It's Not Just How Much You Pay, But Also How You Pay:

Empirical Evidence from the Banking Industry

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Abstract

Classical consumer choice models indicate that utility is derived from the consumption of goods, while the manner in which goods are obtained does not affect utility. This paper examines whether consumers also derive utility (or disutility) from the method of payment used to obtain the good. Using data from the U.S. banking industry we examine consumer choices under two monetarily equal payment structures; we find that the method of payment affects utility since most bank customers prefer to pay for services via receiving low rates for deposits instead of paying explicit fees. Banks, however, recently have been relying on fees for a larger portion of their revenues. These results have implications for customer retention since bank consumers have greater price elasticity of demand to paying service fees rather than receiving low interest rates on deposits.

"Consumers continue to encounter stiffer fees and higher balance requirements"

– McBride, 2006.

1. Introduction

Most economists believe that consumers derive utility from consuming goods, however, the manner in which they were acquired does not affect utility – in other words, the destination good is important while the route taken is not. A simple example illustrates this principle: suppose a consumer obtains x goods purchased for R dollars. It does not matter whether R was calculated via a linear or a non linear tariff (i.e., the consumer is indifferent between the two pricing schedules as long as x units are consumed for R dollars).[1] Indeed, in the class of consumer utility models found in the seminal papers on pricing structure, price discrimination, and non-linear tariffs,[2] consumption enters the utility function yet the form of payment does not. In this case, a consumer who faces two different pricing schemes, yet pays the same price and receives the identical quantity should be indifferent between the two outcomes. We present evidence, however, to the contrary as sometimes consumers care not just about the destination

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[1]Certainly the pricing schedule could influence the optimal quantity of x, however, for a given consumption bundle and total cost, the consumer remains indifferent.

[2]For example, for papers on price discrimination see: Borenstein 1985, Chiang and Spatt 1982, Ekelund 1970, Katz 1987, Malueg 1993, Png and Hirshleifer 1987, Salop and Stiglitz 1977, Schmalensee 1981, Shilony 1977, Thisse and Vives 1988, and Varian 1985. Papers specifically addressing nonlinear tariffs include: Goldman Leland and Sibley 1984, Katz 1983, 1984, Laffont Maskin and Rochet 1987, Leland and Meyer 1976, Mirman and Sibley 1980, Oi 1971, Oren Smith and Wilson 1983, 1984, Perry 1978, Roberts 1979, Schmalensee 1982, Spence 1977, Spulber 1981, and Willig 1978. The only deviation from utility based solely on quantity consumed is where the good's cost is paid in both time and money, (e.g. Hotelling 1929, Shilony 1977, and Spulber 1981). In some of the above papers utility differs across individual types, but never across payment scheme.

(the purchase), but also the trip (pricing structure or payment method).

We examine consumer choices under different payment schemes in the case of the U.S. banking industry. Empirical evidence suggests that bank customers prefer to pay for bank services via receiving low rates on deposits (hereafter *rate regime*) rather than via paying explicit fees (henceforth referred to as *fees regime*). Banks, however, have moved away from consumer payment preferences since bank financial data indicates a steady rise in the proportion of bank earnings that are derived from fee revenue over the last twenty years.

Previous research has shown that banks charge higher fees (Hannan 2006) and pay depositors lower interest rates (Hannan and Prager, 2004; Park and Pennachi, 2005) in more concentrated markets. Moreover, retail deposit fees are also significantly higher for large multi-market banks compared to single-market banks (Hannan, 2006). In this paper, we contend that the shift to a fees regime (which is especially noticeable for banks with greater local market share) may be counter productive because consumers have a more price elastic demand when they pay via a fees regime compared to an interest rate regime for deposit accounts. Hence our finding that large banks charge significantly higher fees may help to explain why large diversified banking organizations are having difficulty in attracting and retaining retail bank customers (Pilloff and Rhoades, 2000).

We consider two competing explanations for the rise in bank fees, each with different implications for bank profit. If market power is driving the increase in fees and prices then profits should also increase. In contrast, if a switch to a fees regime increases consumers' demand elasticity, then competition will be tightened, ceteris paribus, and profit will decline. We use financial statement data to examine the relationship between bank fees and bank profit. Consistent with Stiroh (2006) we find that banks which earn a larger proportion of their income from fees have lower profits. This finding suggests that deposit account holders are more

demand elastic under a fee regime compared to an interest rate regime. In addition, not only are profits lower when banks make greater use of fee-based services, but Stiroh (2006) and DeYoung and Rice (2004) also show that profits are subject to increased volatility when a larger proportion of bank revenue comes from fees instead of interest rates.

The remainder of the paper is organized as follows. Section 2 presents an overview of bank fee revenue. Section 3 presents a simple Hotelling (1929) model of banking competition which is used to assist our empirical investigation. Similar to Prelec and Loewenstein (1998) and Prelec and Simester (2001), our model allows for utility to differ based on form of payment. Empirical test results are presented in section 4. This is followed by an examination of why banks are switching from interest rate to fee-based revenue sources. Concluding remarks appear in the final section.

2. Fees and Fee Income Are Increasing

Bank fees have been rising along with banks' renewed emphasis on retail banking (see Hirtle and Stiroh, 2007). Consumer complaints about ATM and NSF fees have attracted the attention of both politicians and the media (e.g., Wenske, 2007; Mohl, 2005; Berenson, 2003). While it may not be surprising to learn that bank fees are increasing, this section documents the extent of the increase in fees and the proportion of revenues earned from bank fees.

2.1 Bank Fee Data

We collect deposit-related fee data from a sample of U.S. banks compiled in conjunction

with Moebs $ervices of Lake Bluff, IL. The sample includes 579 banks per year between 1999-

2003 and 873 banks each year between 2004-2006. Financial institutions were selected from a

stratified random sample based on region of the country and the size of the financial institution.

A recent Bankrate.com survey on bank fees is consistent with our bank fee data, "punitive fees

continue to climb" (McBride, 2006).

   We report annual averages for five bank fee categories: ATM foreign fee, ATM

surcharge, non-sufficient funds (NSF) fee, stop payment charge, and returned check fee. Each of

these five bank fees (defined in the appendix) are disclosed to the consumer upon opening a

deposit account. The Moebs $ervices bank fee data reveals that most bank fees have steadily

increased between 1999 and 2006 (see table 1). We report the simple, unweighted (unw) annual

average of fees across banks and the average weighted (w) by bank asset size. The weighted

specification may be more representative of the fees paid by the typical bank consumer.

