Addicted to Rebates?
Or are they just what the doctor ordered?

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Abstract

Rebates have been integral parts of many energy efficiency programs and marketing of many non-energy-related products for years. Rebates can be quite effective at inspiring participants to take action. Some energy efficiency rebate programs have made substantial progress in transforming their markets. On the other hand, it is possible that rebates can create unintended, negative consequences in the market. In this paper we present case studies of rebate programs that have contributed to market transformation and some hypothetical negative consequences of rebates. We also suggest some research approaches that could be used to provide evidence for or against some of these negative possibilities. We will conclude by offering some advice on how some of the potential negative effects of rebates could be mitigated or avoided.

Introduction

Rebates have been integral parts of many energy efficiency programs and marketing of many non-energy-related products for years. Rebates can be quite effective at inspiring participants to take action. Some energy efficiency rebate programs have made substantial progress in transforming their markets. On the other hand, it is possible that rebates can create unintended, negative consequences in the market, for example they may diminish the chances that some more cost-effective energy efficiency actions are taken or they may create expectations and attitudes that stand in the way of other energy efficiency actions.

If near-term resource acquisition is the only goal of program planners, they can consider rebates solely on the grounds of their effectiveness in bringing in net energy savings. However, if the goals are broader than near-term resource acquisition, such as market transformation or economic development, then program designers would be wise to consider if including rebates in their programs will hamper their ability to achieve some of their goals. This paper was designed to help in that consideration by examining evidence of positive and negative effects of rebates on the market for energy efficiency goods and services.

We searched the current energy efficiency and general marketing literature seeking documented examples where rebates contributed to market transformation and where they created problems in markets. We found several examples of rebate programs that contributed to market transformation (which we will describe in this paper). However, while we found anecdotal evidence of negative consequences we found no well-documented studies that showed negative consequences. This failure to find negative evidence could be because no one has undertaken a substantial research effort to examine negative consequences. Or it could be that someone has but we failed to find it. If reaction to this paper uncovers evidence we missed, we will write again about this topic.

In this paper in addition to presenting some case studies of rebate programs that have contributed to market transformation, we will present some hypothetical negative consequences of rebates, and suggest some research approaches that could be used to provide evidence for or against some of these possibilities. We will conclude by offering some advice on how some of the potential negative effects of rebates could be mitigated or avoided.

Rebates Can Be Effective Tools for Both Resource Acquisition and Market Transformation.

A number of arguments can be made that rebates are effective tools for resource acquisition and market transformation. Some of those arguments are presented below. None will always be completely true but they illustrate the positive potential of rebates.

- Rebates reduce the first-cost barrier to adoption of a technology or measure.
- Rebates can be a very cost-effective way of achieving near-term energy savings. Rebate programs can much simpler to run and with less management overhead than programs that tackle a number of barriers to energy efficiency.
- Rebates can be a cost-effective way of bringing about changes in the market.
- Rebates can effectively increase the volume of sales of an immature technology helping manufacturers achieve economies of scale, which in turn should lead to reduced prices and accelerating diffusion.
- Rebates are often effective in attracting attention to a program and technology by both end users and trade allies.
- Rebate programs are typically easily understood by end-users and trade allies.
- Rebate programs are usually familiar to end-users and trade allies.
- Rebates can provide a stamp of approval for equipment and the recommendations of contractors and suppliers. Customers may take the attitude of "if there is a rebate on this thing then it must be good" or "if ABC Contractors are authorized to give out rebates for this thing then they must be qualified to offer me good advice."

Rebates have helped to significantly change some markets for energy efficient goods and services. We present case studies examples for residential furnaces, motors, and clothes washers below. Some have suggested that electronic ballasts in the commercial sector is another good example. It seems possible that residential lighting is undergoing transformation spurred on by rebate programs for screw-base CFLs.

Residential Gas Furnaces in Wisconsin

In the 1980s utilities in Wisconsin implemented rebate programs for energy efficient residential gas furnaces and Wisconsin low-income weatherization programs started installing energy efficient furnaces in 1982 and 1983. By the late 1980s, the penetration rate of energy efficient furnaces approached 90% in some areas and utilities began cutting back their rebate programs. In 1991, the Public Service Commission of Wisconsin directed all utilities to eliminate furnace rebate programs (Kushler). However, end users continued to purchase high efficiency furnaces and spec builders continued to install energy efficiency furnaces. Research in 1995 indicated that between 83% and 90% of new furnaces in Wisconsin were high-efficiency (90% AFUE or better), compared to between 37% and 49% in Michigan (Kushler). Prices of efficient furnaces were lower in Wisconsin than neighboring states as well (Schlegel et al. 1992, Schlegel and Prahl 1994). The rate of energy efficiency installations dropped off somewhat over the years but it has remained substantially above baseline rates and rates of nearby states. Simple economics would indicate that some drop-off would happen with the removal of the rebates but the drop-off appears to have been fairly modest. This story has been cited as a good example of how straightforward rebate programs have effectively transformed a market.

