FSC'S LAW & ECONOMICS INSIGHTS

Issue 03-1 **Fisher, Sheehan & Colton, Public Finance and General Economics** **January/February 2003**

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Winter Payment Problems, Price Volatility and Capped Bill Programs

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CONTROLLING WINTER PAYMENT PROBLEMS THROUGH A CAPPED BILLED PROGRAM

It comes as no surprise that many low-income customers cannot afford to pay their bills in a full, timely and regular basis. As a result, not only do the low-income customers face the social and economic deprivations associated with their inability-to-pay, but the utilities that provide service to them incur the business expenses associated with that inability-to-pay as well. These business expenses include not only the costs of carrying arrears, but the costs of charge-offs and the cost of collections as well.

Irrespective of the unaffordability of home energy during "normal" times, one additional question is whether low-income customers, and the companies that serve them, can beneficially insulate these customers from the vagaries of weather and price-induced spikes in annual and seasonal home energy bills. As we come to the end of another heating season where cold weather combined with dramatic fly-ups in heating fuel prices in much of the nation to drive bills up, it is time again to recognize the harms that arise from extraordinary changes in bills accompanying volatility in price and/or temperature.

A study that Fisher, Sheehan & Colton (FSC) undertook for WeatherWise, a company offering Capped Bill Programs, considered whether such programs could be expected to reduce low-income payment troubles, and whether utilities (or energy assistance providers) could reasonably expect there to be expense reductions that could be used to help offset the costs of such a program.

Relationship between Income and Payment Troubles

The FSC analysis was largely based on data from the Iowa Utility Board. The Iowa Utility Board systematically collects information on the incidence of arrears for low-income customers. Under the Iowa reporting system, a "low-income" customer is identified by his or her receipt of energy assistance through the federal Low-Income Home Energy Assistance Program (LIHEAP). Even in Iowa, however, LIHEAP reaches somewhat less than 20% of the state's total eligible population. As a result, this information is limited both by the fact that customers self-select into the population of energy assistance recipients and by the fact that the energy assistance population "misses" 80% and more of the total low-income population. Nonetheless, the Iowa data is the best there is nationwide.

Low-Income Accounts in Arrears

The percentage of energy assistance accounts in arrears consistently and substantially exceeds the percentage of accounts in arrears in the total customer base in Iowa. Based on 46 months of information (April 1998 through January 2002), FSC found that while, on average, 24% of all energy assistance accounts were in arrears over that time period, only 12% of total accounts were in arrears.

While there is some variation by year, the overall proportions are remarkably consistent over time. The data were examined using twelve-month periods. Each period began immediately following the winter heating season (April) and extended through the next March. In this way, each winter heating season was kept intact as a study period.

Level of Low-Income Arrears

In addition to looking at the *number* of accounts in arrears, it is necessary, also, to look at the *extent* to which accounts are in arrears. The average arrears for energy assistance recipients in Iowa are between $200 and $300 year-round, about twice the level of the total population

Important, as well, is the increase in arrears (for both energy assistance recipients and the total population) that occurred in the 2000 - 2001 winter heating season. While for energy assistance recipients, the previous four year high in level of arrears (for those customers with arrears) was about $300 (in April 1999 and April 2000 respectively), the average arrears for energy assistance accounts in arrears skyrocketed to more than $500 in the winter of 2001. So, too, did the average arrears of the total population in arrears see increases to more than $200 in the 2000 – 2001 winter heating season.

Note two additional observations about these 2000 – 2001 winter arrears. First, the level of arrears corresponded to a higher proportion of accounts that were in arrears. In Iowa, in other words, it was true that the high bills of the 2000 – 2001 winter heating season resulted in more customers being behind on their bills. In addition, these customers were *further* behind on their bills than in previous years.

Moreover, the level of arrears did not come *back* down to pre-2000/2001 winter heating season levels during the subsequent twelve months. The average arrears for the total population never did come back to the $100 level before beginning another increase in the 2001/2002 winter season. The energy assistance arrears were reduced in the non-heating season, but were already back up to $300 in January 2002, a level not previously reached (before the 2000/2001 heating season) since April 1998.

Number of Service Disconnections

Before 2002/2003, the last heating season in which Iowa experienced both high heating fuel costs and cold weather (2000/2001) saw a dramatic spike in the proportion of accounts disconnected for nonpayment resulting from the resulting high bills. Iowa does not track the number of disconnects separately for energy assistance accounts and for the total population. Only the total number of disconnections is reported.

Not surprisingly, Iowa utilities disconnected a substantively higher number of accounts after the 2000/2001 winter heating season. The number of disconnections per month never fell *below* 5,000 during the warm weather months following the 2000/2001 winter heating season. This is particularly significant given the observation that in prior years, the number of disconnections per month rarely even *reached* those heights.

