

A COST-PER-CASE MODEL FOR  
TEXAS DISABILITY DETERMINATION SERVICES

BY

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### DEDICATION

To Katie and Claire, for their assistance, support and love.

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CHAPTER I: INTRODUCTION

Does the cost-per-case (CPC) model, as outlined in the Social Security Administration's Cost Estimate Measurement System (CEMS), result in an accurate allocation of operating funds to state Disability Determination Services?

This question is very important because of the immediate impact it has on the quality of service provided to applicants for disability consideration through the Social Security system. Except in a very small percentage of cases, a typical application takes at least thirty days to process and some extend to several months. Aside from the time required to assemble the medical evidence (which may include consultative medical examinations), other factors such as number of examiners and number of cases in an average caseload directly affect how expeditiously and qualitatively a decision is derived in each situation. Therefore, accurate funding levels are necessary to provide relief for deserving applicants, most of whom are already financially desperate at the time of their request for assistance.

Social Security's Cost Effective Measurement System seems to disregard some factors that are extremely important in determining an accurate cost-per-case. Formulating a different cost projection model will be the purpose of this research. Using regression analysis, the model will estimate how much it costs to process a disability case. This alternative will incorporate relevant information that appears to be absent from CEMS.

## CHAPTER II: FEDERAL SETTING

### Introduction

This chapter will discuss the Federal setting which influences all state disability determination services. First, the history of the arrangement between the Federal government and the states will be outlined. Next, Production Per Work-Year, the previous method of computing the Federal revenue allotment to state disability agencies, is presented. Finally, the newest system of calculating cost-per-case, the Cost Effectiveness Measurement System, is reviewed.

### History of Federal/State Arrangement

Two social security disability programs<sup>1</sup> are administered by 54 state disability determination services<sup>2</sup> (DDSS). The DDSS make disability determinations under arrangements with the Secretary of Health and Human Services (HHS). At the federal level, management of the programs rests with the Social Security Administration (SSA). Responsibility within SSA is further distributed among ten regional SSA offices, with Texas being under the auspices of the SSA Regional Office in Dallas. Administration costs of both the SSA and state DDSS are borne entirely by the federal government.

SSA gives the DDSS guidelines to develop and process disability claims and criteria by which to make disability determinations. The legislative history of the programs

suggests that they are intended to be uniformly administered. Because the personnel involved are state employees, however, state laws and practices control many of the administrative actions. Thus, there are significant variations among the DDSs' program administrations.

Before 1980, the DDSs operated under formal agreements with SSA. In response to a 1976 General Accounting Office report<sup>3</sup> critical of SSA's management role, SSA revised the agreements in 1978 to place stronger administrative requirements on states. The revised agreements required DDSs to comply with guidelines issued by SSA for organizational structure, physical facilities, personnel, and medical consultative services. These revisions empowered SSA to terminate an agreement if the state did not comply with the guidelines. Partly because the states regarded the revisions as infringements on their traditional prerogatives, SSA was able to get only 21 of the 54 DDSs to sign the revised agreements prior to 1980, with the remaining DDSs operating under the old agreements.<sup>4</sup>

To strengthen SSA management of the disability programs, the Congress in 1980 amended the Social Act to allow greater SSA control and oversight of the DDSs. The 1980 Disability Amendments required states to comply with federal regulations and other written guidance, called for regulations specifying performance standards, and could, as the Secretary of HHS saw fit, be used to regulate:

- \* the administrative structure of the DDS;
- \* the relationship among units of the state agency and organizations performing tasks for the DDS;
- \* the physical location of a DDS;
- \* a DDS's performance criteria (decision accuracy, timeliness, HHS review of procedures, and other items);
- \* fiscal control procedures; and
- \* when and in what form reports should be submitted to SSA.<sup>5</sup>