The core change in the market appears to be the attitudes and behaviors on the supply side. HVAC dealers now tell their customers that standard practice is to buy an energy efficient furnace, they

discuss the energy savings benefits, and do not scare customers away by emphasizing problems with the technology. The volume of sales created by the rebate programs seems to have been sufficient and to have lasted long enough to permanently change approaches and attitudes.

Motors in Wisconsin

In the 1990s, many Wisconsin utilities had rebate and training programs to promote energy efficient motors. By 1994, sales of energy efficient motors represented 44 percent of new motor sales, compared to a national average of less than 23 percent. (Hagler Bailly, 1995) When rebates ended, sales of energy efficient motors declined but did not return to pre-program levels (Hagler Bailly, 1997A). A 1997 study found that even after rebate programs ended roughly half of the customers who had purchased energy efficient motors and obtained rebates continued to purchase energy efficient motors (Hagler Bailly, 1997B). (Discussed in more detail in Rosenberg and in Pigg.)

Clothes Washers in the Pacific Northwest

In 1997, the Northwest Energy Efficiency Alliance began a resource efficient clothes washer program. It started with rebates of $130 in May 1997, reduced them to $75 by the end of February 1998 to conserve resources in the face of stronger than anticipated demand, and eliminated them entirely in October 1998. It continued offering retailer support including incentives (spiffs) and continued consumer marketing. Sales of efficient units increased rapidly from near zero to over 4,000 per month in February 1998. After the rebate was reduced to $75 sales dropped but they were still over 3,500 when the rebate was dropped entirely in October 1998. Sales again dropped with the loss of the rebate but they remained above 2,500 into 2001 and reached over 4,000 twice during specific promotional efforts. The program's market share was 13.0% in 1998, 12.9% in 1999, and 14.2% in 2000. (Hewett, Pratt & Smith, 2001)

A program market status report from 2001 reports these key lessons learned: (Hewett, Pratt & Smith, 2001)

- *Early use of rebates stimulated interest and sales.*
- *The program was able to transition from rebates to marketing only, and sales rebounded even without rebates. Sales dropped slightly after the rebates were reduced, and finally eliminated, but sales later rebounded to higher levels.*
- *Communication and relationship-building with retailers was a key component of the initiative's success. Communications enabled the program to change strategies with minimal damage to retailer relationships.*
- *Low cost marketing strategies were successful in maintaining relationships and building market share.*

This program provides a good example of the use of rebates to jump-start a market but followed by their removal after a relatively short period of time. The rebates contributed to transforming the markets, but, perhaps largely because they were in place such a short period of time, they did not appear to create adverse secondary problems by warping consumer and supply-side behavior.

Hypothetical Drawbacks of Rebates

A number of arguments are made that rebates hinder market transformation and have unintended negative consequences. This section will discuss some of these arguments to illustrate the potential pitfalls of rebates. We looked extensively for empirical evidence of negative effects in the energy

efficiency arena but failed to find any. The potential drawbacks discussed here are largely drawn from papers addressing non-energy fields. Following each potential drawback we suggest research efforts that could provide evidence as to the existence and strength of any of these drawbacks.

Distraction

Rebates might change the way customers think in unintended ways. Rebates might distract or shift customer focus away from the message that energy efficiency is a rational economic choice on its own merits. In some situations or with some approaches rebates may send the message "Buy this thing to get money back!" rather than "Buy this thing because it makes sense." or "Buy this thing because it will save you money in the long run."

Rebates might serve as a crutch that enables program designers to avoid having to design a program that appeals to consumers in other ways. In the retail market, manufacturers may repeatedly resort to rebates to move their products rather than updating a product's characteristics to increase its appeal. This can lead them ultimately into serious trouble when "The situation will eventually reach a point where a rebate program will no longer resolve the situation. At that time it may be too late to approach the situation from a product enhancement perspective." (Bellinger).

In the new car market, some executives worry that consumers are focused more on rebates and attractive financing than about the unique features of their cars. A report documenting the results of a survey with auto executives stated "The American consumer has become very fickle and interested in affordability but, at the same time, demands quality products. … The message the U.S. automakers have been delivering is one of pricing and not new product innovation." (USA Today).

