TAX FOUNDATION

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Executive Summary

An established phenomenon on the U.S. economic landscape is the rapid expansion of government-supported enterprises that use their tax subsidies and other special privileges to break into markets not originally contemplated when their subsidies were granted. In this context, "government-supported enterprise" can mean anything from a government creation like the Postal Service to a private, non-profit organization that receives tax exemptions because of its charitable charter.

This study explores one such case: the movement of rural electric cooperatives into the propane gas market. Rural electric cooperatives (RECs) now supply approximately 11 percent of the nation's electricity. Their special privileges include federal and state income tax exemptions, loan guarantees and interest rate subsidies, preferential access to federal power, and even monopoly franchises. Many scholars have questioned the appropriateness of the special privileges currently granted RECs, especially given that rural areas are now fully electrified. This paper explores a much more focused issue, the potential for cross-subsidization when RECs do sell propane, and the economic consequences of cross-subsidization when it occurs.

Given the special privileges enjoyed by the RECs, one can appreciate the potential for their use in the propane industry. For example, RECs have amassed considerable capital and labor assets, many of them with the aid of federal subsidies. Many of these resources could be applied to the propane business at low or even zero marginal costs, thus granting the REC affiliates an artificial advantage over their private sector counterparts.

The most common justification for government provision, or subsidization, of consumer goods is "market failure," that is, for various reasons the private market fails to provide a sufficient amount of goods or services to customers. Such market failure appears to be absent from the propane market. The market is fiercely competitive, with a large number of small and medium sized firms participating in a market that is open to entry by new competitors.

In addition to the obvious waste of economic resources that occurs when taxpayers fund the expansion of an industry that already offers good value due to competitive pressure, more waste occurs in the form of "rent-seeking." Rent-seeking refers to the time and money that both the coops and their private sector competitors will inevitably spend in the political arena fighting over the special privileges that give the coops a competitive advantage. These rent-seeking costs are often so large that they devour a significant share of the taxpayer-provided subsidy that could have been available to customers as discounts.

The coops are revealed to be a classic example of the type of privileged firm that is documented in economics literature as a potential cause of market inefficiencies.

Many scholars question the need for coop subsidies, asserting that RECs delivered power successfully to remote rural areas long before subsidies were enacted.

The study finds that RECs are likely using public assistance to cross-subsidize their entry into the propane industry. Using standard assumptions, this taxpayer-financed cross-subsidy may be in the neighborhood of $225 million per year. In other words, taxpayers potentially could be hit for a significant portion of the $225 million to subsidize the RECs even when there is no good economic rationale to do so. Moreover, if most of these costs are eaten up by rent seeking and/or overexpansion, as indeed the literature suggests, they would represent a significant net social loss.

Introduction

Rural electric cooperatives (RECs) are private organizations owned by the consumers they serve. There are roughly 900 RECs operating in 46 states, providing electricity to about 11 percent of the nation's population.[1] Operating under cooperative principles, RECs are not-for-profit entities whose purpose is to serve their customer/members at cost. Margins above expenses are used for capital improvements, distributed to members in proportion to their electricity purchases, or built up as undistributed margins or "profits," which represent membership equity. These built up margins can become quite large. REC managers may have considerable discretion to use them and other sources of funds (such as subsidized loans) to purchase inputs for new propane affiliates.

Recently, RECs have begun moving into ancillary markets, such as the propane gas market. Diversification is a natural process for many businesses, as is using assets from one line of a company's business to support another. However, the existence of public assistance to the RECs and the potential for the coops to use government-granted privileges to cross-subsidize their new lines of business create serious economic and public policy concerns. RECs have amassed an arsenal of capital and labor assets such as good will, managerial expertise, and equipment, all gathered with the aid of public subsidies and under the shield of a monopoly franchise for rural electricity. Many of these assets can be employed in the propane industry, giving the RECs a significant boost over existing propane firms whose capital and labor inputs were purchased without subsidies or artificial advantages.

The use of governmental privileges to enter a new market raises some interesting concerns. For example, as will be demonstrated in this paper, the propane business is very competitive, characterized by open entry and a large number of firms. Absent evidence of market failure, subsidies should not be necessary for the market to function efficiently. To the extent a REC's subsidies seep through to its propane affiliate, economic inefficiencies are created through an overexpansion of the industry. Moreover, many efficient propane producers could be burdened by the entry of the REC affiliate, whose chief attribute may not be some technological advance but the special privileges granted to it by the government.

The problem is both important and somewhat complex. On the one hand, entry of new non-subsidized entrants in a market is most welcome. In this sense the entry of subsidy-free REC affiliates is a spur to competition in propane. However, the market and its existing firms can be damaged by the entry of subsidized firms. Given the substantial subsidies granted electric cooperatives, there is a great temptation for these subsidies to seep through to the propane affiliate, unless steps are taken to prevent such cross-subsidization. The problem is complex since such subsidies are mostly of an indirect nature, making them difficult to identify and treat.

