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Optimal Thresholds in the Collection of Food Stamp Claims

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**OPTIMAL THRESHOLDS IN THE COLLECTION OF
FOOD STAMP PROGRAM CLAIMS**

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EXECUTIVE SUMMARY

This report presents a model of the optimal level and position of the Food Stamp Program threshold for processing claims against clients. A claim results from an overissuance of food stamps to a client, who is obliged to refund the value of the overissuance to the state food stamp agency (FSA). After the FSA detects an overissuance and establishes the overissuance as a claim, it undertakes a sequence of activities designed to collect the claim while at the same time protecting the client's rights. This is referred to as the claims collection process.

The Food Stamp Act of 1977 stipulates that every overissuance must be established as a claim; that the FSA must attempt to collect every claim that is the result of an intentional program violation by the client, that is, fraud; and that the FSA is required to attempt the collection of other types of claims, that is, non-fraud claims, only when it is cost-effective to do so. In 1978, the Food and Consumer Service regulations specified that a claim whose amount is equal to or greater than \$35 is cost-effective to collect. In recent years several FSA's have wondered whether a \$35 claim amount is still an accurate indicator of cost-effectiveness.

Some FSA also raised a second associated issue. Since the statute requires all overissuances to be established as claims, including claims that the FSA knows will fail the \$35 collection threshold, uncollected and in some cases uncollectible, claims have accumulated on the FSA's books. Accumulated uncollectible claims represents a burden to FSA because of the effort required to justify writing off a claim as a bad debt, thereby getting the claim off of the FSA's books. This burden has motivated some FSAs to suggest the use of threshold prior to establishing the claim, as a substitute for the existing threshold which is implemented after establishing the claim.

This study estimates the optimal level of the current collection threshold in three FSAs -- Passaic County NJ, Arizona, and Utah -- based on a model of threshold cost-effectiveness. The study also investigates the feasibility of an establishment threshold, instead of the current collection threshold.

The conclusions of the study are as follows:

OPTIMAL LOCATION

- From a cost perspective, the optimal location is close to the beginning of the claims collection activity as possible, making the establishment threshold preferable to the collection threshold.
- An establishment threshold must be implemented in a manner that is consistent with the Food Stamp Act of 1977, which requires all claims involving fraud to be pursued.
- If an establishment threshold is not feasible, the existing collection threshold is at the optimal location.

OPTIMAL LEVEL

- The optimal level of a threshold at a given location is determined by the total downstream cost that can be avoided for each claim that fails to pass the threshold and by the proportion of the claim amount expected to be collected. The threshold level which ensures that every claim that passes the threshold is cost-effective is computed by dividing total downstream costs avoided by claims that fail the threshold by the collection rate.
- The optimal collection thresholds for the states included in the study are uniformly many times higher than the existing \$35 collection threshold, and several times higher than the \$100 collection threshold used by several FSAs under FCS waivers.
- There is substantial FSA-to-FSA variation in the optimal threshold level. This suggests that there is no uniform national optimal threshold, and that FSAs be permitted to set their own levels based on a cost study. Perhaps this could be done through a waiver process similar to that recently used by FCS in granting permission to several FSAs to raise their collection thresholds to \$100.
- Optimizing the claims process as a whole, rather than optimizing each claim individually, results in threshold levels that are substantially below those resulting from optimizing individual claims. In one FSA for which we can make such a comparison, the total process optimization results in threshold levels that are approximately half as high as those resulting from individual claim optimization.

I. INTRODUCTION

The Food Stamp Program (FSP), which provides benefits to low income households, is funded by the U.S. Department of Agriculture and administered by state food stamp agencies (FSAs). The Food and Consumer Service (FCS) of the U.S. Department of Agriculture (USDA) is responsible for the development and implementation of national (FSP) policy. This includes the promulgation of regulation, financial planning, review of and reimbursement for State expenditure, monitoring State FSP operations, and evaluating the Food Stamp Program.

At the state level, administration of the FSP is the responsibility of State designated agencies (FSAs). States have flexibility within the constraints of the law and regulations to develop their own procedures in operating the Program and, when the need arises, to obtain waivers of regulatory provisions from the Department. As a result, the States vary considerably on many aspects of program operations, their costs, and their effectiveness.

In September of 1993, as part of its ongoing effort to refine program operations, reduce error and deter fraud, FCS contracted with TASCAN & Mathematica Policy Research to conduct an in-depth examination of selected components of the claims process by collecting information on the effective State management of Food Stamp recipient claims. In order to do this, data was systematically gathered and analyzed in five sites - Alabama, Arizona, Arkansas, Utah and Passaic County, New Jersey.

The study had three main objectives. The first objective of this study was to evaluate the cost-effectiveness of the \$35 overissuance rule for the initiation of a collection action on an established non-fraud claim. Based on the outcome of that evaluation, we were to determine the appropriate collection threshold.

The second objective was to estimate a dollar threshold for the establishment of food stamp recipient claims and determine if the FCS should implement an establishment threshold.

The third objective was to identify effective and cost-efficient alternative follow-up activities (collection tools) on claims for which recoupment is not an option. This included claims from over issuance for active cases due to State Agency Error and for any delinquent inactive cases.

This report presents findings from objectives 1 and 2 which focus on estimating dollar thresholds for initiating collection activities; and establishment of non-fraud claims. It is a companion to Hilton and Barokas (1995) which presents the findings from Objective 3 which addresses alternative follow-up activities on delinquent claims (collection tools).

A. BACKGROUND

Food Stamp benefits are issued to participating households each month. The amount of food stamp assistance provided to an eligible household is computed using a benefit formula, which takes into account the household's size, income, assets, and specific types of expenditures. This formula is applied when the household applies to the FSP and at periodic recertifications.¹ Occasionally the calculated benefit amount is incorrect, that is, it is not equal to the benefit that results from the correct application of the benefit formula to the household's true circumstances. Usually, such errors result in more food stamps being issued to the household than is appropriate. Many overissuances continue for several months since most participating households are not recertified each month. When an overissuance is detected, the Food Stamp Agency (FSA) determines whether the overissuance occurred in past months, and computes the cumulative overissuance. Overissuances are caused by three types of errors:

- The FSA applies the formula incorrectly or fails to act on information provided by the household, which results in an agency error (AE).

¹The purpose of recertification is to ensure that the size of the FSP benefits is appropriate to the household's current circumstances, which may have changed since the time of application. A household is usually recertified every six or twelve months, depending on the type of household. For example, earners have a shorter certification period and SSI recipients a longer period. In some states, certain households report their circumstances every month.

- The household makes an unintentional error in reporting its size, income, assets, or expenses, which results in an inadvertent household error (IHE).
- The household makes an intentional error in reporting its size, income, assets, or expenses, which results in an intentional program violation (IPV).

The Food Stamp Act of 1977 (the Act) established that the recipient of an overissuance is obliged to repay the amount of the overissuance to the FSA, regardless of the cause of the overissuance. If the overissuance is due to an AE or an IHE, the household is only liable for the amount of the overissuance and usually is not subject to any other penalties. If the overissuance is due to an IPV, the household is liable for the amount of the overissuance, the individual responsible for the violation is disqualified from the FSP for a specified number of months, and may be subject to additional penalties under the fraud statutes of the state. The number of months of disqualification depends on the severity of the violation and whether the individual committed previous IPV's.

Section 13 of the Act requires FSAs to establish a claim against every household that receives an overissuance. The FSA is required to collect an established claim unless the FSA can demonstrate that it is not cost-effective to do so. Collecting a claim is cost-effective if the amount collected exceeds the cost of collection.

Federal FSP regulations specify some circumstances under which collection is deemed to be cost-effective. If the claim is caused by an IPV or an IHE and if the household is currently participating in the FSP, collection is deemed to be cost-effective. The rationale for this is that, if the household is currently participating, the FSA can recover the claim by reducing the household's FSP benefit in the current and future months. Collection is considered to be virtually costless to the FSA, so collecting all such claims is viewed as cost-effective.

If the claim is caused by an AE or an IHE and the household is not currently participating in the FSP, the claim is deemed to be cost-effective if its amount is \$35 or more.² The regulations permit FSAs to accumulate multiple smaller claims against the household until the total is \$35 or more. This cost-effectiveness test is known as the "collection threshold." Many claims in the FSAs reviewed in this study are uncollectible. The most common reason for being uncollectible is that the FSA is unable to locate the household. Another common reason is that the household does not have enough income or assets from which to collect the claim.³

Since these regulations were first promulgated several FSAs have presented the Food and Consumer Service (FCS) of the U.S. Department of Agriculture with two issues. The first is that the \$35 level at which the collection threshold is set may no longer equal the cost of collecting an AE or IHE claim. This contention is based on two beliefs. The first is that the \$35 figure never was an accurate amount of the costs of collecting claims even when it was adopted in 1978. Second, the \$35 figure has not been changed in 17 years. During this period, the average cost of collection has probably risen. Thus, even if the threshold level were appropriate in 1978 (which it may not have been), it is unlikely to still be appropriate in 1995.

This concern leads to *the first objective of this study—to determine the appropriate level of the collection threshold.*

The second issue raised by FSAs is that large numbers of uncollected claims have accumulated over the years. All overpayments must be established as a claim, even if they are predicted to fail the collection threshold. FSAs must track and account for each claim. Each quarter, the FSAs must report to FCS the

²The FCS of the U.S. Department of Agriculture has recently permitted several FSAs to increase the \$35 limit to \$100.

