 70 Va. L. Rev. 1083, 1112-14 (1984) (homebuyers do not engage in sufficient shopping to maximize their housing decisions).

competitive, even though many homebuyers do not actively shop for the best interest rate.

In contrast to shopping for price terms, relatively few, if any, mortgagors shop for nonfinancial terms such as mortgagor protections. Though the structure of the home purchase transaction facilitates price shopping, it impedes shopping for nonfinancial terms. Studies find that potential homebuyers are frequently under time pressure and stress.[93] Under most sales contracts, the homebuyer is able to bind the seller for only a short period of time prior to obtaining a mortgage commitment.[94] In contrast to their competition over price, lenders make virtually no effort to publicize or make available information concerning the effects of a mortgagor's defanlt.[95] Typically, the first time that even the most diligent mortgagor becomes aware of the mortgage terms concerning default and foreclosure is at the closing of the transaction. At this point, however, the mortgagor is usually bur-

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[93] See Eskridge, supra note 92, at 1114-18.

[94] A typical sales contract for a home contains a mortgage contingency clause that allows a buyer a period of time, usually one to three months, to obtain a mortgage loan commitment. If the buyer does not obtain a commitment during this period, the contract may be declared null and void, and the buyer will be entitled to have his deposit returned. See A. Axelrod, C. Berger & Q. Johnstone, supra note 17, at 1208 (example of a loan contingency clause in a form sales contract). During the period specified in the mortgage contingency clause, the homebuyer must choose a lender, apply for a loan, supply financial documents to the lender, and have an appraisal of the house completed. In active housing markets, the usual time period provided by the mortgage contingency clause may be too short to accomplish all of this. See, e.g., Watterson, Staying atop Mortgage Process Is Crucial, Chr. Sci. Monitor, Sept. 3, 1986, at 19, col. 2 (stating that when lending institutions have a heavy volume, delay in processing loans may cause the buyer to lose the right to purchase the house); What to Do Until Mortgage Works Way Through Logjam, Chi. Tribune, July 28, 1986, at C-19, col. 1 (same).

[95] Federal law does, however, require mortgagees to make certain disclosures to borrowers. See Real Estate Settlement Procedures Act of 1974 ("RESPA"), Pub. L. No. 93-533, 88 Stat. 1724 (codified as amended at 12 U.S.C. §§ 2601-2617 (1988)) (requiring standardized settlement forms); Truth in Lending Act, Pub. L. No. 90-321, 82 Stat. 146 (1968) (codified as amended at 15 U.S.C. §§ 1601-1693r (1988)) (requiring disclosure of the amount financed, the annual percentage rate, and the sum of the finance charges, payments, and the sales price). The only mention of default or foreclosure is contained in a 44-page booklet prepared by the United States Department of Housing and Urban Development that RESPA requires lenders to distribute to borrowers. This deusely printed document contains two sentences concerning default: "If you default on the loan by missing payments altogether . . . the documents also specify certain actions which the lender may take to recover the amount owed. Ultimately, after required notice to you, a default could lead to foreclosure and sale of the home which secures your loan." U.S. Dep't of Hous. and Urban Dev., Settlement Costs: A HUD Guide 19 (rev. ed. 1983).

dened with reading and signing a wide variety of unfamiliar documeuts.[96] Additionally, he will often not be represented by a lawyer and, therefore, will not fully understand the legal significance of much of the mortgage form and the underlying law.[97] The mortgagor also has relatively little bargaining power with respect to mortgage terms once the closing has arrived. He has already paid a nonrefundable commitment fee to the lender and risks losing his sales deposit to the seller if the closing is canceled. This combination of factors results in mortgagors being term takers rather than shoppers with respect to nonfinancial terms such as those that apply to default and foreclosure.[98]

Even though the vast majority of mortgagors do not shop for mortgagor protections and probably have ouly a hazy understanding of what would happen to them should they default, there is reason to believe that inadequate shopping would not lead mortgagees to provide a sub-optimal set of mortgagor protections. I have assumed for the purposes of this analysis that the benefits of mortgagor protections exceed their cost. Given this assumption, even if borrowers do not shop for these protections, lenders would increase their profits by offering them.[99] Even if lenders were able to discriminate among

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[96] Among the documents typically distributed or executed at the closing of a transaction are the deed, the promissory note, the mortgage, the title insurance policy and report, the mechanic's lien affidavit, and the settlement statement. Cf. Burkins, Just Remember How to Sign Your Name, Phila. Inquirer, July 8, 1990, at L1, col. 4 (observing that, at settlement, home buyers must sign "mountains of documents").

[97] Cf. Colton, Lessard, Modest & Solomon, supra note 92, at III-83 ("People often think they know about their mortgage, but when actually queried, the state of their knowledge is incomplete."); Dunn & McFall, Consumer Focus Groups Praise Mortgage Bankers' Good Service, Real Est. Today, Dec. 13, 1985, at 10, col. 1 (relating that recent interviews with homeowners indicate that they have "an overwhelming lack of knowledge on *all* aspects of financing a home").

[98] Cf. Landers & Rohner, A Functional Analysis of Truth in Lending, 26 UCLA L. Rev. 711, 729 (1979) (arguing that shopping for default terms might not be rational because it is unlikely to produce benefits and the search costs associated with it are high). Nevertheless, the standardization of mortgage forms over the past 20 years has probably reduced the costs for highly motivated shoppers to gather information about default terms. See Schill, supra note 2 (discussing the standardization of mortgage documentation).

[99] Cf. Schwartz & Wilde, Imperfect Information, supra note 90, at 1420-24 (concluding, in the context of the provision of security, that if insufficient shopping exists to sustain a competitive equilibrium for loans, lenders would not require more security than borrowers desire, though they might charge supracompetitive prices). This conclusion requires an assumption that cousumers prefer unsecured loans to seeured loans, given a choice at the relevant competitive prices. Id. at 1423. Schwartz and Wilde do not examine whether this

shoppers and nonshoppers, it is unlikely that they would reduce the supply of mortgagor protections below the level that mortgagors prefer. It is far more likely that if mortgagees could discriminate among shoppers and nonshoppers that they would take advantage of nonshoppers by charging noncompetitive interest rates.[100] In any event, insufficient shopping should not be an impediment to the existence of an optimal supply of mortgagor protections.[101]

C. Imperfect Lender Information

Relaxing the assumption of perfect mortgagee information about the prospects of mortgagor default places in doubt the conclusion of the previous Subpart that lenders would offer borrowers an optimal set of mortgagor protections absent government intervention. Clearly the assumption of perfect lender information is not borne out by the mortgage market. The parties to a loan transaction typically have asymmetric information about the likelihood of default.[102] Mortgagees usually have better information than mortgagors about the historical patterns of default and the likelihood that future defaults will be caused by macroeconomic forces. Nevertheless, despite the use of

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assumption is realistic. Id. at 1425. Given my assumption that borrowers are more risk averse than lenders, it is likely that mortgagors would prefer a loan with mortgagor protections to a loan without such protections if given the choice at competitive prices.