Economic inefficiencies and the misallocation of scarce resources may appear in other more subtle ways, such as through "rent-seeking." Rent seeking is the act of expending resources in the political arena to expand and maintain special privileges. For example, the original propane firms may resent the entry of RECs, with their special tax advantages, and may expend considerable resources to block them from using their advantages in the propane market. On the other side, the RECs may expend considerable political resources to maintain their advantage. Resources devoted to such activity represent resources that are not put to productive economic use.

In this paper, we apply the economics of special privileges to the entry of RECs into the propane gas industry. We begin by looking at the nature of RECs and their recent entry into the propane industry. The economic features of a competitive market are discussed and the propane industry specifically is measured against these characteristics to determine its relative competitiveness. Next, we discuss the economic distortions caused by the entry of subsidized RECs into the competitive propane market. Finally, we estimate the cost to taxpayers and to existing non-REC propane firms of the RECs' subsidized entry into the propane industry.

The Economics of Subsidized Rural Cooperatives in the Propane Market

Many rural electric cooperatives have forayed into the propane market, and many more are considering the venture. The result so far is the waste of considerable economic resources. American taxpayers, consumers, and many privately held propane dealers are harmed by the RECs' subsidies and the use of these subsidies to aid entry into the propane market. It is important to detail the exact nature of these subsidies and special privileges.

The Coop Advantage

RECs have been granted a variety of special privileges to generate electricity in rural areas. These include exemptions from federal and state income taxes, loan guarantees and interest rate subsidies, and preferential access to federal power. RECs have also received monopoly franchise advantages. According to some estimates, tax and financial subsidies to RECs amount to about $4.7 billion annually. In other words, RECs would have to raise their prices by nearly 20 percent to generate enough revenues to cover the shortfall left by elimination of these subsidies.[2] These substantial advantages give the RECs an advantage over investor owned electric utilities.[3]

Favorable Tax Treatment

The RECs are not-for-profit organizations owned by their members. Consequently, most RECs are organized under 501(c)(12) of the Internal Revenue Code, which exempts them from federal income taxation. The ability of RECs to sell propane as tax exempt entities is an open question. The IRS is currently reviewing this issue and will be publishing policy guidance on this point.

Many existing REC propane affiliates pay an unrelated business income tax (UBIT) on the income earned from the sale of propane. In theory, this levels the playing field between REC affiliates and independent propane companies. However, in reality it is questionable how comparable the UBIT is to other forms of business taxation.

Exclusive Access to Generous Federal Financing

RECs qualify for low interest loans and loan guarantees from the federal government's Rural Utilities Service (RUS). Loans are tied to tax-free municipal bond rates but are capped at 7 percent; hardship loans of 5 percent are also available. In addition, RECs can borrow from the Cooperative Finance Corporation (CFC), whose principal purpose is to provide members with an additional source of low cost financing. CFC loans are generally available for any use, including the propane business. The CFC actually forecasted increased demand for its services due to the RECs' increasing pace of diversification into new businesses such as propane.[4]

Preferential Access to Inexpensive Power

Unlike their investor-owned competitors in the propane industry, RECs can often receive power generated at federally owned dams priced below market rates. Although this subsidy may have some impact on reducing the energy bill of a REC's propane business, it could also be a source of "cross subsidy." In other words, this subsidy, estimated to be about $1 billion on an annual basis, could have been used to amass capital and labor inputs, many of which are readily adaptable to the propane business at low marginal cost.[5]

According to some estimates, tax and financial subsidies to REC's amount to about $4.7 billion annually.

Other Advantages

Many RECs were given a monopoly franchise to deliver electricity to rural areas. As a result,

the RECs were able to develop a considerable amount of resources in a protected environment. While the nature of the market is beginning to become more competitive, this franchise edge has existed for many years and remains an advantage for RECs in today's market.

Estimating the Size of the Coop Subsidies for Electric Power

According to the study by Putnam, Hayes and Bartlett, the tax and financial privileges enjoyed by the RECs are quite substantial, totaling nearly $4.7 billion in 1995 alone. In other words, the RECs would have had to raise electricity rates by about 20 percent to compensate for the subsidies. For example, if a REC's per unit cost of producing a kilowatt-hour (kwh) of energy were 10¢, then its rate would have to be raised to 12¢ to compensate for the subsidies. This would mean that a similarly situated investor-owned utility (IOU) would have per unit costs of 12¢ compared to 10¢ for the REC since the IOU is in the same circumstance but does not have the subsidies. In other words, the REC's per unit cost of 10¢ would be about 17 percent below the 12¢ per unit costs of the IOU (2¢ divided by 12¢ is 17 percent).