³Several FSAs define financial resources in terms of the household remaining independent of the welfare system. If collecting the claim would force the household back onto the FSP or other welfare programs, the FSA considers the household's resources to be insufficient to collect the claim.

total number of claims, the number of new claims added to the books, and the number of claims that have been closed, terminated, or compromised. When a household pays the claim in full, the claim is said to be closed. When the FSA determines that the claim is uncollectible and is expected to remain uncollectible, the claim is first suspended and then terminated. A suspended claim is one for which the FSA continues to carry the debt on its books, but does not actively try to collect. A terminated claim is written off the FSA's books as a bad debt.⁴ Occasionally the household pays a portion of the claim but

uncollectible, the unpaid balance is considered a bad debt and the claim is said to be compromised.

FSP regulations require that claims that are not closed (that is, not paid by the recipient) be kept open

This approach would keep claims that are not cost effective from getting onto the books, thereby reducing the administrative burden of tracking and justifying the termination of uncollected claims.

This concern leads to the second objective of the study—to determine if the FCS should implement an establishment threshold, and if so, the appropriate level.

B. METHODOLOGY

These issues were investigated in four State FSAs--Arizona (Western Regional Office), Arkansas (SouthWest Regional Office), Alabama (SouthEast Regional Office), and Utah (Mountain Plains Regional Office)--and one county FSA--Passaic County, New Jersey (Mid-Atlantic Regional Office). These FSAs were selected based on the following criteria:

- Having a relatively high collection rate, the proportion of the total dollar amount of claims that are collected.
- Having a cost per claim, as proxied by the financial figures reported in the quarterly FCS Form 269, that is near the median.
- Using at least three of the following collection tools: State tax intercept, wage garnishment, property liens, and small claims court.

In addition to these criteria, we attempted to have a representative distribution of State across FSP Regional Offices. Passaic County New Jersey was selected because it contains an urban area. Arizona was selected because it actively volunteered to participate in the study. All five FSA integrated the FSP claims collection process with that of AFDC and other social programs. Several of the selected FSAs used Federal tax refund intercepts to collect FSP claims.⁶ Details of the claims processing in each FSA are presented in TASCAN, Inc. (1995).

After determining that the none of the selected FSAs could supply the necessary cost data directly from their accounting systems, we requested that each FSA estimate the costs of the major steps in the

⁶All of the selected FSAs use Federal tax refund intercepts in 1995.

claims collection process based on the amount and level of the direct labor required to perform each step. The steps were pre-establishment activities; post-establishment activities of the FSA, excluding activities of other agencies and courts; Fair Hearings and Administrative Disqualification Hearings; criminal investigations by agencies other than the FSA; and court. All five FSAs provided a detailed description of their claims collection process, and three FSAs (Arizona, Utah and Passaic County) provided cost data sufficient to estimate optimal thresholds.

C. PLAN OF THE REPORT

Chapter II is an overview of the claims collection process. Chapter III presents a theoretical model for determining the appropriate level of a threshold. Chapter IV presents a discussion of the optimal *location*, as opposed to *level*, of a threshold. Chapter V reviews the data on the costs of collecting claims and the resulting collections, outlines the empirical model, and presents the estimates of the optimal threshold levels. Chapter VI summarizes the report and provides conclusions.

II. ELEMENTS OF CLAIM COLLECTION COST

This chapter outlines the process by which the FSA and other State agencies handle FSP claims.⁷ The steps represents the units in which claims collection costs are incurred. There is wide state-to-state variation in these steps, so there is no single claims process. Therefore, we have abstracted the general features of the claims process found in the five States participating in this study. The resulting generic claims process is illustrated in Figure II.1. For simplicity, we have limited Figure II.1 to IHE and IPV claims.

The claims collection process begins with the detection of a potential overissuance. Once the caseworker detects an overpayment, the amount of the suspected overpayment is computed and verified. The amount of the overpayment is computed by entering the new household composition, income, assets, or expense data into the FSP benefit formula. The new computed benefit amount is compared to the benefit actually provided to the recipient, and the difference is considered to be the overpayment.

Overissuances are typically identified by the FSP caseworker by comparing information on the recipient's household composition, income, assets, or expenses from several sources other than the recipient to the analogous information provided by the recipient. During the application and recertification processes, the caseworker attempts to confirm the data reported by the recipient by asking the client for documentation verifying the information, and occasionally by contacting the recipient's employer, landlord, and bank. The Income Eligibility and Verification System (IEVS) provides the caseworker with employment and financial data on the recipient from other federal databases, including the Unemployment Compensation data on earned income, federal tax return data on unearned income, and benefits from the

⁷This chapter presents the claims collection process as described by the five FSAs participating in the study. The procedures described herein do not necessarily reflect FCS policy or FSP regulations. FCS does not condone or advocate any deviations from policy or regulations.

FIGURE II-1

IHE AND IPV CLAIMS PROCESS IN THE STUDY FSAs

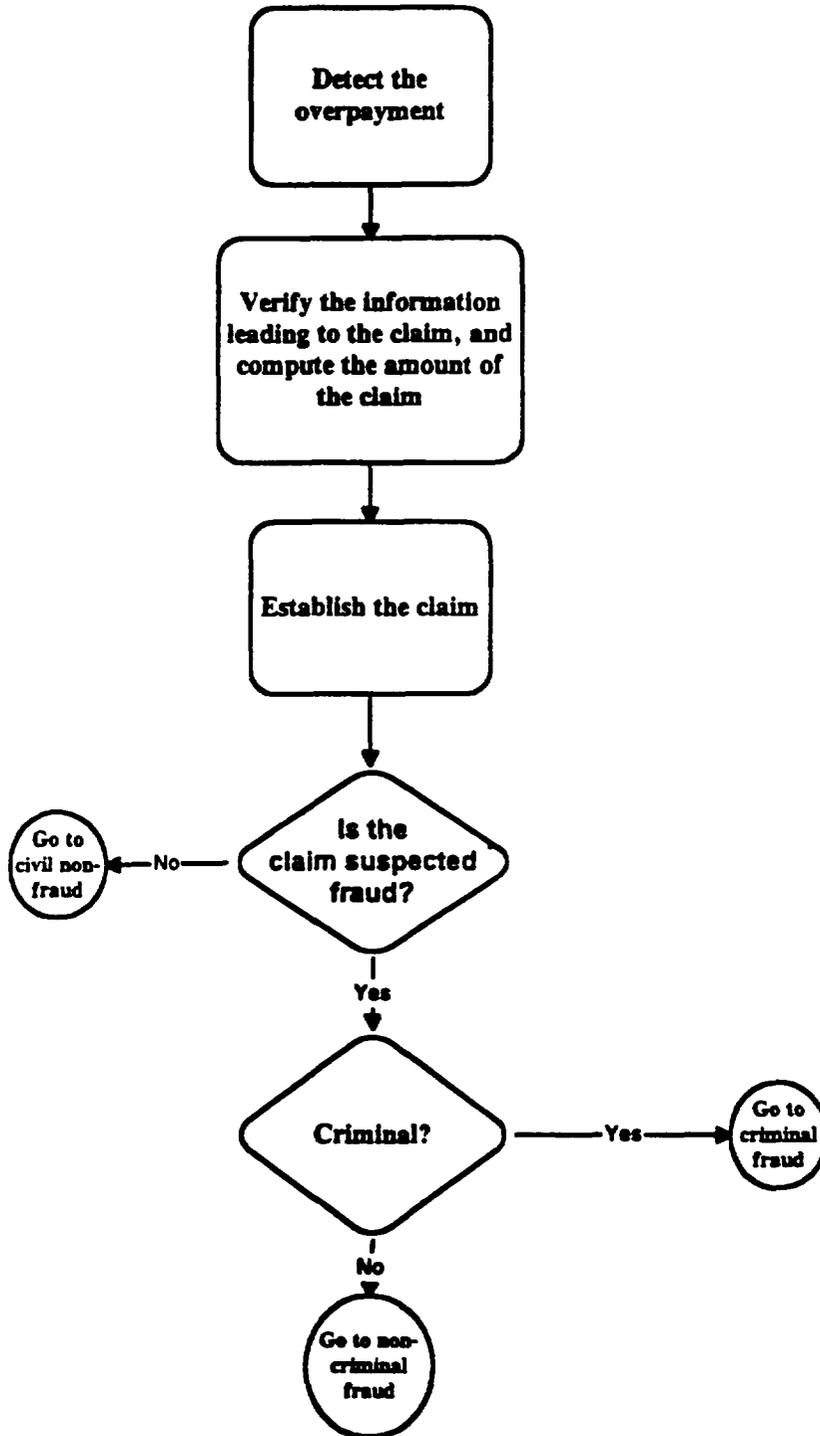


FIGURE II-1 (CONTINUED)