Congress recognized that the Secretary might have to assume the disability determination functions if a DDS failed to make determinations consistent with established guidelines or if a DDS decided to stop participating in the programs. Therefore, the Secretary submitted the required plan for assuming these functions to the Congress on November 20, 1980. In addition, the amendments required SSA to increase its review of DDS decisions to award or continue benefits before any payment action was taken. From fiscal 1983 forward, this "pre-effectuation review" by the SSA was required to cover sixty-five percent of decisions.<sup>6</sup>

In implementing the 1980 amendments, SSA chose to allow the states maximum managerial flexibility because, although Congress authorized the agency to regulate detailed administrative requirements and procedures, SSA believed that such an approach would lead to DDSs withdrawing from the programs. SSA issued regulations in 1981 allowing the DDSs generally to administer the programs as they wanted as long

as they met federal performance standards. The following standards were set for "acceptable" accuracy and timeliness of disability determinations for both DI and SSI: combined Title II (DI) and Title XVI (SSI) decision accuracy of 90.6 percent; Title II case-processing time averaging 49.5 calendar days or less; and, Title XVI case-processing time averaging 57.9 calendar days or less. SSA expected these performance standards to be relatively easy to meet since every state except four was already meeting them.<sup>7</sup>

Some of the other criteria and guidelines SSA gave DDSs for administration of the disability determination process were general and open to interpretation. For example, personnel guidelines specify neither educational requirements or qualifications for a DDS professional staff nor staffing compositions, only that the state should provide sufficient qualified personnel. Also, the DDSs were given significant management flexibility to determine their own organizational makeup, case-flow and workload management, training requirements, staffing levels and configurations, employment requirements, and types of equipment.<sup>8</sup>

#### Funding by Production Per Work-Year

To allocate resources among the DDSs, SSA used a productivity measurement system referred to as production per work-year (PPWY). This means the amount of work produced (measured in cases completed), divided by the number of work-years used to complete that work. Once a national production

goal was established by SSA for a fiscal year, staffing levels and production goals were set for each DDS, considering a number of factors, including expected workload, existing staffing, and planned attrition. Using these data, SSA headquarters staff made the final judgements on each DDS's staff level.<sup>9</sup>

SSA's measurement system considered all disability workloads the same, and counted only in-house staff of the DDSs. It did not account for the many variances in DDS operations, particularly such differences as use of contracted labor, type of cases, and level or magnitude of assistance provided by other state agencies. For example, 43 of the 54 DDSs contracted for various services in 1987, including medical services, transcribing services, clerical personnel, computer services, mail services, security, and legal services. It was estimated that the contracted services for participating DDSs cost more than \$16 million in 1987 and would be equivalent to over 450 work-years if done in house.<sup>10</sup>

SSA recognized most of the weaknesses in its PPWY measurement system. Because operating conditions varied greatly from state to state, SSA developed a new system that automatically adjusts each DDS's reported cost and productivity data to reflect certain factors beyond the DDS control, such as case mix by program and adjudication level, and costs of outside services. This new system was named the Cost Effectiveness Measurement System, and will be described in the next section.

### Cost Effectiveness Measurement System

Historically, SSA's Cost Effectiveness Measurement System (CEMS) has been employed primarily as an analytical tool to evaluate costs and performance among the 54 DDSs. It was first introduced in 1982, but in 1988 SSA proposed to adapt CEMS to be used as a new method of determining resource allocation to the DDSs, replacing the PPWY system. One state from each SSA region was selected (Texas was chosen in its region) to participate in a pilot program to evaluate the effectiveness of this new program. Initially intended to be implemented in fiscal year 1989 , it was delayed until fiscal year 1990.

CEMS was chosen because it was already tracking all expenditures incurred by each DDS regardless of whether it was done in house or contracted out. Various costs (data collected by DDS and reported quarterly to SSA) were categorized under four classifications: personnel, medical, non-personnel, and indirect. Additionally, production data (collected by SSA in the form of case clearances) were included.