   While most bank fees have increased over time (see table 1), one bank fee – the ATM

foreign fee has fallen during the sample period. Hannan (2006) suggests that ATM foreign fees

are falling because single-market banks do not want to lose customers to multi-market banks

Table 1: **Select Bank Fees – Annual Averages Across US Banks (in dollars)**

	ATM Foreign Fee		ATM Surcharge		NSF Fee		Stop Payment Charge		Returned Check Fee	
	unw	w	unw	w	unw	w	unw	w	unw	w
1999	0.80	1.20	0.97	1.35	17.86	23.66	15.07	20.18	4.01	5.14
2000	0.81	1.24	0.84	1.17	19.15	24.66	16.09	23.37	4.53	5.72
2001	0.87	1.37	1.20	1.45	20.05	26.91	16.92	26.01	4.60	7.40
2002	0.82	1.30	1.22	1.25	21.42	25.14	18.02	23.30	4.01	5.44
2003	0.71	1.04	1.36	1.21	20.82	29.01	17.59	24.84	3.81	7.63
2004	0.76	1.31	1.34	1.58	23.39	28.89	19.20	26.89	5.86	8.80
2005	0.84	1.42	1.49	1.57	23.30	28.46	20.44	26.13	4.92	11.78
2006	0.76	0.64	1.55	1.47	24.05	30.34	20.44	28.82	6.89	6.27

unw = unweighted averages across banks   Data Source: Moebs $ervices
w = weighted average by asset size

Table 2: **Regressions of Various US Bank Fees (1999-2006)**										
	ATM Foreign Fee		ATM surcharge		NSF fee		Stop Payment Charge		Returned Check Fee	
	Bank Fixed Effects									
	Coef	StEr	Coef	StEr	Coef	StEr	Coef	StEr	Coef	StEr
const	.670*	.112	.941*	.111	19.6*	.545	16.9*	.651	4.06*	1.13
time	.014†	.006	.080*	.006	.956*	.030	.931*	.036	.278*	.063
asset[a]	.001	.005	.006	.005	-.061†	.027	-.046	.033	-.086	.057
share	-1.66†	.837	1.26	.828	-4.51	4.21	7.16	5.02	-5.29	8.76
hhi	1.63	1.01	-.993	.991	2.52	5.00	-8.88	5.97	16.6	10.4
	Bank Random Coefficients									
const	.359*	.053	.750*	.048	16.9*	.356	13.9*	.421	4.32*	.490
time	.016*	.004	.086*	.004	1.07*	.026	1.01*	.031	.407*	.040
asset[a]	.031*	.003	.016*	.003	.185*	.023	.212*	.026	.037	.031
share	.845*	.248	.679*	.213	.490	1.93	7.21*	2.27	-9.54*	2.16
hhi	-.336	.294	-.194	.253	-5.23†	2.28	-12.5*	2.67	2.03	2.54
Obs[b]	4946 (2910)		4668 (2760)		5240 (2991)		5247 (2993)		5235 (2985)	

[a]Variable enters equation in log form   Data Source: Moebs $ervices
[b]Observations are bank-years (distinct banks in parentheses)   significant at *1%, †5%

(i.e., banks with more numerous ATM locations). Hence the best response of single-market

banks to high ATM surcharges assessed by multi-market banks is to reduce ATM foreign fees.

This foreign fee reduction, however, is partly offset by an increase in the ATM surcharge. The

largest fee increases have occurred for NSF fees ($6.68 higher) and stop payment charges ($8.64

higher) based on the weighted averages in 2006 versus 1999. In summary, bank fees have

clearly increased since 1999.

To more formally address the issue of whether fees have increased over time, we

regressed each of the five fee categories on a time trend, log of assets (in thousands of dollars),

bank's market share,[3] and Herfindahl-Hirschman Index (hhi) which is a measure of market

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[3]Throughout the paper, reported results are for the ratio of a bank's branches to the total
number of branches for all banks in the MSA or rural county. We also considered using the
deposit market share. There are no qualitative differences between results under the two market
share definitions; however, we chose branch share since it is less likely to be endogenous.

concentration in the MSA or rural county.[4] The regression results (see table 2) demonstrate that

there has been a significant increase over time in each of the five bank fees. The random

coefficients regressions reveal that larger banks and banks with greater market share charge

significantly higher fees. But surprisingly, higher hhi (less competitive) markets have

significantly lower bank fees (in two of the five random coefficients regressions).

In addition to the random effects estimations, we also conduct bank fixed effects

regressions for the five fee categories. There are two caveats, however, with using bank fixed

effects. First, the Moebs $ervices data spans just an eight year period, hence the estimates are

identified based on variations during this relatively short time period. Second, and perhaps more

importantly, Moebs draws a new random sample of U.S. banks each year.   This sampling

methodology is not conducive to the same banks appearing in the sample each year. For

example, the ATM foreign fee regression includes 4,946 observations from 2,910 banks. This

suggests that the typical bank appears just twice during the eight year sample period. Since,

identification relies on observed variation from banks that appear multiple times in the sample

(and this occurrence is rare), it is not surprising that many coefficients in the fixed effects

regressions are insignificant.

Despite these above caveats, the time trend results are robust to specification. The

interpretation of the bank fixed effects estimations is slightly different from that of the random

effects estimates. For example, the time trend variable in the fixed effects estimation suggests

that the *same* banks have increased their bank fees over time. The results for the remaining

explanatory variables, however, are mixed with most coefficients not achieving statistical

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[4]The market share and hhi for a multi-market bank is the average of the market shares (or
hhis) in the markets where it operates weighted by the amount of deposits held in each of the
bank's respective markets.

significance. Due to the previously mentioned caveats with fixed effects estimations for these data, we will not place too much emphasis on these results. In sum, these ten regressions reveal a significant increase in bank fees between 1999 and 2006. Next, we examine whether banks are becoming increasingly reliant on bank fees as a revenue source.

2.2 Bank Income Data

In order to document that fee revenue has risen relative to revenue from the interest rate margin we turn to bank balance sheet and income statement data reported in the Reports on Condition and Income (call reports) from the Federal Deposit Insurance Corporation (FDIC). Unlike the Moebs $ervices data, the FDIC call reports provide full financial data for every U.S. bank, and cover a longer time period (1984-2006). We begin our analysis by defining three revenue ratios.

First, we consider service charge revenue which includes both penalty fees and monthly service fees associated with deposit accounts. Service charges are more precisely defined in the appendix. The service charge ratio reflects the proportion of bank income that is derived from service charges on deposit accounts:

$$ServCh \arg eRatio = \frac{ServChrgInc}{ServChrgInc + NetInterestInc} \; .$$

Second, a broader measure of bank fee revenues is provided by non-interest income which is comprised of both service charges and fees received from other value-added services. A more precise definition of non-interest income appears in the appendix. Gross income is the ratio of non-interest income to non-interest income plus gross interest income:

$$GrossIncomeRatio = \frac{NonInterestInc}{NonInterestInc + TotalInterestInc} \; .$$

Finally, we use a third series to reflect the proportion of total income derived from fees. Net income uses non-interest income in the numerator, however, unlike gross income ratio, net income includes non-interest income and net interest income as the denominator as follows:

$$NetIncomeRatio = \frac{NonInterestInc}{NonInterestInc + NetInterestInc} .$$

These three fee-based ratios are plotted over time in figure (1). The top panel (a) shows the yearly average for the three fee ratios across all U.S. banks. The upward trend is unmistakable for the two non-interest income ratios, while the service charge revenue ratio appears relatively constant over time. This series also shows the effect of the early 2000s interest rate dip. Panel (b) shows the weighted annual average of each ratio weighted by bank size. A visual inspection of the weighted average plots from figure (1), however, clearly indicates that all three ratios are increasing over time.[5]

