PRICE AND PREJUDICE: A VARIANCE COMPONENTS ANALYSIS OF SOME CAUSES AND CONSEQUENCES OF REGULATING CHICAGO STOREFRONT BANKS

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The impact of government regulations on the functioning of markets is currently a topic of lively debate. In this paper we examine the effects of legislative and administrative regulations on the market for services provided by Chicago currency exchanges. Our findings suggest that the regulations stifle competition, with the result that the opportunity to extract excessive profits exists. And since currency exchanges tend to be concentrated in poorer neighborhoods with higher proportions of minority residents, the burdens of market inefficiencies fall on those individuals who can least afford them.

I. INTRODUCTION

Beginning with the "rediscovery" of poverty in the early 1960's, a variety of studies have amply demonstrated that residents of America's inner cities suffer from substantial economic hardship (e.g., Harrington, 1962; Sexton, 1965; Lyford, 1966; Moynihan, 1968). When more recent inflationary trends are taken into account (Caplovitz, 1979), the picture is hardly more optimistic. In the search for causes and ameliorative strategies, a number of urban institutions have been asked to shoulder the blame, and local retail establishments have been popular targets.

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It is probably fair to say that, indeed, "the poor pay more" (Caplovitz, 1967; Sturdivant, 1969) and that inner city merchants often approach their customers with suspicion, rudeness, and even outright hostility (Rossi *et al.*, 1974). Yet, when researchers have turned from description to explanation, charges of avarice and prejudice are at best incomplete. In particular, these charges ignore the structural environment in which inner city businesses operate. Moreover, evil is not the sort of causal factor to which public policy can easily respond.

In this paper, we will take a structural perspective by considering the functioning of a particular urban market and the role played by public regulation in shaping the business environment. More specifically, we will focus on currency exchanges in the city of Chicago and examine the impact of a body of administrative regulations on the market for services provided by those exchanges. Are the poor really paying more when they patronize currency exchanges; and if so, is public regulation part of the problem or part of the solution?

II. BACKGROUND

Currency exchanges are an Illinois institution found virtually nowhere else in the country. Sometimes organized as small "Mom and Pop" businesses and sometimes as large chains, currency exchanges routinely cash checks, write money orders, distribute food stamps, and sell license plates. In addition, exchanges are used as delivery addresses for welfare checks and may be authorized to pay utility bills and the monthly rents of local tenants. In short, currency exchanges provide many of the services normally found in full-service banks.

While currency exchanges were initially a response to the bank failures of the Great Depression,[1] they owe much of their current viability to Illinois laws that effectively prohibit branch banking outside downtown Chicago. About four-fifths of the nearly 500 exchanges in Illinois are located in Chicago and tend to be concentrated in poorer neighborhoods where banks are uncommon. One result is that currency exchanges are perhaps the most salient financial institution in the day-to-day lives of

[1] "The General Assembly has found and declares: that the community currency exchange business . . . has become so widespread since the bank holiday in 1933. . . ." (ILL. REV. STAT. ch 16½, § 30).

inner city residents and therefore have a significant impact on how low-income households manage their financial affairs.

Of late, currency exchanges have come under increasing scrutiny, and fundamental questions have been raised about their distributional consequences. For example, a fee of between one and two percent is typically charged to cash public assistance checks (including Social Security and welfare checks). Thus, a two-child family receiving approximately $260 a month routinely pays about $4.00 for the service, along with $.35 or more for each payment to landlords and utility companies. Since banks commonly provide the same services for less (often cashing checks for free), it is easy to understand at least one source of recent public concern.

A second set of criticisms have stemmed from the regulatory structure to which Illinois currency exchanges have traditionally been subjected. Since 1943, licensing and regulation have been the responsibility of what is now the Currency Exchange Division of the Department of Financial Institutions, and from time to time, charges of collusion and corruption have surfaced (Pound and Zekman, 1976: 1). In addition, the statutory standards for licensing specify two apparently incompatible goals: "to promote and foster the . . . financial stability" of the industry, and to respond to the "needs of the communit[y]."[2] In the view of many, the former has dominated in practice. Indeed, a recent study undertaken by the Illinois Legislative Investigating Commission concluded, "A general rule of thumb, established by tradition and infrequently violated, is that no license will be granted to an ambulatory currency exchange or community exchange if another community exchange is located within four blocks of the proposed location" (Illinois Legislative Investigating Commission, 1977: 41). Such practices may well shield individual exchanges from genuine competition and perhaps help to explain how Illinois exchanges have allegedly managed to charge about three times the going rate for virtually identical services offered in the New York metropolitan area.