In calculating a specific cost-per-case allotment for each state, three factors are adjusted by regionally determined indices. Labor costs are adjusted based on a labor index (obtained from the Bureau of Labor Statistics) which standardizes the varying costs of labor in different states (i.e., states with low labor costs in relation to the

national average of private-sector labor costs have their costs inflated; states with high labor costs in relation to the national average have their costs deflated). Medical costs are adjusted based on a state medical index (derived from the average actual physician-submitted Medicare charge) which standardizes the varying costs of medical services in different states. Actual case clearances reported is adjusted based on the workpower intensiveness of each type of case, derived from national work-sampling data (this compensates states for the peculiarities of their workload mix--those states with a particularly workpower-intensive workload mix receive additional case clearance credit).<sup>11</sup>

Once these weighted figures are derived, they are used to compare each state against the other and the national average (calculated by finding the mean of all the state figures). States then have their cost-per-weighted-case adjusted according to where it falls in relation to the national weighted average. Usually, SSA takes the difference between the two figures, state and national, and adds (if below the national average) or subtracts (if above) to the state cost-per-weighted-case. These adjusted totals are manipulated again by the labor and medical indices to arrive at SSA's final cost-per-case estimate.

Data from a preceding base period is used to calculate projected workloads and funding requirements for the upcoming fiscal year. Since CEMS is a quarterly reporting system and

SSA must prepare this prediction prior to a fiscal year starting date of October 1, the most recent data available for this analysis is that from the last two quarters of the previous fiscal year plus the first two quarters of the present fiscal year (i.e., data collected from April through March). To arrive at a funding cost-per-case, the weighted figure derived for expenditures is divided by the weighted figure derived for expected workload for each state.

Producing an adjusted cost-per-case for each state is the net result of the CEMS approach. This figure is modified by the state's labor and medical costs as well as its workload mix relative to the national average. Given these accommodations, the states are expected to operate within a fairly narrow cost band. Primarily, the difference between the CEMS funding system and the PPWY system is that it relies less on historic trends and more on achievement of cost-per-case funding targets.

## CHAPTER III: LITERATURE REVIEW

### Introduction

In this chapter the conceptual framework for the newly specified cost-per-case estimation model will be established. In contrast to theoretical issues associated with model building, this applied research project is attempting to correct perceived distortions in an existing estimating model by focusing more on estimation technique and effectiveness. The first four elements will be the same basic ones used in Social Security's Cost Effectiveness Measurement System (CEMS) model: personnel costs, medical costs, non-personnel costs, and indirect costs. Additionally, two other elements are proposed that should be integral parts of the cost-per-case estimating model: processing time and accuracy (or quality). Therefore, the model specifies that cost-per-case is a function of traditionally defined cost factors (personnel costs, medical costs, non-personnel costs, and indirect costs), and two new items (processing time and accuracy).

### Basic Elements

To produce goods or a service, business and economic theory states that there must be resources input into the process to achieve a result. The following four elements have long been accepted<sup>12</sup> as basic, necessary inputs to achieve the desired outputs, whether in the private or public

sector. A detailed description of the factors involved in each of these elements as it relates to cost-per-case in the Disability Determination Service is provided.

### **Personnel Costs**

These costs include personnel salary and benefits. Personnel costs are divided into two categories: direct personnel costs and support personnel costs. Direct personnel costs contain the costs of those personnel who are directly involved in the case-processing stream. For example, these are classified as medical consultants (in-house), examiners, examiner trainees, hearing officers, case consultants, vocational specialists, supervisors, clerical, and part-time employees. Direct personnel costs are presumed to be proportional to the volume of cases processed and can be expected to fluctuate over time as the case load rises or declines. Isolation of costs for each of the categories included in direct personnel costs promotes analysis of the effects of management decisions about adjusting resources and the resource mix over time to meet changing caseload conditions.<sup>13</sup> Actually, these costs are determined only once a year at the beginning of the fiscal year in October, and based on the previous base period costs.<sup>14</sup>