IHE AND IPV CLAIMS PROCESS IN THE STUDY FSAs

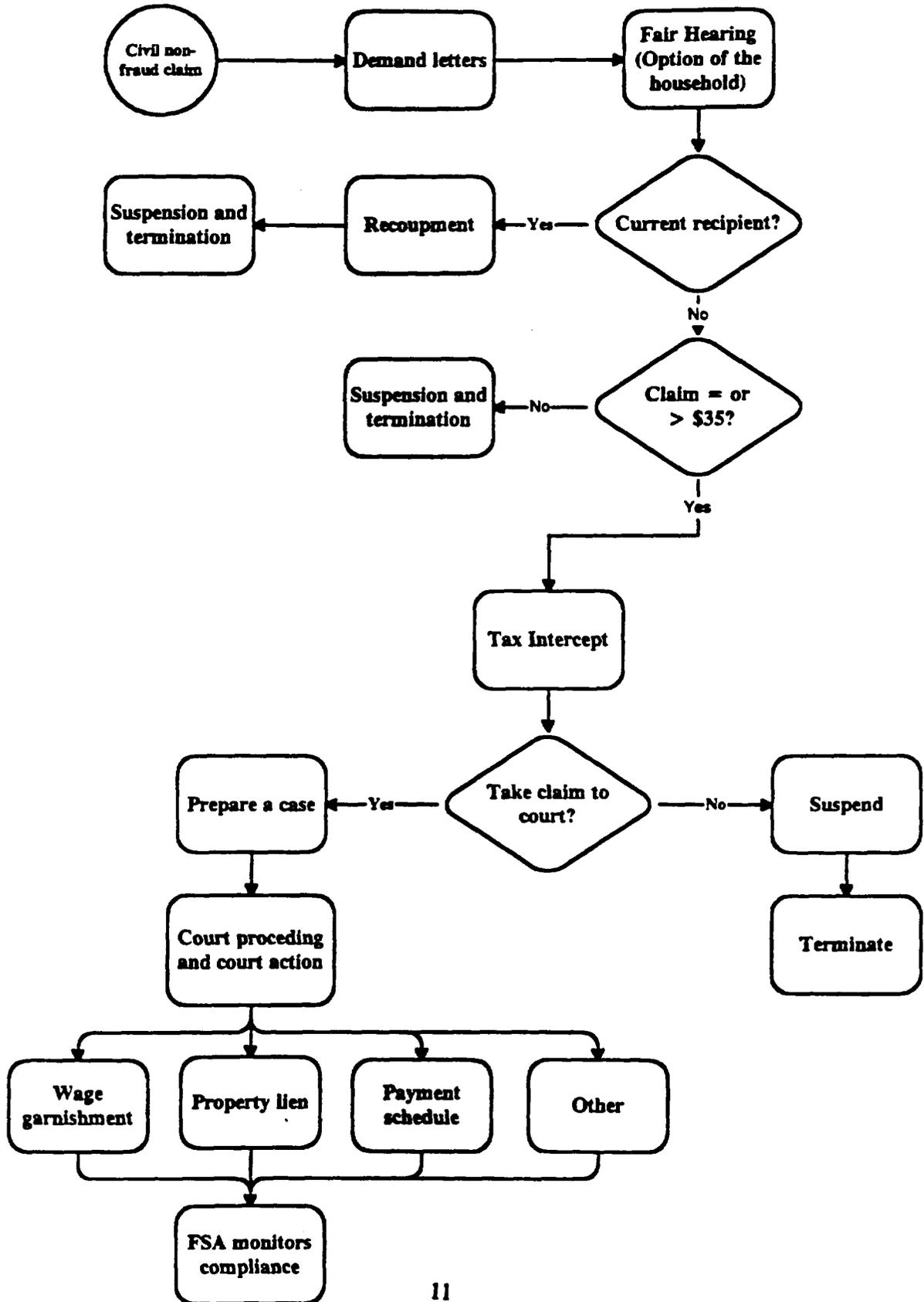
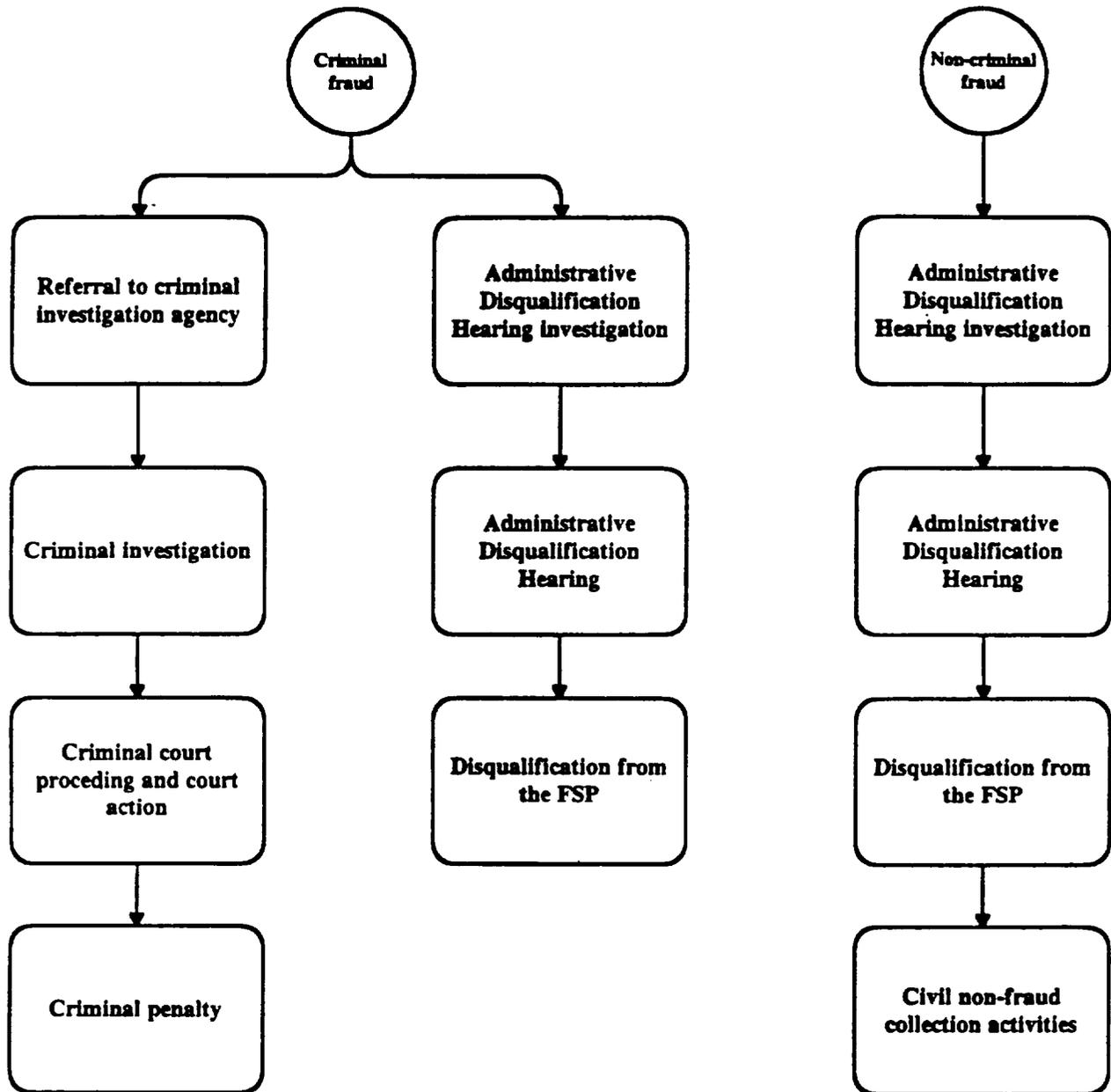


FIGURE II-1 (CONTINUED)

IHE AND IPV CLAIMS PROCESS IN THE STUDY FSAs



Supplemental Security Income (SSI) and Social Security programs. The caseworker may also access information on benefits from state programs, such as General Assistance.

To verify the information that forms the basis for the overpayment, another caseworker or a claims worker checks the calculations and sometimes collects additional information both from the recipient and from other entities. To compute the total amount of the overpayment, the caseworker identifies the months in which the recipient's information was not correct. The FSP benefit formula operates on a monthly accounting period, using monthly income, household composition, and expenses as input, and computes a monthly benefit. The initial overpayment computation is a monthly figure. The date of onset of the monthly overpayments is used to compute the total overpayment. Because they are labor-intensive steps, the verification step and the computation of the claim amount can consume half of the resources required to complete the entire claims process. In one of the five states in the study, as many as half of the originally detected overpayments were not established as claims following these steps.

There was significant variation across FSAs regarding the organizational units responsible for verification and computation of amount. Some FSAs used local FSP office personnel, and others used the unit that is responsible for collecting claims.⁸ If these two steps were performed outside the claims unit, the overpayment was then transferred to the jurisdiction of the claims unit.⁹

After these two steps are completed, the overpayment is established as a claim. Establishing the claim consists of entering the overpayment data into the (typically automated) claims tracking system. From a legal perspective, establishing the claim constitutes a statement that the agency believes the recipient is

⁸For details on the claims processing of our individual study FSAs, see TASCAN (1995).

⁹Typically, the claims unit was responsible for collecting claims from recipients of all the welfare programs in the state, and was housed in the state department of human services. If the initial investigation was performed outside the claims unit, the claims unit may verify the information underlying the claim a second time.

indebted to the agency for the amount of the overpayment. From a regulatory perspective, establishing the claim makes it subject to federal regulations of the claims collection process.

At this point, the FSA determines the cause of the overpayment -- an error by the FSA, or agency error (AE); an error by the client, or inadvertent household error (IHE); or fraudulent behavior by the client, or intentional program violation (IPV). Suspected IPV claims are further subdivided into suspected criminal fraud claims and non-criminal fraud claims.