While Chicago currency exchanges have never been a popular local institution, it was in 1977 that simmering

[2] ILL. REV. STAT. ch 16½, § 30, repealed, P.A. 80-442 (Sept. 2, 1977); *accord*, *Cohn* v. *Smith*, 14 Ill. 2d 388, 153 N.E.2d 83, 86 (1958). See also, ILL. REV. STAT. ch. 16½ § 34.1.

discontent began to have a real impact. A combination of media exposés, public interest litigation, and reform politics converged on the state capitol; when the dust had settled, the Illinois General Assembly had rewritten the Currency Exchange Act. Along the way, the legislature determined (among other things): that a few exchanges charged exorbitant rates,[3] that rates were especially unfair in poor, mostly black areas of Chicago,[4] and that there was no need to guarantee the industry's profitability.[5] In response to these findings, the legislature ordered the Department of Financial Institutions to (1) "formulate . . . maximum rates" for check cashing and money orders,[6] (2) permit different maximums for different types of checks, (3) repeal the "financial stability" licensing standard leaving only the "need of the community" test (P.A. 80-442 [Sept. 2, 1977]).

These and other related decisions were made on the basis of information that most social scientists would deem at least incomplete: anecdotal testimony from public hearings, newspaper articles, and somewhat superficial statistical analyses.[7] However, the legislation provided only a broad framework for reform, and the details remained to be determined in ratemaking proceedings subject to judicial review. In particular:

> The Director [of the Department of Financial Institutions] shall, by rules adopted in accordance with the Illinois Administrative Procedure Act, formulate and issue, within 120 days from the effective date of this amendatory Act, schedules of maximum rates which can be charged for check cashing and writing of money orders by community currency exchanges and ambulatory currency exchanges. Such rates may vary

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[3] One exchange returned 4,016 percent on investment, it was revealed in the testimony of J. Oppenheim in ratemaking proceedings before the Director, Dept. of Financial Institutions (Jan. 9, 1978). Sen. Harold Washington sponsored rate regulation legislation because "I was concerned about the exorbitant rates charged" (Pound and Zekman, 1976: 1, 26).

[4] "Rates have been discriminatory based on various neighborhoods, particularly within the city of Chicago and the rates vary depending upon the economic affluence of various neighborhoods." Sen. Harold Washington, in sponsoring P.A. 80-438, at Sen. Tr. 78 (May 26, 1977).

[5] "I don't think the people of the State of Illinois, as represented in the General Assembly, need to assure the financial stability of any business." Sen. David C. Shapiro, in sponsoring P.A. 80-442, at Sen. Tr. 102 (May 26, 1977).

[6] P.A. 80-438 (Sept. 2, 1977), ILL. REV. STAT., ch. 16½, § 49.3. A constitutional challenge to this statute was recently upheld because the statute lacked regulatory standards (*Thygesen* v. *Callahan*, 385 N.E.2d 699, 24 Ill. Dec. 558 [1979]).

[7] By far the best of these was Bridges and Oppenheim, 1977. Yet, as the authors readily admit, the weak data base undercut any really firm conclusions.

> according to such circumstances and conditions as the Director determines to be appropriate. The schedule so established may be modified by the Director from time to time by the same procedure (P.A. 80-438, Sept. 2, 1977; ILL. REV. STAT., ch. 16½, § 49.3).

Other ratemaking standards announced by the Department included "the cost and expense attributable to rendering the service" and "such other facts which the Director deems relevant."[8]

Clearly the legislative mandate spoke to the kinds of questions on which more rigorous social science research could shed some light. For example, there had been no really systematic study of factors explaining variation in rates across Chicago currency exchanges; yet, it was precisely those factors that were supposed to be critical in the ratemaking process. Indeed, it had still to be demonstrated that, with the exception of a few outliers, the alleged rate patterns were other than chance.

In response to these and other questions, the study reported in this paper was introduced. In essence, with the aid of the variance components procedure developed by Fuller and Battese (1974), the rate structure across the full population of Chicago currency exchanges was addressed with exogenous variables including characteristics of individual currency exchanges and characteristics of the particular neighborhoods served. While we would be the last to claim that our work was definitive (for reasons that will soon be readily apparent), it is to our knowledge the most thorough empirical effort to examine these issues.

