

Did usury ceilings hold down auto sales?

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Usury ceilings have been implicated, along with persistently high interest rates, as culprits in the long, deep slump in the automobile sector that occurred in the late 1970s and early 1980s. As the prime rate rose from the 6-8 percent range of 1977 to 20 percent in 1981, lenders in many states were restricted from charging higher rates for automobile financing by long-standing usury ceilings. Over the same period retail sales of passenger cars fell from over 11 million in 1977 and 1978 to 8.5 million in 1981. Looking over this situation, a representative of the National Automobile Dealers' Association testified in Congress in 1980 that state usury limits were contributing to the economic decline of the motor vehicle industry.¹ He argued that these ceilings caused a significant reduction in banks' automobile lending, which in turn curbed consumer demand for automobiles.

The purpose of this paper is to investigate the effect of usury ceilings on the retail sales of automobiles. Both the conventional treatment of usury ceilings by economic theory and previous empirical research suggest that usury ceilings on automobile finance rates would be detrimental to automobile sales in periods of high interest rates. However, a statistical analysis of automobile sales in Illinois and Michigan between 1977 and 1982 did not discern any clear effect of binding ceilings. I attribute the failure of the data to support this hypothesis to the peculiar circumstances of automobile financing.

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¹"State Usury Ceilings and Their Impact on Small Business," Hearings before the House Committee on Small Business 96 Cong. 2 Sess. (Government Printing Office, 1980), p. 101. See also, Charles J. Elia, "Rising Prime Rate Plus States' Usury Ceilings Put a Kink in Car Industry's Recovery Outlook," *Wall Street Journal* December 3, 1980.

According to the standard theoretical analysis, when lenders are prevented by usury ceilings from raising finance rates to meet the added costs of higher economy-wide interest rates, they will respond by reducing the amount of credit they are willing to lend and strengthening noninterest credit terms.² It stands to reason, that when usury ceilings limit the supply of credit, they will inhibit sales of credit-financed goods.

Several empirical studies of the effect of usury ceilings on the housing market support this reasoning, linking the effect of usury ceilings on credit supplies to their effect on consumer purchases. These studies have documented a connection between binding ceilings on mortgage rates and reduced new housing construction.³ With the recognition that half or more of all new car purchases are financed by credit, the automobile market appears to present a situation similar to the housing market. We expect, then, that usury ceilings which restrict automo-

²See D. Vandenbrink, "The Effects of Usury Ceilings," *Economic Perspectives*, (Midyear 1982), pp. 44-55.

³Studies of the effect of usury ceilings on the mortgage market and homebuilding include: Ernest Kohn, Carmen J. Carlo, and Bernard Kay, *The Impact of New York's Usury Ceiling on Local Mortgage Lending Activity*, New York State Banking Department, January 1976; James E. McNulty, "A Reexamination of the Problem of State Usury Ceilings: The Impact on the Mortgage Markets," *Quarterly Review of Economics and Business*, vol. 20 (Spring 1980), pp. 16-29; R. Oostas, "Effects of Usury Ceilings in the Mortgage Market," *Journal of Finance*, vol. 31 (June 1976), pp. 821-34; Dwight Phaup and John Hinton, "The Distributional Effects of Usury Laws: Some Empirical Evidence," *Atlantic Economic Journal* vol. 9 (Sept. 1981), pp. 91-98; Phillip K. Robins, "The Effects of State Usury Ceilings on Single Family Homebuilding," *Journal of Finance*, vol. 29 (March 1974), pp. 227-36; Arthur J. Rolnick, Stanley Graham, and David S. Dahl, "Minnesota's Usury Law: An Evaluation," *Ninth District Quarterly*, vol. 11 (April 1975), pp. 16-25; and Steven M. Crafton, "An Empirical Test of the Effect of Usury Laws," *Journal of Law and Economics*, vol. 23 (April 1980), pp. 135-146.

ble finance rates would also restrict sales of automobiles.⁴

Usury ceilings and automobile sales in Illinois and Michigan

In this section we test this expectation against actual experience with binding usury ceilings and automobile sales in Illinois and Michigan. Mirroring the national decline in auto sales, annual registrations of new passenger automobiles in Illinois fell from 706,000 in 1977 to 454,000 in 1981 and in Michigan they dropped from 664,000 to 446,000 over these same years. During much of this period, both states had legal ceilings covering finance rates on automobile loans. For the purpose of this study the ceiling on automobile credit was defined as the maximum rate permitted on direct automobile loans by commercial banks.⁵ In Illinois, that ceiling was 12.75 percent (7 percent add-on) until January 1, 1980 when it was raised to 16.25 percent (9 percent add-on). Then, effective September 15, 1981, all Illinois ceilings on consumer loans were eliminated. Michigan, on the other hand, still has a ceiling of 16.5 percent, raised from 12.83 percent (7 percent add-on) on April 7, 1980.