A. AE CLAIMS

There is significant variation in the way States handle AE claims (not shown in Figure II-1). Some States limit their efforts to a demand letter to the client requesting a voluntary repayment. If the client refuses, no further action is taken. Other States treat AE claims as if they were IHE claims. In the demand letter, the household is offered the opportunity to request a Fair Hearing. At a Fair Hearing, the household and the FSA will review the claim, typically, before an administrative law judge (ALJ).¹⁰ The purpose of such a hearing is to give the client the ability to appeal the FSA's decision. The client may contend, for example, that the FSA's information about earned income, which was the basis for computing the overpayment, is incorrect. As a second example, the client might contend that the household never received the overissued food stamps. If the hearing authority finds that the claim is invalid, the agency sets the amount of the claim to zero and closes the claim. The outcome of the Fair Hearing is that the claim is judged to be legitimate, or to have no basis. Further, the Fair Hearing determines the amount of the claim, taking into account any information presented by the household at the hearing.

¹⁰FSP regulations do not require the presiding officer at a Fair Hearing to be an ALJ. The Fair Hearing process is used by many programs other than the FSP, some of which require an ALJ.

B. THE CLAIMS

The household is sent up to three or four demand letters explaining the nature of the claim and the consequences of not making payment. The client is advised of the right to a Fair Hearing in the initial demand letter.¹¹ If the claim is found to be valid, either because the administrative law judge found in favor of the agency or because the client waived the right to a Fair Hearing, the agency's next step is usually to recoup the claim if the household is an active FSP participant. If the client is a current recipient, the claim may be recouped, that is, recovered from future benefit payments. The recipient's benefit amount is reduced by 10 percent for a nonfraud claim.¹² Recoupment continues until the entire claim is paid or the client leaves the FSP.

If the claim becomes delinquent and recoupment is not an option, the next step is usually to intercept the client's income tax refund. In 1994, twenty-one FSAs participate in the Federal income tax refund intercept program, and the majority of states operate state income tax refund intercept programs. The Federal program has operated for three years and is expanding rapidly because of the advantages it provides to FSAs: it is inexpensive, it locates many clients who have moved to other states, and it results in large amounts of repayments. The principal limitation of the tax refund intercept program is that, for an individual claim, it is effective only once per year and only for individuals owed a refund.

If the claim remains open after a tax intercept is attempted, the agency must decide whether to take the claim to municipal, county, or state court. The primary criterion used in this decision is the size of the claim, but other factors may also be used, including the amount of the client's income and assets from which the claim could be paid, the likelihood that forcing the client to pay the claim would cause him/her to return to the FSP, subjective factors related to the likelihood that the court will find in favor of the

¹¹At any point in the claims process after the household receives a demand letter, the household can pay the claim. Upon being paid, the FSA closes the claim.

¹²If the recoupment amount computed in this way is less than \$10, the amount is set to \$10.

agency, and the current workload of the staff responsible for preparing the case for court. In the process of notifying the client of the impending court session, some states allow the client to respond to the threat of court action by paying the claim prior to the court session.

If the agency decides to take the claim to court, the agency arranges for its legal representation and prepares the case against the client. If the court finds in favor of the agency, the judge typically specifies a payment arrangement. Such arrangements can include a simple payment schedule; wage garnishment, if the client is employed; or a lien against, and seizure of, the client's property, typically the client's vehicle. While the agency can inform the court of the client's resources, the court, rather than the agency, chooses the payment arrangement. Even though the court specifies the payment arrangement, payments are typically made directly to the FSA rather than the court. If a client subject to a court order fails to pay the claim on schedule, he/she is in contempt of court and may be subject to additional court action.

If the agency decides not to send the claim to court, its only options are sending additional demand letters and intercepting the client's income tax refund the following year. After exhausting these options, the agency may determine that the claim is uncollectible. This determination is usually made because the client cannot be located; the client does not have, and is not expected to have, the financial resources to pay the debt; or the client refuses to pay the claim, but the agency decides not to take the matter to court.

At this point, the agency may follow any one of three strategies: leave the claim in an officially open status but not actively pursue payment, suspend the claim by officially placing it in an open but inactive status, or terminate the claim by writing off the remaining balance as a bad debt. Federal regulations require the minimum period of suspension to be three years. Some FSAs adopt the first or second strategy for many uncollectible claims, because of the burden of documenting terminations resulting in the accumulation of numerous old, uncollectible claims.

C. IPV CLAIMS

The process for a non-criminal IPV claim is similar to that of an IHE claim. The primary difference is that the hearing is an Administrative Disqualification Hearing (ADH) rather than a Fair Hearing. While a finding for the agency by a Fair Hearing is the determination that the claim is legal and valid, a finding for the agency by an ADH also results in the disqualification of the client from the FSP for a specified period of time. As is the case for IHE claims, the individual has the option to waive the ADH. In addition to disqualifying the client through an ADH, the FSA may use, and generally does use, the same strategies for settling the noncriminal IPV claim that are used for IHE claims.

The process for a criminal IPV claim is quite different from that of any other type of claim. Each state has a unique set of criteria for determining if the claim is criminal. Typically, the claim must be the result of fraudulent behavior of the client and must represent a large sum of money. The definition of a large claim is generally established in state criminal statutes and varies from state to state. The state may also use more subjective criteria to classify a claim as criminal fraud, such as the likelihood of success in criminal court. For example, a claim against a 65 year-old widow may not be treated as criminal, even if the claim is large and the agency has evidence of fraud. On the other hand, a relatively small fraud claim may be treated as criminal if the client is a repeat offender.

The client is subject to two types of penalties for committing criminal fraud--disqualification from the FSP through an ADH, and criminal penalties determined by criminal prosecution.¹³ Criminal claims are typically referred to a different state agency, which prepares the criminal case for prosecution. The criminal investigation agency reviews the information about the claim provided by the unit making the referral and decides whether to recommend the case for criminal prosecution. This decision is based on the nature of the alleged fraud and may include some of the same factors used to determine whether the

¹³Sometimes the FSA does not hold an ADH, and the criminal court will include a disqualification from the FSP as a part of its judgement.

collections unit takes noncriminal claims to court, including (1) the size of the claim; (2) the amount of the client's resources, including both income and assets, from which he/she could pay the claim; (3) subjective factors related the likelihood that the court will find in favor of the agency; and (4) the current workload of the staff responsible for preparing the case for court. Claims that the criminal investigation agency decides not to take on are returned to the collections unit, which processes them thereafter as noncriminal IPV claims.

If the criminal investigation agency accepts the claims, that agency conducts an investigation into the criminal aspects of the case. In some states, while this investigation is occurring, the FSA is simultaneously attempting to collect such claims through civil means, such as recoupment, letters, and tax refund intercepts. In other states, no attempt to collect the claim is made through civil procedures. At the conclusion of its investigation, the criminal investigation agency decides whether it believes the client committed criminal fraud. If the conclusion is that the client did not commit criminal fraud, the claim is referred back to the FSA, which may process it as a noncriminal IPV claim.

If the investigation concludes that the client committed fraud, the criminal investigation agency takes the case to the state's attorney general, who prosecutes the criminal case in municipal, county, or state court. If the client is convicted, he/she is required to participate in an arrangement to pay the claim in conjunction with the judgement. Payment arrangements are generally the same as those in civil court: a simple payment schedule; wage garnishment, if the client is employed; or a lien against, and seizure of, the client's property. If the client is acquitted, the claim is referred back to the FSA, which may process it as a noncriminal IPV claim.

Although the preceding description views the client as an individual, the Food Stamp Act has a more complex definition of client. Food stamp benefits are computed for, and issued to, the household. The household is generally defined as all persons in the dwelling who pool their resources for the purchase and preparation of food and who regularly eat together. The household can include more than one adult. The

Food Stamp Act establishes that all adults in the household are jointly and severally liable for an FSP claim. This means that the collection agency can collect payment of a claim from any adult, or combination of adults, in the household, even if that adult has left the original household and become a member of another household. Typically, the agency initiates collection with the individual identified as the head of the household or who signs the FSP application and recertification forms. If that attempt fails, some FSAs make similar efforts to collect from other adult household members. These efforts can include tax refund intercepts or recovery of the FSP benefit of another household that a liable adult has joined.

III. THEORY OF OPTIMAL THRESHOLDS

This chapter presents the theoretical framework within which we estimate the cost-effectiveness of both collection and establishment thresholds. The development of the framework begins as we define the cost-effectiveness of the entire claims process. Section A presents the basic concepts for the analysis of both the optimal level and location of a claims threshold. Section B presents a model of the optimal threshold level from the perspective of an individual claim. Section C discusses deterrence and unmeasured costs. Section D presents the interactions between a collections and an establishment threshold.

A. BASIC CONCEPTS

We begin by imagining a system of activities by which claims are processed. A claim can proceed along any one of a variety of paths through the process. The particular path the claim takes through the process is determined by the characteristics of the claim, whether the client is continuing to receive food stamps, and whether the client voluntarily settles the claim. Some claims take short, simple paths, resulting in little cost. Others will take longer, complex paths, resulting in greater costs. The cost-effectiveness of an individual claim is the ratio of the savings to the program resulting from processing the claim to the cost of processing the claim. The savings to the program is the amount of the claim that is collected. The cost is the sum of the costs of each activity in the claim's path through the collection process. In this study, we measure both costs and savings from the perspective of the combined Federal and State budgets, and we do not adopt the broader cost-benefit perspective of society as whole.