Next we more formally examine how fees have changed over time by estimating a fixed effects regression where each of the three fee ratios are dependent variables while time trend, log of assets (in thousands of dollars), interest rates (average annual 6-month t-bill), market share, and hhi serve as explanatory variables. The regression results from table (3) confirm the upward fee income trend depicted in figure (1). Each of the three bank fee income ratios have significantly increased during the past twenty years.
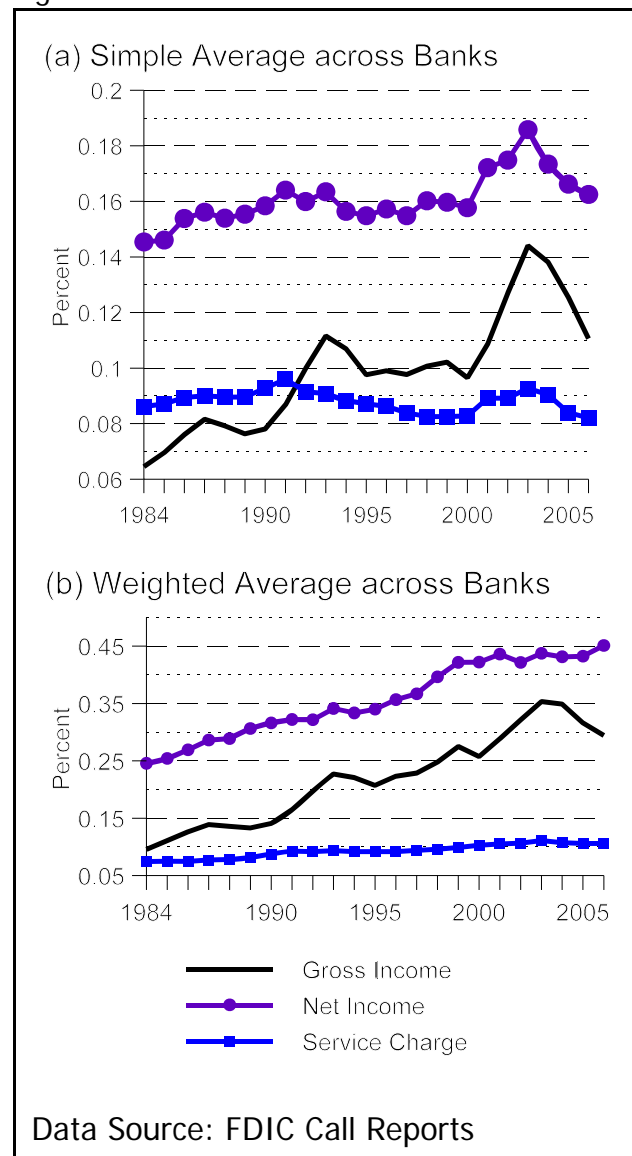
The regression estimates indicate that the relationship between a bank's size and its fee ratio is indeterminate since there is a negative relationship between the service charge ratio and

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[5] During our twenty-two year sample period there has been considerable bank consolidation. According to the FDIC, the number of commercial bank institutions dropped by 48 percent from 14,496 (in 1984) to 7,527 (in 2005). This wave of bank consolidation was aided by the passage of the Riegel-Neal Act of 1994 which eliminated many of the prohibitions against banking and branching (Matasar and Heiney, 2000) and by bank closures due to the wave of saving and loan failures.

size, while both the gross income and net income ratios are positively related to size. The three

fee income ratios are inversely correlated with the interest rate, which conforms with intuition

that a rise in (lending) interest rates widens the net interest margin, which lowers the portion of

income coming from fees. The three fee income ratios increase when banks have larger market

shares suggesting that banks become increasingly dependent on fee income as they gain market

share. While banks with larger market share may be assessing higher fees, we also find a

negative relationship between hhi and the fee income ratios. This suggests that an increase in

hhi (less competitive) actually lowers bank

fees. One explanation for this result is that

smaller banks in highly concentrated markets

are forced to lower their fees in order to

compete with larger banks which have a

dominant position. This negative relationship

between hhi and bank fees, however, is

statistically significant only for the service

charge estimation.

In order to better understand the hhi

and market share results we consider two

simple examples of market structure changes.

First, suppose market A has four equal sized

competitors. Following the exit of one firm

the three remaining competitors equally

divide the market. We calculate the effect of

this market structure change on the service

Figure 1: **Fee Income as a Percent of Total**

Data Source: FDIC Call Reports

Table 3: **Fixed Effects Regression of Fee Income Ratios (1984-2006)**

	Gross Income Ratio		Net Income Ratio		Service Charge Ratio	
	Coeff	Std Err	Coeff	Std Err	Coeff	Std Err
constant	0.0744*	0.0020	0.0322*	0.0025	0.1120*	0.0012
time trend	0.0023*	0.0000	0.0009*	0.0001	0.0005*	0.0000
ln assets	0.0021*	0.0002	0.0117*	0.0002	–0.0018*	0.0001
interest rate	–0.0053*	0.0001	–0.0023*	0.0001	–0.0014*	0.0001
market share[a]	0.0169*	0.0039	0.0169*	0.0048	0.0173*	0.0024
hhi[a]	–0.0023	0.0040	–0.0071	0.0050	–0.0188*	0.0025

Significant at: *1%, [†]5%   No. of Obs.238469   No. of Groups19952

Data Source: FDIC Call Reports   Note: All regressions include bank fixed effects

[a]Branch information is not available 1984-86. Hence this variable is set equal to zero for all observations before 1987 and we include an indicator variable (not reported) to denote such observations. Coefficients and Std. Errors for these variables are reported in thousandths.

charge ratio. For each bank, market share and hhi both increase by 0.08. Since the coefficients for market share and hhi are of similar magnitudes, hence these changes nearly offset each other. Second, consider market B which also starts with four equal competitors. Following the merger of two firms the market hhi increases from 0.25 to 0.375. For the merged firm, who experiences an increase in both market share (0.25) and hhi (0.125), the net effect is a predicted slight increase in the service charge ratio. This consolidation does not effect the market shares of the other two firms while hhi has increased; therefore, the net effect is a reduction in their predicted service charge ratio.[6]

In addition to the table (3) regression estimates, we also conduct a couple of robustness checks since we do not observe branch information prior to 1987 and hence cannot observe market share or hhi for each MSA (or rural county). First, we re-estimate the fixed effects regression without the 1984 to 1986 data. The findings are quantitatively and qualitatively

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[6]The merged firm is predicted to increase the service charge ratio by 0.00000198, whereas the remaining firms will experience decrease of 0.00000235.

similar to those reported for the entire sample.[7] Second, we also re-estimate table (3) while

excluding market share and hhi. One again, we obtain the regression coefficients are similar for

the remaining explanatory variables. Hence, these results appear robust to alternative

specifications.

2.3 Discussion

Table (4) compares the Moebs data with the call report data. The Moebs data is a sample

of U.S. banks while the call reports provide full coverage of U.S. banks. The Moebs data is

skewed toward larger banks with a larger average banks size ($2.9 billion compared to $484

million in assets). A large portion of the difference in average banks size and market share for the two samples is due to the Moebs data covering a more recent time period.[8] Both data sources provide annual observations at the bank holding company level.