Similarly rebates focus attention on the action rather than on the reasons behind the action. They could cause some customers to focus on the rebate rather than on energy efficiency and on first cost rather than life-cycle cost. In examining the Energy Star Homes program, Werling et. al. put the problem this way:

> *"DSM programs are often focused on a very specific set of mandatory actions that must be completed - in order to streamline the enforcement process. Again, most participants only perform the minimum level of actions required without understanding additional benefits of taking these actions (i.e. comfort, health, safety, and increased resale value). As a result, these rebate-based programs rarely lead to substantial improvements in energy efficiency or lead participants to value energy efficiency on its own merits."*

On the other hand, rebates could be an effective tool to focus people's attention on a product long enough to get across to them the message that the product saves energy. Without the rebate, program designers will have to find some other hook to pull people in and it could be that non-rebate hook is both more expensive and less effective than a rebate.

Research Possibilities: Evaluation and market research studies often ask participants "Why did you buy this product?" and receive responses like "because of the rebate", "because it saves energy", "because it is good for the environment", "because my neighbor has one", etc. A meta analysis of the results of such questions across multiple studies could provide some indication of the magnitude of the issue. If "because of the rebate" ranks consistently and significantly higher than "because it saves energy," this could provide some evidence that the rebates are not being effectively used to convey an energy efficiency message.

Suspicion

Rebates might create suspicion in end-user minds about the benefits or value of the rebated product. A rebate may cause potential purchasers to think "If they have to give out rebates to get people to buy this thing then there must be something wrong with it." For example, auto manufacturers are more likely to give rebates for slow-moving vehicles and not for the hot sellers. Some consumers probably recognize that fact and take it into account when deciding if a particular vehicle is desirable or not.

On the other hand, rebates may confer "this product must be OK" status on products if the rebate is offered by someone other than the manufacturer.

Research Possibilities: End user surveys could test for this potential problem by examining attitudes toward rebated and non-rebated products.

Narrow Focus

Rebates may narrow customers' focus to the specified equipment and away from other actions that could save more energy. Rebates could thus stand in the way of considering more comprehensive actions, more cost-effective options, or options that would save more energy cost-effectively. For example, a rebate on energy efficient lighting fixtures could stand in the way of customers considering the potential savings from occupancy sensors or other controls as Castellow et.al. describe:

> *Lighting programs often simply rebate a fixed monetary amount per piece for a particular lamp type. Participation in such programs has often been on a "first come, first served" basis. This approach prevents an industrial customer from considering beneficial process impacts or from looking at options that might be of greater benefit. In the LMCP* [Large Manufacturing Customer Pilot Program]*, for example, one installation involved special dual-output level fixtures and occupancy sensors. … This type of installation results in much higher savings than would have occurred with a traditional installation of energy efficient lamps. In a typical rebate program, this solution would not have been permitted.*

On the other hand, in some circumstances, rebates may be effective in getting end-users to consider the importance of energy efficiency, which could lead to other energy efficiency actions. Some programs use rebates as the carrot to get their foot in the door – when in, they can discuss more comprehensive approaches to energy efficiency.

Research Possibilities: With access to enough existing data on program participation in situations where rebate recipients have opportunities to participate in other program activities, researchers could address these questions: How often do rebate recipients go on to participate in other, non-rebate portions of programs? How often do they go on to make **related** energy efficiency improvements? Checking that the improvements are related to the rebated technology would help address whether the rebate stood in the way or encouraged more actions in the same area.

Load Building

In some cases, rebates may send the message "it is ok to buy this product" creating momentum for new installations that add to load, rather than reduce it. For example, rebates on residential central air conditioning could entice some customers to buy an AC system where none existed before and encourage them to think that since the AC is efficient it is an environmentally benign action. A study in California found just such an effect as Samiullah reports:

In the context of shifting expectations and the questionable premises underlying thermal comfort science, it seems reasonable to suggest that the availability of incentives for installing central air conditioning may, in this case, have encouraged additional air conditioning use in some cases. Further, such incentives may be helping solidify the perception that compressor-driven central air conditioning is normal, standard, and environmentally benign, as long as it's efficient.

On the other hand, the situations where this possibility exists may be fairly limited and some of the danger can be mitigated, for example by requiring that rebates are available only in replacement situations.

Research Possibilities: It might be useful to program designers if an examination of the technologies and applications typically rebated were done to identify situations where load building is a risk so that protection mechanisms can be designed into programs.

Entitlement

Under some circumstances, rebate programs may create a rebate entitlement attitude in the market that could stand in the way of informed individuals choosing the efficient option without a rebate. Is it possible that past energy efficiency programs largely focusing on rebates have conditioned supply-side actors to think that energy efficiency programs are rebate programs and little else? If so, does that conditioning affect the way they talk about and promote energy efficiency products and services? There is evidence that consumers in non-energy arenas are becoming addicted to rebates, refusing to purchase unless they are offered some discount or rebate. For example, auto buyers now expect a rebate of more than $3000 to buy a new car and subsidized financing weighs heavily in their decision making (Kohn). The Federal Reserve Beige Book on June 17, 1998 reported:

Auto dealers also describe sales as good, though some express concern about customers becoming "addicted" to rebates, coupons and other promotions that maintain sales but cut into profit levels.