Somewhere near the beginning of the process, or "upstream," a threshold is implemented. A threshold separates the flow of new claims into two groups, those that pass the threshold, and those that fail the threshold. Claims that fail the threshold are sent down a relatively short path, and the FSA incurs

relatively small costs and collects none of the claim. Claims that pass the threshold are sent down a relatively long path, and the FSA incurs relatively large costs and may collect some or all of the claim.

By assigning a claim to the “failure” group, the FSA forgoes any chance of collection in trade for a reduced cost of processing the claim. The threshold can be any rule that assigns each claim to one of the two groups based on some characteristic, or combination of characteristics, of the claim. Both the existing collection threshold and the establishment threshold are based on the claim amount. Claims whose amounts are less than the threshold fail, and claims whose amounts are equal to or greater than the threshold pass.

Avoided cost is the difference between the downstream cost for claims that pass the threshold and the downstream cost for claims that fail the threshold.

B. OPTIMALITY FOR AN INDIVIDUAL CLAIM

This section presents a model of the optimal threshold level for an individual claim. A generalization of this to a model of the optimal threshold level for the population of claims is presented in the Appendix.

There are four alternative definitions of optimality. The threshold could be set at the level which:

1. Ensures every single claim is cost-effective, that is, the expected savings exceeds the expected cost of each individual claim. This is the definition of optimality used in this chapter.
2. Ensures that the entire claims collection process has a cost-effectiveness equal to 1.0. This is the definition of optimality used in the Appendix.
3. Maximizes the cost-effectiveness ratio of the entire claims collection process.
4. Maximizes the “profit” of the claims collection process, that is, maximizes the surplus of total savings over total costs of the process.

The advantage of the first definition is the simplicity of the resulting model. Its disadvantage is that it does not optimize the cost-effectiveness of the entire claims process, but rather treats each claim individually.

The remaining three definitions avoid this disadvantage by optimizing the process as a whole. The

disadvantage of the third definition is that the cost-effectiveness ratio may be maximized when the threshold is set at an extremely high level and very few claims, perhaps a single claim, are pursued.

The second and fourth definitions have no such disadvantages. We have chosen the second definition for the following reasons. First, the process under analysis is that of public agency, which is not required by competitive pressure to maximize profits. Second, FCS has expressed a preference for the threshold to be set as low as possible short of causing the cost-effectiveness ratio to fall below 1.0. This preference appears to be based on a recognition of the unmeasured deterrent effect of vigorous claims collection.

We begin by considering the existing collection threshold. The collection threshold is based on the claim amount, and requires the following assumptions:¹⁴

- The amount collected, S , from a claim is an increasing function of the amount, A , of the claim.
- $S = 0$ for claims that fail the threshold.
- The cost, C , of processing a claim is greater for claims that pass the threshold than for claims that fail the threshold.
- The cost, C , of processing a claim that passes the threshold is not a function of the size of the claim (or at least does not increase as fast as S with increases in A).

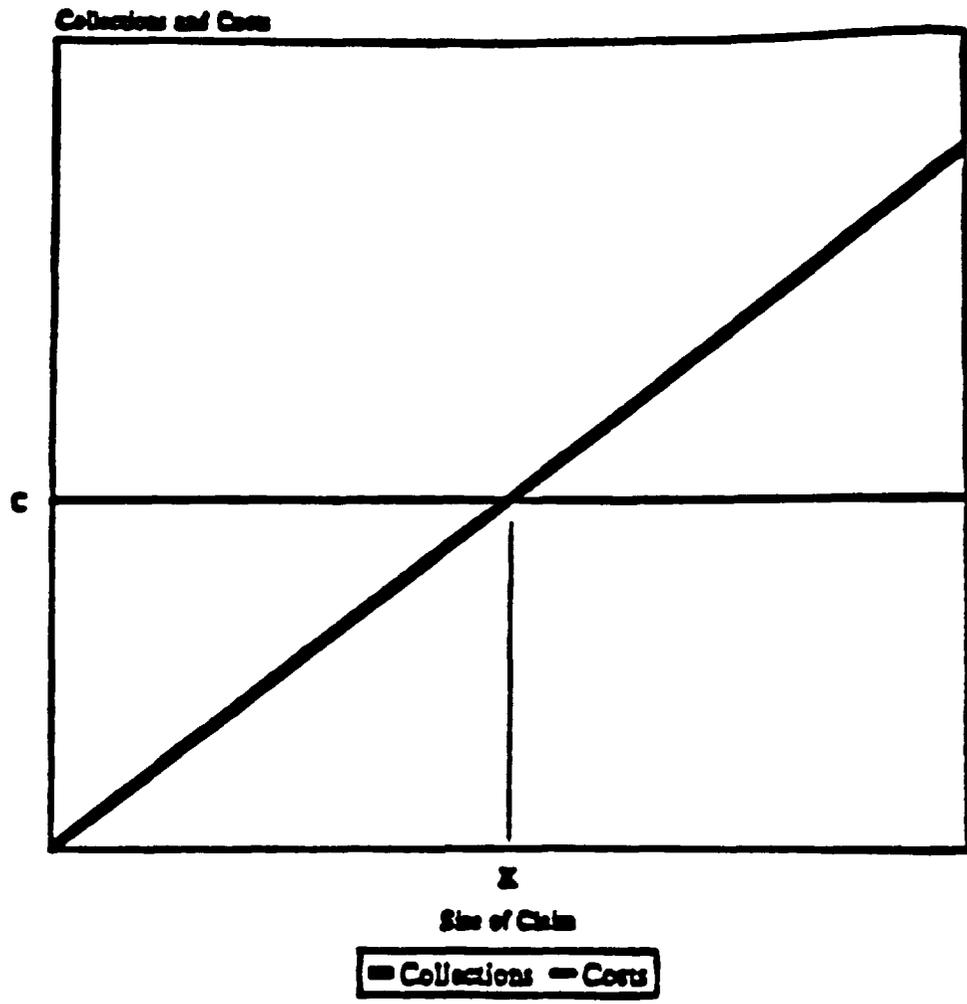
These assumptions are illustrated in Figure III.1. The figure shows a hypothetical plot of both collections, S , (the thick line) and cost, C , of claims that pass the threshold (the thin line) by the size of claim. Collections and cost are measured along the Y axis, and the size of the claim is measured along the X axis.

Collections are shown to increase as the size of the claim increases. Each of the five FSAs participating in this study expects, when a claim is established, to collect a certain percentage of the claim

¹⁴For clarity, both savings and costs are presented as if they are scalars. In fact, each is an expected value of the probability density function of savings and costs.

FIGURE III.1

ILLUSTRATIVE OPTIMAL THRESHOLD LEVEL



amount, known as the collection rate. With such a rule, larger claims result in larger collections. In contrast, costs along the horizontal thin line do not vary with claim size.¹⁵

Costs equal collections if both are equal to C at claim size K , as shown in Figure III.1. If a claim is smaller than K (to the left of K), costs exceed collections. This makes attempting to collect the claim not cost-effective. If the claim is greater than K (to the right of K), collections exceed costs and the claims process is cost-effective. If the threshold is set equal to K , then claims that are not cost-effective will fail,

and claims that are cost-effective will pass. This makes K the optimal threshold level. An electronic

version of this model is presented in the Appendix lix.

C. DETERRENCE AND UNMEASURED COSTS

Deterrence occurs when a client who is considering committing a program violation takes the likelihood of getting caught into account. The more intensive is the process of detecting and collecting, the greater is the likelihood of getting caught, and the less likely the client is to commit the IPV. By

preventing some violations from being committed, the claims process produces a saving to the FSP that

Deterrence enters the model of the optimal threshold level as an indirect saving to the FSP beyond the direct saving from claims collections. Adding indirect savings to direct savings shifts the savings line in Figure III.1 upward, which causes the intersection of the savings line and the cost line to shift to the left. Thus, adding deterrence to the model results in the optimal threshold being reduced.

Similarly, as detailed below in Chapter V, it is not feasible to measure all the costs associated with collecting claims. While measuring the costs borne by the FSA is straightforward, some costs are borne by other public agencies, such as municipal and county courts and the state agency that is responsible for criminal investigations and prosecutions. Adding unmeasured costs to measured costs shifts the cost line of Figure III.1 upward, causing the intersection of the cost line and the savings line to move to the right. Thus, accounting for unmeasured costs results in the optimal threshold to be increased.

The impacts of deterrence and unmeasured costs on the optimal threshold level are offsetting. One can only speculate about the direction and magnitude of the net impact of both factors. Both factors apply only to a minority of claims. The deterrence factor applies only to IPV claims; and the unmeasured cost factor applies only to claims that go to court and/or require a criminal investigation.

D. ESTABLISHMENT THRESHOLD AND ITS INTERACTIONS WITH THE COLLECTION THRESHOLD

An establishment threshold is similar to the existing collection threshold except that it is implemented at an earlier step in the claims process, that is, before the overpayment is established as a claim. This upstream position has the following impacts, relative to the collection threshold:

- The cost associated with claims that fail the threshold is smaller because the claim does not have to be suspended and terminated.
- The cost of activities downstream from the threshold is larger because there are more activities downstream from the threshold.
- The expected savings for claims that pass the threshold is unchanged, which in turn depend on the likelihood of collecting the claim.

These impacts mean that the optimal level of an establishment threshold is higher than that of a collection threshold.

Some have viewed the collection threshold and the establishment threshold as operating independently of each other. If this were true, the establishment threshold could be implemented along with the existing collection threshold and the level of each set independently of the other. This view is not correct.