Two stylized facts appear for these two data sources. First, fees are increasing whether we measure them in levels or in contribution to revenue. Second, fees are positively correlated with market share,

Table 3: **Data Set Comparison**		
	Moebs Data	Call Reports
Assets ($ millions)	2908	484
Mkt Share Unweighted Weighted	11.4% 9.7%	6.1% 8.1%
Obs	7362	246120
Time Period	1999-2006	1984-2006
Frequency	Annual	Annual
Level of Aggregation	by Bank Charter	by Bank Charter
Data Coverage	Random Sample of US Banks	Every US Bank

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[7] Results available upon request of the authors.

[8] In fact, the average bank size nearly doubles (to $944 million) when we restrict the FDIC Call Reports data to the 1999 to 2006 period.

which suggests that if bank consolidation leads to more increased market share then bank fees

will likely increase.[9] The next section presents a simple model of the banking industry with two

extensions, each of which reflect the two stylized facts above.

3. A Simple Model

This section presents a simple model of bank competition with two deviations: (I) the

competitive model and (ii) the market power model. For the competitive version of the model,

we assume that the zero profit condition holds. Banks movement to fee income will increase

industry competition since consumer demand for banking services is more elastic for fee-based

banking services than for rate-based charges. This intensified competition can act as a

counterweight to banking consolidation. In the market power model bank consolidation

contributes to increased market power which results in higher fees.

3.1 The Baseline Model

Consider the standard circular city version of the Hotelling (1929) model. Let an infinite

measure of customers be located around a circle of length 1 and n banks be evenly spaced around

the circle located at $0, \frac{1}{n}, \frac{2}{n}, ..., \frac{n-1}{n}$. All banks supply an identical service; hence banks are

differentiated only by their locations around the circle with the locations representing product

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[9]Bank consolidation does not necessarily imply an increase in local market share. For example, bank consolidation will not increase the local market share if the merging banks do not have any branches in the same MSA (or rural county) market.

differentiation.

Consumers, like the banks, are identical with the only difference being their physical locations on the circle. In the case of the banking industry, this product differentiation could represent tastes for the personal touch, or account features, or geographic convenience, or a composite of these factors. Consumers receive a benefit $\bar{s}$ from consuming a single unit of the banking service. Assume that $\bar{s}$ is sufficiently large such that the whole market is covered (i.e., every consumer makes a purchase). Consumers pay a price, p, for a unit of banking service in addition to incurring a travel cost, t, per distance, d, traveled to a bank. In the standard spatial model a consumer's value of consumption is:

$$\bar{s} - p - td \tag{1}$$

A customer located at a distance x past bank I is indifferent between the two closest banks in either direction if

$$p_i + tx = p_j + t(\tfrac{1}{n} - x) . \tag{2}$$

In the standard model t converts distance units to money units, whereas we use t to convert distance units into utility units and m to convert money units into utility units. Thus a consumer located at x and paying p for a unit of the banking service therefore receives consumer surplus (*CS*) of:

$$CS = \bar{s} - mp - td . \tag{3}$$

This consumer is indifferent between the two closest banks if

$$mp_i + tx = mp_j + t(\tfrac{1}{n} - x) . \tag{4}$$

Thus, the marginal consumer is located at:

$$x = \tfrac{1}{2}[\tfrac{1}{n} + \tfrac{m}{t}(p_j - p_i)] . \tag{5}$$

Any consumer to the right of the marginal consumer chooses the bank to the right and vice versa.

Banks produce identical units of banking services for each account. This service only differs by a bank's location on the line. Each banking service is produced at a constant marginal cost c and a fixed cost f. Banks charge a price p for serving each account via one of two payment methods. First, banks can offer a below market interest rate on deposits resulting in revenue of p per account. Or secondly, they could pay the market interest rate on deposits and charge higher fees resulting in revenue of p per account. Given the consumer's behavior described above and assuming that the two banks on either side of bank I charge the same price p_j then bank I faces the following demand curve for banking services:

$$D(p_i) = \tfrac{1}{n} + \tfrac{m}{t}(p_j - p_i) .$$
(6)

Given this demand curve, the price elasticity of demand for banking services is:

$$\varepsilon = -\left[\frac{t}{mnp_i} + \frac{p_j}{p_i} - 1\right]^{-1}$$
(7)

Bank profit is

$$\pi_i = (p_i - c)[\tfrac{1}{n} + \tfrac{m}{t}(p_j - p_i)] - f$$
(8)

with the profit maximizing level of p_i given by the first order condition $d\pi/dp=0$:

$$p_i = \tfrac{1}{2}[\tfrac{t}{m}\tfrac{1}{n} + p_j + c] .$$
(9)

In a symmetric equilibrium

$$p = \tfrac{t}{m}\tfrac{1}{n} + c .$$
(10)

Rates and fees are assumed to affect the consumer's utility function differently. Specifically, a higher level of m makes consumers more price sensitive and thus lowers the

equilibrium price. As noted above, banks receive payment for their banking services via one of

two methods. First, they can engage in financial intermediation (i.e., earning money from the

interest rate spread by lending money at a higher rate than the interest paid to depositors). Hence

to purchase the banking service a depositor pays the price, p , indirectly in the form of receiving

lower interest rates (this payment method is termed *rates* or a *rates regime*). Alternatively,

depositors can earn market interest rates, however, they pay for the banking service on a fee-for-

service basis (e.g., monthly account maintenance fee, or penalty fees such as ATM foreign fees

and NSF fees). The customer is pays the price, p , directly (this payment method is termed *fees*

or a *fees regime*).

Next, assume that monetarily equivalent prices of rates and fees are not viewed as equal

by customers (i.e., m differs depending on whether there is a rates regime or a fees regime).

Specifically, when under a rates regime $m=m_l$, while if banks charge higher fees $m=m_h$ where

$m_l<m_h$. Note that the price elasticity of demand – equation (7) – implies a higher (more

negative) price elasticity when consumers pay fees rather than rates.

We offer four potential explanations for why consumers may be more sensitive to paying

fees instead of rates.[10] These are based upon framing, risk aversion, hidden costs, and

transactions costs. First, we present the framing issue involved with paying for the banking

service. Fees are likely perceived by consumers as losses, whereas interest is likely considered a

forgone gain. If bank consumers exhibit loss aversion, then they would prefer a rates regime

over a fees regime.

Second, there is a risk aversion argument for consumers' preferring a rates regime over a

fees regime. Consumers may prefer the deterministic aspect of rates compared to the variation in

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[10] The exact nature and cause for these differing consumer views of monetarily equal fees
is not modeled and remains beyond the scope of this paper.

payments under the fees regime. When a consumer is charged through low rates the payment is constant. When a consumer is charged via penalty fees (e.g., overdrawing an account), the consumer incurs no charge for most months, however, they incur a high charge in some months (when they can least afford it).