⁴Among the numerous studies of automobile credit, finance rates, and automobile demand, only a few have been concerned specifically with the role of state rate ceilings, and then they have focused only on their effect on automobile credit markets, not on the market for automobiles. See R. P. Shay, "The Impact of Legal Rate Ceilings on the Availability and Price of Credit," National Commission on Consumer Finance, *Technical Studies IV*, pp. 387-424; Douglas F. Greer and Ernest A. Nagata, "An Econometric Analysis of the New Automobile Credit Market," National Commission on Consumer Finance, *Technical Studies IV*; Richard L. Peterson and Michael D. Ginsberg, "Determinants of Commercial Bank Automobile Loan Rates," *Journal of Bank Research*, Spring 1981, pp. 46-55; and Daniel J. Villegas, "An Analysis of the Impact of Interest Rate Ceilings," *Journal of Finance*, September 1982, p. 941.

⁵Typical of consumer lending regulations in most states, in Illinois and Michigan different laws applied to automobile loans made by different types of lending institutions. For example, in Illinois direct loans by commercial banks to individuals for the purchase of automobiles were subject to the state's general consumer installment loan ceiling while the lenders were subject to a specific statutory ceiling covering motor vehicle retail sales. From 1977 to 1981, the ceiling under the Illinois Motor Vehicle Installment Sales Act was higher than the ceiling applicable to banks.

According to our model, these state usury ceilings are only expected to affect auto sales when the ceilings are lower than the rate auto lenders would have charged in the absence of legal restriction. In order to judge when these ceilings actually were binding in Illinois and Michigan, then, it is necessary to determine the unregulated, or market, rate on auto loans. But where usury ceilings exist we may not be able to observe this market rate directly.⁶ For the purpose of this study, the market rate was represented by the average U.S. rate on new automobile loans, a series published by the Federal Reserve System based on loan rates reported by a sample of commercial banks drawn from throughout the United States. In a period of high interest rates, this measure is likely to understate the market rate since the reported rates would have been influenced by ceiling limits.

Figures 1 and 2 compare this measure of the market rate on automobile loans to the ceilings in Illinois and Michigan, respectively. Twice between 1977 and 1982 the market rate rose above each state's ceilings, making the ceilings binding. In Illinois, the periods of binding ceilings were from the last quarter of 1979 until January 1980 when the ceiling was raised, and from about June of 1981 until September, when the ceiling was eliminated. The periods were roughly the same in Michigan: from November 1979 until the ceiling was increased in April 1980, and from mid-1981 through the last observation in August of 1982. Figure 3 shows that during these periods the rates reported on the Federal Reserve survey by banks in Illinois and Michigan were indeed below the national "market" rate.

The hypothesis that auto sales are lower during times when ceilings are binding than when they are not was tested in regressions on quarterly automobile registrations in Illinois and

⁶Actual automobile loan rates are not an accurate indicator of the market rate in states where ceilings are in fact binding, since the actual rates reflect the influence of the ceiling. All empirical studies of the effect of usury ceilings must face this problem of how to measure the market rate of interest. The preferred solution is to simulate a market rate from observations of actual interest rates known not to have been subject to a ceiling.

Figure 1
Illinois installment loan ceiling vs. U.S. average bank rate on direct auto loans

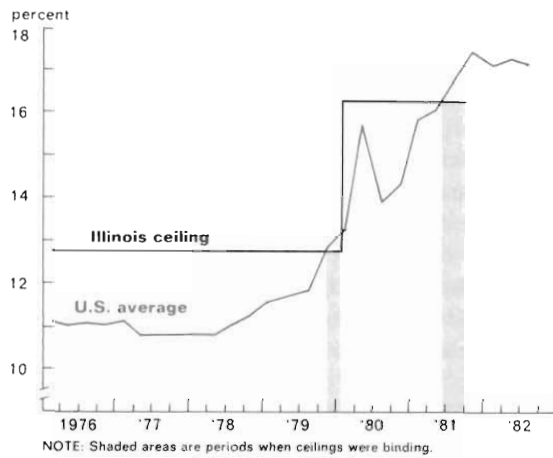
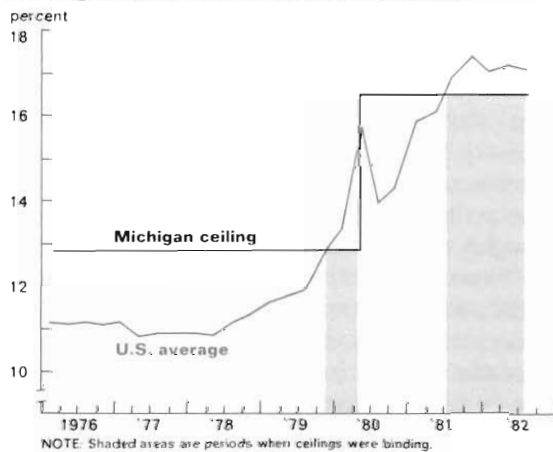