100 Cf. Schwartz & Wilde, Intervening in Markets, supra note 90, at 665-66 (stating that if firms can discriminate among shoppers and nonshoppers, they may charge higher prices and provide lower quality).

101 The conclusion that profit-maximizing lenders would offer nonshopping borrowers mortgagor protections relies upon the assumption that lenders can accurately estimate the likelihood that an individual borrower will default. Once this assumption is relaxed, lenders might not be willing to offer these protections due to problems of adverse selection. See infra text accompanying notes 105-11. An additioual caveat exists to the conclusion that lenders would voluntarily offer an optimal level of mortgagor protections in the absence of shopping. Mortgage originators increasingly earn their profits based upon the volume of loans they originate. They may therefore find it contrary to their interest to dwell on matters of default, because this might either cause homebuyers to back out of the transaction or to minimize the amount of their borrowing. Cf. Schwartz & Wilde, Imperfect Information, supra note 90, at 1430 ("[L]enders will be unlikely to correct consumers' misperceptions by stressing how likely a default may be because such an action will decrease lenders' profits from making loans.").

102 See D. Jaffee & K. Rosen, Asymmetric Information and the Mortgage Market 21 (Center for Real Estate & Urban Economic Review Working Paper No. 89-155, 1988) (presented to the annual meeting of the American Economics Association) (observing that "preliminary empirical tests . . . are consistent with the hypothesis that asymmetric information has been a significant factor in creating higher mortgage delinquency rates").

elaborate screening devices,[103] mortgagors have better information than mortgagees concerning their personal financial status, payment practices, and future consumption plans.[104]

Asymmetric information may lead to market failure as a result of adverse selection.[105] In Part I, I suggest that mortgagor protections could usefully be conceptualized as a form of insurance against default. Insurance involves the aggregation of uncorrelated risks in a pool. As the number of insured risks in the pool increases, so will the accuracy of predictions of expected loss. However, insurance markets require that insured risks with similar levels of exposure be segregated into separate pools.[106] If risks are not segregated in this manner because of the inability of the insurer to distinguish among different risk groups, low risk insureds will subsidize high risk individuals through their insurance premiums.[107] Adverse selection will result as individuals with higher risks are attracted by insurance premiums that are priced below their expected cost. Eventually, the premiums charged to low risk individuals may exceed their willingness to pay, and they will drop out of the market.[108] Depending upon the severity of informational asymmetries and the level of risk aversion of the insured parties,[109] adverse selection may prevent insurance markets from reaching an equilibrium level of insurance agreements.[110]

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103 See id. at 4-6 (discussing the limited utility of mortgagee screening devices); cf. T. Sullivan, E. Warren & J. Westbrook, supra note 3, at 313 (asserting that many of the questions asked by creditors are ineffective in predicting bankruptcy).

104 See Dunn & Spatt, Private Information and Incentives: Implications for Mortgage Contract Terms and Pricing, 1 J. Real Est. Fin. & Econ. 47, 47 (1988) (noting that consumers have private information unobservable to lenders, such as their personal prepayment and default characteristics); cf. T. Sullivan, E. Warren & J. Westbrook, supra note 3, at 102 (discussing similarity between debtors in bankruptcy and Americans generally).

105 See K. Abraham, Distributing Risk 15 (1986) (discussing adverse selection).

106 See Priest, supra note 37, at 1540-41.

107 Id. at 1541.

108 Id.

109 Low-risk individuals who are highly risk-averse may not drop out of the insurance pool despite their subsidizing of higher-risk insureds. A low-risk insured will drop out when the premium she pays exceeds her expected loss and risk premium. A risk premium is the amount that a risk-averse person is willing to pay, over and above the expected loss, in order to avoid a particular risk. Id. at 1541.

110 See J. Cummins, B. Smith, R. Vance & J. VanDerhei, Risk Classification in Life Insurance 27 (1983) (stating that the inability to classify risks may lead to restrictions in the availability of insurance coverage); Rothschild & Stiglitz, Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information, 90 Q.J. Econ. 629, 629 (1976) (explaining that asymmetries in information may result in the absence of a

Homebuyers with high subjective probabilities of default would be among the groups most likely to purchase mortgagor protections if they were offered by mortgagees.[111] Lenders would encounter difficulty in identifying these high risk individuals and charging them more for protections than they would charge low risk individuals. The increased price of mortgagor protections attributable to the disproportionate number of high risk purchasers would lead many low risk borrowers to prefer loans with no mortgagor protections. Eventually, this adverse selection might cause lenders to withdraw unprofitable mortgagor protections from the market even though the aggregate benefits they would generate in the absence of adverse selection would exceed their costs.

Even if adverse selection of the type described above did not lead markets to provide a sub-optimal level of mortgagor protection, market failure might be brought about by signaling. In markets with asymmetric information, such as mortgage markets, low risk borrowers have an incentive to signal to lenders the fact that they are good credit risks.[112] If mortgagor protections were offered by mortgagees, even borrowers who would benefit from protection might choose to forgo protection to signal their creditworthiness to the lender.[113] Mortgagors who opt for mortgagor protections might be labeled bad credit risks and charged actuarially unfair prices for the mortgagor protections or, alternatively, be denied credit altogether.[114]

The use by borrowers and lenders of the demand for mortgagor protections as a proxy for credit risk might lead to an inefficient level

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competitive equilibrium); cf. Akerlof, The Market for "Lemons": Quality Uncertainty and the Market Mechanism, 84 Q.J. Econ. 488, 490 (1970) (stating that asymmetrical information about the quality of a product (used cars) may lead to a sequence of events that effectively prevent the operation of a market).

[111] In addition, homebuyers with high levels of risk aversion and those with strong preferences to equalize the marginal utility of income over different periods of time would disproportionately purchase mortgagor protections.

[112] The possible benefits of this signaling would be lower interest rates, more lenient terms, and a greater likelihood of loan approval.

