Hunger in America: An Economic Analysis of U.S. Food Assistance

Zechariah Taylor
University of Puget Sound

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Introduction:

Despite American economic success, hunger remains a prevailing problem in society. Millions of U.S. citizens every year live with insufficient food consumption and lack proper nutrition. The Economic Research Service recently asserted that in 2007 11.1 percent of U.S. households had "low food security" status, as defined by family's reports of food-related hardship during the year (Nord, Andrews, and Carlson, 2007). Over several decades, food assistance programs have developed to answer this problem. However, the efficiency of these programs is questionable. In 2005, 13 million people who were eligible for the food stamp program (FSP) did not receive assistance (Maryns, 2008). In addition, many food banks and pantries are struggling to operate and find the donations they need to function (Downey, 2008).

Given current economic conditions of rising food prices, increase of the working poor, and macroeconomic instability, food assistance programs remain vital to millions of citizens across the nation. Yet, despite their growing importance and questionable competence, there has been little comparative analysis of the two primary producers of food assistance, the government via food stamps and the nonprofit sector via food banks. Thus, this paper will examine the efficacy of these programs using economic theory. The paper will first analyze food assistance through utility theory and a consumer choice model. Subsequently, the outcomes of a nonprofit production model will be examined. By exploring U.S. food welfare programs through an economic framework, the paper will offer some recommendations as to the most effective delivery of food assistance. The

paper's conclusions may also illuminate current weaknesses of food welfare programs in America.
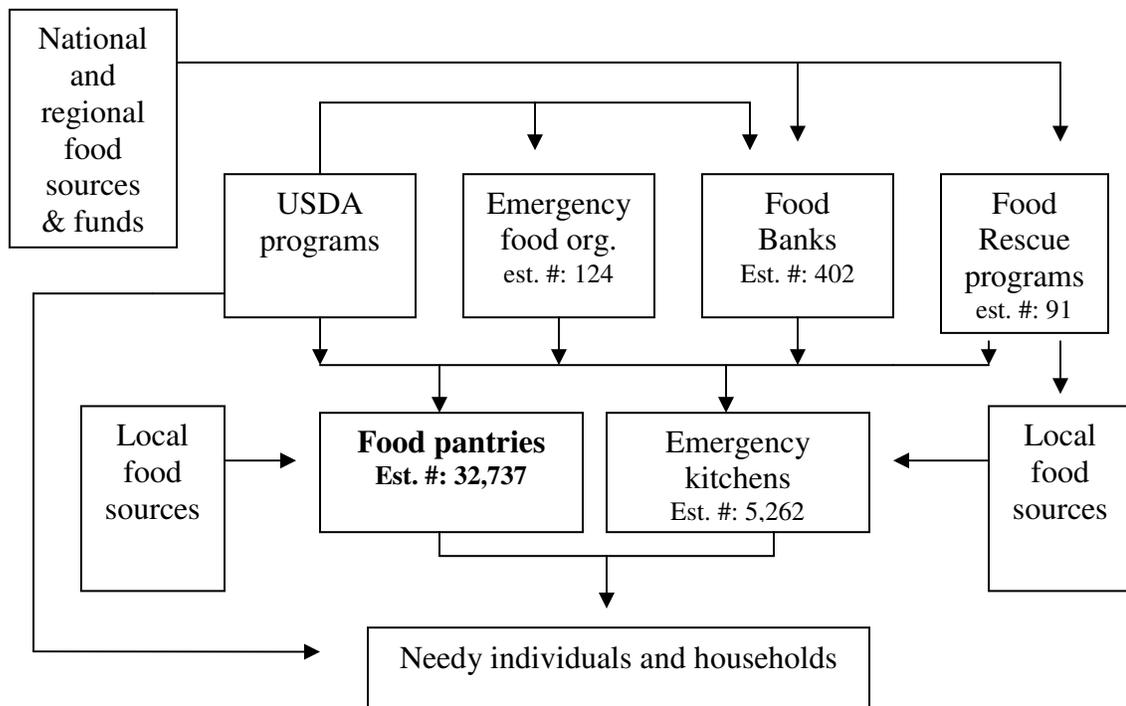
Created in the early 1940s, the FSP[1] has been used to alleviate hunger in America. According to the U.S. Department of Agriculture, the FSP, is "... the most critical component of the safety net against hunger because it provides basic protection for citizens of all ages and house-hold status" (Gunderson, 2007). The aim of the FSP is simple; it targets the most needy (lowest income) citizens to increase their food consumption. The government distributes food stamps to the poor so they may purchase greater quantities of food. Citizens whose incomes fall below a specified level are eligible to obtain a certain amount of food assistance. For example, a single person household with a gross monthly income of $1,127 is eligible for $176 worth of food stamps (USDA 1, 2008). The amount of benefits the household receives is called an "allotment". To acquire the allotment amount, the net monthly income of the household is multiplied by .3, and the product is then subtracted from the household's maximum allotment to find the total allotment. This is because users of the FSP are expected to spend about 30 percent of their resources on food[2] (USDA 1, 2008). Although food stamps are a welfare program, they are not entirely free. To receive the FSP's benefits, the household or individual must file an application form, conduct a face-to-face interview and provide verification of important information, such as income and expenses. Applying for the FSP also costs the applicant some processing fee, which averaged $10.31 in 1999 (Maryns, 2008). This description of the FSP is what will be used throughout the paper.

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[1] As of Oct. 1, 2008, the FSP has been renamed the "Supplemental Nutrition Assistance Program" and benefit packages have changed. However, this paper will analyze the old name and structure of the FSP.
[2] Further information may be found at http://www.fns.usda.gov/FSP/applicant_recipients/eligibility.htm.