A third potential explanation focuses on the hidden nature of rates. Fees are prominently disclosed ex-post and paid directly (i.e., money is withdrawn from the account). Whereas consumers pay for bank services indirectly in the interest rates regime. Money paid through lower deposit rates is paid via forgone earnings which do not appear on the consumer's monthly bank statement.

The final possible explanation is based on transactions costs. Charges below a certain threshold may not warrant a consumer's attention. Hence rate-based payment schemes which involve small and frequent costs go unnoticed by consumers. Whereas, infrequent large fees may capture consumers' attention and hence trigger a response.

3.2 The Competitive Model

Starting with the baseline model and then adding the assumption that banks are free to enter and exit any U.S. market ensures a competitive equilibrium with zero profit. Adding the free entry assumption to equation (8), we are able to determine that the zero profit condition is:

$$n^2 = \frac{t}{mf} \ . \tag{11}$$

Hence consolidation (which lowers n) is offset by a movement from rates (m_l) to fees (m_h) in order to remain in the zero profit equilibrium. In the fees equilibrium, while fewer firms are incurring fixed cost f, welfare actually declines since any gains from fewer fixed fees are more than offset by customers paying the price, p , in a less efficient manner (since m is higher). This

welfare reduction can be quantified by calculating the consumer surplus. Substituting the zero

profit condition (11) into the equilibrium price equation (10) results in a price of:

$$p = \sqrt{\tfrac{t}{m}}\sqrt{f} + c.$$ (12)

Substituting this into the consumer surplus equation (3) we find:

$$\text{CS} = \bar{s} - \sqrt{mtf} - mc - td.$$ (13)

Hence the consumer surplus is clearly decreasing with m. The competitive model indicates that

both banks and consumers are worse off when fees are used.[11] The empirical results section of

this paper presents evidence that bank profits are negatively correlated with banks fees.

3.3 The Market Power Model

In this model rather than assume that banks are free to enter and exit, we explore the

possibility that increased market power due to consolidation results in higher bank fees. In the

competitive model, the number of firms n, is endogenous and we explore the comparative statics

of m. Whereas in the market power model, the number of firms is exogenous (determined by

regulatory and historical factors) while m is endogenously determined. Assume that there is a

price cap $\bar{p}$ on interest rates (i.e., a rate floor exists for bank deposit rates). In practice,

$\bar{p}$ represents the maximum potential price derived from the interest rate spread (i.e., setting the

interest rate on deposits at 0%). Thus if banks wish to raise price beyond $\bar{p}$ they must charge

customers via fees in addition to (or instead of) rates.

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[11]One shortcoming of the competitive model is that it does not explain why banks charge
any fees. While not modeled, section 5 offers some explanation for banks' usage of fees.

If equilibrium p is below $\bar{p}$ then banks would optimally charge rates rather than fees as competition is less intense when m is lower. In this case, the location of the marginal consumer between the two banks is determined from equation (5). If the equilibrium p, however, is above $\bar{p}$ then banks would need to charge fees in addition to rates. Allowing for a combined pricing structure, where banks charge both rates and fees, we find that the marginal consumer lies a distance x from bank I where x is described by the following equation:

$$m_l \, \bar{p} + m_h \, (p_i - \bar{p}) + t \, x = m_l \, \bar{p} + m_h \, (p_j - \bar{p}) + t \, (\tfrac{1}{n} - x) \qquad (14)$$

This equation implies that the location of the marginal consumer is:

$$x = \tfrac{1}{2} \, \tfrac{m}{t} \, (p_j - p_i) + \tfrac{1}{2} \tfrac{1}{n} \qquad (15)$$

where $m = m_h$ in the case where $p_i > \bar{p}$ and $m = m_l$ in the case where $p_i < \bar{p}$. The profit equation and resulting price equation are described in the baseline model above (equations 8 and 10, respectively). That is:

$$p = c + \tfrac{t}{m_h} \tfrac{1}{n} \quad \text{if} \quad p > \bar{p}$$

$$p = c + \tfrac{t}{m_l} \tfrac{1}{n} \quad \text{if} \quad p < \bar{p}$$

If the price of the bank service exceeds the maximum potential price from the interest rate spread (i.e., $p > \bar{p}$), then substituting for p into the equation above results in the following condition:

$$c + \tfrac{t}{m_h} \tfrac{1}{n} > \bar{p} \ .$$

We can invert this inequality and express it as a condition of n:

$$\tfrac{t}{m_h} \tfrac{1}{\bar{p}-c} > n \ .$$

Likewise $p = c + \frac{t}{m_l} \frac{1}{n}$ if $p < \bar{p}$ can be expressed as

$$p = c + \frac{t}{m_l} \frac{1}{n} \quad \text{if} \quad c + \frac{t}{m_h} \frac{1}{\bar{p}-c} < n.$$

Finally, note that when n is between these two cutoffs, $p = \bar{p}$. Thus price is declining with the

number of bank firms. When n is small, banks charge a high price ($p = c + \frac{t}{m_h} \frac{1}{n}$) for the service

using both fees and interest rate spread. As n increases, banks resort to charging the maximum

price from the interest rate spread ($\bar{p}$). Finally, in the most competitive markets (when n is

large), banks charge less than the maximum interest rate spread. These three price ranges are

summarized as follows:

$$p = \begin{cases} c + \frac{t}{m_h} \frac{1}{n} ....\text{if}..n < \frac{t}{m_h} \frac{1}{\bar{p}-c} \\ \bar{p}...........\text{if}..\frac{t}{m_h} \frac{1}{\bar{p}-c} < n < \frac{t}{m_l} \frac{1}{\bar{p}-c} \\ c + \frac{t}{m_l} \frac{1}{n} ....\text{if}..\frac{t}{m_l} \frac{1}{\bar{p}-c} < n \end{cases} \tag{16}$$

with the corresponding profits being:

$$\pi = \begin{cases} \frac{t}{m_h} \frac{1}{n^2} - f ....\text{if}..n < \frac{t}{m_h} \frac{1}{\bar{p}-c} \\ \left(\bar{p} - c\right)\frac{1}{n} - f ....\text{if}..\frac{t}{m_h} \frac{1}{\bar{p}-c} < n < \frac{t}{m_l} \frac{1}{\bar{p}-c} \\ \frac{t}{m_l} \frac{1}{n^2} - f ....\text{if}..\frac{t}{m_l} \frac{1}{\bar{p}-c} < n \end{cases} \tag{17}$$

3.4 Discussion

In the competitive model the movement from a rates regime to a fees regime (which

would be profit reducing) is accompanied by a reduction in competition (which is profit

enhancing) to maintain zero profits. In the market power model, consolidation leads to higher

prices. Since the revenue that can be derived from the rate spread is limited (since banks cannot pay depositors less than a 0% interest rate), banks will turn to fees in an attempt to increase revenue. Both the competition and the market power models are consistent with the stylized fact that fee usage increases with market share. These two models, however, have very different implications for profits and interest rates.