Support personnel costs consist of the salary and benefits costs provided to Disability Determination Services administrative personnel and quality assurance personnel, as well as the relevant proportion of Texas Rehabilitation

Commission (TRC) State Office administrative, accounting, human resources (personnel), and data processing personnel costs. Costs assigned to this category normally do not directly fluctuate with the size of the agency's case load. Certainly, these costs are expected to fluctuate over time, but not as directly, nor as immediately, in relation to case load as do direct personnel costs. Isolation of costs included in support personnel costs promotes analysis of the effects of decisions regarding levels of personnel resources assigned to these activities in order to meet various administrative goals, including those related to timeliness and accuracy.<sup>15</sup> Hence, a positive relationship between personnel costs and cost-per-case is hypothesized.

#### **Medical Costs<sup>16</sup>**

Medical costs are those purchased medical services incurred by the agency to obtain the medical information necessary to make eligibility determinations. Reported costs are comprised of obligated amounts. These costs are categorized as: consultative examination (CE) costs, medical-evidence-of-record costs, and applicant travel costs (costs associated with the applicant's travel and subsistence expenses connected with CEs, vocational workshops, and disability hearings).

A consultative examination is an examination of an applicant by a licensed physician, psychologist, or vocational specialist at the agency's request. Costs for

medical examinations, psychiatric examinations, psychological evaluations and tests, X-rays, and laboratory tests would be included under CE costs. In addition, costs for vocational assessments should be included CE costs. A vocational workshop or assessment is an evaluation and testing of the claimant's functional abilities through job sampling and task performances.

Medical evidence of record (MER) is defined as document(s) received from a licensed physician, clinic, hospital, or other providers of medical services which provide the medical history of the applicant for the purpose of documenting disability claims. In addition, costs incurred in the attainment of vocational assessment records should be included under MER costs. Therefore, a positive relationship between medical costs and cost-per-case is hypothesized.

#### Non-Personnel Costs<sup>17</sup>

Non-personnel costs are operating costs which include: occupancy, staff travel, furniture and equipment, supplies, communications, contractual, electronic data processing (EDP), and other costs.

The following expenses are included in the occupancy costs:

- \* Lease Expenses: rental expenses for office space occupied by the DDS;
- \* Maintenance Costs: expenses for the general upkeep of the office space and includes repairs and contracted janitorial services;

- \* Utility Costs: expenses for heat, light, and water;
- \* Leasehold Improvements: expenses for modifications or improvements to the office space;
- \* Building Security: expenses for contracted building security services;
- \* Trash Removal: expenses for the removal of trash or debris from the building; and
- \* Pest Control: expenses for pest control services.

Staff-travel costs are the sum of in-state and out-of-state costs associated with travel of agency personnel in the execution of the disability determination function.

Furniture and equipment costs includes the purchase, rental, or lease of the following items: office furniture and furnishings (chairs, desks, file cabinets, etc.), word processing equipment, telecommunications equipment, reproduction equipment, dictaphones and recorders, security equipment, and other furniture and equipment as defined by existing policy.

Items included in supply costs are: office supplies, reproduction paper and supplies, printing, stationery, data processing paper and supplies, word processing paper and supplies, and small equipment purchases.

Communications costs includes costs for telecommunications, postage, and delivery. Telecommunications includes costs such as telephone and line charges for data transmittal, telephone line and service charges, and telephone equipment rental. Postage and delivery costs

includes postage, box rentals, freight charges (not related to shipment of furniture and equipment), contracted delivery services, and other delivery charges (e.g., Federal Express).

Contractual costs include costs associated with the acquisition of services normally performed by DDS personnel. They represent outside services, not charges that may have been contracted with another state agency. Examples of common contractual services are: clerical services such as medical transcription, word processing, and other temporary agency services; voucher processing; equipment-maintenance contracts; outside accounting or legal services; and consulting services (except data processing (EDP) consultations which are reported as an EDP cost). Some contracted costs are excluded because they are represented in a designated category, such as medical consultants (included in personnel costs), EDP equipment maintenance (included in EDP costs), and building maintenance contracts (included in occupancy costs).