If the two thresholds are both implemented, they interact with each other in several ways. First, the level of the collection threshold depends on the level of the establishment threshold. If the establishment threshold is set higher than the collection threshold, the collection threshold will be ineffective since the collection threshold is imposed downstream in the claims process. The smallest claim to reach the collection threshold would have a value equal to the establishment threshold. No claim would reach the collection threshold with a value above the collection threshold but below the establishment threshold. In effect, the establishment threshold is the lowest the collection threshold may be meaningfully set.

Second, the level of the establishment threshold depends on the level of the collection threshold. Setting the establishment threshold lower than the collection threshold results in a group of nonfraud claims being established but not pursued because they fail the collection threshold. The current problem of the unnecessary administrative burden on FSAs associated with establishing claims that are never pursued, discussed in Chapter I, would not be solved. Avoiding such unpursued claims requires that the establishment threshold be set at a level equal to or above the collection threshold.

In summary, the establishment threshold should not be lower than the collection threshold, and the collection threshold should not be lower than the establishment threshold. These conditions can be true only if the two thresholds are set at the same level.

The problem with implementing both thresholds and setting them at the same level is that the thresholds have different optimal levels, as demonstrated above. Specifically, the optimal level of the establishment threshold is higher than that of the collection threshold. Therefore, if the two thresholds are

set at the same level, as we have shown they should be, one of the two thresholds must be set at a suboptimal level.

The solution to this problem is to view the two thresholds as substitutes rather than complements. One threshold should be implemented, not both of them. In other words, evaluating thresholds first requires identifying the best location for the single threshold within the claims process, and then determining the best level of that threshold.

IV. THE OPTIMAL THRESHOLD LOCATION

This chapter identifies the optimal location of a threshold, and examines the parameters that determine that location.

The model presented in Chapter III allows us to compute the optimal level of a collection threshold and the optimal level of an establishment threshold. The optimal level of each is defined as that level at which cost-effective claims pass the threshold and claims that are not cost-effective fail the threshold. Each threshold is equally optimal.

In order to compare one threshold location (collection threshold) to the other (establishment threshold), we must use another criterion. One such possibility is the overall cost of the claims process. The farther upstream is the threshold, the smaller is the total cost of the claims process. This is because fewer steps of the process have been performed for claims that fail the threshold. This reasoning leads to the conclusion that the establishment threshold is preferable to the collection threshold. This finding is demonstrated algebraically in the Appendix.

The feasibility of replacing the collection threshold with an establishment threshold depends on a legal, rather than an economic, argument. In some FSAs in our study, the claim is determined to be fraud or nonfraud after establishment. In those FSAs, the establishment threshold necessarily applies both to fraud and nonfraud claims since it is applied before the fraud status is determined. This means that claims whose amount is less than the threshold but which would ultimately be determined to involve fraud would not be established, and therefore would not be collected. The Food Stamp Act of 1977 (Act) requires that every claim involving fraud be pursued. If overissuances are viewed as possibly involving fraud, but the FSA has not discovered the information required to make the determination, then an implementation threshold may not be consistent with the Act. On the other hand, if overissuances are assumed not to

involve fraud until future investigation reveals evidence of fraud, then there may be no inconsistency between the Act and an establishment threshold.¹⁶

Another factor in the legal environment is the common practice among state agencies of applying an informal cost-effectiveness criterion to criminal prosecutions. Typically, the FSA refers a claim that it suspects of involving a crime to another State agency such as the office of the attorney general. That agency reviews the claim and decides whether or not to prosecute. That decision is based on several, generally undocumented, factors, including the size of the claim. State attorneys do not usually have enough resources to prosecute all the cases referred to them. Therefore, they must select specific cases to prosecute. In this selection process, large claims are typically given a higher priority than small claims. The selection is based on a cost-effectiveness criterion. Generally speaking, small claims are seen as not worth the effort to prosecute. Claims that are not prosecuted are returned to the FSA, which treats them as non-criminal fraud claims.

In summary, on economic, cost-effectiveness grounds, an establishment threshold is preferable to a collection threshold, because it includes a larger portion of the total claims collection costs in the optimization process. Second, there is a possible conflict between an implementation threshold and the Food Stamp Act of 1977. In the future, FCS will determine whether this is a real conflict. Third, the behavior of some other State agencies is consistent with the application of a cost-effectiveness threshold to claims involving fraud.

¹⁶MPR does not offer a legal opinion in this matter. The issue of consistency between an establishment threshold and the Act remains to be determined by FCS.

V. EMPIRICAL RESULTS

This chapter presents the empirical estimates of the optimal threshold level in Passaic County, New Jersey, Arizona, and Utah.

A. COST AND CLAIMS DATA

1. Passaic County, New Jersey

The Passaic County, New Jersey, Board of Social Services estimated the cost of each major step in processing a claim. The process includes the following steps.¹⁷ After each step, we present the cost per claim processed and the number of claims processed in a typical month. The process begins with 239 overpayments detected within a typical month.

Step I. Pre-establishment activities, including detecting the overpayment, reviewing the case file, and verifying the basis for the overpayment. These costs vary by the source of the referral. Each claim is processed in one of the following five activities.

A. Referral from a Food Stamp/AFDC redetermination

1. Cost per claim¹⁸ - \$79
2. Number of claims - 60

B. Referral from a Food Stamp-only redetermination

1. Cost per claim - \$100
2. Number of claims - 37

¹⁷These steps differ in minor ways from the generic description of the claims process presented in Chapter II. These differences are typical of the state-to-state or county-to-county variation in the claims process.

¹⁸The cost per claim figures represented below are computed on the basis of the number of claims processed in that step, rather than based on 239 claims

C. Referral from the Food Stamp/AFDC Income and Eligibility Verification System

1. Cost per claim - \$75
2. Number of claims - 42

D. Referral from the Food Stamp Income and Eligibility Verification System

1. Cost per claim - \$81
2. Number of claims - 91

E. Referral from the fraud unit

1. Cost per claim - \$291
2. Number of claims - 9

Step II. Establishment and initial collection activities, including calculating of the amount of the claim, sending demand letters to the client, and setting up and maintaining the case tracking records. In contrast to Step I, each claim is processed through all of the following activities.

A. Calculation of amount of the claim

1. Cost per claim - \$317
2. Number of claims - 239

B. Demand letters

1. Cost per claim - \$6
2. Number of claims - 191

C. Maintaining the account

1. Cost per claim - \$36
2. Number of claims - 191

Step III. Federal income tax refund intercept

1. Cost per claim - \$72
2. Number of claims - 48

Step IV. Process payments from the client

1. Cost per claim - \$112
2. Number of claims - 105

Step V. Hearings, including both Fair Hearings and Disqualification Hearings

1. Cost per claim¹⁹ - \$1
2. Number of claims - 15

Step VI. Disqualifying the client

1. Cost per claim - \$44
2. Number of claims - 38

Step VII. Court action, including both civil and criminal

1. Cost per claim - \$92
2. Number of claims - 115

The cost figures are based on the FSA staff time spent on an activity for a claim, accounting for the salary, the benefits, indirect costs, and general and administrative costs associated with that person. Costs are limited to those incurred by the FSA; costs incurred by the state agencies responsible for hearings and for criminal investigations and prosecutions are excluded. The court costs in Step VII are limited to those incurred by the FSA in preparing the case and representing the FSA in court. These costs do not represent the entire cost of a court proceeding.

The Passaic County FSA did not provide cost figures for suspending and terminating claims. We have assumed that each activity costs the same as Step II.C activities.

¹⁹These costs are so low because most of the costs of hearings are not borne by the FSA.

2. Arizona

The cost data supplied by the FSA in Arizona was less detailed than those from New Jersey. The total cost in FY 1994 for processing overpayments/claims was \$4,272,826, of which \$2,735,383, or 64 percent, reflected pre-establishment processing of 25,071 overpayments, and the remaining \$1,537,443 reflected post-establishment processing of 15,464 claims. Thirty-eight percent of the detected overpayments were not established as claims.

From these figures, we compute the average total cost per overpayment was \$170, the average pre-establishment cost per overpayment is \$109, and the average post-establishment cost per established claim is \$99.

The total amount of claims outstanding at the end of the year was \$5,106,961. The total amount collected during the year was \$2,181,074. We use the ratio of collections during the year to the amount of claims at the end of the year, 43 percent, as an estimate of the collection rate.

Data on the number of claims that fail the collection threshold, and the cost of such claims, are not available. We assume that the percent of established claims that fail the threshold is the same as that of Passaic County, 20 percent, and we assume the cost of suspending and terminating each failed claim is half that in Passaic County, \$20. Combining these assumptions with the post-establishment cost per claim yields an estimate of the post-establishment cost per claim that passes the threshold of \$119.

3. Utah

The Utah FSA establishes 260 claims in the average month. The pre-establishment activities cost \$48,684 per month. Post-establishment processing, not including hearings or court costs, is \$47,708 per month. In an average month, 47 DQH hearings and 11 fair hearings are completed, at a cost of \$13,831 to the FSA. In an average month, four claims are submitted to court, at a cost of \$6,548 to the FSA. The Utah FSA spends a total of \$116,773 per month on the claims process.