4. Empirical Results

In order to test the two models we examine actual bank profits using the call reports and Moebs $ervices data. First we test the profit implications of the two models. The market power model predicts that profits should increase with fees (or the fee ratios). Whereas, if consumers are more price sensitive to rates than to fees, profits should be inversely correlated with the fee ratios. As a second test, we examine the correlation between fees and rates. The market power model predicts that fee revenue and the interest rate margin will increase together. Whereas, the competitive model relies on a tradeoff between fee revenue and rate revenue. Finally, we test the price structure embodied in equation (16), where fees should be used only when deposit rates are low enough such that they approach the rate floor. The results support the competitive model.

4.1 Fees Ratios' Impact on Profit

In the competitive model, a fees regime provides lower profits (due to intensified competition induced by elastic consumer demand). Whereas in the market power model, bank profits rise with the proportion of fee-based revenues. Hence the question of how consumers

Table 5: **Variable Definitions**

ROA	= Return on Assets (Profit / Total Assets)
ROE	= Return on Equity (Profit / Capital Outstanding)
gross income	= Non-interest revenue / (Non-interest revenue + Gross interest revenue)
net income	= Non-interest revenue / (Non-interest revenue + Net interest revenue)
service charge	= Service charge revenue / (Service charge revenue + Net interest revenue)
ln assets	= Natural log of assets (in thousands of dollars)
interest rate	= Average annual 6-month T-bill rate
demdep/dep	= Demand deposits / Total deposits
capital/assets	= Capital Outstanding / Total Assets
independent bank	= 1 if bank is not a subsidiary of a larger bank holding company
market share	= weighted average of branch market share in each MSA or rural county in which bank operates
hhi	= Herfindahl-Hirschman Index (weighted average of sum of squared market shares in each MSA or rural county where bank operates)
Int. Margin	= Interest margin (net int. inc. from checkable deposits / checkable deposits)
Deposit Rate	= Interest expenses (–interest expense on checkable deps / checkable deps)
ServChrgRev	= Service charge revenue (service charge revenue / checkable deposits)
DepRatePos	= Interest rate on interest bearing, NOW, accounts [–interest income from checkable dep / (checkable deps - demand deposits)]

respond to these different pricing regimes can be answered empirically by examining bank

profits. We use both return on assets (ROA) and return on equity (ROE) to measure bank

profits. ROA is a common measure of bank profitability which normalizes profit to scale. Our

second profit measure, ROE, enables easy comparisons with other business. Hence we regress

these two profit measures on the three fee revenue ratios defined in section 2.1 (gross income

ratio, net income ratio, and service charge ratio) and control variables:

$$Profit_{it} = \alpha_0 + \alpha_1 \, FeeRatio_{it} + \alpha_2 \, X_{it} + u_i + \varepsilon_{it}$$

where u_i is a random disturbance characterizing the ith observation and ε_{it} is the error term. X_i is

a vector of control variables which includes bank size, interest rates, proportion of demand

deposits, capital to asset ratio, an indicator for independent banks, market share, and hhi. These

bank profit controls are common in the banking literature (e.g., Barajas, Steiner, and Salazar,

1999; Akhavein, Berger, and Humphrey, 1997; Rhoades, 1987; Short, 1979, and Hannan, 2006).

Table (5) presents definitions for all variables used in the regressions. We also note that other explanatory variables were considered, however, due to lack of statistical significance we opted not to include them in the reported estimation.[12] Due to the various profit measures and fee ratios, six random effects regressions appear in table (6) with the first three models using ROA to measure profits, while the final three models use ROE.

We begin by considering the ROA profit measure. We find that ROA in table (6) is significantly higher following increases in both the gross income (model 1) and net income (model 2) ratios. Recall that both of these income measures reflect the proportion of revenue derived from non-interest income (which includes both deposit account fees and value-added services such as stock brokerage and trust management). The remainder of the regressions (models 3, 4, 5, and 6) show a negative relationship between the fee ratios and profits, though the effect of gross income on ROE (model 4) is not statistically significant. Hence the regression results for models 1 and 2 lend support for the market power model, while rejecting the competitive model whereas, the other four regressions lend support for the competitive model while casting doubt on the market power model. Since the link between profits and the proportion of fee-based income earned by banks is mixed, it would appear difficult to reject either the competitive model or the market power model.

Let us examine more closely the result of these six regressions. First, to address the main instrument of this paper – how consumers respond to deposit account fees – the most telling fee ratio is service charges – which is comprised of fees on deposit accounts. In contrast, the other two fee ratios use non-interest income, which includes many add-on services that consumers

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[12]The following control variables were excluded due to lack of statistical significance: proportion of non-performing loans, loans per branch, market deposit growth, bank asset growth, bank deposit growth, and bank branch growth.

Table 6: Fixed Effects Estimates of Bank Profitability Determinants (1984-2006)

Dependant Variable = ROA   No. of Obs 234001, No. of Groups 19807

	Model 1		Model 2		Model 3	
	Coeff	Std Err	Coeff	Std Err	Coeff	Std Err
constant	11.192*	0.4608	11.194*	0.4608	11.846*	0.4774
gross income	3.3360*	0.3864				
net income			1.9720*	0.2979		
service charge					−2.8002*	0.5831
ln assets	−0.8465*	0.0359	−0.8446*	0.0359	−0.8460*	0.0361
interest rate	−0.1594*	0.0203	−0.1804*	0.0200	−0.1989*	0.0201
demdep/dep	−1.1463*	0.3528	−0.8000†	0.3472	−0.1515	0.3432
capital / assets	−9.4334*	0.5298	−8.9809*	0.5265	−9.4116*	0.5364
independent bank	0.3585*	0.0735	0.3612*	0.0735	0.3680*	0.0735
market share[a]	0.3818	0.6189	0.3960	0.6189	0.4817	0.6190
hhi[a]	−0.5049	0.6542	−0.5038	0.6542	−0.6357	0.6545

Dependant Variable = ROE   No. of Obs 233996, No. of Groups 19807

	Model 4		Model 5		Model 6	
	Coeff	Std Err	Coeff	Std Err	Coeff	Std Err
constant	−0.8858*	0.3333	−0.8718*	0.3334	−0.4782	0.3454
gross income	−0.1211	0.2792				
net income			−0.6313*	0.2152		
service charge					−1.9072*	0.4212
ln assets	0.0716*	0.0260	0.0778*	0.0260	0.0547†	0.0261
interest rate	0.0050	0.0146	0.0035	0.0145	−0.0012	0.0145
demdep/dep	0.1850	0.2548	0.2994	0.2508	0.2933	0.2479
capital / assets	1.4670*	0.3830	1.4686*	0.3806	1.1124*	0.3877
independent bank	−0.0515	0.0531	−0.0499	0.0531	−0.0511	0.0531
market share[a]	0.3485	0.4471	0.3566	0.4471	0.3844	0.4471
hhi[a]	−0.3420	0.4726	−0.3545	0.4726	−0.4003	0.4727

Data Source: FDIC Call Reports   Significant at:*1%, †5%, and ‡10%

Note: All regressions include both bank and year fixed effects.

[a] Branch information is not available for 1984-86. Hence this variable is set equal to zero for all observations before 1987 and we include an indicator variable (not reported) to denote such observations. Coefficients and Std Errors for these variables are in thousandths.

elect to purchase and hence are unlikely to raise consumers' demand elasticity. Thus we believe

that the results of models 3 and 6 – results that lend support for the competitive model – are more

revealing about consumers' preferences.