III. RESEARCH DESIGN

Data

If Chicago currency exchanges were operating in a single competitive market, all should charge roughly the same prices for comparable services. In fact, the local nature of their clientele and the existence of substantial regulation (e.g., the de facto four-block rule) may mean that many markets were involved, all partially shielded from the full impact of

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[8] *Rules of Practice and Procedure of the Department of Financial Institutions to be Followed in the Formulation and Issuance of Schedules of Maximum Rates for Check Cashing and the Writing of Money Orders by Community and Ambulatory Currency Exchanges* at Rule 3.02 (3) (Dec. 2, 1977).

competition. Consequently, while we shall shortly be far more precise about our model specifications, it should be clear that a wide range of exogenous forces must be examined for their impact on prices.

The 1976 Chicago Community study (Bedgar *et al.*, 1976) partitioned the city into 78 traditional community areas, each reflecting a relatively high degree of homogeneity. Information from the 1970 Census was therefore available in a form aggregated into these community areas, and this material provided data on the socioeconomic characteristics of each community (e.g., median income, proportion black). Individual exchanges were then assigned the demographic attributes of the community area in which they were located. In addition, the presence of a bank within a one-mile radius was accounted for along with information on exchange ownership (e.g., as a member of a chain).

State law already requires that currency exchanges post the rates for their services (Illinois Dept. of Financial Institutions, 1973: Reg. 12), and from 480 exchanges in Chicago (virtually the entire population), data were collected on the prices charged for a standard set of services. These data were then used to construct our endogenous variables.

We were eventually able to construct reasonably complete files on a total of 457 Chicago currency exchanges (i.e., about 5 percent of the cases were discarded). Table 1 presents some summary statistics on the most relevant variables.

Table 1. Descriptive Statistics for Currency Exchange Data

Variable	Mean	S.D.	Min.	Max.
Check denomination ($)	148.25	164.87	1	500
Money order denom. ($)	148.25	164.87	1	500
Check cashing charge (¢)	155.26	154.05	10	750
Money order charge (¢)	117.36	115.48	10	750
Competing exchanges (integer)	10.57	6.56	1	25
Size of chain (integer)	3.95	4.33	1	22
Local bank (dummy)	.77	.42	0	1
Juvenile crime rate (per 1000)	16.39	8.73	1.7	33.5
Median income ($)	10,127.90	3,315.77	4,880	20,930
Minority population (1000's)	22.70	27.32	0	91.2
Total population (1000's)	65.31	35.20	5.00	198.00

Model Specification

While a great deal has been written about small businesses in general and inner city merchants in particular (e.g., Caplovitz, 1967; Sturdivant, 1969; Rossi *et al.*, 1974), it is difficult to extract much useful material for an analysis of our currency exchange data set. Perhaps most important, it seems nearly impossible to precisely characterize the market environment in which Chicago currency exchanges operate. The "four-block rule" would appear to guarantee that a relatively large number of distinct markets are involved since, at least implicitly, Chicago is carved up into numerous small territories where entrance from the supply side is restricted. Yet it is difficult to know how critical these barriers really are.[9]

Faced with these and other difficulties, we decided to specify our estimation equations roughly consistent with free-market assumptions. That is, each currency exchange is viewed hypothetically as operating in a free market defined by the boundaries of its *community*. This is no doubt a serious oversimplification of reality, but free-market assumptions allow for signed, *a priori* model specifications and, equally important, provide a benchmark from which empirical anomalies can be considered.

We began by assuming that the quantity of currency exchange services demanded was a function of the community's population, its median income, the size of the black population, price, and whether at least one bank was located in the community. The quantity of currency exchange services supplied was initially assumed to be a function of the juvenile delinquency rate (or alternatively, the arrest rate for drug offenses), the number of exchanges in the community, the size of the chain of which each exchange was a member, and price. These initial formulations are summarized in equations 1 and 2.