Figure 2
Michigan motor vehicle loan ceiling vs. U.S. average bank rate on direct auto loans



Michigan from 1977 through the second quarter of 1982 (a span of 22 quarters). Three alternative variables were used to measure the effect of the usury ceilings, two dummy variables and a spread variable. One dummy variable was constructed to equal to 1 whenever the state ceiling was below the U.S. average rate on bank auto loans. (This occurred in 8 out of the 44 observations.) However, since our measure of the market rate may understate the true market rate, this dummy variable may not capture all the times when ceilings were in fact binding auto-

mobile credit rates in these two states. For this reason, an alternative dummy was constructed based on a more liberal definition of "binding." This variable took the value 1 whenever the "market rate" was above or less than 1 percentage point below the state ceilings. (This occurred in 16 of the 44 observations.)

Figure 3
Most common rate on direct new auto loans at commercial banks



The spread variable was devised to measure the effect of the "bindingness" of the ceiling. This variable was given a value equal to the spread between ceiling and market rates whenever the two were closer than one percentage point in absolute value. Otherwise it was set equal to 1. In other words, the spread variable ranged between -1 and 1, with a larger (i.e., more positive) value signifying a less binding ceiling. Hence, the coefficient on this variable was expected to be positive.

All regressions also included three variables to control for other economic influences on automobile sales: the state unemployment rate, the quarterly change in state per capita disposable income, and the prime rate. A higher unemployment rate was expected to be associated with a lower level of auto sales, while positive changes in disposable income were expected to bring about higher automobile sales. The prime rate was intended to measure the influence of interest rates on credit-financed purchases. In-

cluding this variable was necessary to ensure that the coefficients on the ceiling variables did not also reflect the effect of the high interest rates that caused the ceilings to become binding.

A final consideration in the specification and estimation of the regressions was necessary because the data from both states were pooled. A dummy variable was included to measure any difference in the average level of automobile sales, other things equal, between the two state cross-sections. This variable took the value of 1 for Illinois observations. In addition, the regressions were estimated using the Parks technique to take account of possible interdependence between the cross-sections or autoregression in the time-series.

The regression results are shown in Table 1. In the first column, the effect of the ceiling is measured by the simple dummy variable; the second column uses the less restrictive definition to designate periods of binding ceilings; and

in the third column the spread variable replaces the ceiling dummy. Overall the equations did fairly well. The untransformed OLS regressions explained over seventy percent of the variance in automobile sales and the F-statistics in each regression were significant. Higher unemployment rates had a negative effect on automobile sales and, according to the Illinois dummy variable, Illinois sold about 5.5 fewer automobiles per 1000 population than Michigan. Higher interest rates had the anticipated negative effect on the level of automobile sales.

The results for the usury ceiling variables are disappointing. Although all the coefficients did have the expected signs, suggesting a negative relationship between binding ceilings and automobile sales, none was statistically significant. In other words, this negative pattern could be attributed to chance as easily as to a systematic relationship. Thus, the experiences in Illinois and Michigan do not strongly support the claim that binding usury ceilings are detrimental to automobile sales.

A model for the automobile sector

One place to look for an explanation of why the empirical results did not give stronger support to our expectations about the effect of usury ceilings on automobile sales is in the way automobile financing and sales differ from the situation posed by either the standard theoretical analysis or the empirical studies of the housing sector. This section argues that when the particular structure of the automobile credit market is taken into account, it might not be reasonable to expect that binding usury ceilings will necessarily adversely affect the overall level of automobile sales, after all.