[113] See Rea, Arm-Breaking, Consumer Credit and Personal Bankruptcy, 22 Econ. Inquiry 188, 196-97 (1984) (speculating that low risk borrowers might offer to have their arms broken upon default as a signal of their likelihood to repay loan); see also Scott, supra note 85, at 747 (proposing that granting the creditor a coercive remedy such as repossession may signal the creditor that the borrower will not misbehave).

[114] See Barth, Cordes & Yezer, Benefits and Costs of Legal Restrictions on Personal Loan Markets, 29 J.L. & Econ. 357, 368 (1986) (noting that "tagging" of borrowers may contribute to preventing the market from functioning correctly).

of mortgagor protection. Like other forms of insurance, mortgagor protections do not benefit only those most likely to experience unfortunate events. To the contrary, insurance also improves the welfare of risk averse individuals by permitting them to reduce their own risks by pooling their risks with those of others.[115] This efficiency-enhancing attribute of insurance exists regardless of whether the insured has a high or low probability of experiencing the event entitling her to insurance proceeds. Therefore, treating the demand for mortgagor protections as a proxy for credit risk is likely to be extremely overinclusive. If signaling occurs, allocative inefficiencies might result from borrowers who would benefit from mortgagor protections underinsuring, or, alternatively, from extremely risk averse individuals paying excessive prices for coverage. In addition, to the extent that borrower fears of signaling result in borrowers who have only high subjective probabilities of default or extremely high levels of risk aversion purchasing mortgagor protections, demand may become insufficient to sustain any market for mortgagor protections.[116]

D. Imperfect Borrower Information

The final assumption in my model of mortgagor-mortgagee interaction, that mortgagors accurately estimate their own risk of mortgage default and foreclosure, is almost certainly incorrect. Mortgage default is generally caused by a combination of factors, many of which are outside the control of the mortgagor.[117] Empirical studies demonstrate that mortgage default is frequently attributable to broad economic conditions such as declining home values and unemployment rather than individual mortgagor conduct.[118] Therefore, mort-

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[115] See supra text accompanying note 36.

[116] Nevertheless, it is possible that signaling could alleviate the problems generated by asymmetric information in loan markets if the demand for mortgagor protections came primarily from people with high actual probabilities of default. It is likely, however, that mortgagor protections would also be requested by individuals with average probabilities of default but high levels of risk aversion. See supra note 111. Signaling in the context of mortgagor protections might lead to inefficiency not because signaling per se is inefficient, but because the informational content of the signal is faulty.

[117] However, to the extent that a mortgagor's default is caused by factors under her own control, such as overconsumption or fraud, she may be able to predict the probability of default with a high degree of accuracy. See supra text accompanying note 104.

[118] See supra note 76 and accompanying text.

gage default is unlikely to be predicted with any degree of precision by most individual borrowers.

The observation that mortgagors are unlikely to be able to predict accurately their likelihood of default says nothing about whether the typical mortgagor tends to underestimate or overestimate default probabilities. A substantial body of theoretical and empirical research undertaken by psychologists, decision scientists, and economists, however, supports the proposition that borrowers are likely to underestimate their probabilities of default. Expected utility theory posits that when faced with two or more courses of action, individuals should choose the alternative that maximizes their expected utility.[119] Controlled experiments, however, demonstrate that with respect to many types of decisions people tend systematically to discount low probability, high loss events.[120] These biases cause people to underestimate the expected costs generated by many of these events.

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[119] See R. Hogarth, Judgement and Choice 88 (2d ed. 1988). "The expected utility of an alternative is calculated by taking a weighted sum of the utilities associated with the outcomes of the alternative under the different possible (uncertain) states." Id.

[120] See K. Abraham, supra note 105, at 22:

> [T]here is growing evidence that . . . [i]n at least some settings, people tend to overvalue risks with a high probability of occurrence but small potential severity and to undervalue low probability but high severity risks. The result is a tendency in the aggregate for people to purchase too much low-limits coverage and not enough protection against catastrophic losses.

(footnote omitted); H. Kunreuther, Disaster Insurance Protection: Public Policy Lessons 185-86 (1978) (indicating that insurance decisions suggest that people discount or ignore low probability, high loss events such as floods and earthquakes); Weinstein, Klotz & Sandman, Promoting Remedial Response to the Risk of Radon: Are Information Campaigns Enough?, 14 Sci. Tech. & Hum. Values 360, 370-71 (1989) (proposing that people tend to underestimate the hazards of radon because it cannot be detected sensorially or readily connected to specific instances of cancer). But see Noll & Krier, Some Implications of Cognitive Psychology for Risk Regulation, 19 J. Legal Stud. 747, 755 (1990) (explaining that prospect theory suggests that "people behave as if they think that low-probability events are more likely than their own beliefs about the probabilities would suggest").

Social scientists have shown, however, that individuals do not underestimate all low probability, high loss events. In fact, several studies show that people frequently overestimate the likelihood that they will suffer serious bodily injury or death from sudden, catastrophic sources. See Lichtenstein, Slovic, Fischhoff, Layman & Combs, Judged Frequency of Lethal Events, 4 J. Experimental Psychology Hum. Learning & Memory 551, 575 (1978) (concluding that dramatic or sensational causes of death tend to be greatly overestimated); Magat, Viscusi & Huber, Risk-Dollar Tradeoffs, Risk Perceptions and Consumer Behavior *in* Learning About Risk: Consumer and Worker Responses to Hazard Information 83, 93 (W. Viscusi & W. Magat eds. 1987) [hereinafter Learning About Risk]:

> Consumer responses may vary with the kinds of risks involved even though their welfare implications are the same. . . . [R]isk perceptions are influenced by many aspects of

The failure of individuals to estimate accurately the likelihood of low probability, high loss events might be attributable to transaction costs. Gathering sufficient data to make reasonably accurate estimates of relatively rare events is both costly and time-consuming.[121] In addition, even if such data were to be made available to consumers at relatively low prices, processing it in such a way as to make it salient would still likely require substantial time and effort. Furthermore, if the information concerns an unpleasant matter such as death, destruction, or economic ruin, the psychic costs of meaningfully evaluating the options might exceed the benefits generated.[122] Incorrect estimations of the likelihood of low probability, high loss events may, therefore, be the result of rational, utility-maximizing behavior.