Extending REC Privileges into the Propane Industry

Given the special privileges enjoyed by the RECs, one can appreciate the potential for their use in propane. In effect, a significant subsidy "endowment" problem could arise if many of the advantages of the RECs seep or spill over into their propane affiliates. RECs have amassed considerable capital and labor assets, many of them with the aid of federal subsidies. In turn, many of these resources could be applied to the propane business at low or even zero marginal costs. For example, goodwill, the coop's logo, managerial advice, and customer lists are valuable resources developed for the electricity business that can easily be used in propane at little cost. This gives the REC a significant advantage over private propane firms since these crossover endowments were all amassed with the assistance of public subsidies and a monopoly franchise.

There are many sorts of assets that could be transferred to the affiliates:

- A list or survey of potential or existing propane customers (particularly the coop's customers who are observed by meter readers to have propane service)
- Real property for storage, parking, and office uses
- Trucks
- Tanks
- Sales personnel
- An inventory of parts and supplies
- Managerial or administrative personnel
- The use of trade names and the REC's reputation in the community.

Moreover, cross-subsidization can occur in financing, such as providing loans at below market rates, with insufficient collateral, or with generous repayment schedules.

Hilco Electric Cooperative, based in Itasca, Texas, provides a good case study of the subsidy seepage that is possible. Hilco Electric supplied a great variety of labor and capital inputs to its propane affiliate, Hilco United Services. Since these inputs were developed with special privileges granted by the government, the REC effectively subsidized the propane affiliate with taxpayer resources. It was also found that the propane subsidiary obtained favorable financing with the backing and guarantee of the cooperative. After a successful lawsuit was brought by the propane industry, the two entities took measures to at least give the appearance that they were conceptually separate.

The weight of all these advantages could translate into an artificial competitive advantage for the REC propane affiliates. For example, a new propane firm would have to spend a considerable sum of money to develop a customer list of known propane users. The REC will have already developed such a list as part of its electricity business. The cumulative effect of all these advantages would likely lead to a considerable price advantage for the coop affiliate. This would create an artificial, or subsidy-induced, hardship for private, taxable propane firms.

The federal government has attempted to

limit the use of such privileges in other areas. These privileges were usually confined to a specific area and were not to be used indiscriminately. In effect, the economic prowess and endowments nurtured by special government privileges were to be fenced off so as not to threaten thriving competitive markets like propane. For example, we do not encourage the United States Army to develop side businesses such as supplying armed guards for corporations and private homes, nor do we encourage the Navy to use its vessels for private ferry service.

A REC propane affiliate may benefit indirectly from the loan subsidies and guarantees of the REC. The fact that the propane affiliate is connected to the privileged parent REC, whose loans are at least implicitly guaranteed by the federal government, may be enough to secure a substantial loan subsidy from private lenders. Moreover, the close relationship between the REC and its affiliate may lead the REC to provide the affiliate with favorable loan terms that would not be available if the transaction were truly at arm's length. For example, if the parent REC is guaranteeing a loan, and the affiliate does not pay the parent REC for this valuable assistance, then the affiliate gets a loan rate that is lower than it would otherwise be if it had to utilize the private loan market. Another potential source of funds for the REC affiliates is the National Rural Utilities Cooperative Finance Corporation (CFC). The base for these funds are the margins and contributions of member coops. The principal purpose of the CFC is to provide coops with favorable financing to supplement the programs administered by the RUS. While RUS loans may only be used for electricity, CFC funds can be used for the propane affiliates. There could be a net cost to taxpayers if the coops make up for the propane loans by acquiring new loans from the RUS.[6] One study estimates that the REC's cost of capital advantage is about 2¢ per gallon of propane. At the time of the study the price of propane was roughly $1 per gallon. Therefore, considering only the interest subsidy, the per-unit cost faced by the REC would be about 2 percent lower than that faced by a similarly situated private propane producer.[7]

Given this discussion and using the Putnam, Hayes and Bartlett study, it is possible to derive a rough estimate of the total effect the RECs' special privileges may have in their propane interests. The REC may not be able to utilize all of the special privileges available to it in the new industry. However, as we shall show, it is reasonable to assume that 60 percent of all the advantages available for electricity could also be used in the propane business.

As derived above, the subsidies received by RECs cause their costs to be about 17 percent below the costs of a similarly situated IOU. Sixty percent of this 17 percent advantage represents a 10 percent cost advantage enjoyed by RECs compared to their private competitors. Assuming a propane price of roughly $1 per gallon, the RECs' advantage would be about 10¢ per gallon.

The REC's, however, have invaded ancillary markets, such as the propane gas market. In so doing they have created considerable controversy.