Implicit in the model from which our initial expectation was derived is the assumption that consumers obtain credit independently of their purchase of goods. The discussion below indicates that this assumption is not appropriate to the situation with automobile purchases. According to Table 2, at the end of December 1981, commercial banks were the single largest source of automobile credit holding 47 percent of the \$126 billion total automobile credit liability of

Table 1

Impact of usury ceilings on automobile sales in Illinois and Michigan: 1977-I to 1982-II

	(1)	(2)	(3)
Constant	25.50 ^a (19.95)	25.52 ^a (19.44)	24.96 ^a (15.91)
State unemployment rate	-0.77 ^a (-5.22)	-0.80 ^a (-5.32)	-0.77 ^a (-5.14)
Change in disposable income	1.77 (0.63)	1.94 (0.69)	1.78 (0.63)
Illinois dummy	-4.75 ^a (-8.01)	-4.76 ^a (-7.73)	-4.73 ^a (-7.95)
Ceiling dummy	-0.64 (-0.84)
Alternate ceiling dummy	...	-0.37 (-0.48)	...
Spread variable	0.42 (0.78)
U.S. average prime rate	-0.23 ^a (-2.71)	-0.22 ^a (-2.12)	-0.22 ^a (-2.48)
Summary statistics for untransformed OLS regression:			
R ²	.70	.70	.70
F	18.03	17.75	18.02

NOTES: Regressions estimated by Parks technique, a two-stage procedure to correct for heteroskedasticity, contemporaneous correlation, and auto-regression in the error structure of pooled time-series cross-section data. T-statistics are in parentheses.

^aSignificant at 5% level (one-tailed).

Table 2
Automobile credit outstanding by holder
December 1981

	\$ Billions	Percent
Commercial Banks	126.4	46.8
Indirect	35.1	27.8
Direct	24.1	19.1
Finance Companies	45.3	35.8
Credit Unions	22.0	17.4
Total	126.4	100.0

SOURCE: Board of Governors Federal Reserve System of Research and Statistics, March 1982.

U.S. consumers. Finance companies followed with 35 percent of the total and credit unions had the smallest share, only 17 percent. What is not clear from this table is the fact that the finance company category is comprised almost entirely of the finance subsidiaries of the major automobile makers, the so-called "captive subs." Other consumer finance companies do virtually no automobile financing.⁷ Table 2 also does not make clear the role of automobile dealers in supplying credit. Automobile dealers are the initial credit contact for the majority of automobile purchasers although they do not show up as final holders of credit contracts. In most cases, dealers conduct credit investigations and carry out other credit-related tasks before placing credit contracts with other financial institutions. The amount of dealer-originated credit is sizeable. According to Table 2, of the \$59 billion in consumer automobile credit held by banks at the end of 1981 almost sixty percent, \$35.1 billion, was indirect credit—credit which originated with dealers. In addition, virtually all of the automobile credit listed in the table under finance company holdings was originated by

⁷A staff member at the Board of Governors estimates that the "captive subs" represent over 90 percent of the automobile credit holdings attributed in the statistics to finance companies generally. This is corroborated in a study by Rosenblum and Siegel who estimated from company reports that together GMAC, Ford Motor Credit, and Chrysler Credit held \$40.9 billion of the \$45.2 billion figure (90.3%) in the finance company category of Table 2. This study also showed that the holdings of three captive subs comprised one-third of all outstanding automobile credit at the end of 1981. Harvey Rosenblum and Diane Siegel, *Competition in Financial Services: The Impact of Nonbank Entry*, Staff Study 83-1, Federal Reserve Bank of Chicago.

dealers. Thus, behind these data is the fact that a significant portion of automobile financing is arranged or provided by agents which have at least some interest in the automobile sector.

Aggregate data on consumer automobile credit suggest that these connections influence the supply of automobile credit. As shown in Figure 4 and Table 3, captive-sub finance companies behave differently than commercial banks—lenders that are entirely independent of the automobile sector. Figure 4 traces movements in the prime rate and in automobile rates for commercial banks and finance companies from 1976 through 1982. Until early 1978 these three interest rates stood in their typical relationships with respect to one another: consumer automobile loan rates were above the prime rate (reflecting the higher administrative cost of consumer over commercial lending) and finance company rates were above rates at commercial banks (reflecting the higher risk clientele of the finance companies).