B. OPTIMAL THRESHOLD LEVEL

Chapter III shows that a threshold level that ensures that each claim that passes the threshold is cost-effective is the avoided downstream costs divided by the collection rate. The empirical approach to estimating the optimal threshold level is to measure the cost of processing a claim that passes the threshold, the cost of processing a claim that fails the threshold, and measure the average proportion of the claim amount that is collected.

1. Passaic County, New Jersey

From the cost data provided by the Passaic County FSA we estimate the average post-establishment cost per claim of \$541. To this figure we add the average pre-establishment cost per claim of \$90, producing a cost per claim for the entire process of \$631. If an establishment threshold were implemented in Passaic County the per claim cost of the steps downstream from the threshold would be \$541.

Before it can be used to compute the optimal threshold level this figure must be adjusted because it reflects the influence of the existing \$35 collection threshold. We assume that the 48 claims lost between Steps II.A and II.B in the Passaic County cost data failed the collection threshold, and that if these claims had not been screened out by the threshold, they would have incurred the same average cost as the claims that passed the threshold. The resulting adjusted post-establishment per claim cost is \$587.

Using a 60 percent collection rate, the optimal level for an establishment threshold is \$978 $(\$587/0.60)$.²⁰

The per claim cost of the steps downstream from the existing collection threshold is \$251. Using the same 60 percent collection rate, the optimal level for a collection threshold is \$419. This level is less than

²⁰The algebraic rationale for dividing the cost by the collection rate is presented in the Appendix, pages 43 and 44. The collection rate should include not only the payments made by households, but also foregone FSP benefits to households that disqualified from the program at an ADH

half of the optimal establishment threshold because calculating the amount of the claim occurs after establishment and costs more than half of the post-establishment cost of processing the claim.

2. Arizona

In Section A, we showed that the average cost to the Arizona FSA per overissuance is \$170. In order to correct this figure for the existing \$35 collection threshold, we assume that 20 percent of the established claims fail the collection threshold, and it costs \$20 to process each of these after they fail. Administrative records show that the collection rate in Arizona is 43 percent. A cost of \$119 per claim that passes the collection threshold means that the optimal collection threshold is \$277 ($\$119/0.43$). Unfortunately, the available data from Arizona does not support the estimation of the optimal establishment threshold. The optimal establishment threshold lies between \$277 and \$428. Since relatively little happens to a claim between establishment and the collection threshold in Arizona, since the verification, computation of the claim amount, and determination of the type of claim occurs before establishment, the optimal establishment threshold will be only slightly above the \$277 optimal collection threshold.

3. Utah

In Utah, the average total cost per claim is \$449. In order to correct this figure for the existing \$35 collection threshold, we assume that 20 percent of the established claims fail the collection threshold, and that it costs \$20 to process each of these after they fail. Administrative records indicate that the claims collection rate in Utah is 68 percent. These figures yield an optimal overissuance threshold level of \$658. Using these same assumptions about claims that fail the existing collection threshold, we calculate the cost downstream from the collection threshold per claim that passes the threshold at \$322, yielding an optimal collection threshold level of \$472.

VI. CONCLUSION

This study identifies the optimal location and level of a threshold in the FSP State claims collection process. To minimize the cost of the claims process, the optimal location is as far “upstream” in the claims process as possible. It is not feasible to apply a threshold much before establishing a claim because that is the first point at which the FSA determines the claim is legitimate and computes the amount of the claim. Thus, from this economic perspective, an establishment threshold is preferable to a collection threshold.

The Food Stamp Act of 1977 requires the FSA to pursue every claim involving fraud. This raises the concern that an implementation threshold might screen out some claims that would be shown to involve fraud by investigation conducted downstream from the threshold. By implementing the threshold at such an early point in the process, that is, before the FSA identifies the type of claim (fraud/nonfraud), the threshold would prevent the FSA from pursuing claims that, in fact, involve fraud. One possible resolution of this problem might be for FCS to require FSAs to presume all overissuances are potential nonfraud claims, until later investigation reveals evidence of fraud.²¹

If no threshold may be applied to fraud claims, the earliest point that a threshold can be implemented is after the claim has been established, after the fraud/nonfraud determination is made, and before any collection activities are performed. Thus, the existing collections threshold is at the optimal location if a threshold may not be applied to fraud claims.

The optimal level of a threshold at a given location is determined by the total downstream cost that can be avoided for each claim that fails to pass the threshold and by the proportion of the claim amount expected to be collected. The threshold level which ensures that every claim that passes the threshold is

²¹MPR is not offering a legal opinion in this matter. This issue can be resolved only by FCS seeking legal counsel.

cost-effective is computed by dividing total downstream costs avoided by claims that fail the threshold by the collection rate.

Several patterns emerge from the resulting estimates, summarized in Table VI.1. The optimal collection thresholds are uniformly many times higher than the existing \$35 collection threshold, and several times higher than the \$100 collection threshold used by several FSAs under FCS waivers. This means that either the existing collection thresholds are too low or that the deterrent value of the claims process is much larger than the unmeasured costs of the claims process. As discussed in Chapter III, such a circumstance results in lowering the optimal threshold level below the estimates presented in Table VI.1. Since both deterrence and unmeasured collection costs are not quantified, we do not know which is larger. It seems unlikely that deterrence is so much larger than unmeasured collection costs that the true optimal is a small fraction of the estimated optimal.

A second conclusion from Table VI.1 is that there is substantial FSA-to-FSA variation in the optimal threshold level. This suggests that there is no uniform national optimal threshold, and that FSAs be permitted to set their own levels based on a cost study. Perhaps this could be done through a waiver process similar to that recently used by FCS in granting permission to several FSAs to raise their collection thresholds to \$100.

TABLE VI.1
SUMMARY OF OPTIMAL THRESHOLD LEVELS

	Collection Threshold	Establishment Threshold
Passaic County, NJ	\$419	\$978
Arizona	277	NA
Utah	472	NA

REFERENCE

TASCON, Inc. "Guidelines for Selecting and Supplementing Cost Effective Collection Tools for Delinquent Claims." Bethesda, MD: TASCON, Inc., 1995.

APPENDIX

A MODEL OF OPTIMAL THRESHOLDS

In the Appendix we develop a model of optimality from the perspective of the entire population of claims, rather than the individual claim. We begin by presenting the model for individual claim optimality.

A. OPTIMALITY FOR AN INDIVIDUAL CLAIM

For an individual claim that passes the threshold, let

$$S_i = \beta_1 * A_i$$

where S is the amount collected, β_1 is the collection rate, A is the amount of the claim, and I is an index of the claim. For a claim that fails the threshold,

$$S_i = 0$$

The cost of a claim that passes the threshold, $A \geq T$ where T is the level of the threshold, is

$$C_i = \beta_2$$

where C is the cost and B_2 is the constant cost per claim. For a claim that fails the threshold, $A < T$,

$$C_i = \beta_3$$

where $\beta_3 < \beta_2$.

The claim amount A that generates collections equal to the cost of collecting the claim is

$$A^* = \frac{\beta_2 - \beta_3}{\beta_1} \quad \text{Equation A.1}$$

where the numerator is the cost avoided by a claim that fails the threshold, and the denominator is the collection rate. Setting the threshold at \hat{A} guarantees that every claim that passes it will be cost effective.

B. OPTIMAL THRESHOLD FOR THE PROCESS

Requiring every single claim that passes the threshold to be cost-effective may be an unnecessarily stringent standard. Claims whose amount exceeds \hat{A} generate more collections than they cost to collect. When total collections and total cost are summed over all claims that pass the threshold, collections exceed costs, and the cost-effectiveness ratio of the entire process is above 1.0.

In this section we derive an expression for the threshold that optimizes the claims process as a whole, rather than optimizing each claim individually.

Let us define the total gross savings from the entire population of claims to be:

$$S_{tot} = \beta_1 * \int_{A=T}^{\infty} (A * f(A)) dA$$

where the amount, A, of the claim is distributed in the population normally with mean μ and variance σ^2 . The expression $f(A)$ is the density function of that normal distribution and T is the level of the threshold.

The total cost of the process is

$$C_{tot} = \beta_2 * \int_{-\infty}^{A=T} f(A) dA + \beta_3 * \int_{A=T}^{\infty} f(A) dA$$

where the first term on the right side of the equation is the total cost of claims that fail the threshold, and the second term is the total cost of claims that pass the threshold. As we assumed in Section B, $\beta_3 < \beta_2$. The integral in the first term is the area under the probability density function of A to the left of T. The integral in the second term is the area under the probability density function to the right of T.

Having expressions for total savings and total costs, we now define optimality of the claims process as a whole in two ways. The first and most straightforward way is to set the threshold at the level at which net savings, that is, the difference between savings and cost, is maximized, or

$$\max (S - C)$$

This is the “profit maximizing” definition of optimality, in that it maximizes the excess of collections over the costs of collecting claims. If the FSA were a profit maximizing firm, this would be the appropriate definition of optimality.

The claims collection component of the FSA, however, is a public agency performing a law and regulation enforcement function, rather than a profit maximizing firm. Much of the value of public expenditures on law and regulation enforcement is their deterrent effect. The knowledge that the public agency might detect and prosecute an intentional program violation deters some FSP clients from committing such a violation. Although it is virtually impossible to measure the number of violations that were prevented by operating a claims collection process, we assume that the value of deterrence decreases as the threshold is set at higher levels. As the threshold is set at higher levels, the potential violator views the likelihood of violation being pursued decreasing.²² As shown in Section D below, adding the value of deterrence to the expression for S_{tot} generally results in lowering the optimal threshold.