Since the creation of the world's first food bank in 1967, nonprofit organizations (NPO) have been important providers of food assistance. Unlike governmental food assistance, NPO have various means of delivering services. Food banks, food pantries, soup kitchens and food rescue organizations are all important nonprofit providers of food assistance. Given the differing forms nonprofit food assistance can take, a generalized definition of nonprofit food provision must be established. For the purpose of this study, the term food pantries will refer to all nonprofit food assistance. The food pantry will be used as the unit of study because of its importance as a provider of food assistance. As seen in Chart 1.A, food pantries are the final distributors of assistance in the Emergency Food Assistance System (which helps ensure adequate nutrition for low income Americans). Primarily all nonprofit food assistance materializes at local pantries. Thus, food pantries are the most predominantly used organization by food assistance participants.

Chart 1.A – Emergency food assistance provider system*

National and regional food sources & funds					
	USDA programs	Emergency food org. est. #: 124	Food Banks Est. #: 402	Food Rescue programs est. #: 91	
Local food sources	**Food pantries Est. #: 32,737**	Emergency kitchens Est. #: 5,262			Local food sources
	Needy individuals and households				

Figure taken from USDA Economic Research Service (June 2002)

Although varying definitions of food pantries exist, this paper will define food pantries as localized distributors of food to low-income individuals or families who meet basic income and usage requirements. This is in agreement with the 1980 Farm Bill definition of, "a public or private nonprofit organization that distributes food to low income and unemployed households including foods from services other than USDA to relieve situations of emergencies and distress" (Kentucky Department of Agriculture, 2008). The food pantry may obtain food or monetary donations from the local community, food banks, for-profit firms, wholesalers and retailers. Most food pantries rely completely on volunteer staff for the production of services.

Literature Review:

Despite the historical significance of nonprofit and government involvement in food assistance, there has been little comparative analysis between the two. Most of the existing literature on food pantries lacks theoretical analysis and primarily consists of consumer and producer reports. However, some research has studied important aspects of both the FSP and food pantries.[3]

In February of 2008, the Food Research and Action Center (FRAC) reviewed important literature regarding barriers to consumers of participating in the FSP. According to the report, transaction costs are significant barriers for many eligible citizens. The report cited one study that revealed around 60 percent of those eligible for food stamps did not apply because the costs of application were too high. The same study also concluded that potential applicants who had travel times above 15 minutes showed a strong propensity not to apply. In addition to travel times, the report showed the importance of implicit time costs. For example, in 1999 the average time necessary to complete the application process was around 5 hours. Several applicants took over 12 hours to complete the process (Maryns, 2008). According to the FRAC, these hours represent time applicants could be doing other things, like helping their children with schoolwork. Low income citizens, who must struggle through red tape to receive their assistance and then have to deal with difficulties in using the assistance, may feel it is not worth the struggle. This would explain a survey cited by the report in which 86 percent of state food stamp directors said a major reason why seniors do not participate in the FSP

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[3] Although a majority of food stamp research focuses on the program's inability to increase food expenditures, this paper will not focus on this issue.

was that the effort needed to apply outweighed the benefits (Maryns, 2008). The FRAC also reported that application fees, however small, may be daunting to households experiencing difficult circumstances.

Another area of research has focused on the stigma of food assistance. A working definition of "stigma" was provided by Edward Bird in the paper, "Exploring the Stigma of Food Stamps". The paper described welfare stigma as the lower utility that some recipients feel when they receive welfare support, such as food stamps. The "stigmatized" receive lower utility because they are embarrassed, do not want their children to be seen as poor, or feel their societal status and reputation may be tarnished (Bird, 1996). Although many of those in need swallow their pride and engage in the FSP, a significant number of eligible citizens choose not to participate because of stigma (Eisinger, 1998). A study in 2004 by Barlett and Burstein showed that 44 percent of eligible participants cited stigma as a reason for not applying or using the FSP (Mayrns, 2008). The same study also documented the effects of stigma on food stamp users. According to the survey, food stamp users reported being treated disrespectfully when using food stamps in a store. This led a number of recipients to avoid telling others they were receiving food stamps and go through extra effort to shop at a store where nobody knew them. Another survey by America's Second Harvest (a domestic hunger-relief organization) showed that between 7-10 percent of eligible citizens stated they never applied for welfare benefits because of stigma. (Maryns, 2008) According to the research, a certain stigma does exist in the minds of many needy people. This stigma has historically been strong enough to make eligible citizens find an alternative source of meeting their needs (Eisinger, 1998).

The negative impact of stigma on participation in the FSP may have led to government development of electronic benefit transfer cards (EBT). EBT allow FSP users to store and access their benefits like a credit of debit card when purchasing groceries. This method of welfare delivery is thought to increase ease of use and limit misprinting costs (Maryns, 2008). According to the FRAC, EBT may also diminish stigma. A North Carolina survey in 2001 found that 12 percent of FSP participants liked the privacy EBT offered. In addition, a 1994 Maryland report showed that 83 percent of low-income consumers preferred using EBT, partly because they reduced perceived embarrassment and stigma (Maryns, 2008). Despite these findings, there is no concrete evidence that EBT increase participation rates or substantially reduce stigma (Maryns, 2008).

Previous papers have shown the development of food pantries and their importance in dealing with national hunger. Daponte and Bade explain how nonprofit involvement in food assistance was created to satisfy an unmet demand. They suggest that there has been a distinct shift in household perception of food assistance in America. This shift can be seen by an increased reliance on nonprofit food assistance. According to Daponte and Bade only 36 percent of households dependent on a food pantry use food stamps and one third of food pantry users have never even applied for food stamps (Daponte, 2007). About one-twelfth of Americans received food from a pantry at least once in 2005.