Secondly, the two regressions (models 1 and 2) which cast doubt on the competitive

model, both use ROA to measure profit and non-interest income to capture bank fees. Many of the elements included in non-interest income (e.g., brokerage, investment banking, and insurance underwriting) do not involve holding any assets. Thus as banks engage in these activities, profit increases (the numerator of ROA), while assets remain unchanged (the denominator), so ROA necessarily increases. Thus we should expect a positive relationship between gross income/net income and ROA. This relationship holds regardless of the competitive environment and hence provides limited insight to the validity of the market power model. In other words, we could see this positive relationship in these income ratios and ROA, even under the competitive model. Thus we discount the results of models 1 and 2 in favor of the remaining four models which support the competitive model. Hence, taken as a whole, these results support the main contention of the paper – charging deposit consumers through fees (instead of through the interest rate spread) increases competition among banks.

Finally, turning to other variables reported in table (6) we find that independent banks have higher ROA, but lower ROE, than banks that are controlled by bank holding companies. The independent bank coefficient, however, is not statistically significant in the ROE equations. The link between profits and bank size is indeterminate since we find larger banks have significantly lower ROAs. On the other hand, larger banks have significantly higher ROEs. Both of the market structure variables, market share and hhi, provide little explanatory power. They are, however, consistent, with market share being positively related to profit while hhi is inversely correlated with profit. Hannan and Prager (2006) find a negative relationship between profit and hhi for a sub-category of banks – single-market banks operating in rural markets.

4.2 The Relationship Between Fees and Rates

In this sub-section we examine the relationship between rates and fees. The competitive model and the market power models have different views on the relationship between rates and fees. Recall that an interest rate regime and a fees regime provide different price charging mechanisms. In the competitive model, rate income and fee income move in opposite directions as (substitutes) as banks can charge any combination of the two to maintain a zero profit condition. Whereas in the market power model, rate income and fee income move in unison (complements), as banks raise prices. Thus, this section examines the correlation between interest income and fee income to determine whether fees and rates are substitutes (competitive model) or complements (market power model).

Interest income is measured in three ways. First, we examine the interest rate margin (the difference between interest income from loans and interest paid to depositors divided by the amount of money kept in checkable deposits). Second, in order to control for lending interest rates, we exclude the interest received from loans focusing solely on the interest paid to depositors. Thus, the second interest measure is the amount of interest paid on checkable deposits divided by the amount of money held in these accounts. Since interest on deposits is an outflow for banks, it is expressed as a negative amount. Finally, we further restrict the interest measure to include only checkable deposit accounts that

Table 7: **Fee & Rate Correlations**			
	Interest Margin	Deposit Rate	Dep Rate (NOW)
Service Charges	0.0291	–0.0723	–0.0015
ATM Foreign Fee	–0.0080	–0.0889	–0.0293
ATM Surcharge	–0.0227	–0.0666	–0.0145
NSF Fee	–0.0502	0.0072	–0.0175
Stop Payment Charge	–0.0610	0.0064	–0.0219
Returned Check Fee	–0.0397	–0.0187	–0.0248
obs (call)	248624	248624	243270
obs (Moebs)	3894	3894	3892

Source: Service charge and all rate variables are from call reports; other fees are from Moebs data.

pay interest. Hence, the third interest measure is the amount of interest paid on checkable

deposits accounts divided by the amount of money held in interest bearing checking accounts

(NOW accounts). We use six fee measures. First is the fee rate – total service charge income

divided by the amount of money held in checkable deposits from the call reports. We also use

the five fee categories reported in the Moebs data: ATM foreign fee, ATM surcharge, NSF fee

stop payment charge, and returned check fee.

Table (7) reports the correlations between the three rate measures and the six fee

measures. While three of the eighteen correlations coefficients are positive, most are negative.

Further, those that are positive have relatively small coefficients – less than 0.03 – while the

negative coefficients range as high as 0.09 (in absolute value). In sum, these correlation

coefficients imply that rate revenue and fee revenue are substitutes, which lends support for the

competitive model.

4.3 Fee and Market Share Correlations

In this sub-section we perform a test of consumers' preference for rates over fees. The

baseline model implies that rates are pareto superior to fees (i.e., consumers prefer rates and

banks earn higher profits under a rates regime). This preference is quite explicit in equation

(16). In order to raise prices/income banks first lower rates paid to depositors until the bank

reaches an interest rate floor, after which the bank turns to fees increases. To test this

hypothesis, we examine the relationship between fees, market share, and deposit interest rates.

As we saw earlier, fees and market share are positively related. If rates are superior to fees, then

we expect to find a stronger correlation between rates and fees at lower interest rates. That is,

suppose market share (or other factors) allows banks to raise prices; if they have both rates and

Table 8: **Correlations Between Mkt Share and Fees**				
Deposit Rate	<1%	1%–2%	2%–3%	>3%
Correlation Coeff.	0.0690	0.1008	0.0133	0.0011
Observations	31235	39479	49195	71884
Data Source: call reports				

fees at their disposal, then they will prefer to raise revenue by lowering deposit rates. If, however, the deposit rate is at or near the rate floor, then they have only one tool for raising prices: increase fees.

Thus, we first divide the data into four categories by interest rate. We examine the correlations between market share and fee revenue for each group of observations. (This is the same fee revenue measure used in section 4.2.) Table (8) reports correlation coefficients for each group. According to the correlation coefficients, when banks pay high deposit rates, the correlation between market share and fee revenue is very weak. Presumably, banks in this situation are raising prices via lowering deposit rates rather than via raising fees. This implies that rates are preferred to fees. On the other hand, when deposit rates fall below 2% – presumably approaching the rate floor – banks with larger market share charge higher fees. In sum, these results imply that when possible banks prefer to use rates, however, they switch to fees only when necessary.

5. Why Are Banks Moving Toward Fees?

This paper has shown that the level of bank fees and the fees' share of revenue have both increased between 1984 and 2006. The previous section, however, indicates that this shift toward fees is not profit enhancing. Why then are banks moving toward more fees?

First, the passage of the Gramm-Leach-Bliley Act in 1999 (which repealed the Glass-Steagall Act) banks began offered a more diverse range of products (and hence increased fee revenue) to include: investment banking, commercial banking, trust management, and insurance products. Fees from these recently added bank services are likely the driving force behind the growth in the proportion of fee-based revenues. Our findings suggest that some of these recently added services, which have increased fee-based revenue and the product line diversification, are not as profitable as financial intermediation. Stiroh (2006) and Weinreich (2001) suggest that pressure from financial markets have pushed banks in the direction of seeking more fee-based revenue under the presumption that fees are more stable, hence reducing risk.

Second, while fees are becoming more important in the overall revenue mix (especially so for large banks), we note that banks still derive more than half of their revenue from financial intermediation (i.e., lending money at higher rates than they pay to depositors). During our sample period, the weighted averages of all three fee ratios are considerably larger than the simple averages (see figure 1). This suggests that smaller banks are not as reliant on fee income as larger banks are. The weighted average is a better indicator of the fees charged by larger banks and hence better reflects the experience of the most bank consumers.