Though transaction costs might explain why individuals estimate probabilities incorrectly, such costs do not explain why individuals would systematically underestimate the likelihood of, and expected losses from, many low probability events such as mortgage foreclosure. Several theories exist to explain why people apparently fail to act according to the parameters of expected utility theory. According to some psychologists, people use "heuristics" (rules of thumb) to process information and reach decisions.[123] Among the heuristics most relevant to estimating one's probability of mortgage default is the "availability" heuristic. According to the availability heuristic,

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the risk, such as the immediacy of the hazard and whether the outcome leads to visible and sensational outcomes, as in the case of tornadoes.

But cf. Gillette & Krier, Risk, Courts, and Agencies, 138 U. Pa. L. Rev. 1027, 1074-76 (1990) (observing that differing perceptions of risk between lay individuals and expert risk assessors is not simply attributable to inaccurate fatality assessments, but instead reflects that lay individuals have a fuller idea of risk). Magat, Viscusi, and Huber also suggest that the results of empirical studies might be consistent with the hypothesis that people underestimate or tend to ignore the likelihood of low probability financial risks. See Magat, Viscusi & Huber, supra, at 93.

[121] See K. Abraham, supra note 105, at 14 (explaining how transaction costs may lead individuals to make risk-related decisions that do not serve their interests).

[122] Cf. Akerlof & Dickens, The Economic Consequences of Cognitive Dissonance, 72 Am. Econ. Rev. 307, 317 (1982) (compulsory old age insurance may be justified on the ground that individuals would otherwise underinsure because they "prefer not to contemplate a time when their earning power is diminished"); Camerer & Kunreuther, Decision Processes for Low Probability Events: Policy Implications, 8 J. Pol'y Analysis & Mgmt. 565, 578 (1989) (proposing that one reason people may buy little insurance against hazards such as earthquakes is that it would remind them of their vulnerability to risk).

[123] See R. Nisbett & L. Ross, Human Inference: Strategies and Shortcomings of Social Judgment 7 (1980).

people are more likely to judge an event as being frequent or probable if the event is readily available in their memory.[124] Because many factors other than its actual frequency or statistical probability affect whether an event is retained in one's memory, the availability heuristic may lead to unreliable probability estimates.[125] For example, one might be more likely to remember events that are vivid, that have occurred to people one knows, or that have occurred to people to whom one is related. Events such as mortgage foreclosure happen only infrequently and are unlikely to be publicized by those unfortunate enough to experience them. Therefore, because most people either do not know someone who has defaulted on his mortgage or are unaware of that person's foreclosure, it is likely that they will tend to discount the probability of foreclosure happening to them.[126]

Systematic underestimation of the probability of mortgage default may also be attributable to "anchoring." Anchoring describes a cognitive bias that results from the tendency of people to make estimates by reference to a particular starting point.[127] In essence, anchoring results in a person "process[ing] new information in a way that leaves

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[124] See id. at 7; Tversky & Kahneman, Availability: A Heuristic for Judging Frequency and Probability, 5 Cognitive Psychology 207, 208 (1973).

[125] See R. Nisbett & L. Ross, supra note 123, at 19. The availability heuristic might also explain why people tend to overestimate the probability of relatively rare causes of death. See supra note 120. Deaths from airplane crashes and exposure to nuclear radiation are particularly vivid and well-publicized. Therefore, they are more likely to remain in one's memory. Cf. Combs & Slovic, Newspaper Coverage of Causes of Death, 56 Journalism Q. 837, 843 (1979) (reporting on a study that shows violent and catastrophic causes of death are overreported and that this bias in coverage corresponds to individual biases with respect to the frequency of these causes of death).

[126] Nevertheless, it is likely that at least some individuals overestimate their probability of mortgage foreclosure. A market exists for decreasing term life insurance earmarked to pay off the insured party's mortgage should he or she die prior to its maturity. Commentators have observed that the price of this insurance exceeds what it would cost an individual to purchase a similar amount of ordinary, nonearmarked term insurance. See Dunn, "Pennies-A-Day" Insurance Probably Isn't Worth It, Bus. Wk., Jan. 30, 1989, at 98.

[127] Tversky & Kahneman, Judgment Under Uncertainty: Heuristics and Biases *in* Judgment Under Uncertainty: Heuristics and Biases 3, 14 (D. Kahneman, P. Slovic & A. Tversky eds. 1982). A simple experiment conducted by Tversky and Kahneman illustrates the anchoring phenomenon. Two groups of subjects were given five seconds to estimate the product of a series of identical numbers. With one group, the numbers were arrayed from the smallest to the largest; the other was given numbers arrayed in the inverse order, from largest to smallest. The subjects with the numbers arrayed from smallest to largest responded with estimates much below those of the subjects whose numbers were arrayed from largest to smallest. See id. at 14-18 (discussing the results of several controlled experiments demonstrating the anchoring phenomenon).

him too close to the conclusion he would have reached in the absence of that information."[128] Commentators have observed that anchoring will lead people to overestimate their prospects of success and to underestimate their prospects of failure.[129] These studies suggest that borrowers are apt to overestimate their chances of successfully repaying a mortgage loan and underestimate their probability of default and foreclosure.[130]

The tendency of individuals to underestimate their risk of mortgage default because of the use of judgmental heuristics is likely to be exacerbated by motivational factors. Psychologists have repeatedly shown in experimental settings that people tend to be optimistic about their expectations of both positive and negative events. When subjects are

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[128] Jackson, The Fresh-Start Policy in Bankruptcy Law, 98 Harv. L. Rev. 1393, 1411 (1985) (footnote omitted).

[129] See id. at 1411-12 ("Much evidence indicates that the errors associated with incomplete heuristics, especially anchoring, lead decisionmakers systematically to overestimate chances of success and to underestimate the corresponding risks."); Tversky & Kahneman, supra note 127, at 16 ("The general tendency to overestimate the probability of conjunctive events leads to unwarranted optimism in the evaluation of the likelihood that a plan will succeed or that a project will be completed on time."). Overestimation of success and underestimation of failure are explained by the tendency of people to overestimate the probability of conjunctive events and underestimate the likelihood of disjunctive events. Successfully repaying a loan is a conjunctive event: one must successfully make payments each month for a lengthy period of time. The probability of successfully repaying the entire loan is therefore much less than the probability of making each individual payment. Nevertheless, anchoring suggests that people's estimates of successful loan repayment will be influenced by their having successfully made each individual payment in the past. Because their starting point is successful payment, they will tend to discount the probability of failure on some future payment. See Tversky & Kahneman, supra note 127, at 15-16; see also Tversky & Kahneman, Extensional Versus Intuitive Reasoning: The Conjunction Fallacy in Probability Judgment, 90 Psychological Rev. 293, 307-08 (1983) (demonstrating that people tend to overestimate the likelihood of conjunctive events); Wolford, Taylor & Beck, The Conjunction Fallacy?, 18 Memory & Cognition 47, 51-52 (1990) (finding that in test situations in which subjects do not assume that the outcome of a scenario is known, a majority continue to rate conjunctive occurrences as more likely than each individual component occurrence).