The reasonableness of this estimate can be appreciated by looking at the structure of the potential advantages available in propane. There are two basic sources of such privileges: direct subsidies and indirect subsidies.

Direct subsidies include loan subsidies, guarantees and other favorable loan terms enjoyed by the affiliates due to their connection to subsidized RECs. There may also be some minor tax advantages available to propane affiliates that could be considered direct subsidies.[8] The Putnam, Hayes and Bartlett study estimates that these give the RECs nearly a 20 percent cost advantage over investor owned utilities in the electricity market. If we assumed that only a third of these direct advantages could be used in propane, then the REC would have a 6 percent advantage.

The other source of advantage is indirect subsidies such as the use of capital and labor

resources already amassed in the electricity business that might be adaptable to propane. The use of margins created in the subsidized electricity business that are used to purchase capital and labor inputs used in the propane business is another indirect subsidy. If only one third of the resources used in the propane business came from this source, RECs would reap an additional 6 percent advantage. This advantage arises because portions of these resources are amassed under the 20 percent cost advantage in the first place.[9] Together, these assumptions would give the RECs a 12 percent advantage—making the 10 percent subsidy assumed in this paper look conservative.

Finally, the literature on REC diversification mentions the possibility of RECs' raising the price of electricity to "cross-subsidize" their entry into another business such as propane.[10] Such behavior is consistent with "agency" problems in which "empire building" managers may have different goals than coop owner/customers. These issues take us into other areas of regulatory pricing that are somewhat removed from our subject. Nevertheless, it is one more factor that could increase the price/cost advantage of the REC propane affiliate relative to investor-owned firms. The literature on cross subsidies suggests that this source of cost advantage can be quite significant. For example, a study of the telephone industry suggests that, on average, local residential service is priced about 20 percent below average cost due to higher charges on other classes of customers.[11] Again, the assumption here of a 10 percent cost advantage of a REC affiliate in propane is conservative in comparison.

Even if the advantage were only half this amount, or 5 percent, it would be significant because propane is a relatively homogenous commodity. Commodities of this sort are difficult to differentiate and are sold mostly on the basis of price. Therefore, modest price advantages can translate into substantial losses for firms without special privileges.

Competition and the Propane Market

Government subsidies typically are advanced as a mechanism for correcting a "market failure" or to supply a vital consumer good that, for whatever reason, is being insufficiently supplied by private industry. While the actual efficacy and efficiency of this policy is questionable, proponents of RECs' entry into the propane industry, at least, should be able to demonstrate that the private market is currently not meeting the needs of propane consumers or that propane is an essential consumer good being undersupplied by the market.

But the propane industry is already competitive and is meeting the needs of consumers. Competitive markets tend to lead to the lowest possible prices while allocating society's scarce resources in an optimal fashion. In a dynamic, or long run sense, competitive markets encourage the search for new technologies and innovations that lead to greater improvements in consumer welfare.

Among the most important conditions necessary for a competitive market is open entry. Open entry refers to the ability of new firms and new ideas to penetrate an existing market. For example, if an artificial impediment, such as a special license or other regulatory hurdle, is imposed on a market, then firms may be unable to enter such markets. In turn, prices are likely to exceed competitive levels.

Many economists also argue that a "reasonably large" number of firms must exist in a market to make it competitive. A large number of firms, so goes the theory, ensures that consumers have ample options in the marketplace and are able to switch suppliers readily should price or innovation so dictate. A relatively large number of firms in a particular industry also increases the likelihood that the failure of any one firm does not dramatically affect the vast majority of consumers.

The existing propane gas industry is characterized by both open entry and a large number of firms. There are about 8,000 propane retailers nationwide operating some 13,500 distribution centers. The top 50 retailers (in terms of gallons) accounted for about 40 percent of total national retail sales. In 1994, the largest retailer sold about 830 million gallons, roughly 6 percent of total industry sales while

the fiftieth largest firm sold an insignificant portion of the industry total. Available evidence indicates that in local markets, including rural markets, consumers can choose from a variety of propane dealers.[12]

These economic features of the propane market would lead most economists to conclude that it is a very competitive market. In the long run, this means that most firms are making a "normal" return or profit from their investments in the industry. It would also mean that scarce resources are being allocated in an efficient manner.

Why, then, have at least 57 RECs in about 13 states entered the propane business since the mid-1990s? One answer might be that the RECs made a significant breakthrough in propane distribution that will lower costs, create additional value for consumers, or otherwise create a competitive advantage for the RECs in the propane market. If this were the case, then the entry of RECs into the propane industry would be consistent with economic theory on the competitive market. However, it is not likely that all 57 RECs in 13 states have made such a significant advance in propane distribution as to justify their entry into an otherwise competitive industry. It is much more likely that RECs recognize propane distribution as a complementary industry to power generation and also recognize that they enjoy a competitive advantage over private propane firms due to their numerous government subsidies.