It could be argued that the more telling numbers are the weighted average for the service charge ratio in 1984 and 2006 (7.5% and 10.6% respectively). Service charges (bank fees that are assessed on deposit accounts) have steadily increased over time and hence represent the pricing switch adopted by banks of moving from rates to fees in the provision of deposit account services. To put the rising fees in perspective, more than half of bank revenue comes from the rate margin; much of the rest comes from value-added services; and only one-tenth of revenue comes from fees on deposit accounts. We conclude that reports of the demise of financial intermediation are greatly exaggerated.

6. Conclusion

This paper shows that consumer utility is affected not only by a good's price, but also can be affected by the form of payment. We examine the case of paying for retail banking deposit services where two pricing structures are available to the bank. Banks could charge explicit fees or pay their depositors sub-market interest rates on their deposits. In three tests, we find empirical evidence which suggests that consumers prefer indirect payments over direct payments for deposit account services. First, banks using a fees regime of pricing earn lower profits than those using a rates regime, an occurrence which associated with increased competition due to consumer distaste for fees. Secondly, fee income and rate margin income are substitutes, a condition implied by the model. And third, banks turn to fees only after reaching the rate floor, which suggests that banks recognize the preferability (higher profits for banks and higher utility for consumers) of rates.

The paper presents two versions of a simple product differentiation model for the provision of bank services where (I) bank prices rise due to market power resulting from consolidation; while (ii) the competitive model indicates that higher fees will intensify competition among banks. These two versions of the model are tested by using balance sheet and income statement data from FDIC call reports. The empirical evidence supports the competitive model.

These findings beg the question: why are consumers so averse to paying bank fees over receiving reduced depository rates? We offer four potential explanations (framing/loss aversion, risk aversion, hidden costs, and transactions costs) to explain consumer preferences for

a rates regime over a fees regime. An area of future research is to develop a formal model of

why consumers perceive rates and fees differently. This would enhance our understanding of

preferences for various payment structures.

A second question raised from our findings, is why are banks moving from rates to fees?

Since the repeal of the Glass-Steagall Act in 1999, banks have been offering a wide range of

products which have increased their fee revenue. These actions, while increasing product

diversification,[13] do not appear to be as profitable (at least not initially) as financial

intermediation. Moreover, Stiroh (2006) proposes that pressure from financial markets have

pushed banks in the direction of seeking more fee-based revenue under the presumption that fees

are more stable, hence reducing risk. Finally, bank fees can be viewed as Ellison's (2005) "add-

on goods" or Gabaix and Laibson's (2006) "shrouded attributes". In such models, firms charge

low up-front prices (offer competitive interest rates) and charge higher prices for later

complements such as accessories, replacement parts, or maintenance (bank penalty fees). These

models extract rents from consumers only if switching costs are high enough. Potentially, our

results indicate that banks underestimated the switching costs of deposit accounts.

Our results also have some public policy implications. In the past twenty years, the U.S.

commercial banking industry has become increasingly concentrated thanks in part to the Riegel-

Neal Act of 1994 (Matasar and Heiney, 2000; Kroszner and Strahan 1999). While previous

research has shown that bank fees (Hannan 2006) and lower deposit rates (Hannan and Prager,

2004; Park and Pennacchi, 2005) are associated with more concentrated bank markets, we also

find lower profit rates for banks that have a higher proportion of fee-based revenues. Larger

banks and banks with greater market share are more likely to rely on fees rather than interest

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[13]Stiroh (2004) dispels the myth that banks derive diversification benefits from a
movement to fee income.

rates to pay depositors. This finding coupled with the fact that large diversified banks are having

trouble attracting and retaining retail bank customers (Pilloff and Rhoades, 2000) suggests that

bank consumers are "voting with their feet" and fleeing banks that are making greater use of fees

to pay for depository accounts. While bank consolidation has heightened concern about banks

having too much market power,[14] consumer aversion to paying higher bank fees appears to have

partly offset this increased market power.

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[14] For example, the Riegel-Neal Act of 1994 includes a provision that caps the share of U.S. deposits that any one bank organization can control at 10%. This depository cap is currently being approached by Bank of America.

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8. Appendix: Definitions

Foreign Fee: Consumers are assessed an ATM foreign fee when they use an ATM not owned by the bank, an out-of-network ATM (e.g., a Bank of America consumer who frequents a Wachovia ATM pays this fee to Bank of America). Note, when a customer uses an ATM out of the country a currency conversion fee is charged which is sometimes also called a "foreign fee". In this paper, foreign fee, refers to the fee for using an out-of-network ATM, not the fee charged on an out of the country transaction.

NSF fee: a non-sufficient funds (NSF) fee occurs when a consumer's check exceeds the account balance.

Surcharge: In addition to the ATM foreign fee a consumer who uses an out-of-network ATM also pays an ATM surcharge which is paid to the ATM's owner (e.g., a Bank of America consumer who uses a Wachovia ATM pays this surcharge to Wachovia).

Stop Payment Charge: The fee charged when a bank customer requests that the bank halt processing (not pay) a check or range of checks which were written by the customer.

Returned Check Fee: The charge assessed when a consumer attempts to deposit or cash a check which is returned for non-sufficient funds. (i.e., the customer receives a bad check)

Service Charge Income: Most service charge revenue derives from NSF and ATM fees. The category also includes revenue derived from: (1) monthly account maintenance fees; (2) failure to maintain minimum account balances; (3) charges associated with the number of checks drawn on and deposits made in their deposit accounts; (4) charges for checks drawn on "no minimum balance" deposit accounts; (5) charges for withdrawals from nontransaction deposit accounts; (6) charges for the closing of savings accounts before a minimum period of time has elapsed; (7) charges for inactive or dormant accounts; (8) charges for issuing stop payment orders; (9) charges for certifying checks; and (10) charges for the accumulation or disbursement of funds deposited to Individual Retirement Accounts (IRAs) or KEOGH plan accounts that are not handled by the bank's trust department.

Non-interest Income: Includes (1) service charges on deposit accounts; (2) income from fiduciary activities, (3) trading revenue; (4) investment banking, advisory, brokerage, underwriting fees and commissions; (5) venture capital revenue; (6) net servicing fees; (7) net securitization income; (8) underwriting income from insurance and reinsurance activities; (9) income from other insurance activities; (10) net gains (losses) on sales of loans and leases; (11) net gains (losses) on sales of other real estate owned; (12) net gains (losses) on sales of other assets (excluding securities); (13) other noninterest income.

Checkable Deposits: This are officially called "transaction account" is defined as a deposit or account on which the depositor or account holder is permitted to make withdrawals by negotiable or transferable instrument, payment orders of withdrawal, telephone transfers, or other similar devices for the purpose of making payments or transfers to third persons or others.

Demand Deposit Account: checking accounts which do not pay interest. The category also includes travelers', certified or cashier's checks purchased but not drawn upon and other moneys held for short periods of time such as escrow or tax withholding.