[130] See Jackson, supra note 128, at 1412 n.60 (stating that "existing hypotheses suggest that individuals will underestimate the risks inherent in repayment"); Scott, supra note 85, at 769 ("Individuals tend to overestimate the probability of conjunctive events, such as the events leading to successful repayment, and to underestimate the risk of disjunctive events, such as those causing default." (footnote omitted)). But see Schwartz, supra note 40, at 379 ("The evidence fails to show that consumers misperceive risk levels to the extent that undesirable equilibria exist."). Loan default may, of course, also be recharacterized as a conjunctive event: the borrower loses her job, is unable to repay her mortgage loan, and defaults. Nevertheless, the anchoring heuristic is unlikely to lead borrowers who have not already defaulted to overestimate their likelihood of default—the borrower in good standing will be anchored toward successful repayment rather than delinquent payment or default.

asked to rate the probabilities that they and a third party will encounter negative events, they consistently rate their own probability of encountering the event lower than the third party's.[131] Among the reasons suggested for this tendency are defensiveness, wishful thinking,[132] and the adoption of negative stereotypes for people who encounter controllable, negative events.[133]

If people underestimate the expected costs attributable to low probability, high loss events, they may not purchase an optimal level of insurance.[134] Indeed, studies show that individuals often fail to purchase insurance for low probability, high loss events, even when premiums are actuarially favorable. For example, homeowners in flood-prone areas have repeatedly been shown to fail to purchase flood insurance even though the premiums are heavily subsidized by the federal government.[135] Paul Slovic's experiments also show that peo-

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[131] See Weinstein, Unrealistic Optimism About Future Life Events, 39 J. Personality & Soc. Psychology 806, 813 (1980) (reporting that experiments provide evidence of "unrealistic optimism" with respect to both positive and negative events); Zakay, The Influence of Perceived Event's Controllability on Its Subjective Occurrence Probability, 34 Psychological Rec. 233, 238 (1984) (relating that estimated personal probabilities for both controllable and uncontrollable negative events are less than estimated probabilities for third parties); Zakay, The Relationship Between the Probability Assessor and the Outcomes of an Event as a Determiner of Subjeetive Probability, 53 Acta Psychologica 271, 278 (1983):

> This pattern of probability assessment can be described in terms of the following belief: "If the event is of positive value, it is more likely to happen to me than to others, and if it is of negative value it is less likely to happen to me than to others."

But see Schwartz, supra note 40, at 379 (discussing evidence that people perceive risks accurately).

[132] See Miller & Ross, Self-Serving Biases in the Attribution of Causality: Fact or Fiction?, 82 Psychological Bull. 213, 222 (1975) (suggesting that optimistic biases may be attributable to defensiveness and wishful thinking); Perloff, Perceptions of Vulnerability to Victimization, 39 J. Soc. Issues 41, 45 (1983) (stating that "perceptions of unique invulnerability may stem from ego-defensive mechanisms").

[133] See Weinstein, supra note 131, at 808 (proposing that people who do not see themselves fitting a stereotype are unlikely to believe that the event will happen to them).

[134] See G. Calabresi, The Costs of Aceidents: A Legal and Economic Analysis 55-58 (1970) (stating that private insurance may be inadequate when people are incapable of evaluating risk); Schwartz, supra note 40, at 375 ("Consumers will underinsure if they underestimate the risk of harm."). Concluding that underestimation of risk leads to underinsurance implies some benchmark of adequate insurance. Deciding what level of insurance is adequate for individuals raises several troubling issues. See infra notes 143-44 and accompanying text.

[135] See H. Kunreuther, supra note 120, at 6; Anderson, The National Flood Insurance Program—Problems and Potential, 41 J. Risk & Ins. 579, 586 (1974) (reporting that few communities participated in the subsidized flood insurance program); Anderson & Weinrobe, Insurance Issues Related to Mortgage Default Risks Associated with Natural Disasters, 53 J. Risk & Ins. 501, 503 (1986) (noting that even in high hazard areas owners rarely purchase

ple do not typically purchase insurance for low probability, high loss events, despite premiums that are actuarially fair. Instead, individuals have a strong preference for insuring against high probability, low loss events.[136]

If the assumption of perfect borrower information is relaxed, private mortgage markets may fail to supply an optimal set of mortgagor protections. Mortgage defaults are low probability events that usually involve large losses for the mortgagor. Borrowers are likely to underestimate the probability that they will default and face foreclosure. Because borrowers probably underestimate the expected loss attributable to default and foreclosure, they are unlikely to demand an optimal level of mortgagor protections.

IV. Government Intervention, Mortgage Markets, and Mortgagor Protections

In Part I of this Article I propose that mortgagor protections be conceptualized as a form of insurance designed to protect borrowers from the adverse effects of default and foreclosure. The net present value simulation and multiple regression analysis presented in Part II indicate that the cost of existing mortgagor protection laws is likely to be modest. These modest costs suggest that the existence of mortgagor protections might promote economic efficiency. In Part III, I examine whether the private market could be relied upon to provide an efficient level of mortgagor protection and conclude that the market might fail to supply an optimal level because of imperfect information on the part of both lenders and borrowers. Adverse selection and

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earthquake insurance); Slovic, Fischhoff & Lichtenstein, Regulation of Risk: A Psychological Perspective *in* Regulatory Policy and the Social Sciences 241, 259-61 (R. Noll ed. 1985) (examining why even with federally subsidized rates few property owners purchased flood insurance). Kunreuther notes that people also do not purchase federally subsidized crime insurance or earthquake insurance. H. Kunreuther, supra note 120, at 7, 15-16.