Since the effect of adding deterrence is to lower the optimal threshold level and since the value of deterrence is not measured, we approximate the effect of adding deterrence to the model by adopting an alternative definition of the optimal threshold level. Instead of setting the threshold level such that $S - C$ is maximized, we set the level such that total savings equal total costs, or $S - C = 0$.

²²In a law and regulation enforcement setting, it is important that information about the threshold be withheld from the public in general, and clients in particular. Withholding this type of information is practiced by many similar Federal agencies, including the IRS.

In order to evaluate the integrals in S_{TOT} and C_{TOT} , we must assume that claim amounts are distributed in a particular way. For each distribution of claim amounts from the three states for which we have claim data--Alabama, Arkansas, and Passaic County, New Jersey--

$$\text{Mean } A > \text{Median } A > \text{Mode } A$$

We also know that the distribution of A cannot extend below $A = 0$. These characteristics suggest that the probability density function of A is lognormal,

$$Z = \ln(A)$$

where Z is distributed $N(\mu_2, \sigma_2)$.

The mean of A , μ_A , and standard deviation of A , σ_A , are measured from the claims data from the three states listed above. From μ_A and σ_A , μ_2 and σ_2 for the analogous normal distribution are computed.²³

$$\sigma_2^2 = \ln \left(\frac{\sigma_A^2 + \mu_A^2}{\mu_A^2} \right)$$

$$\mu_2 = \ln \mu_A - \frac{1}{2} \ln \left(\frac{\sigma_A^2 + \mu_A^2}{\mu_A^2} \right)$$

We next convert z into a standard unit normal distribution, u :

$$z = \frac{Z - \mu_2}{\sigma_2}$$

$$z_T = \frac{Z_T - \mu_2}{\sigma_2}$$

Where z_T and Z_T are the values of z and Z that correspond to the threshold T . Setting $S_{TOT} = C_{TOT}$ and making these substitutions yields:

²³These expressions are derived from equations 6.1 and 6.2 in Johnson and Kotz (1970), p. 115.

$$\beta_1 * \int_{z=z}^{\infty} (A * f(z)) dz = \beta_2 * F(z_T) + \beta_3(1 - F(z_T)) \quad \text{Equation A.2}$$

where $f(z)$ is the standard normal probability function and $F(z)$ is the cumulative standard normal function.

The savings on the left side of the Equation A.2 can be expressed in terms of the average amount of claims greater than the threshold times the proportion of claims above the threshold:

$$\beta_1 * \bar{A}_T * (1 - F(z_T)) - [\beta_2 * F(z_T) + \beta_3(1 - F(z_T))] = 0 \quad \text{Equation A.3}$$

where \bar{A}_T is the mean value of A for claims that pass the threshold:²⁴

$$\bar{A}_T = \exp\left\{\left[\left(\frac{f(z_T)}{1 - F(z_T)}\right) * \sigma_z\right] + \mu_2\right\}$$

Equation A.3 is expressed in terms of the β s, $f(z)$, $F(z)$, σ_z , and μ_z . All of these terms are known except z_T . Equation A.3 is solved for z_T numerically, yielding z_T . This standard normal term is converted to Z_T by:

$$Z_T = (z_T * \sigma_2) + \mu_2$$

Finally Z_T is converted to T by

$$T = e^{Z_T}$$

T is the threshold at which the cost-effectiveness of the claims process is 1.0.

²⁴For X distributed N(μ , σ) and truncated from below at T:

$$E(X) = \left\{\left[\frac{f(T)}{(1 - F(T))}\right] * \sigma\right\} + \mu$$

C. UNMEASURED COSTS

As detailed in Chapter V, it is not feasible to measure all the costs associated with collecting claims. While measuring the costs borne by the FSA is straightforward, some costs are borne by other public agencies, such as municipal and county courts and the state agency that is responsible for criminal investigations and prosecutions. Unmeasured costs enter the model as an additional term in the cost equation:

$$C_{tot} = \left[\beta_2 * \int_{-\infty}^{A=T} f(A) dA \right] + \left[(\beta_3 + \beta_5) * \int_{A=T}^{\infty} f(A) dA \right]$$

where β_5 is the unmeasured cost per claim that passes the threshold. The addition of unmeasured costs to the model increases the optimal level of the threshold.

D. OPTIMAL THRESHOLD LOCATION

Let us divide the claims process into two mutually exclusive and exhaustive portions, the portion occurring prior to the collection threshold, the upstream portion, and the portion occurring after the threshold, the downstream portion. Through the model described in Chapter III, the downstream portion is optimized, such that downstream costs, C_{DS} , equal collections, S , all of which are assumed to be downstream of the threshold. If the FSA incurs substantial costs upstream from the threshold, C_{US} , then the entire claims process is not optimized, that is, $S < C_{DS} + C_{US}$. The FSA spends more to collect claims than it collects from that process. The larger is C_{US} the farther from cost-effectiveness will be the claims process.

In order to bring total savings into equality with total cost, one can either raise the level of the threshold or move the threshold upstream. Assuming for simplicity that A is distributed normally, rather than lognormally, the former strategy involves finding the threshold level, T , such that

$$S_{TOT} = \beta_2 * F(t) + \beta_3*(1 - F(t)) + C_{US}$$

where $t = \frac{T - \mu_A}{\sigma_A}$ and C_{US} is the cost of processing a claim before the threshold is applied to the claim. C_{us} is not multiplied by a term involving the cumulative normal because all claims, both those that subsequently pass and those that fail the threshold, result in these costs.

The second strategy is moving the threshold upstream to the beginning of the process. This involves setting T such that

$$S_{TOT} = \beta_2 * F(t) + (\beta_3 + C_{US}) * (1 - F(t))$$

Claims that fail the threshold result in costs of β_2 , and claims that pass the threshold result in costs of $\beta_3 + C_{us}$.

The optimal threshold level under each strategy equates savings to costs, producing a cost-effectiveness ratio of 1.0. Even though both strategies (raising the threshold and moving the threshold) are equally optimal from the perspective of their cost-effectiveness ratio, they are not equivalent in terms of total costs. The second strategy (moving the threshold) results in fewer claims with the extra C_{US} costs than does the first strategy (raising the threshold). If we use the same threshold level for the two strategies, the difference between the total cost under the first strategy, $C_{TOT,1}$, and the total cost under the second strategy, $C_{TOT,2}$, is

$$C_{TOT,1} - C_{TOT,2} = C_{US} * F(t).$$

Thus, even though both strategies have a cost-effectiveness ratio of 1.0, moving the threshold upstream reduces the overall cost of claims collection, and is therefore preferable to leaving the threshold in its original position and increasing its level. This result holds if A is distributed lognormally.

E. RESULTS

The threshold levels computed in Section V.B guarantee that every claim that passes the threshold is cost-effective. Such a threshold results in the cost-effectiveness ratio of the entire claims process exceeding 1.0. This is because all claims whose amount exceeds the threshold generate more collections than they cost to collect. Therefore the threshold can be set at levels below those computed in Section B and still result in a cost-effective claims process. The model presented in the Appendix generates the threshold at which the cost-effectiveness of the entire claims process is 1.0.

Passaic County, New Jersey is the only participating FSA that has provided both cost data, presented in Section A, as well as claims data from which the mean and standard deviation of the distribution of claim amount can be computed. The parameters used to solve Equation A.3 for the optimal threshold are listed in Table A.1.

We have assumed the cost of suspending and terminating a claim that fails the threshold is \$40 for the collection threshold. This cost is taken to be \$0 for the establishment threshold, since one of the

TABLE A.1
PARAMETERS FOR PASSAIC COUNTY, NEW JERSEY

Parameter	Collection Threshold	Establishment Threshold
Cost of a Claim that Passes the Threshold	\$251	\$587
Cost of a Claim that Fails the Threshold	\$40	\$0
Collection Rate	60%	60%
Mean Claim Amount	\$339	\$339
Standard Deviation of the Claim Amount	\$543	\$543
Optimal threshold	\$204	\$638

advantages of such a threshold is that claims that fail the threshold are never established as claims, and so need not be suspended and terminated.

The collection rate is set to the 1994 rate of 60 percent. The actual collection rate may be a function of the claim amount, and indeed may be endogenous, depending on the level and location of the threshold. This complication has not yet been incorporated into the model. If the collection rate rises with the claim amount, the true optimal threshold is smaller than our estimate.

The mean and standard deviation of the claim amounts are measured from claims data provided by Passaic County. These figures are also endogenous. As the threshold level changes, the distribution of claim amounts change, affecting the mean and standard deviation of the claim amount. We have ignored this endogeneity for this estimation.

The final row of Table A.1 presents the optimal threshold level that solves Equation A.3. The optimal collection threshold is \$204, and the optimal establishment threshold is \$638. For each type of threshold, the threshold that makes the cost-effectiveness ratio of the entire claims process equal to 1.0 is about half of the threshold that ensures that every claim is cost-effective.

Table A.2 summarizes all the estimated optimal threshold levels. Two sets of estimates are provided for Passaic County, one optimizing each claim, and the other optimizing the claims process as a whole. The estimates for Arizona and Utah optimize each claim individually.

TABLE A.2
SUMMARY OF OPTIMAL THRESHOLD LEVELS

	Collection Threshold	Establishment Threshold
Passaic County, NJ		
Individual Claim Optimality	\$419	\$978
Total Process Optimality	204	638
Arizona	277	NA
Utah	472	NA