The RECs' use of their government subsidies to enter an otherwise competitive market is economically inefficient. The RECs' expansion into the propane industry is troublesome for the following three reasons:

1) An oversupply of propane and displacement of existing propane firms are likely to occur, thus diverting scarce economic resources away from a more productive activity with greater benefit to more consumers.

2) The RECs continually protect their special advantages by ongoing lobbying efforts that have no productive economic benefits.

3) The RECs' activities in the propane industry may result in a contestable equilibrium, in which the organization's special privileges are used to derive artificially high margins that are redistributed to the cooperative's members or managers.

Oversupply of Propane

The subsidies granted to the RECs will lead them to sell more propane than would otherwise have been produced in a purely competitive marketplace. Thus, scarce economic resources will be applied in an economically inefficient manner; these same resources would have been applied to some other endeavor that would have yielded greater value to more consumers. Subsidies work like a false signal in the marketplace that diverts resources from a higher marginal value activity to a lower marginal value activity. In economic terms, the marginal cost of the extra output is less than its societal benefit. It would be like using taxpayer money to subsidize General Motors to make toothpaste.

The overexpansion effect produced by government subsidies becomes greater the more the coop membership base wants to take the subsidies in the form of lower prices for propane. The lower the price of propane, the greater the demand for propane. This in turn increases the resources devoted to its production and distribution. This expansion, however, would be wasteful from an optimal use perspective.

Rent-seeking costs may force prices up to the contestable price whether the original coop goal was a lower price or higher profit/margin.

Existing propane firms who are displaced by the entry of the rural REC would also be damaged. Many existing propane distribution firms will lose out, not necessarily because the entering RECs have superior technologies but because they wield special privileges from the government. In this context, it is interesting to note that a survey by the National Rural Electric Cooperative Association suggested

that about 45 percent of RECs were considering entering the propane industry. This could take a sizable share of the $10 billion propane market from existing propane firms.

Rent Seeking

Another source of economic distortion caused by the subsidies used by RECs to enter the propane market is associated with what economists call rent seeking.[13] Rent seeking refers to the costs that are expended in the political arena to secure and maintain special privileges. The RECs must spend a considerable amount of resources to defend and extend their subsidies in the public arena. These costs may include hiring lobbyists, contributing to political causes, and visiting Capitol Hill and state legislators in support of continued subsidies. At the same time, private firms in the propane industry must expend resources that otherwise would go toward economically beneficial activities to defend their turf from invasion by firms with public subsidies.

According to the literature, rent-seeking activities may consume much of the RECs' gains from the tax subsidies and could dissipate the lower prices that coop members had planned to offer consumers.[14] In the case of the RECs, for example, it would be more efficient simply to allow coop members to receive a government discount from the existing propane firms. In this way the goal of extending subsidies to coop members would be achieved without diluting the investments of the existing private propane firms. However, in the parlance of rent seeking theory, such a subsidy mechanism would be too "raw." Taxpayers and other consumers of propane would object since the special privilege granted to some subset of consumers would be so clear and unfair. Thus, for political reasons, the subsidy is often disguised. Most taxpayers do not notice either the extension of ongoing distribution subsidies to RECs active in the propane industry or the use of subsidized endowments built up in electricity but crossed over to propane. This indirect route involves a much greater waste of society's resources than direct subsidization by private sector firms since the capital investment of many propane firms could be displaced and entry of less efficient REC affiliates encouraged.[15]

In a broader context, the RECs' foray into propane may be part of an overall political strategy to maintain or expand its membership/ally base. In the new world of electricity generation, competition among regions and locales is likely to become more brisk. Many rural areas served by RECs could be threatened by entry of investor owned utilities. In this more competitive world, RECs are under pressure to expand subsidies to maintain and expand markets. In this way the membership can be stabilized while new allies are groomed. Unfortunately, for the taxpayer this is going beyond the original bounds of such subsidies.

Contestable Equilibrium

Finally, it is possible that the REC membership base may choose to take their propane subsidies in the form of profits or discretionary resources. This is sometimes referred to as a "contestable" equilibrium. For example, we have found that a coop's subsidies give it roughly a 10 percent per unit cost advantage over existing firms and the competitive price of propane is $1 per gallon. The REC conceivably could take its subsidies in the form of lower prices for propane, in this case 90¢ per gallon. On the other hand, it could choose to set its price close to the original, market price of $1 per gallon. For example, the REC could set a price of 98¢ per gallon. This "contestable" price would be low enough to force some of the original propane firms out of the market and prevent them from contesting or re-entering the market. In effect, the REC would take their subsides in the form of a small price decrease

Unlike their investor-owned competitors in the propane industry, REC's can often receive power generated at federally-owned dams priced below market rates.

of 2¢ per gallon and a larger "profit" of 8¢ per gallon. These "profits," in turn, can then be used to finance more affiliates selling more goods and services unrelated to electricity, creating an ever-increasing spiral of empire building. While propane is the most popular item sold, RECs also sell such diverse items as fireplaces, burglar alarms, insulation, landscaping, and cell phone service. In any event, the profit could be taken in many disguised forms such as lower electric rates, higher salaries, discounts on coop-supplied appliances, and a larger budget for political activities.