It was not, however, merely warm weather terminations that were affected by the incidence and level of arrears resulting from the 2000/2001 winter heating season. The number of terminations during the opening months of the 2001/2002 winter season was unprecedented in scope. During the December/January time period for the prior four years, Iowa utilities terminated 652 accounts (Dec./Jan. 98-99); 712 accounts (Dec./Jan. 99-00); 283 accounts (Dec./Jan. 00-01); and 2,142 accounts (Dec./Jan. 01-02).

The 2,142 accounts for which service was terminated in December 2001 and January 2002 was seven times as many terminated accounts as in the corresponding time period one year earlier. It was 30% higher than the total number of accounts terminated in the December/January time period for the prior three years *combined*.

Rate of Service Disconnections

It would be wrong to conclude that the high winter bills of the 2000/2001 winter heating season resulted only in an increase in the total number of accounts experiencing a service termination. *That* observation might result merely from the fact that a larger number of accounts was in arrears after that winter heating season. In fact, the implications go beyond that result.

The FSC analysis translated the number of service disconnections into a rate of disconnection per 1,000 accounts in arrears. Converting the number of disconnections into a rate per 1,000 accounts in arrears factors out the increased number of accounts in arrears. As the data show, Iowa utilities disconnected customers in arrears at a far faster rate than had historically been the case.

Assuming that Iowa utilities did not make a conscious policy choice to disconnect customers under circumstances that would not have resulted in a disconnection in a prior year, what the Iowa data tells us is that after the 2000/2001 winter heating season, a far greater number of customers had dug themselves into an arrears hole which they could not climb out of prior to the termination of service. The rate of service terminations during the warm weather months after the 2000/2001 winter heating season never fell below 30 disconnections per 1,000 accounts in arrears. In contrast, while the 30-per-1000 rate had been reached in occasional months in the previous four years, that rate of service termination had never been reached and sustained over a period of months as was experienced in 2001.

In summary, several conclusions march forward from the Iowa data:

First, winter weather marked by high bills caused by temperature and/or price spikes has the impact of driving both the incidence of arrears and the level of arrears disproportionately higher in the energy assistance population than in the customer base as a whole.

Second, the higher incidence of arrears, when coupled with the higher level of arrears, arising from price fly-ups results in an increase in the number of disconnections.

Finally, in addition to higher numbers of disconnection, the higher incidence of arrears, when coupled with the higher dollar level of arrears (for those customers having arrears), resulted in a higher rate of disconnections per thousand accounts having arrears. A higher proportion of customers in arrears, in other words, was so deeply in arrears, they could not retire their arrears (or at least retire their arrears to an extent sufficient to avoid the termination of service).

The Relationship between Price, Temperature and Payment-Troubles

This section seeks to provide insights into the relationship between various indicators of payment-troubled status, energy assistance recipients, and two specific factors that can increase bills to those recipients in any given month or year (price and weather). The search for such a relationship using publicly available data is complicated by a variety of factors.

First and foremost is the complete absence of data. Most states do not report data on the incidence of service terminations or on either the number of accounts in arrears or dollars of arrears on a regular basis. Those few states that do publish information do not generally distinguish between the total residential population and the low-income residential population. Most states, however, simply do not compile data on collections or payment-troubles for residential customers generally, let alone for low-income residential customers in particular.

Having said that, it is possible to apply basic some analytic tests to data obtained for the state of Iowa. The Iowa Utilities Board reports on a monthly basis: (1) the number of energy assistance accounts in arrears; (2) the level of arrears for energy assistance accounts in arrears; (3) the number of disconnect notices issued to energy assistance accounts; (4) the number of energy assistance accounts written-off (but not the dollars of write-off); and (5) the number of residential disconnections for nonpayment (but not the number of energy assistance accounts disconnected for nonpayment).

The monthly Iowa reports were obtained for April 1998 through January 2002, a period of 46 months.

Four measures of payment-troubled status were selected or developed as indicators of the impact of price and/or temperature on energy assistance recipients in Iowa. These included monthly data for: (1) the proportion of energy assistance accounts in arrears; (2) the dollars of arrears for accounts in arrears; (3) the rate of disconnections for nonpayment per thousand accounts in arrears (for total residential class, not for energy assistance recipients); and (4) the index of the number of energy assistance accounts written-off to the total number of energy assistance accounts.

In addition, within each year, three data points were selected to consider the impacts at different points in the year. The three months selected included: (1) April, the month immediately following the winter heating season (and the close of the winter shutoff moratorium); (2) July, the middle of the non-heating season when, perhaps, any residual effects of the heating season may have been played out; and (3) October, the month immediately preceding the next winter heating season, when presumably the effects of the *preceding* season would be at their lowest (and the effects of the coming season would not yet have begun to accumulate).