Food banks and pantries uphold a new aspect of food assistance which is hard to find in government assistance. Nonprofits add an element of service. Food pantries operate almost exclusively with volunteer laborers, who give their time to help others.

Food pantries can produce service with a smile and provide a feeling to those in need that someone cares. A Washington State consumer report which questioned pantry users about their satisfaction with service quality found a high level of contentment. In the areas of service almost 70 percent of respondents gave the highest rating of satisfaction (Pierce, L. 2008).

However, food pantries and banks have several weaknesses. The California Association of Food Banks notes many issues facing nonprofit food assistance. Increasing demand for services, declining donations, higher food prices, and lack of short-term federal support has stretched many food banks and pantries thin. (CAFB 2008) Given food pantry's reliance on donations and stable prices, short run negative economic shocks can greatly disrupt the ability of nonprofit food organizations (NPFO) to produce critical services. The sensitivity of NPFO to times of economic weakness has been the focus of many recent news stories. An April 2008 feature article by the Washington Post is an example of such journalism. According to the article, food banks are being stretched thin as requests for food assistance have increased by 30 percent since last year (Downey, 2008). A simultaneously shrinking donation base has created a compounding effect on food banks and pantries. Donations have decreased as farmers are shipping more of their goods abroad, and grocery stores are diminishing the amount and frequency of their donations (Downey, 2008). A recent trend by grocery stores of selling "scratch-and-dent goods" to discount stores instead of giving them to reclamation companies, who donate to food banks, has been the primary cause of smaller grocery donations (Downey, 2008).

Economic Theory and Results:

To analyze U.S. food assistance through a consumer choice framework, it is important to establish the economic nature of food. Accurately viewing food stamp and pantry use from the consumer's perspective depends on understanding whether food is a normal or inferior good. If food is a normal good, as the consumer's income increases the quantity demanded for that good will rise. If food is an inferior good, the opposite would occur and consumers would want less food as their incomes increased. Using data from the U.S. Department of Agriculture, a simple Engle curve (Chart 1) shows food is a normal good. In recent history, as U.S. household's disposable income (income after taxes) has risen, the amount of food expenditures has likewise increased.

Chart 1*
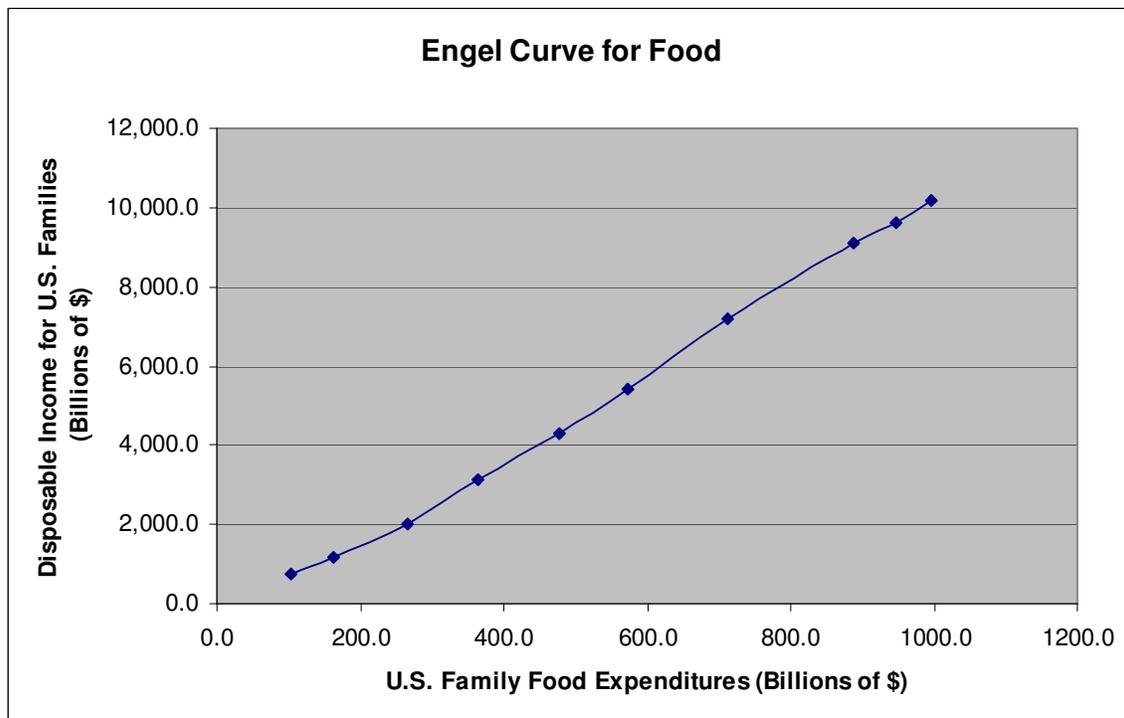
*Data from U.S. Department of Agriculture Economic Research Service (USDA 2)

This Engel consumption curve shows food as a normal good. Thus, when income rises, the quantity demanded likewise rises for food. Establishing food as a normal good is important for future analysis using consumer choice.

Now that food has been established as a normal good, a consumer choice model can be created for low-income consumers who are receiving food stamps. This rational consumer choice model shows the consumption decision between composite good "Y" and food. In this model, the consumer is attempting to maximize the utility they receive from consuming food and composite good Y. This consumption decision can be stated as: Maximize $U(Y, F)$ subject to $P_Y Y + P_F F = M$. This adaptation shows a low-income consumer's participation in food stamps. Under the restrictions of the program, citizens whose incomes are sufficiently low become eligible for some quantity of food stamps (which can only be used to purchase food). The modified budget constraint in Figure 2.1 shows the effect of food stamps on the model.