[9] For example, 77 percent of the Community areas have at least one bank. Within any four-block area, banks may provide direct competition across a range of services, and other kinds of establishments may well cash checks and write money orders (e.g., supermarkets). However, the actual density of these alternative sources of currency exchange services within four-block areas (and considerably larger areas) is typically not very great. In addition, currency exchanges no doubt draw on a larger market area than four blocks, especially if they are located in commercial districts and/or along public transportation routes. In other words, unless proximate exchanges tend to be members of the same chain, some competition may be found between nearby exchanges. Finally, individuals living or working near the borders of four-block areas may have ready access to more than one exchange. Again, some competition between exchanges may exist.

$$Q_D = f(\text{Population, Income, Race, Bank, Price}) \quad (1)$$

$$Q_S = f(\text{JD, Number, Chain, Bank, Price}) \quad (2)$$

In equations 3 and 4 we further specify our equations for supply and demand.

$$Q_D = \alpha_o + \alpha_1(\text{Population}) - \alpha_2(\text{Income}) + \alpha_3(\text{Race}) - \alpha_4(\text{Bank}) - \alpha_5(\text{Price}) \quad (3)$$

$$Q_S = \beta_o - \beta_1(\text{JD}) + \beta_2(\text{Number}) + \beta_3(\text{Chain}) + \beta_4(\text{Price}) \quad (4)$$

As equation 3 indicates, demand is seen to increase linearly with the size of the community's population; the greater the number of people, the greater the quantity demanded. Median income is assumed to be negatively related to demand. The services provided by currency exchanges are seen as inferior goods, and the fact that more wealthy individuals typically take their business to banks (Pound and Zekman, 1976) would seem to support this premise. The size of the black population is assumed to be positively related to demand. Since historically blacks in Chicago have heavily patronized currency exchanges (Pound and Zekman, 1976), blacks may well have developed a preference for the services provided by currency exchanges. This taste may rest on longstanding relations with currency exchange personnel, lack of familiarity with alternate suppliers such as banks, or simply habit. Banks provide a set of substitute services. Thus, the presence of a local bank should reduce demand. Finally, we make the usual assumption that the quantity demanded is negatively related to price.[10]

In equation 4, we assume that the quantity supplied is a linear function (see footnote 10) of the juvenile delinquency rate, the number of exchanges in the community, the size of the chain of which a given exchange is a member, and price. The juvenile delinquency rate is taken as an indicator of certain costs of doing business: the amount of vandalism and theft, the cost of providing necessary security, the size of insurance premiums, and the incidence of voided checks. Therefore, the juvenile delinquency rate should be negatively related to the quantity supplied. The number of exchanges in the community is assumed initially to be positively related to the quantity supplied. To the degree that chains can capitalize

[10] Since for a *given* service, such as cashing a $100 check, prices across exchanges do not vary a great deal (a few cents), the linear form is probably a reasonable approximation of the relevant segment of the demand curve, whatever its real functional form.

on positive returns to scale, they should be able to provide more services at a given price. However, it is also possible that large chains may be able to exercise some control over the market, and this in turn might significantly reduce competition. Conceivably, such control might reduce the quantity supplied (depending on demand); and therefore it was unclear whether the relationship between chain membership and supply should be positive. Finally, price should be positively related to the quantity supplied.

Unfortunately, we have no measures of the amount of service offered (quantity). However, if we make the usual equilibrium assumptions, we can equate the supply and demand equations and solve for price. We are then left with a single reduced form equation with price a linear function of the other variables. Equation 5 shows the results.

$$\begin{aligned}\text{Price} = {} & \gamma_0 + \gamma_1(\text{Population}) - \gamma_2(\text{Income}) + \gamma_3(\text{Race}) + \gamma_4(\text{JD}) \\ & - \gamma_5(\text{Number}) - \gamma_6(\text{Chain}) - \gamma_7(\text{Bank}) \qquad (5)\end{aligned}$$

Equation 5 indicates that price should be positively (and linearly) related to the community's population, the size of the black population (race), and the juvenile delinquency rate. Price is negatively (and linearly) related to median income, the number of exchanges in the community, the size of the chain, and the presence of at least one bank.[11]

With equation 5 in hand, we are still left with the task of formulating our endogenous variable. Currency exchanges offer a wide range of services, and for some services, charges vary as a function of the size of the transaction. Models for each service and the different charges for different size transactions would have produced a prohibitively large number of equations and enormous difficulties in arriving at any overall conclusions. Consequently, we decided to focus primarily on charges for cashing checks and writing money orders. These were the most common and controversial services (Pound and Zekman, 1976). That is, they represented the majority of business transactions of real substance and were the services around which public concern had developed. For both check cashing and money orders, posted prices were available for eight denominations (e.g., $1, $10, $25, and so on). Treating each denomination as a separate "service" would have

[11] We had no measures of such things as currency exchange revenue, profits, rates of return, or number of transactions.

produced a total of 16 equations. While we did in fact estimate each of these equations (see footnote 17), we felt that pooling the data would be more efficient. Hence, each denomination for checks and money orders respectively was approached as a unit of observation. In other words, for checks, the 457 exchanges and eight denominations produced 3,656 "cases," and for money orders, the 457 exchanges and eight denominations produced 3,656 "cases."