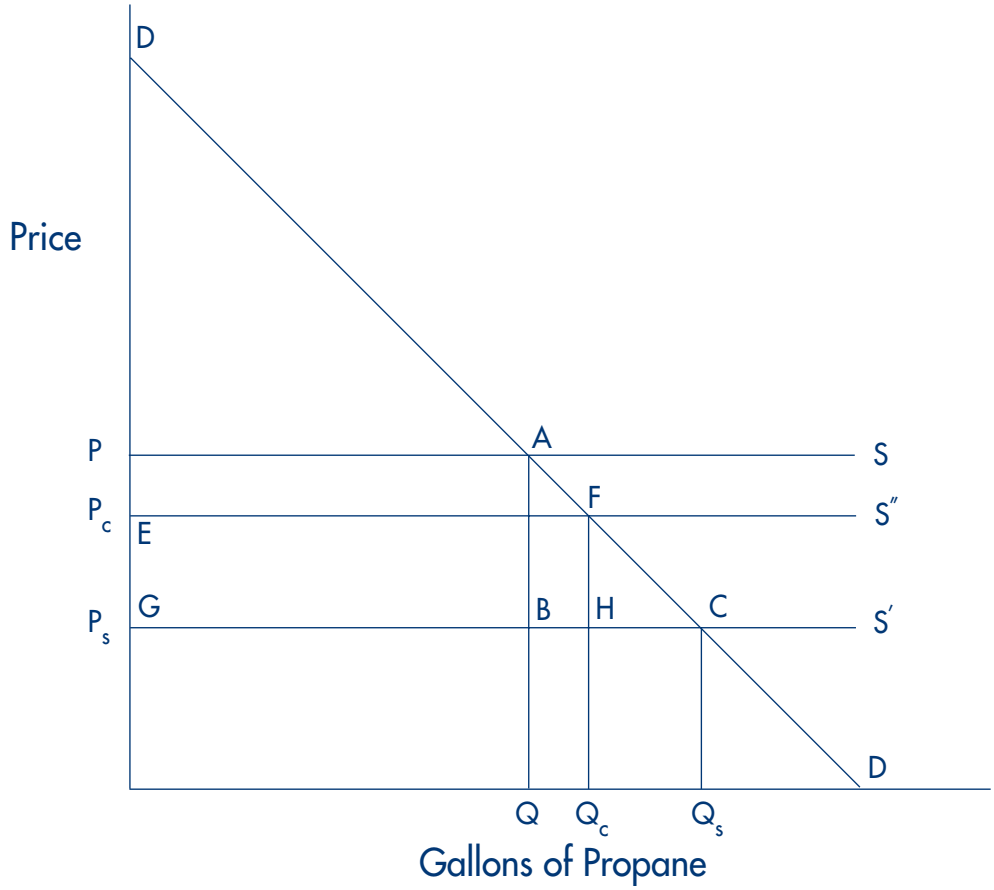
In the long run, most of these profits may be eaten up by rent seeking costs. In fact, rent-seeking costs may force prices up to the contestable price whether the original coop goal was a lower price or higher profit/margin. In consequence, the contestable price may be the most likely price in the long run.

Whether the final equilibrium is a contestable price or a much lower price is an interesting question and one worthy of future study. However, in either case the tax subsidies will have caused significant economic losses in the form of an unnaturally high supply of propane, inefficient rent seeking activities, and the likelihood of a contestable equilibrium.

A Simplified Model of Economic Distortions Created by Rural Coop Subsidies in the Propane Market

Figure 1 below is a simplified diagram that summarizes the effect of subsidies on the market for propane. In this diagram the price of propane is given on the vertical axis while the quantity demanded by consumers is mapped against the horizontal axis. For simplicity we have assumed that the average cost

Figure 1: Effect of Subsidies on the Market for Propane



of producing propane is constant at "S." Under these constant cost conditions the marginal cost of propane will be equal to its average cost and therefore also is represented by line S. Under competitive conditions, propane's price will be equal to its marginal cost. At the intersection of the supply curve S and the demand curve D, Q amount of propane will be produced at market price P. This price and quantity produced/consumed are both competitively and socially optimal results.