136 See Slovic, Fischhoff, Lichtenstein, Corrigan & Combs, Preference for Insuring Against Probable Small Losses: Insurance Implications, 44 J. Risk & Ins. 237, 253 (1977). Slovic et al. suggest two possible reasons for the failure to insure against low probability, high loss events. It may be that people are risk seekers with respect to losses and risk averse with respect to gains. Alternatively, people may refuse to worry about losses when the probability of the event generating the losses dips below a certain threshold. See id. at 253-54; see also H. Kunreuther, supra note 120, at 236 (suggesting that people may ignore risks whose probability is below a threshold level); Eldred, How Wisely Do Consumers Select Their Property and Liability Insurance Coverage?, 14 J. Consumer Aff. 288, 292-97 (1980) (stating that consumers tend to purchase insurance with excessively low policy coverage limits and deductibles).

signaling may cause lenders to refuse to offer mortgagor protections or to offer them at actuarially unfair prices; borrower underestimation of the risk of default may lead to insufficient demand and underinsurance.

In this Part, I examine whether government intervention in mortgage markets might be justified on efficiency grounds to correct these potential market failures. I conclude that government intervention may be justified, either to provide mortgagors with information or to mandate mortgagor protection. States that choose to require mortgagor protection might adopt policies such as statutory rights of redemption and deficiency judgment prohibitions. Alternatively, to minimize allocative inefficiencies generated by these laws, states might consider replacing statutory rights of redemption and anti-deficiency judgment legislation with a compulsory mortgage foreclosure insurance program.

A. Government Intervention in Mortgage Markets

Even if private markets fail to provide an efficient level of mortgagor protections, government intervention would be justified only if it could, in some way, correct the market failure.[137] Because the market failure in this case is caused by imperfect information, the government might be able to improve market outcomes by either mandating disclosure on the part of lenders or disseminating information itself.[138] The government might be effective in improving borrower information about the likelihood of mortgage default. Government agencies and federally-related secondary mortgage market agencies already collect a wealth of information about mortgage defaults and foreclosures. They could publish this information and disseminate it to borrowers. One potentially cost-effective way of disseminating this information would be to incorporate it into the disclosure statements already mandated by federal law.[139]

Information dissemination alone might not, however, lead mortgagors to estimate their own probability of default accurately and to act accordingly. Mortgagors would still face substantial difficulties in

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[137] See supra text accompanying note 85.

[138] See Beales, Craswell & Salop, Information Remedies for Consumer Protection, 71 Am. Econ. Rev. 410, 413 (1981) ("Information remedies are most likely to be the most effective solution to information problems.").

[139] See supra note 95.

processing the information in a way that would be meaningful to them.[140] Even if the time and psychic energy required to process the information were not excessive, mortgagors might still fail to estimate risk accurately. Several studies find that the cognitive failures discussed in Part III exist even when individuals have sufficient information.[141] Furthermore, government provision of information would do little to minimize adverse selection—government has no comparative advantage over private lenders in assessing the riskiness of particular borrowers.

A second alternative would be for governments to mandate mortgagor protections through state laws, much as they do today.[142] Nevertheless, the government should act cautiously in using regulation to correct market failures attributable to imperfect information. Compulsory contractual provisions may be troubling in that they limit the

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[140] See Schwartz & Wilde, Imperfect Information, supra note 90, at 1459 ("Decisionmakers face substantial practical problems in correctly ascertaining the odds, developing concise and comprehensible formats for disclosure, and conveying the essential facts in such a way that consumers will pay attention to them.").

[141] See Slovic, Informing and Educating the Public About Risk, 6 Risk Analysis 403, 403 (1986) ("[T]he goal of informing the public about risk issues, which seems easy to attain in principle, is surprisingly difficult to accomplish."); Weinstein, Klotz & Sandman, supra note 120, at 376 (indicating that mere provision of information about environmental hazards such as radon "will not be sufficient to ensure decisions consistent with the actual level of risk"); Wolford, Taylor & Beck, supra note 129, at 52 (observing that over 40% of subjects with statistical training continue to make the conjunction fallacy). But see Brookshire, Thayer, Tschirhart & Schulze, A Test of the Expected Utility Model: Evidence from Earthquake Risks, 93 J. Pol. Econ. 369, 378 (1985) (revealing that designation of earthquake sensitive zones and required disclosure to prospective real property buyers seems to cause homebuyers to pay less for property located in such zones); Viscusi, Magat & Huber, The Effect of Risk Information on Precautionary Behavior, *in* Learning About Risk, supra note 120, at 60, 82 ("[Labeling] information can produce precautionary behavior consistent with the most salient predictions of rational economic actions."). Studies demonstrating that individuals have an optimistic bias cast further doubt on the efficacy of information disclosure. Even if borrowers were advised of default probabilities, they might nevertheless believe that they are less likely to default than the average person, due to wishful thinking, ego-defensive behavior, or the adoption of negative stereotypes. See supra text accompanying notes 131-33.

[142] See Camerer & Kunreuther, supra note 122, at 584 ("For some risks, it may be cheaper and more efficient to require certain actions than to induce people to take those actions voluntarily with incentives or information."); Whitford, A Critique of the Consumer Credit Collection System, 1979 Wis. L. Rev. 1047, 1074 ("[G]iven the relative infrequency of default, regulation of the collection system to achieve the system many or most customers would choose if well informed may be more practical or efficient than undertaking a consumer education program to inform all persons entering credit transactions of the harms associated with execution."); see also Camerer & Kunreuther, supra note 122, at 581 (discussing evidence that information provision may fail to improve decisionmaking).

range of choices available to consumers.[143] State-mandated mortgagor protections will promote economic efficiency only if the government is able to estimate what the utility functions of homebuyers would be absent cognitive error. If the government is unable to predict how much protection the typical, fully informed mortgagor would demand, its intervention may lead to a level of protection less optimal than that which the market would have provided absent regulation.[144]

B. Redesigning Mortgagor Protection Laws

States that opt to mandate mortgagor protections should reexamine the structure of current mortgagor protection laws.[145] Mortgagor protection laws frequently apply to all mortgagors in a state, regardless of whether they are individual homeowners or multinational corporations.[146] Reconceptualizing mortgagor protections as a form of insurance suggests that the sweep of many mortgagor protection laws is much too wide. Large business enterprises are generally thought to be considerably less risk averse than individual homebuyers, and they are therefore less likely to benefit from insurance. These businesses have opportunities to minimize the risk of mortgage foreclosure, such as diversification of assets[147] and self-insurance,[148] that are unavaila-

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[143] See supra note 85; cf. D. Bickelhaupt, supra note 37, at 78 (noting that social insurance limits individual freedom).