The separate pooling procedures for checks and money orders, however, led to two complications. First, since charge was clearly a function of denomination, denomination had to be included as an exogenous variable. Yet, it was also apparent that the relationship was not fully linear, and over and above a linear relationship between denomination and charge, the two lowest denominations ($1, $10) and the highest denomination ($500) appeared to produce slightly higher charges. Therefore, we introduced a dummy variable for the two lowest denominations and another dummy variable for the highest denomination.

The introduction of denomination into equation 5 has several significant implications. In particular, we are now able to estimate the marginal impact of denomination on price. It was not at all clear *a priori* precisely how denomination should be related to price, although impressionistic evidence suggested it should be related in a monotonically increasing fashion. We will have more to say about this later. Furthermore, with the insertion of denomination as a new variable, our model implies that the marginal effect of denomination is *not* a function of other variables in the equation. Finally, by *construction*, denomination is orthogonal to all other exogenous variables. Since each currency exchange posts rates for the same denomination, denomination is *fully crossed* with all other predictors. This means that in the additive linear form we employ, all estimates of marginal effects are the same regardless of whether denomination is included in the equation or not.

Second, there was good reason to believe that the residuals would be correlated within exchanges across each exchange's denominations and within each denomination across exchanges. The former would result from stochastic perturbations unique to each exchange, while the latter would

result from stochastic perturbations unique to each denomination. Proceeding with ordinary least squares in the face of such correlations would have produced inefficient estimates of the regression coefficients and inconsistent standard errors (Kmenta, 1971: 499-515; Maddala, 1977: 320-333). Hence, we resorted to a form of generalized least squares which in essence re-weights the data to take such correlated residuals into account; the Fuller-Battese (1974) variance components procedure we employed possesses all of the usual desirable asymptotic properties.[12] It is also perhaps worth stressing that such techniques have traditionally been developed for pooled time-series and cross-sectional data, but we see no principled objection to applying them here. We have the same sort of statistical problems, although the sources are somewhat different.

IV. FINDINGS AND DISCUSSION

Table 2 shows the variance components estimates for the pooled data set (N = 3,656) in which charge for check cashing is the dependent variable. (Charges are in cents.) A number of regression coefficients of this reduced form equation have t-values in excess of 2.0 (i.e., statistically significant at the .05 level for a two-tailed test) and also have nontrivial substantive effects. To begin, check denomination has a whopping linear impact, accounting for 89 percent of the variance in charges. The regression coefficient indicates that each dollar increase in denomination produces nearly a one-cent increase in service charge. There is also some evidence for a nonlinear effect through an increment of 62 cents for high ($500) check denominations. However, low denominations ($1, $10) appear to make no difference over and above the linear effects.

The large impact of denomination, while perhaps not surprising, must not be misunderstood. When the linear and nonlinear effects are considered together, about 89 percent of the variance in charges for check cashing is explained. This means that since all currency exchanges post rates subject to

[12] Variance components models require homoskedasticity, which in this instance does not seem problematic. A recent consideration of these and other assumptions can be found in Mundlak (1978: 69-85). A more elementary discussion can be found in Berk (1979: 385-410).

Table 2. Fuller-Battese Estimates for Check Cashing (in cents)

Variable	B-estimate	T for B=0	Probability	S.E. B
Intercept	28.39	2.358	.018	12.014
Check denomination ($)	.828	12.636	.000	.066
Dummy for large checks	61.700	2.129	.033	28.976
Dummy for small checks	7.259	.480	.631	15.109
Competing exchanges (integer)	.324	2.014	.044	.161
Chain size (integer)	.648	3.889	.000	.167
Local bank (dummy)	−2.844	−1.637	.102	1.738
Juvenile crime rate (per 1000)	.070	.534	.594	.132
Community population (1000's)	−.029	−1.050	.294	.027
Median income ($)	−.0006	−1.910	.056	.0003
Minority population (1000's)	.059	1.568	.117	.038

Variance Component for exchanges = 122.81
Variance Component for denominations = 221.79
Variance Component for error = 743.42

the *same* denominations, only 11 percent of the variance in charges remains to be explained by systematic factors varying *across* exchanges. In other words, most of the variation in charges is a function of denomination. However, this does not mean that factors accounting for the residual 11 percent are necessarily trivial or meaningless. Much of the substantive focus of this research is on variation across exchanges, and in practical terms, the regression coefficients tapping the residual 11 percent may well be important.