If subsidies were available to a rural coop in the market, its average and marginal cost curve is below S and can be characterized by S'. The difference between S and S' would represent the tax and financial subsidies per unit received by the coop. Private propane producers would continue to face a cost curve represented by line S. If the coop chooses to take its subsidies in the form of lower prices it would expand output to Q_s where the S' curve intersects the demand curve. In this case there would be an overexpansion of resources devoted to propane measured by the amount Q_s minus Q. The net economic loss to society from this subsidy-induced over expansion would be represented by the triangle ABC.

REC subsidies were justified in order to electrify America, not to start up new enterprises where markets are already well served.

A more likely equilibrium would be consistent with the contestable price theory suggested above. In this case, the wealth maximizing strategy for the coop would expand output to Q_c at a price of P_c.

Such a move would force some competing firms out of the market and allow the subsidized coop to earn above-normal returns equal to EFHG at a price of P_c and Q_c output. Standard economic analysis would seem to indicate that this situation would result in minimal economic losses for society as a whole since the long-run above normal profits/subsidies earned by the coop simply represent a transfer of wealth from taxpayers to the RECs without a sizable loss of consumer surplus. However, this argument assumes that the tax subsidies were acquired at no cost. Modern public choice theory demonstrates that rent-seeking costs can be very high. Such expenditures, which are non-productive and represent a societal loss, could theoretically equal or exceed the above normal returns earned by the subsidized firm. In Figure1, this societal loss is represented by EFHG if rent-seeking costs dissipated all of the above-normal returns.[16]

Subsidies and Economic Distortions

From a theoretical standpoint, it is interesting to gauge the potential losses associated with the coops' entry into the propane business. Of course, these losses are not without a real world impact, as existing competitive propane firms and their employees—many of which are small, family-operated businesses, may suffer real pain and dislocation from entry of the cross-subsidized REC affiliate. Although the extent of such market penetration is unknown, a survey by the National Rural Electric Cooperative Association indicates that 45 percent of all RECs are considering getting involved in the propane market. Nor are the exact per unit subsidies enjoyed by the RECs in the propane business known. Nevertheless it is important to estimate such losses should the actual penetration of the market by RECs continue to increase.

We use the subsidy measure developed by Putnam, Hayes, and Bartlett to estimate per unit subsidies of RECs entering the propane industry. As noted above, this analysis of the rural electricity market suggests that rural coop per unit costs are about 17 percent below the costs of similarly situated investor owned utilities because of the REC subsidy advantages. Since many of these subsidies would be available in the propane business, we have estimated that the per unit subsidy for a REC operating in the propane industry would be about 10 percent of the existing private price. This would mean that the per

unit subsidy for RECs in propane would be about 10 percent of the existing private price.

What would the potential for subsidies and special advantages be if 25 percent of the propane market were taken over by the RECs? Using a market price of $1 per gallon, a coop subsidy of 10 percent, and based on the total production of the propane industry in 1995 of roughly 9 billion gallons, the total annual subsidies and advantages reaped by the RECs is $225 million. In other words, taxpayers potentially could be hit for a significant portion of the $225 million to subsidize the RECs even when there is no good economic rationale to do so.[17] Moreover, if most of these costs were eaten up by rent seeking and/or overexpansion, as indeed the literature suggests, they would represent a significant net social loss.

The Lack of a Prohibition on Cross-subsidization

No federal law or regulation expressly prohibits cross-subsidization in the case of the RECs. It is beyond the scope of this paper to investigate the desirability of such laws or regulations, or even how such statutes would be enforced. However, it is interesting to note that prohibitions against cross-subsidization exist in other contexts, such as in the telecommunications industry and in relation to the Postal Service. Also, no federal agency has the authority to investigate whether cross-subsidization is occurring. For example, the Rural Utility Service, which oversees RECs, does not have jurisdiction over affiliates in this regard. Thus, while there are incentives to cross-subsidize, there are no controls in place to prevent it from happening.

Conclusion

By conventional economic measures, the propane industry is a competitive industry. The recent entry of RECs in the propane business raises some interesting questions. In particular, the RECs have received considerable subsidies and privileges from the government. Many of these subsidies can seep into the propane business either as direct subsidies, such as favorable loan terms, or indirectly through the use of resource endowments built up in the subsidized electricity sector but adaptable to propane. The query, then, is why do we need to subsidize RECs as they enter the propane industry? Since there are no significant positive externalities associated with propane use, there really is no economic justification for such subsidies "seeping" into propane.

In fact, there are good arguments for limiting the use of REC subsidies in the propane industry. These subsidies were justified in order to electrify America, not to start up new enterprises where markets are already well served. As we would not allow the Navy to make a few dollars by using its vessels to transport leisure seekers to island resorts, we should also worry about the entry of subsidized RECs into the private sector. Our study suggests significant net economic losses can occur due to rent seeking and overexpansion costs.