As reported by the FRAC, participation in the FSP is not free. In fact, a significant amount of transaction costs are associated with applying for and using food stamps. Application fees, time costs, travel costs (i.e. insurance, gas, bus fares, etc.) and complex documentation requirements all represent costs of using food stamps. The introduction of these transaction costs into the model will decrease the total welfare of food stamps by some dollar amount. This loss represents the costs that the consumer incurs to receive food stamps. Given that food is a normal good, the welfare recipient will consume less food and end up purchasing F_2 and Y_2, ceteris paribus. This model expands existing consumer choice models with food stamps by introducing the effect of transaction costs.

Figure 2.1 – FSP with Transaction Costs (TC)
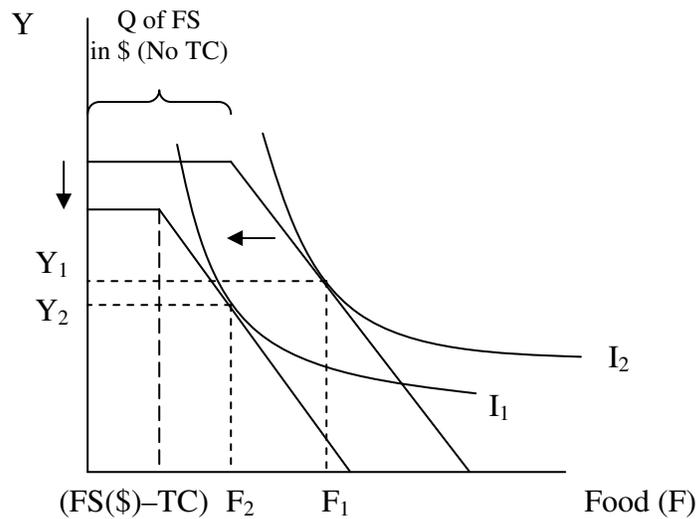
The introduction of transaction costs to the consumer choice model illustrates two important behaviors. First, this model explains why many low income consumers do not participate in the FSP. If the consumer receives $100 worth of stamps but must incur a substantial amount of costs to receive that welfare transfer, that $100 is worth much less. Thus, the benefits to the FSP may not be worth the implicit and explicit costs of applying and using food stamps. The limited real benefit of the FSP may also explain why some former food stamp users do not reapply. Once they use the program, they realize the costs of transactions with the FSP are too high and see a limited benefit to reapply. Second, this model demonstrates the FSP user's failure to reach the desired amount of food. With the introduction of transaction costs there will be an income and substitution effect that diminishes the amount of food and Y consumed. FSP participants will only receive a level of food F_2 and indifference curve I_1, which is significantly lower than F_1 and I_2 achieved when the consumer did not face transaction costs. Consequently, the government's provision of food stamps does not account for the impact of transaction

costs on the consumer. To achieve a greater level of food consumption, the value of food stamps would have to increase further to negate the impact of transaction costs on the welfare user's consumption choice.

The consumer choice framework can also be applied to nonprofit food assistance. In this model, a low-income individual can choose to consume composite good "Y" at imaginary price "Y + TC" and food at price "X + TC" with their own income. Again the welfare user is assumed to be a rational consumer who is trying to maximize his/her utility subject to the constraints of a budget. This model assumes transaction costs are already accounted for in the price of goods. As depicted in Figure 2.2, without the benefits of the food pantry, the consumer will consume Y_1 and F_{OWN} so they maximize their utility. If the benefits of the food pantry are added to the model, the price of food decreases, rotating the budget line out on the F axis. Since an eligible consumer may receive food at a pantry free of charge, the effective price is the costs of transaction. However, a food pantry user may only take a restricted amount of food each visit. Thus, if a consumer obtained food exclusively via a pantry, their budget line would be kinked as in Sub-Figure 1. This kink is caused by the limited quantity of food available for a food pantry user at any time period.