Looking first at variables affecting the demand for check cashing services, neither the community's overall population nor its median income have statistically significant effects. However, the t-value for median income is 1.91 (statistically significant at the .05 level, had we used a one-tailed test), and the regression coefficient is in the predicted direction. If one chooses to take the regression coefficient seriously, check cashing by currency exchanges may indeed be an inferior good. The sign for having a bank in the community is also in the predicted direction but also short of statistical significance (t = 1.64). Perhaps the presence of a local bank does increase competition and reduce prices, but the evidence is hardly overwhelming. Finally, the impact of the size of the community's minority follows the same pattern of showing the predicted sign but a somewhat disappointing t-value (t = 1.57). That is, there is a hint that communities with greater numbers

of minority residents pay higher prices for the exchange service of check cashing, but a compelling case cannot be made. We will see shortly that in general a more interesting story will emerge when money order prices are examined.

There seem to be complex trends in the variables affecting the supply of currency exchange services. While the juvenile delinquency rate has no impact, the other variables have intriguing effects. The more currency exchanges in a community, the *higher* the price for cashing checks. Each additional exchange increases the price about ⅓ cents, and since there are as many as 25 exchanges in a community, an 8 cents differential may occasionally result. Although this is not a big effect in absolute terms, the sign is certainly troubling from a free-market perspective. The effect of the size of the chain of which each exchange is a member is also statistically significant and has a *positive* effect. Each additional chain member increases the price for cashing checks about ⅔ cents. Across the full range of chain sizes, a differential of 14 cents may occasionally result. Apparently, any positive returns to scale are not passed on to the consumer.

What then are the practical implications of the findings from Table 2? To begin, while denomination is clearly the most powerful predictor in the equation, its substantive import for a study of regulatory impact is not immediately apparent. Suffice to say that there is an important story beneath the surface that will soon have our undivided attention. As for the other results, although the price increments associated with multiple exchanges in a neighborhood and with chain membership are not large in absolute terms,[13] they do represent nontrivial percentage increases on the average charge. Since the mean charge for cashing a check is $1.55, consumers at the extremes are paying about 15 percent more per check than others (adding the effects of both variables). Equally important, even rather small percentage increases in average charges for check cashing can make a substantial difference in the total revenue obtained by currency exchanges.

One might argue with some justification that these additional revenues come about through factors restricting the

[13] These are distinct variables. There is no particular tendency for chain members to be located in the same neighborhood.

operation of competitive markets. Larger chains may be able to exercise some control over the market; members of the same chain will not compete with one another. The impact of the number of exchanges may reflect similar practices. Given that currency exchange operators in a particular community typically know one another and often work together through their professional association, they may cooperate in the determination of prices.[14] With a large number of exchanges in a community, such collusion could be quite powerful.

Table 3 shows the results of analysis of charges for writing money orders (in cents).[15] By and large, the findings are rather similar to those for check cashing. The linear effect of denomination explains a little over 85 percent of the variance, and each dollar increase in the size of the money order increases the charge about ⅔ cents. The increment for the largest money order is roughly the same as we found previously, but the t-value is only 1.61. Still, it is clear that little has changed for the impact of denomination.

Table 3. Fuller-Battese Estimates for Money Order Charges (in cents)

Variable	B value	T: B=0	Probability	S.E. B
Intercept	36.500	3.150	.002	11.588
Money order denomination ($)	.644	10.519	.000	.061
Dummy for large M.O.	43.632	1.611	.107	27.088
Dummy for small M.O.	5.616	.398	.691	14.124
Competing exchanges (integer)	.635	3.533	.000	.180
Chain size (integer)	.485	2.604	.009	.186
Local Bank (dummy)	-2.020	-1.039	.299	1.944
Juvenile crime rate (per 1000)	- .249	-1.686	.092	.148
Community population (1000's)	- .082	-2.668	.008	.031
Median income ($)	- .0009	-2.592	.010	.0003
Minority population (1000's)	.110	2.591	.010	.042

Variance Component for exchanges = 176.48
Variance Component for denominations = 193.62
Variance Component for error = 746.99

[14] At one point "The [currency exchange] association then had a meeting and decided to have all their members sign a voluntary pledge not to charge more than one percent for cashing checks" (Former Ill. Dept. of Financial Institutions Director Carla Petersen, quoted in Pound and Zekman, 1976).