These relationships changed considerably after mid-1978. The prime rate rose from the 6-8 percent range of the early 1970s to 20 percent in 1981. Consumer automobile loan rates also increased considerably during this period, but not nearly as dramatically as the prime lending rate (due in part presumably to state usury ceilings). What is most interesting is the change in

Figure 4
Auto loan interest rates fell below the prime rate during recent recession years

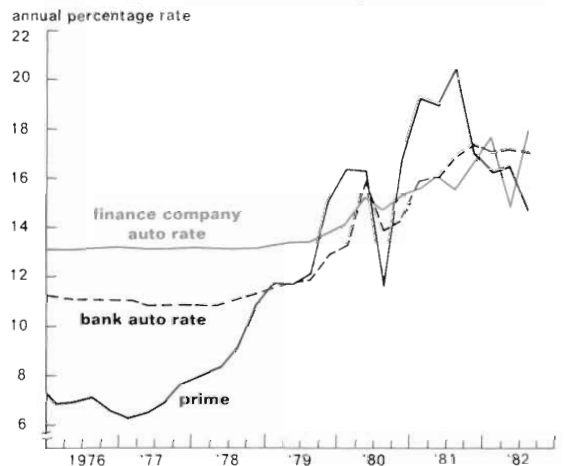


Table 3
Extensions of automobile credit:
Market share and dollar amount 1977-1981

	1977	1978	1979	1980	1981
	<i>share of market</i>				
Automobile credit	100.0%	100.0%	100.0%	100.0%	100.0%
Commercial banks	61.4	60.2	57.1	49.2	45.3
Credit unions	22.0	21.0	18.5	18.3	19.2
Finance companies	16.8	18.9	24.5	32.5	35.5
	<i>\$ billions</i>				
Automobile credit	75.6	88.0	93.9	83.5	94.4
Commercial banks	46.4	53.0	53.6	41.4	42.8
Credit unions	16.6	18.5	17.4	15.3	18.1
Finance companies	12.7	16.5	23.0	27.1	35.5

SOURCE: Board of Governors Federal Reserve System Division of Research and Statistics, March 1982.

the relationship between the finance company rate and the commercial bank rate. The gap between the two closed in late 1979 and for much of the time thereafter, bank rates topped finance company rates. One interpretation of this change is that it reflects an attempt by the automakers to counter the threat of high interest rates on sales by offering below-market finance rates through their captive subs.

Table 3, which shows the dollar amount of automobile credit extended and market share by type of lender for the years 1977 through 1981, suggests that this strategy succeeded. According to the upper panel of the table, finance company credit extensions increased every year from 1977 to 1981 while commercial bank extensions rose moderately in 1978 and 1979 and then dropped precipitously in 1980, coincident with the surge in bank lending rates. The result was a doubling of the finance company share of the automobile credit market from 1977 to 1981 as shown in the lower panel of Table 3. Thus, it appears below-market financing offered by the captive subs did retain some customers who might have been discouraged from making automobile purchases because of the high cost of bank financing.

We have seen that in the market for automobile financing, lenders are often connected to the sellers of automobiles and that for these lenders the credit business apparently was secondary to the business of selling automobiles during a period of high interest rates and tight credit.

Under this interpretation, automobile finance companies become a source of automobile credit that is insulated from the effect of usury ceilings. Lenders who offer below-market rates to maintain credit to support automobile purchases would not be apt to restrict lending because a usury ceiling prevented charging higher rates. Lending by these finance companies would tend to offset the restrictive effect of usury ceilings on credit supplied by independent lenders, and the existence of such a ceiling-neutral supply of automobile credit would weaken the aggregate connection between binding ceilings and automobile sales levels.

Conclusion

Contrary to expectations, the empirical investigation reported on in this paper did not show that binding usury ceilings were a clear factor in the decline in automobile sales in Illinois and Michigan between 1977 and 1981. A subsequent discussion looked to the distinctive characteristics of the supply of automobile credit to explain why the empirical work failed to support the original expectation. It was argued that connections between automobile financing and automobile retailing and the apparent willingness of U.S. auto makers to subsidize credit through their finance subsidiaries would tend to make usury ceilings inoperative for a significant portion of the supply of automobile credit. As a result, binding ceilings on automobile finance

rates do not necessarily mean a reduction in total automobile credit or, therefore, in aggregate automobile sales.

This is not to say, however, that ceilings on automobile finance rates are of no consequence. For one thing, binding ceilings may still force independent lenders like banks to restrict their automobile lending. In addition, if they induce automobile makers to offer greater credit subsi-

dies through their financing arms, the cost of this subsidy is made up in other ways, perhaps in higher automobile prices for all automobile purchasers.⁸ It would be useful, therefore, for future research to look at the effect of usury ceilings on other aspects of the automobile market than the number of autos sold.

⁸See "Low-interest loans: How the dealers do it," *Business Week*, July 12, 1982, p. 27.