On the other hand, delaying purchases while waiting for an expected rebate program may indicate rational economic behavior. If past patterns indicate there is a reasonable likelihood of a new rebate program in the near future, it may make financial sense to postpone some kinds of investments while waiting for rebates.

Research Possibilities: Markets where rebates have been offered in a cyclical fashion (being offered and withdrawn multiple times), particularly where there have been many cycles or where the offered/not-offered pattern was consistent, may offer good opportunities to study participant behavior in the off-periods. How much does purchasing drop off in the non-rebate periods? Are end users delaying purchases while waiting for the next rebate cycle to start? If so, are the foregone energy savings from the non-rebate period worth more than the rebate? Energy Star lighting programs may provide a good target for such a study given the recent trend toward on-again, off-again rebates in this area. Rebates are common in non-energy markets so, presumably, some studies have been done of their effectiveness in these other markets. Mining that research might provide important insights for the energy efficiency field.

Conclusion

In doing the research for this paper, it was fairly easy to find examples where rebates contributed significantly to the lasting transformation of a market. On the other hand, finding concrete examples of the pernicious effects of rebates in the energy efficiency field was much harder. Perhaps that is because proving a negative is quite hard. Perhaps it is because few have focused on the issue. Perhaps it is because the pernicious effects do not exist and few are inclined to write papers that say, "we looked for something and found nothing." We have suggested a variety of ways in which further research could be done to provide evidence on the broader effects of rebate programs.

While we did not uncover evidence of problems, we did uncover *discussion* of several ways that rebates *might* have a negative influence on a market. Given that rebates might cause unintended harm, it is prudent to consider how to best avoid the possibility. How can the potential negative effects of rebates be mitigated or avoided? What determines whether rebates might have unwanted negative effects?

Three factors seem to be especially critical for the ability of rebate programs to have significant and lasting affect on the market. If the rebate program covers a large market, if it has significant amounts of money relative to the size of the market, and if it is applied across enough time, then it rebates seem to have a better chance of contributing to market transformation. Several other factors affect, but to a smaller degree, the ability of a rebate program to have a positive influence on the market. The following describes those factors.

- **Market Size vs. Resources.** If the goal is to transform the market, ensure that the budget will support rebates of a size (rebate per unit) and quantity (total number of rebates) that will have a strong likelihood of significantly affecting the market.
- **Influence.** A rebate that is too small may attract predominantly free riders, for the incentive is not high enough to alter behavior. A rebate that is too large may waste resources and spread them too thin.
- **Timing.** Do not expect to transform a market overnight using rebates. If you cannot be reasonably confident of funding over the long-haul, think again about using rebates as a market transformation approach. Pulling out before achieving the goal could send the wrong message to the market.
- **Geography.** If your program is limited to a small territory, and if it is not coordinated with other very similar programs in surrounding territories, it may be too small to significantly affect the market. Statewide and regional efforts or those done in sync with other states probably stand the best chance of having an impact beyond the near-term energy savings.
- **Internal Incentives.** Ensure that program managers and field staff have the right incentives so they do not over-emphasize the role rebates play in their program and neglect other activities that contribute to changing markets.
- **Commitment vs. Entitlement.** Make the timeline and goal of rebates clear to everyone, particularly manufacturers and distributors so they will understand the program's commitment to change. If part of the goal is to change the supply stream (e.g., reduce the price of CFLs through volume purchasing), make sure the manufacturers know that the program is going to be around long enough to achieve that goal. However, under some circumstances it will be important to make sure end-users and, particularly, supply-side companies know that the rebates are temporary and when they go away, they will stay away. If you do not, you may encourage the attitude that rebates are an entitlement, which will stand in the way of other energy efficiency actions. Periodically ratcheting up the efficiency levels required for a rebate may serve to pass the message that rebates are intended to move the market, not just reward some particular behavior.

- **Transformation Story.** Choose the technology for rebates carefully and do not use them unless you can develop a clear and strong story of how they will support market transformation if that is your goal. Even if you want to use them only for achieving near-term energy savings, carefully consider whether they might harm the market in the process and thus create more trouble than they are worth.
- **Market Actor Target.** Consider carefully who to give financial support to. In some cases, it may be that applying financial incentives to the supply side (e.g., through marketing assistance) will have more long-term positive effects than providing rebates on the demand side.

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