Figure 2.2 – Food Pantry Consumer Choice Model
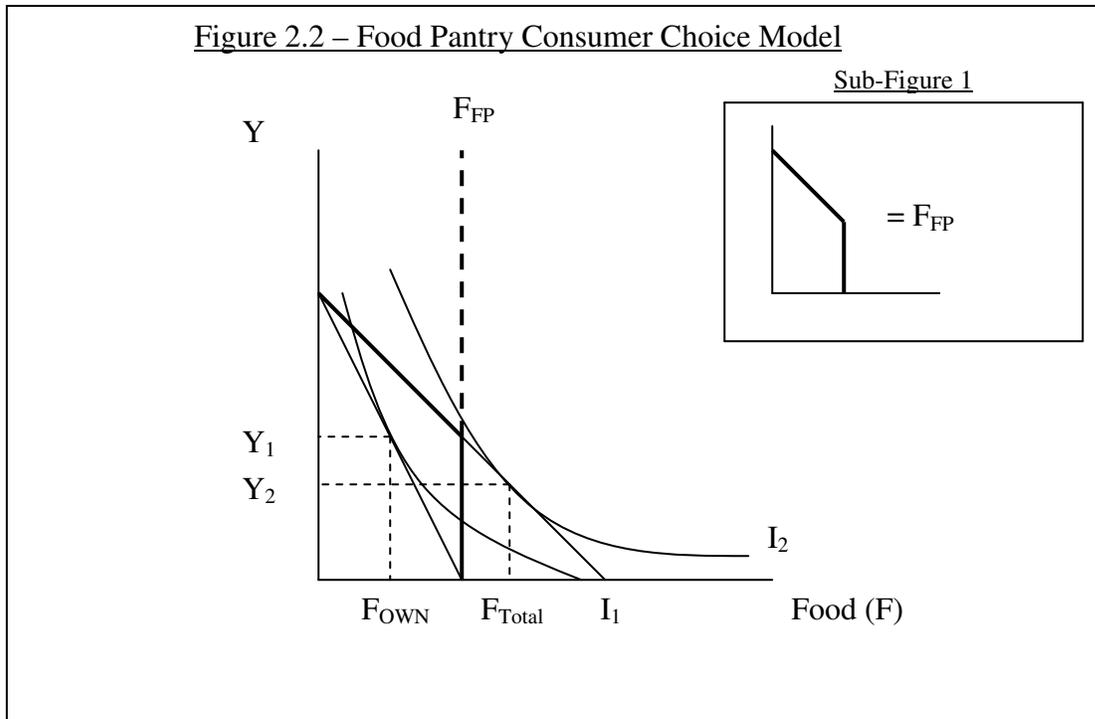
Despite the restricted amount of food available, the food pantry should greatly improve low-income consumer's food expenditures. Consuming food from a pantry also has additional benefits that are not directly shown in the model. When a pantry is used, the recipient gets food that he/she may take home and put on the table. In the FSP, the consumer must go to the store, determine what goods should be purchased and then wait in line. The food pantry eliminates the costs of going to the store and searching for food, by giving the consumer food ready for immediate use. However, pantries may also limit choice. If all that is available at a certain time period is fruit and beef, a consumer will have to take fruit and beef or receive nothing. However, this problem may be avoided if the consumer takes the fruit and beef and uses the money saved to purchase their most desired good.
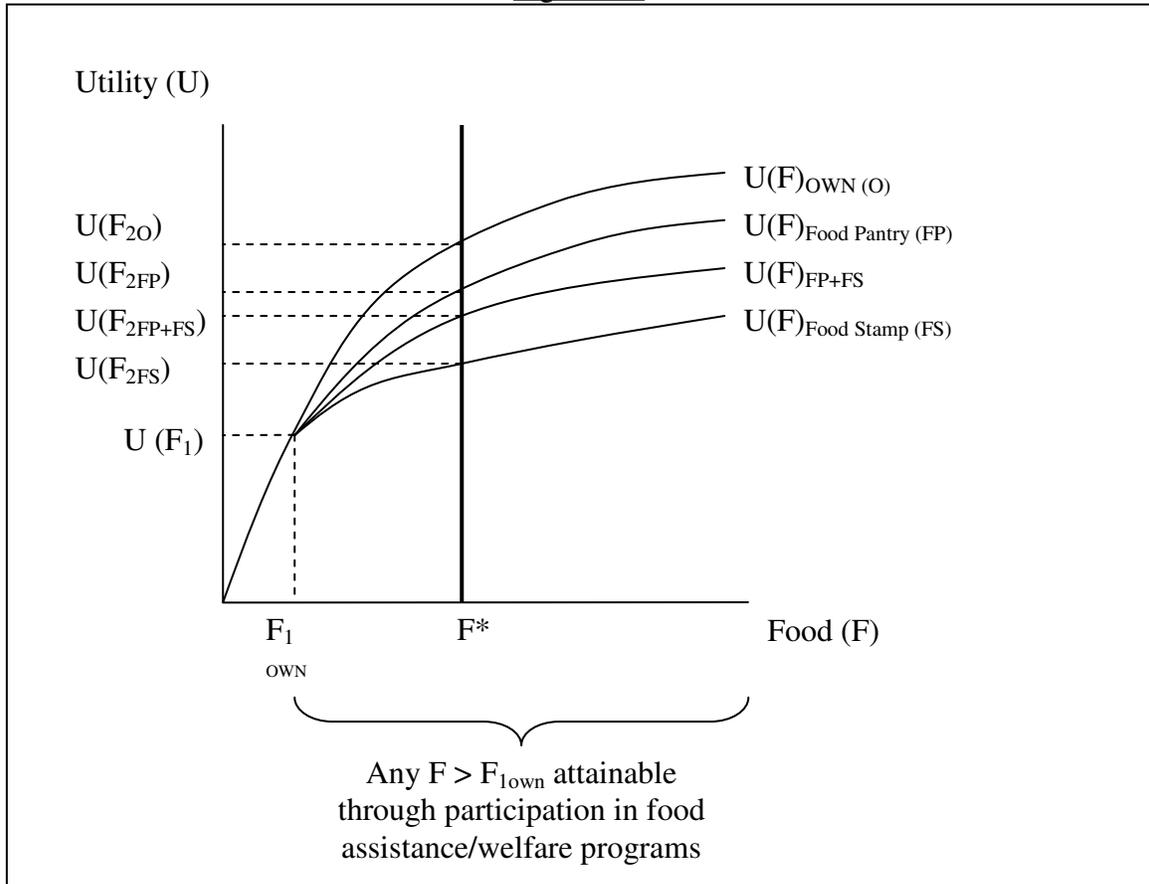
Food pantry organizations also give the consumer exactly what food assistance programs want them to have, more food. Unlike the FSP, pantries direct transfer of food

ensures that low-income families and individuals achieve greater levels of food security. This is why Figure 2.2 shows a large increase of food to F_{Total}. The direct transfer of food to the consumer dramatically changes the budget constraint making the optimal consumption point at a much higher level of food. This is desirable not only for needy households, but for policy makers as well.

The impact of food assistance programs can also be viewed by using a standard utility function. This utility model (Figure 3.1) depicts the affect on a consumer's utility function of participating in food assistance to achieve a desired level of food. The food utility model shown in Figure 3.1 assumes a diminishing marginal utility of food. In this model, low-income consumers begin with an initial food endowment (F_1) which they purchase. These individuals can only achieve a food level greater than F_1 through food assistance programs (food stamps or food pantries) or an increase in income. However, participation in either food assistance program or a combination of both is assumed to create some level of stigma. A pre-determined base level of food that is desired for low-income consumers to achieve is represented by F*. In order to reach F*, a consumer may purchase the food on their own (possible only by an increase in income), go to the local pantry, use food stamps, or utilize a combination of both pantries and stamps. According to the model, the manner in which the consumer reaches F* will dramatically affect their utility function. In this case, the nonprofit food pantry is assumed to have the lowest stigma correlated to its services and thus is the stigma minimizing welfare program for the consumer. The food pantry is assumed to have lower stigma because it is more private to use, is staffed primarily by volunteer workers, and is funded completely by donations instead of tax dollars. Since tax dollars are provided by citizens, certain individuals who

resent the use of their taxes toward the FSP may create a stigma effect by harassing

welfare users or by causing recipients to feel guilty for using public funds.