[15] While it might seem that we could have increased our efficiency with the application of techniques for seemingly unrelated equations (across the two kinds of services), the exogenous variables for both kinds of services were identical. Therefore, no benefits would result.

The impacts of statistically significant variables affecting the supply of services are also familiar. A greater number of exchanges in a community leads to *higher* prices, and large chains charge *more*. In short, whatever supply forces caused higher prices for check cashing seem also to be operating for writing money orders.

It is for variables tapping the demand for money orders that we find some substantive changes. The impact of median income is still negative, but now statistically significant. Money orders from currency exchanges are apparently an inferior good. Perhaps more intriguing is the finding that communities with larger populations experience *lower* prices for money orders, *ceteris paribus*. It is difficult to know what this means; an indicator of greater demand leads to lower prices. Finally, we now find a statistically significant effect for the size of the community's black population. Communities with a greater number of black residents experience *higher* charges for writing money orders. Yet, the precise import of this effect is not really clear. The problem, of course, is that the presence of a large number of blacks may be related to a number of unmeasured factors increasing the costs of operating currency exchanges: higher insurance premiums, higher rents, or greater security costs.[16]

Where does that leave us overall? First, for both money orders and checks, prices are higher in communities with a larger number of currency exchanges and where exchanges are members of larger chains. Clearly, it is difficult to fully square these patterns with competitive market assumptions; and as we argued earlier, the practical implications may be nontrivial. In the case of the number of exchanges, currency exchange operators seeking to influence prices may be especially effective in controlling the market when many can cooperate. In the instance of chain size, our findings may reflect an ability of larger chains to exercise some impact on the market.

[16] In order to explore these possibilities, we introduced several other community-level variables into both equations (i.e., for checks and for money orders). However, as one would expect, the very indicators that might unravel effects confounded with the size of the black population produced serious difficulties with multicollinearity. Thus, variables such as the arrest rate for drug-related offenses, community educational levels, and the number of families on public assistance led to highly unstable regression estimates.

Second, findings regarding the demand for currency exchange services are somewhat ambiguous. While it is reasonably clear that currency exchange services are inferior goods, little else of much importance can be definitively concluded. The fact that communities with larger black populations appear to pay higher prices (at least for money orders) is subject to a variety of interpretations, and the finding that for money orders, communities with larger populations (regardless of racial distribution) pay lower prices remains rather anomalous. One would have expected precisely the opposite.[17]

Finally, the size of the transaction has nearly the same large effect for both checks and money orders.[18] For observers close to the day-to-day operation of currency exchanges, this may not be surprising, but the underlying meaning is unclear. If currency exchange charges reflect the marginal costs of providing services, it would seem that such costs increase roughly as a linear function of denomination (with the exception of $500 transactions). Yet, since it is hard to imagine that the marginal costs of actually processing transactions differ greatly by denomination, perhaps the currency exchange operators are responding to the risks involved. In the case of checks (there are really no risks from money orders), the higher prices for higher denominations may reflect the anticipated losses from checks that are not honored; larger checks may lead to larger losses. Still, the linear form remains intriguing since actual losses are not only a function of the size of the check, but the probability that it will not be honored. The linear form implies that the *expected* losses from a $100 check are ten times larger than the *expected* losses from a $10 check.

If one assumes (for the moment) that the actual loss if a check is not honored is the value of the check, currency exchange operators may be acting as if the probability of a "bounced" check is approximately constant regardless of

[17] As mentioned earlier, we also ran separate equations for each of the denominations for money orders and checks. These equations necessarily neglected the role of denomination as a predictor of charge, but by and large, the other variables behaved as they did in the pooled analyses. Regression analyses were also attempted for other currency exchange services: state license fees, utility payments, and transfer fees. However, too little variance existed across exchanges to produce useful results.

[18] We tested whether the marginal impact of denomination varied as a function of several different community variables, and found no effects.

denomination. Then, if one takes our estimated regression coefficients seriously, this probability would appear to fall around .009.