Notes

[1] Timothy Daniel, Josh Feltman, and Daniel Goldstein, "Why Entry By Rural Electric Cooperatives Into Propane Distribution Is Anticompetitive," NERA Consulting Economists, September 1999.

[2] Putnam, Hayes and Bartlett, Inc., "Subsidies and Unfair Competitive Advantages Available to Cooperative Utilities," prepared for the Edison Electric Institute, Washington D.C., August, 1998, p. 32.

[3] Many scholars have questioned the need for subsidies at all, asserting that cooperatives were successful at delivering power to remote rural areas long before the subsidies were enacted. The continuing subsidization of RECs is questionable given the fact that rural America is now electrified. Discussion of this topic, however, is beyond the scope of this paper. This paper explores the potential for cross-subsidization when RECs move into ancillary markets, and the economic consequences of cross-subsidization when it occurs.

[4] See, Daniel, Feltman and Goldstein, p. 16. While some may argue that the CFC's lending ability is a result of the margins, or profits, of the RECs and does not constitute a net drain on taxpayer resources, the RECs could make up for the propane loans by acquiring new loans from the RUS.

[5] See, Putnam, Hayes, and Bartlett, p. 32.

[6] See, Daniel, Feltman and Goldstein, p. 16.

[7] See, Daniel, Feltman and Goldstein, pp. 21–25.

[8] For example, many of the REC propane affiliates pay an unrelated business income tax (UBIT) on the earned income from the propane business. However, it is questionable whether UBIT is as effective as other forms of business taxation. Some RECs have received private letter rulings from the IRS that allow them to extend their tax-exempt status to propane revenues. It is important to note that these letter rulings apply only to those firms that requested such rulings. These rulings currently are under review by the IRS. See, Ty Tompson, "IRS: Propane Sales a 'Like Organization Activity'," *Electric Coop Today*, Power Supply Report, October 22, 1999.

[9] It is important to understand that the 6 percent advantage is a minimum estimate. For example, the cost advantage would be even larger if a REC uses its perfectly adaptable resources against a new propane firm that had yet to amass these resources. After all, the REC would have already covered the cost of such resources in the electricity business. In our case, if 30 percent of the resources of the REC affiliate are of such a character (a valuable customer list, or office space are good examples) then the cost advantage of the REC over the new private entrant would approach 30 percent from this source alone. It is only in the case where the REC is matched up with a firm that has similar resource power or reserves that the 6 percent advantage would hold. In this case both companies would have 30 percent cross endowments but in the REC case the original cost of this endowment would have the 20 percent subsidy/advantage attached with it.

In spite of the severe problems that the RECs' considerable resource endowment causes less endowed non-REC firms, the policy-relevant statistic should be confined to the subsidy content of that endowment. There is not any significant reason to bewail entry of firms in an industry simply because they are well endowed. It is only the unique subsidy and franchise advantages they may have received to assemble such endowments that is policy relevant.

[10] See, Daniel, Feltman, and Goldstein, pp. 17–20.

[11] See, "From C to Shining C: Competition and Cross Subsidy in Communications," Gregory Rosston and Bradley S. Wimmer, *SIEPR Discussion Paper No. 00-21,* Stanford Institute for Economic Policy Research. Larger estimates are suggested in, "The Breaking Up of AT&T: What Are the Lessons?," Jerry Hausman, Timothy Tardiff, and Alexander Belinfante, *Papers and Proceedings of the American Economics Association,* 178-184, May 1994.

[12] See, Daniel, Feltman and Goldstein, pp. 8–12.

[13] A seminal article in this branch of economics is Gordon Tullock, "The Welfare Costs of Monopolies, Tariffs, and Theft." *Western Economic Journal* 5, Fall 1967, pp. 224–232.

[14] Recent developments in rent seeking theory suggest that the costs of rent seeking are much larger than commonly believed. See Gordon Tullock, *The Economics of Special Privilege and Rent Seeking, Studies in Public Choice,* Kluwer Academic Press, Boston/Dordrecht/London, 1989.

[15] Curiously, another rent seeking cost could be the extension of the discounts to non-coop members. The REC propane affiliates sell a large amount of propane to non-members. In effect, extending the subsidies to non-members represents even more taxpayer exposure. However, such an extension of the subsidy would abet the political goals of RECs who stand to gain more allies.

[16] As noted in the prior section, the rent seeking costs can come in may forms such as lobbying costs, political organization, destruction of capital assets of existing firms displaced. Moreover, some of the new REC propane firms may be less efficient in production or distribution than existing propane firms, yet the subsidies mask these inefficiencies.

[17] Not all of the $225 million would be a new taxpayer loss, since part of the special advantage may come from resources already paid for and subsidized. Also, some of the advantage could be cross-subsidies in the form of higher electric prices.

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