Figure 3.1

Utility (U)

U(F)$_{OWN (O)}$
U(F)$_{Food Pantry (FP)}$
U(F)$_{FP+FS}$
U(F)$_{Food Stamp (FS)}$

U(F$_{2O}$)
U(F$_{2FP}$)
U(F$_{2FP+FS}$)
U(F$_{2FS}$)

U (F$_1$)

F$_1$ F*   Food (F)

OWN

Any F > F$_{1own}$ attainable
through participation in food
assistance/welfare programs

An alternative utility function model (Figure 3.2) of food shows how consumers

respond to the affects of stigma in their decision making process. This function depicts

that to maintain a constant level of utility, a higher quantity of food much be reached for

the consumer to participate in food assistance. Stigma may be perceived by the consumer

or inflicted by the community. Those who purchase their own food and do not experience

stigma are represented by U(F)$_O$. These consumers only decline in utility comes from

diminishing returns associated with food. Consumers who experience stigma from

participation in welfare are represented by $U(F)_{FP}$, $U(F)_{FS}$, and $U(F)_{FP + FS}$. According to the utility functions of those with stigma, greater use of welfare programs will give the consumer a higher food level but also an increased feeling of stigma associated with their involvement. Thus, welfare participants must receive a high level of food to negate the effects of stigma on their utility function. This model may explain citizens who are eligible for food stamps yet choose not to receive assistance. If they are targeting a certain level of utility (U_{BAR} in this example) the increase in utility from a higher food level is negated by stigma. In addition, this model may explain highly stigma sensitive individuals or families who reject both food stamps and food pantries. These low-income consumers are highly sensitive to changes in their utility levels and the amount of food they receive must be distinctly larger than the loss in utility from stigma.

Figure 3.2
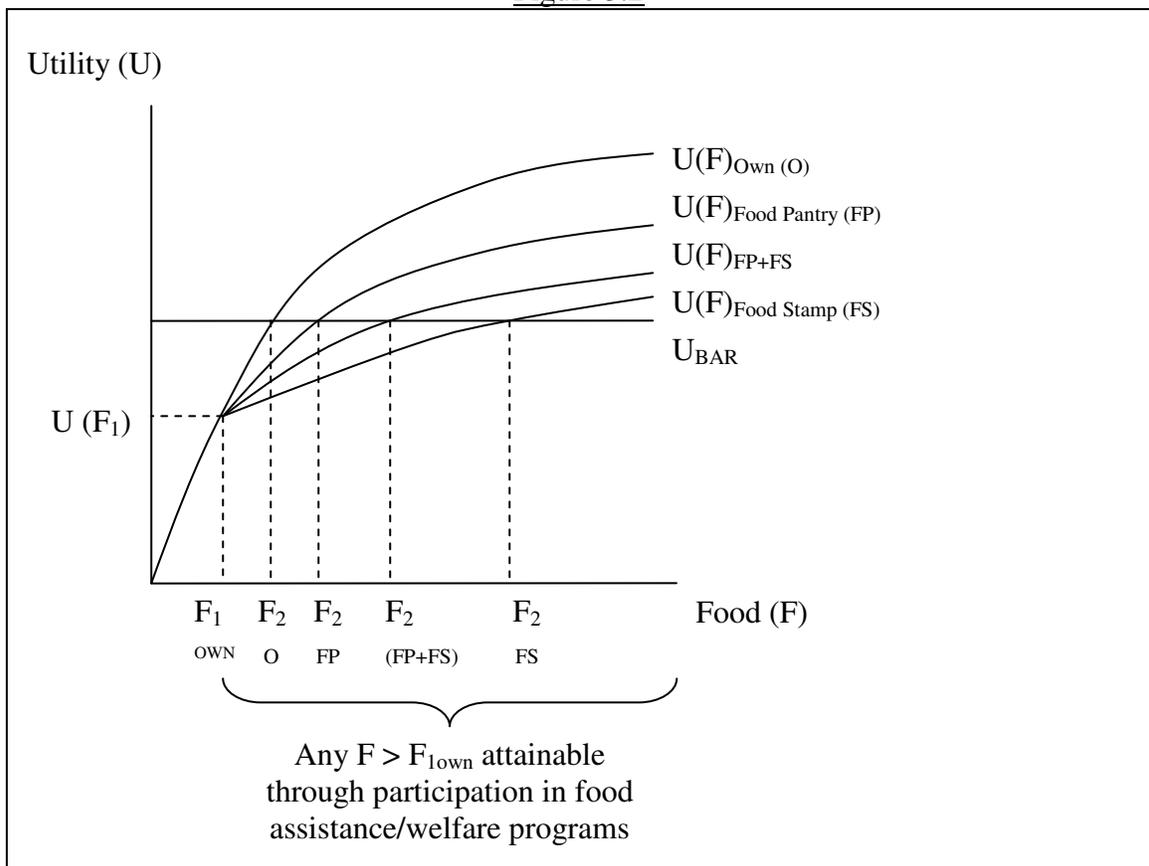
Although the consumer provides several insights into food assistance analysis, the producer must be analyzed as well. Thus, a simple market model (Figure 4.1) will be used. The model of food pantry production assumes that pantries are donative nonprofits, relying completely on donations to operate. Due to their reliance on donations, food pantries have a limited amount of food assistance available at any given time period. Since receiving services from the food pantry requires no monetary payment, the effective prices are the transaction costs of using the pantry's services. Q* represents the optimal food assistance output, where low-income families can receive all desired assistance.