[144] An additional inefficiency could occur if mandated mortgagor protections prevented borrowers from using coercive remedies as a "precommitment or self-command mechanism" in long-term contracts. Scott, supra note 85, at 770; Scott, Error and Rationality in Individual Decisionmaking: An Essay on the Relationship Between Cognitive Illusions and the Management of Choices, 59 S. Cal. L. Rev. 329, 342-49 (1986) (arguing that regulations prohibiting coercive remedies that ex post seem to promote efficiency may actually promote inefficiency because consumers will no longer be able to use self-generated behavioral rules to discourage weak will and to control the incentives to default in long-term contracts).

[145] My analysis of alternative mortgagor protection laws is limited to efficiency-enhancing modifications. State legislators may wish to consider other societal objectives in modifying their real estate finance laws. See supra note 4.

[146] Some states, however, do distinguish between mortgages secured by residences and those secured by nonresidential properties. See, e.g., Kan. Stat. Ann. § 60-2414 (1983) (redemption statute permitting mortgagors to waive their redemption rights except when the mortgage secures a dwelling, or dwellings, occupied by no more than two families or agricultural land); see also supra note 13 (deficiency judgment prohibitions in some states apply only to mortgages or deeds of trust securing residences).

[147] Diversification typically involves investing in a number of unrelated assets to reduce the magnitude of loss from an uncertain event. See J. Van Horne, Financial Management and Policy 46 (6th ed. 1983).

ble to most homeowners. If the primary purpose underlying mortgagor protection laws is to insure against the adverse effects of default and foreclosure, then these laws ought to be amended to cover only those who need the protections—homebuyers and, perhaps, small businesses.

Furthermore, although the existence of mortgagor protection laws may promote efficiency, the laws may not be optimally designed from the perspective of either the borrower or the lender. Anti-deficiency judgment laws may promote a moral hazard[149] on the part of the borrower. Once a borrower's equity evaporates because of falling house prices or accrued, but unpaid, interest and penalties, he no longer has any incentive to maintain the value of the property securing the loan or protect it from waste if he is insulated from personal liability.[150] Statutory rights of redemption may be even more troubling. Although redemption rights permit borrowers to repurchase their property after foreclosure, and therefore preserve the subjective value they place on their homes, such laws probably chill bidding at foreclosure sales. Third party purchasers are unlikely to bid the fair market value of properties when they must bear the risk that their purchase will be unraveled a year later. Laws that permit mortgagors to remain in possession of the property during the redemption period exacerbate the disincentives to purchase because they create a heightened risk of waste.

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[148] Self-insurance is a risk retention mechanism in which a private firm or governmental body plans to pay the losses it incurs from its own funds. See C. Williams & R. Heins, supra note 36, at 227. Self-insurance is typically used by firms or entities that: 1) are large enough to assume risk; 2) can reasonably predict future losses; and 3) can benefit from obtaining control over their losses through improved claims processing. If a firm is capable of self-insuring, it gains the added advantage of saving the loading charges that would have to be paid to an outside insurer. See Young, Self-Insurance *in* Risk Management Today: A How To Guide for Local Government 59, 59-61 (N. Wasserman & D. Phelus eds. 1985).

[149] A "moral hazard" is a situation in which an insured person or entity might take some action causing a loss or fail to take some action within its power to avoid a loss because of the existence of the insurance. See A. Polinsky, An Introduction to Law and Economics 56 (2d ed. 1989).

[150] Some states that generally prohibit deficiency judgments permit damage actions against mortgagors if waste is attributable to reckless, intentional, or malicious despoliation of property. See Cornelison v. Kornbluth, 15 Cal. 3d 590, 603-05, 542 P.2d 981, 990-92, 125 Cal. Rptr. 557, 566-68 (1975). Nevertheless, borrowers who are merely negligent in failing to take appropriate precautions to protect the value of their property would probably not fall within the court's "bad faith" exception and therefore would still be insulated from personal liability in California.

The insurance-based justification for mortgagor protection laws developed in this Article suggests an alternative to existing mortgagor protection laws. State legislators who wish to provide assistance to mortgagors might consider structuring mortgagor protection as an insurance program. At the closing of a home purchase, a buyer would purchase mortgage foreclosure insurance.[151] In the event of default, the borrower would be entitled to a payment that would ameliorate the adverse effects of foreclosure. States could earmark the insurance either to pay for certain items, such as an additional period of time for the borrower to remain in possession of the property, or, alternatively, to pay for personal liability on the debt. Perhaps a more efficient insurance program would allow the individual debtor who has defaulted to decide for himself how to spend the insurance proceeds.[152] To avoid the problems created by imperfect information discussed in Part III, the state could make mortgage foreclosure insurance compulsory,[153] as it has done for other low probability events such as floods.[154]

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[151] The insurance program could be administered by the state or private sector.

[152] Mortgage foreclosure often occurs in the context of personal bankruptcy. See T. Holloway & R. Rosenblatt, supra note 76, at 29 (National Foreclosure Survey indicates that 10% to 15% of the loans in foreclosure are subject to a bankruptcy stay). For a program of mortgage foreclosure insurance to have the desired effect of protecting borrowers from the adverse effects of default, a state might have to adjust its laws governing what property is exempt under the bankruptcy laws to include the proceeds of the mortgage foreclosure insurance. Under the bankruptcy law, exempt property remains free from the reach of creditors. See T. Sullivan, E. Warren & J. Westbrook, supra note 3, at 27-30.

[153] See Johnson, Choice of Compulsory Insurance Schemes Under Adverse Selection, 31 Pub. Choice 23, 34 (1977) (stating that "[c]ompulsory insurance can be a Pareto optimal policy in insurance markets with adverse selection"); Kaplow, supra note 42, at 548-49 (stating that compulsory insurance is a potential solution to the problem of underestimation of risk).

[154] Federal flood insurance was first established by Congress in 1968. See Senate Comm. on Banking, Hous. and Urb. Affairs, Flood Disaster Protection Act of 1973, S. Rep. No. 583, 93d Cong., 1st Sess. 3, *reprinted in* 1973 U.S. Code Cong. & Admin. News 3217, 3219. In 1973, to encourage participation in the program, Congress required that all communities located in flood-prone areas participate in the program or forfeit their right to receive federal construction subsidies. In addition, the legislation prohibited federally regulated lending institutions from making mortgage loans in areas that did not participate in the program. Homebuyers who did not purchase flood insurance in participating communities were ineligible for loans made by these institutions. See Flood Disaster Protection Act of 1973, Pub. L. No. 93-234, §§ 102, 202, 87 Stat. 975, 978, 982 (codified as amended at 42 U.S.C. §§ 4012(a), 4106 (1988)). Under pressure from real estate developers, Congress amended the program in 1977 to permit federally regulated lending institutions to make loans in nonparticipating communities. See Housing and Community Development Act of 1977, Pub. L. No. 95-128, § 703, 91 Stat. 1111, 1144 (codified as amended at 42 U.S.C. § 4106 (1988)).