These twelve variables (four factors, each of which was obtained for three separate months) were the dependent variables used in the FSC inquiry. Two independent variables were selected for consideration. Since average monthly revenue was not available, for either residential customers generally or for energy assistance customers in particular, the factors affecting bills were selected as the independent variables: (1) temperature; and (2) price

A simple R^2 analysis was performed for each relationship. An R^2 indicates the "tightness" of the fit of two sets of data. A high R^2 (one approaching 1.0) indicates that changes in the dependent variable are closely explained by changes in the independent variable. A low R^2 indicates that the movements in the two variables are random (or that they, at the least, are not associated with each other). An R^2 does *not* establish causation. It cannot be said, in other words, that a high R^2 demonstrates that the movement in the independent variable *causes* the movement in the dependent variable. It merely indicates that there is an association or relationship.

The FSC analysis reached the following conclusions (amongst others):

First, there is a strong association between the dollars of arrears for energy assistance accounts at the end of the heating season and the temperatures experienced during the heating season. The strength of that association remains even during the middle of the non-heating season

Second, similarly, there is a moderately strong relationship between the proportion of energy assistance customers in arrears at the selected months and the sum of the heating degree days during the heating months of November through March.

Third, there is a moderately strong relationship between the rate at which accounts in arrears experience a disconnection for nonpayment and the temperature in the preceding heating season. The rate of disconnection is measured by the number of disconnections per 1,000 accounts in arrears. The relationship grows stronger from April to July before beginning to relax.

A Capped Bill Program

One response to bill volatility involves programs called a Capped Bill Program. Under a Capped Bill Program, the participant pays the same bill amount each month for twelve months. An external party -- the company that designed and is promoting a Capped Bill Program is called WeatherWise USA -- acquires financial instruments that pay the participants' bills above the monthly capped bill amount. Bills may increase due to changes in weather or to changes in price. In the event of *lower* bills driven by milder temperatures or an energy price drop, the participant receives a refund at the end of the program year.

FSC combined the data presented above into a model that considers the financial impact of a Capped Bill Program. The model considers the change in costs to the utility that might arise from the implementation of a Capped Bill Program.

Three cost factors were considered: (1) the cost of collecting the past-due bill (collection costs); (2) the cost of obtaining replacement revenue (either internally or externally) for the time the billed revenue goes uncollected; and (3) the cost of revenue ultimately written off as uncollectible.

Cost savings were estimated assuming three alternative scenarios. Each scenario is an alternative way of considering how a Capped Bill Program might eliminate the impacts of dramatic changes in bills attributable to temperature and/or prices. The three alternatives are:

Scenario #1: Assuming that the energy assistance population will act in the same way as the residential population as a whole;

Scenario #2: Assuming that the energy assistance population in the heating season marked by high prices and colder-than-normal weather instead acted in the same fashion as the energy assistance population in a heating season in which price and temperature did not play a factor; and

Scenario #3: Assuming that the energy assistance population in the heating season marked by high prices and colder-than-normal weather acted in the same fashion as the energy assistance population acted in the *non*-heating season, a time period in which price and temperature did not play a factor in affecting bills.

Scenario #1 tests the financial impacts of a Capped Bill Program that will generate payment outcomes for the energy assistance population that reflect the payment outcomes of the residential population as a whole. Under these conditions, the Capped Bill Program will generate offsetting cost savings of roughly $75 ($74.48) per participant. These savings go to offset a program cost of $100 per participant.

(This is not to say that each participant generates program savings. But the sum of the savings divided by the total number of program participants yields the savings per participant.)

Scenario #2 tests the financial impacts of a Capped Bill Program that will generate payment outcomes for the energy assistance population that reflect the payment outcomes of the energy assistance population in a typical heating season. Under this approach, the impacts of the weather and price are factored out by looking at the behavior of the energy assistance population during a year in which those factors were not in play. Under these conditions, the Capped Bill Program will generate offsetting cost savings of roughly $24 ($24.08) per participant. These savings go to offset a program cost of $100 per participant.

Scenario #3 tests the financial impacts of a Capped Bill Program that will generate payment outcomes for the energy assistance population that reflect the payment outcomes of the energy assistance population in the non-heating season. Under this approach, the impacts of the weather and price are factored out by looking at the behavior of the energy assistance population during a time period in which those factors are not in play. Under these conditions, the Capped Bill Program will generate offsetting cost savings of more than $30 ($30.14) per participant. These savings go to offset a program cost of $100 per participant.

Summary and Conclusions

A Capped Bill Program has the potential to offer substantive advantages both to low-income consumers and to the utilities that provide service to them. While such a program could not be operated cost-free, as with other low-income programs, there *are* offsetting cost savings that such a program would generate.

Given the increasing number of years where the confluence of colder-than-normal weather and dramatic heating fuel price spikes impose severe harms on low-income consumers, regulators and fuel assistance providers should more aggressively explore the potential advantages of a Capped Bill Programs.

A copy of the complete analysis, titled "Payment-Problems, Income Status, Weather and Prices: Costs and Savings of a Capped Bill Program," including all data tables and the financial spreadsheet, can be obtained by sending an e-mail to:

publications@fsconline.com

Fisher, Sheehan and Colton, Public Finance and General Economics (FSC) is a research and consulting firm with offices in Belmont (MA), Scappoose (OR), and Iowa City (IA).

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