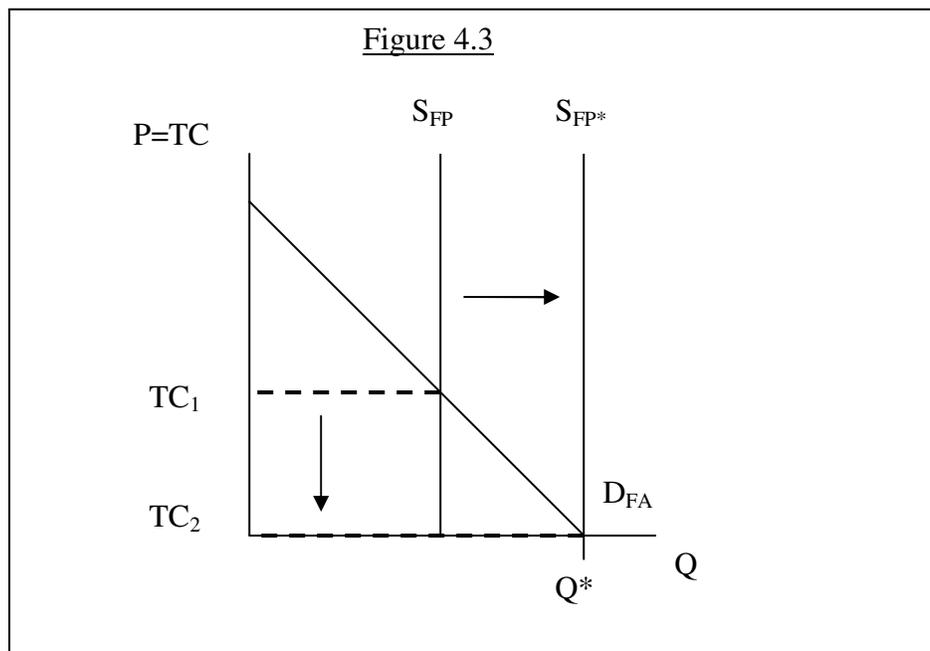Non-Profit Food Pantry Production Model – Figure 4.1
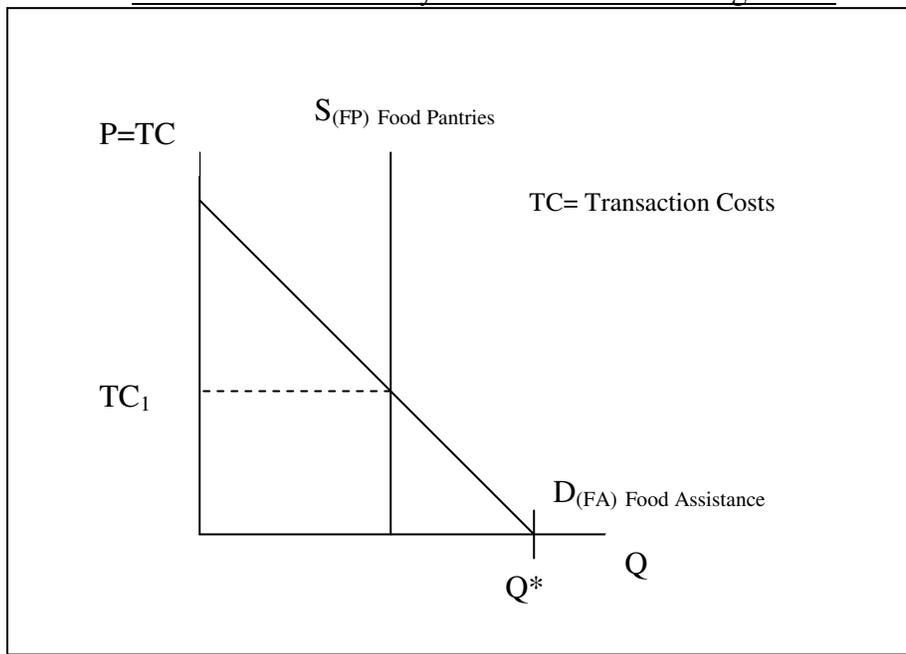
As seen by figure 4.2, the increase in demand and decrease in supply represent current market conditions. The current economic crisis and ballooning unemployment rate has lowered citizen's propensity to give. Potential donors are increasingly strapped for cash and are less likely to give others food, especially if they have to worry about their own food bill. These current conditions are extremely problematic for food pantries

because they are donative non-profits, relying completely on donations to operate. However, a decrease in donations does not mean food pantries will have to shut down, but a new equilibrium must be reached. According to the model, transaction costs will subsequently rise as pantries implement stricter requirements, recipients have to wait in longer lines, or there is less food to choose from. This is particularly significant to food pantry users that have special demands (i.e. kosher diet, diabetic, etc.) If pantry recipients have to wait in long lines, the amount of stigma associated with food pantry use may increase. One of the benefits of food pantries is their privacy; many times an individual may go in and out without being noticed, limiting embarrassment or shame. However, when that individual has to wait in a long line of strangers or neighbors, the risk of self-induced stigma greatly increases. A rise in food pantry stigma may ostracize needy families and individuals, excluding them from important resources. Thus, current economic conditions not only have a profound effect on the ability of a food pantry to function, but also upon its mission to care and provide for the less-fortunate.