Transforming existing state mortgagor protection laws into an insurance program would also have additional efficiency-enhancing effects on mortgage markets. In recent years, real estate capital markets have been integrated with national credit markets, largely as a result of secondary mortgage market agencies buying and selling mortgage loans and promoting their securitization. At present, the secondary mortgage market does not fully price mortgages to reflect the expected costs attributable to different state laws.[155] States with mortgagor protection laws probably do not bear the full costs of their laws, but, instead, probably externalize a portion of those costs to borrowers in other states. The externalization of costs increases the likelihood of states enacting mortgagor protection laws the aggregate costs of which exceed their benefits. Although I do not believe, based upon the net present value simulation presented in Part II, that these externalized costs are likely to be significant, replacing mortgagor protection laws with an insurance program would ensure that all of the costs of mortgagor protections are borne by the mortgagors through insurance premiums.[156] Furthermore, separating the cost of mortgagor protections from the interest and principal payments made by homebuyers has the added advantage of substantially reducing fiscal illusion.[157] Facing separated costs, homebuyers would be better able to assess the costs and benefits of mortgagor protections. Armed with these enhanced assessments, homebuyers could lobby their

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Nevertheless, communities that do not participate may not receive federal construction subsidies, and residents who do not participate may not obtain FHA or VA insured loans. Further, borrowers in participating communities must still purchase flood insurance to qualify for loans originated by federally regulated lending institutions. See Houck, Rising Water: The National Flood Insurance Program and Louisiana, 60 Tul. L. Rev. 61, 70-71 (1985). Flood risk is generally viewed as uninsurable by the private market because of adverse selection. See Greene, A Review and Evaluation of Selected Government Programs to Handle Risk, 443 Annals 129, 131 (1979). Numerous social welfare programs may also be characterized as mandatory insurance. See S. Rea, Disability Insurance and Public Policy 5 (1981); Diamond, A Framework for Social Security Analysis, 8 J. Pub. Econ. 275, 296 (1977).

155 See Schill, supra note 2.

156 Replacing current state mortgagor protection laws with an insurance program would also reduce the transaction and information costs created by divergent state mortgagor protection laws. Although there may be some transaction and information cost reduction achieved by repealing these laws, I do not believe that the amount of savings would be significant. See id.

157 " 'Fiscal illusion' traditionally refers to the methods utilized by governments to disguise the level of taxation in order to minimize taxpayer resistance." Schill, supra note 42, at 859 & n.115.

elected representatives to alter or to eliminate the protections if they determine that, on balance, the protections yield a net loss.

Compulsory mortgage foreclosure insurance might not, however, eliminate mortgagor moral hazard and, in some circumstances, might even exacerbate the problem. Mortgagors might be less careful in making mortgage payments if they were insured against some of the consequences of default. In addition, financially distressed mortgagors who would otherwise sell their homes to pay off loan balances might prefer to default in order to collect the insurance proceeds. There are reasons, however, to believe that the problem of moral hazard is likely to be rather limited in the context of a compulsory mortgage foreclosure insurance program. In insurance markets, problems of moral hazard are typically minimized by coinsurance. As long as the act that entitles the insured party to collect the proceeds of insurance is not costless, he or she will be less likely to reduce precautions or default for the purpose of collecting insurance proceeds. Mortgage default typically entails significant out-of-pocket expenses for a borrower in the form of penalties, late fees, and acceleration of the indebtedness, all of which could function as a form of coinsurance.[158] Mortgagors who default would also lose the subjective value that they place on their homes. In addition, default and foreclosure are likely to harm a homebuyer's credit reputation, making it more difficult for him to borrow funds in the future. If needed, states could take further steps to minimize the problems posed by moral hazard by limiting the coverage of mortgage foreclosure insurance to those defaults that occur for reasons beyond the control of the mortgagor, such as unemployment and precipitous drops in local or regional housing prices.[159]

CONCLUSION

In this Article I argue that the acccpted wisdom regarding mortgagor protection laws requires substantial revision. I find, contrary to

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[158] Mortgagors with equity in their homes are also unlikely to default willfully and risk foreclosure. This equity may effectively serve as an insurance deductible.

[159] A different form of moral hazard could also be present. Mortgagors with foreclosure insurance might borrow funds in excess of the amount that a fully informed, uninsured, risk neutral person would borrow because they would be insulated from at least a portion of the risk of default. Providers of mandatory mortgage foreclosure insurance could alleviate this potential problem by adjusting the premium paid for the insurance to reflect estimates of expected loss.

the results of other empirical studies, that it is unlikely that mortgagor protection laws substantially increase the costs of home credit. This empirical finding is consistent with the theory that when viewed from an ex ante perspective, mortgagor protections may promote, rather than impede, economic efficiency by functioning as a form of insurance against the adverse effects of default and foreclosure. Government intervention in mortgage markets to mandate protection, in the form of deficiency judgment prohibitions, statutory rights of redemption, or a compulsory mortgage foreclosure insurance program, may be necessary to correct market failures attributable to imperfect information.

The economic implications of mortgagor protection laws are part of a broader set of issues concerning the desirability of government regulation of housing markets. In recent years, the cost of homeownership has outpaced the earning power of many Americans. After consistently climbing since the end of World War II, the homeownership rate in the United States fell in the 1980s. Policymakers at all levels of government have increasingly focused on ways to make housing markets more efficient and housing more affordable.

This Article fits into the current debate over the desirability of government regulation of housing markets in at least two ways. First, it suggests that one set of laws that have been harshly criticized may promote rather than impede economic efficiency. More broadly, the analysis suggests that policymakers should proceed with caution in their efforts to deregulate housing markets. There is little doubt that numerous forms of government regulation, such as large lot zoning and rent control, impede the efficiency of housing markets and generate substantial short- and long-term costs. However, other government interventions, such as mortgagor protection laws, may promote economic efficiency in ways that are not immediately apparent, nor easily provable. In our efforts to improve the efficient operation of the housing market, we should be careful not to substitute slogans and truisms for theory and empirical evidence.