Unfortunately, there are a number of complications. First, a relatively small proportion of currency exchange patrons have checking accounts or have friends with checking accounts; indeed that is the reason the exchanges exist. Therefore, most checks (and especially larger checks) brought to currency exchanges for cashing are likely to be payroll checks and checks from public agencies. It is hard to imagine that the probability that such checks would bounce is one in a hundred. Moreover, the largest checks may have the smallest expected loss. On the other hand, we have been implicitly assuming that currency exchange operators are risk neutral, and perhaps a more reasonable premise is that currency exchange operators are risk averse. Were this the case, a roughly linear relationship between denomination and price could in principle result despite a smaller expected loss for larger checks.

Yet, regardless of whether currency exchange operators are risk neutral or risk averse, voided checks may incur a range of additional costs. For example, banks routinely apply penalties for checks that do not clear, and at least for small checks, the percentage increase in cost is nontrivial. Also, when a check bounces, currency exchange operators may try to find the perpetrator in order to obtain payment. This may be a time-consuming and perhaps hazardous undertaking. Finally, to the degree that such losses through voided checks are covered by insurance, a large number of voided checks may affect insurance premiums. In short, there is far more to expected losses than the value of the check, and in principle, these additional costs must be considered.

Clearly, a compelling explanation for the linear relationship between denomination and price is difficult within the competitive market perspective we have been assuming. Alternatively, it may prove fruitful to consider the implications of assuming that currency exchanges have a virtual monopoly over the services they provide to particular communities (although this too is a serious oversimplification). Then, if one assumes that customers wishing to cash larger checks have a stronger demand for currency exchange services, currency exchange operators may be able to effectively practice price

discrimination. The premise that individuals wishing to cash large checks evidence especially strong demand seems reasonable; a lot of money is at stake, and it may be difficult to cash large checks at other outlets (e.g., the corner drug store). And if little competition really exists from alternative suppliers of the relevant services, the rational currency exchange operator seeking to maximize profits will capitalize on variation in demand. Finally, given a model of price discrimination, the linear relationship between denomination and price may simply reflect a convenient pricing algorithm: roughly some fixed percentage of denomination. Note that this perspective also helps to explain the linear relationship between denomination and price for *money orders* where the notion of risk is not really relevant.[19]

V. CONCLUSIONS

It is clear that original legislative and administrative intent addressed the needs of the currency exchange industry and the needs of consumers. Yet taken as a whole, our findings suggest that in practice public regulation has so distorted the relevant markets that effective competition is probably discouraged. And in the absence of effective competition, the opportunity exists to extract excessive profits.

Our findings do not speak to whether the entire currency exchange industry is able to capitalize on a noncompetitive business environment. However, there is substantial evidence that in communities where exchange operators are able to exercise significant control over the market, the prices for currency services are higher. Moreover, since currency exchanges tend to cluster in less affluent neighborhoods with greater numbers of minority residents, the perverse effects fall disproportionately on those individuals who can least afford the burden.

It is important to stress that while it seems that once again, "the poor pay more," greed and prejudice have not figured importantly in our causal explanations. Price discrimination in a noncompetitive market does not require the pursuit of evil. An even-handed pursuit of profit will suffice.

[19] In fact, the "float" advantage for money orders increases with denomination.

With this said, it is not at all clear what path public policy should follow. Tighter regulations on the prices charged for currency exchange services might well reduce some of the more dramatic price variation across exchanges and communities. And if it were possible to accurately estimate the costs of providing currency exchange services, a "fair" rate of return might be established. This might reduce prices overall. Yet, tighter controls (which cost money to implement) could just as easily drive currency exchange capital into other markets and reduce the supply of services. Thus, many communities might soon be without any currency exchanges.

If one is prepared to assume that currency exchange services are not a necessity for which public agencies should take responsibility, an alternative to tighter controls is deregulation. Yet, deregulation is hardly a flawless solution. There is no guarantee that prices would decline, no guarantee that variation in prices would be reduced, and no guarantee that all communities would be served. On the other hand, if it could be shown that significant effective demand for currency exchange services exists and that currency exchange operators have typically been able to extract large profits, deregulation is probably the wiser course. In other words, if currency exchanges are likely to be profitable, genuine competition should eventually yield more desirable results. At the very least, average prices should decline.

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