Figure 4.2
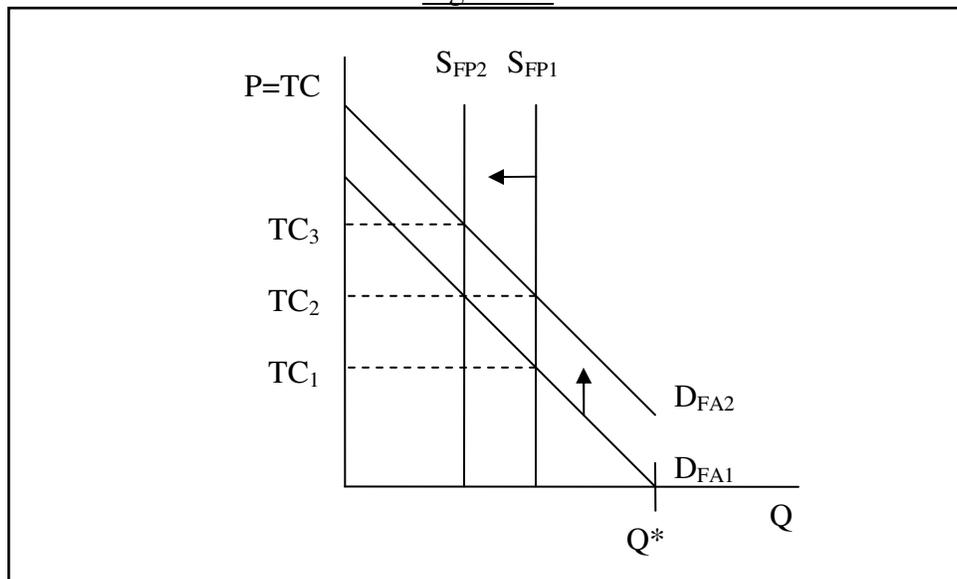
To reach the optimal production level at Q*, the amount supplied by a food pantry at any given time period would have to increase. This would only be attainable through government subsidies or a larger donation base. As Figure 4.3 depicts, an increase in donations would shift out the supply curve to S_{FP*}, ceteris paribus. Subsequently, the market would equilibrate at TC_2 where the costs of transactions are essentially eliminated. This occurs because there are longer hours of operation, more food is available to choose from and the pantry's storage capacity would expand, reducing or eliminating time spent waiting in line.

Figure 4.3

$P=TC$

S_{FP} S_{FP*}

TC_1

D_{FA}

TC_2

Q

$Q*$

These models show the weaknesses of nonprofit food pantry production. Given their donative nature, pantries are extremely sensitive to negative short-run economic shocks. As figure 4.2 illustrated, a weak economy may not only increase demand for the food pantry's services, but also may decrease its supply as well. This may make food pantries more selective and restrictive, increasing the costs to the needy of receiving food assistance. An increase in exclusivity may not only reject needy families but also impede

the mission of nonprofit food pantries, which strive to provide the most assistance for the greatest amount of people.

The production model also raises the question of the efficacy of a food pantry. Communities where the pantries are most needed are also where they may receive the least donations. However, this point is disputed, as strong empirical evidence exists that low-income citizens give a larger portion of their income than many other wealthier citizens.

Conclusion:

This paper has analyzed U.S. food assistance through the framework of several unique economic models. The use of economic theory has explained consumer behavior and the weaknesses of nonprofit production. As documented in the literature and seen throughout the models, stigma and transaction costs are dynamic influences on consumer's participation in food assistance. Unfortunately, this paper does not analyze the utility received from donating to a food pantry or other NPFO. This is an important exclusion given the donative nature of food pantries. Studying the impact of donor altruism to U.S. food assistance programs may be an important topic for future research.

Given the arguments presented, this paper recommends that the government should increase the tax incentives of food pantry donations for businesses and also give small subsidies to pantries. Food pantries rely heavily on donations from grocery stores and food distribution plants, yet these donations are slipping under current economic conditions. If more businesses were given a strong, unlimited (no cap on donation quantity or $ value) tax incentive to donate food and funds, pantries would be able to

continue and expand operations. The tax incentive could eliminate the monetary value of the donation from the firm's income statement. Thus, the greater the firm's donation, the larger the tax benefit. Small subsidies (less than or equal to $1,000 per quarter) would come in four quarterly payments and limit the pantry's expenditures to improving productive capacity (i.e. food stocks and storage). The subsidy should raise the food pantry's average revenue function and allow for an increase in production. To avoid overcrowding and welfare reliance, the food pantry should create a clear set of guidelines for potential benefactors. They must be residents of the city in which their food pantry is located, unless their city does not have a pantry. Under this approach, pantries would be able to operate on a local scale and provide low-income families with their optimal amount of food (Q*). This approach improves efficiency by giving the food pantry only what it needs. If food pantries were given a specified amount, they could use those funds to expand operations as needed. Then, they may be able to meet the heterogeneous demand of a local community. The food pantry's increase in average revenue from the subsidy would allow them to expand their buildings and storage, operate for longer hours and more days during the week, and allow them to respond to specialized consumer demands. This is important, as often low-income individuals or families are unable to receive the full or partial provision of their special dietary needs and wants (e.g. kosher diet, diabetics, vegans, etc.).

The FSP should continue to operate, however several changes should be made. First, EBT should be given to all food stamp users. The electronic system should reduce stigma by increasing the privacy of use. Application forms should be simplified and shortened requiring only vital information. Finally, the FSP could lower costs by

reducing the benefit computation so that households are only expected to spend about 25 percent of their resources on food. The funds saved by this reduction could be used to supply food pantries with the aforementioned quarterly subsidy.

In accordance with the models established earlier, this approach should limit stigma, maximize consumer utility and enable the needy to increase their food expenditures while minimizing the costs of transactions.

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