Electronic data processing (EDP) costs, relating to data processing equipment and services, includes: data processing equipment, computer service center charges, direct charges from other state agencies for EDP services, programming services and software, EDP consulting, and EDP maintenance. Costs for data processing paper and supplies are included in the supplies category.

All other non-personnel costs which have not been previously identified may include: publications,

subscriptions, dues, seminars, and miscellaneous external training (including tuition reimbursement). Thus, a positive relationship between non-personnel costs and cost-per-case is hypothesized.

### Indirect Costs<sup>18</sup>

Indirect costs include payments for a variety of services provided to the DDS by its parent agency or another agency of state government which are not billed directly to the DDS. Generally the indirect costs charged to the DDS are an allocation of a larger pool of costs charged to a higher level of state government (e.g., parent agency). Indirect costs are broken down into the following categories:

- \* Accounting Services: charges which cover accounting and record-keeping services received (such as auditing and budgeting);
- \* Data Processing Services: charges for data processing services received, not reported as direct charge EDP costs;
- \* Personnel Services: charges for state personnel services received (such as screening, personnel file record keeping, and labor relations);
- \* Building Occupancy: proportional costs assessed through the indirect cost mechanism for space occupied by those providing services for DDS;
- \* Other State Agency Costs: all other charges to the indirect cost pool which cannot be readily analyzed and which often represent charges from a statewide indirect cost allocation; and
- \* All Other: costs not classified in the other categories (such as legal services and printing services) representing "pure overhead" costs. "All Other" also includes indirect costs pertaining to accounting, data processing, personnel, or building occupancy services which the DDS does not receive.

In many situations, the composition of indirect charges to the DDS will not be known. In these situations, a DDS analyzes the composition of the indirect cost pool on the next higher level (such as parent agency). If the composition of this cost pool is documented, the DDS assumes the same attributes apply to its indirect cost pool. If the composition of the parent agency's cost pool is not documented, the DDS continues up the state hierarchy, perhaps to Department level, perhaps above, until arriving at a cost pool whose composition is documented. At that point, the DDS analyzes the components of the large indirect cost pool and assumes the same attributes apply to the DDS's indirect cost charges.

Indirect costs, then, comprise the estimated costs of necessary services provided by other supporting entities. Consequently, a positive relationship between indirect costs and cost-per-case is hypothesized.

#### Two Additional Elements

Logically, the way to consider the next two elements, processing time and accuracy, is with the concepts embodied in productivity theory. Productivity is the relationship between output of products and services and input of resources: output divided by input. Productivity is the efficiency with which resources are used to produce and deliver services or products at specified levels of quality

and timeliness. This criterion leads to a definition of productivity that has three elements: efficiency, quality, and timeliness. If quality or timeliness decreases at the expense of improved efficiency, productivity has not improved.<sup>19</sup>

In systems language, inputs are transformed into outputs aimed at meeting desired standards. Each element of the production process (that is, input, throughput, output, and standards) can be broken down into specific characteristics for analytical purposes in the following chart (Figure 3.1), some of these characteristics are listed beneath the appropriate element:

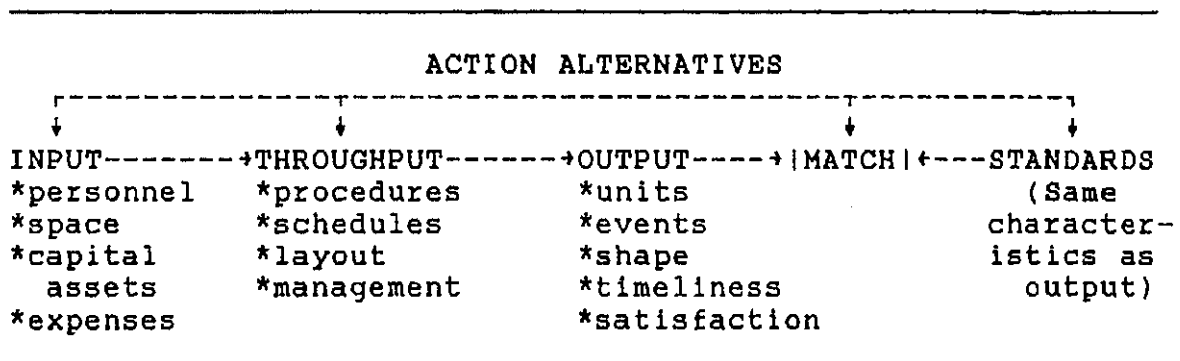


Figure 3.1 The Production Process and its Elements<sup>20</sup>

In general, the process above explains that inputs are converted to outputs and matched with standards (or expectations of results) to discern whether the process should continue and what improvements might be made. If outputs do not meet standards, specific attributes can be

revised under the elements of input and throughput, or standards can be changed. In order to control this process, ratios are used. The comparison of output to input is known as efficiency, and the ratios of output to standards are called effectiveness measurements. A productive process is one which optimizes efficiency and effectiveness ratios.<sup>21</sup>

As can be seen, the first four basic elements detailed above are part of the input. In the following discussion, the necessity of including two additional elements in the cost-per-case estimating model, processing time (timeliness) and accuracy (effectiveness), will be explored.

#### *Processing Time*

In determining a disability case, processing time is a critical factor in the procedure. It is a prime determinant of how soon an applicant will know whether and/or when they will receive disability benefits. Average processing time is a factor included in the evaluation of an examiner's job performance. Economically speaking, it also determines the total cost of processing a case, since each additional day the case is being processed adds to the total cost. Hence, timeliness has a direct influence on the cost of determining a case.

In the private business sector the capacity of the production system defines a firm's competitive boundaries.<sup>22</sup> Capacity is the rate of output that can be achieved from a process and this characteristic is measured in units of

output per unit of time.<sup>23</sup> The term capacity implies an attainable rate of output but says nothing about how long that rate can be sustained. To avoid this problem, the concept of best operating level is used: the level of capacity for which the average unit cost is at a minimum.<sup>24</sup> This is depicted in Figure 3.2. Note that as we move down the curve, we achieve economies of scale until we reach the best operating level, and we encounter diseconomies of scale as we exceed this point.

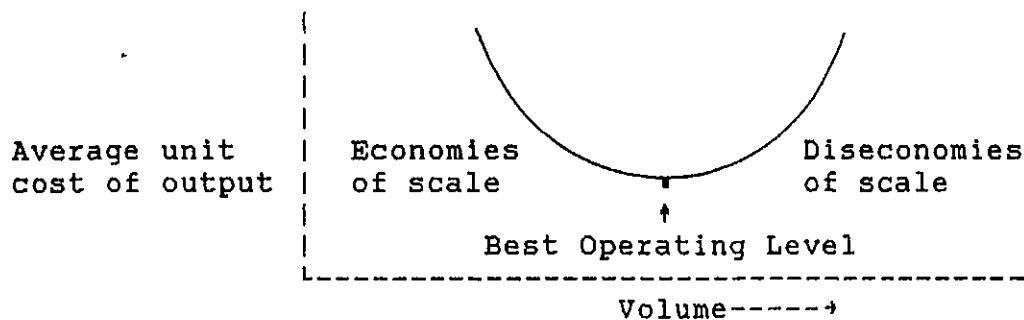


Figure 3.2 Economies of Scale<sup>25</sup>

Economies of scale is a well known economic concept: as a plant gets larger and volume increases, the average cost per unit of output drops because each succeeding unit absorbs part of the fixed costs, but this reduction in average unit cost continues until the plant gets so big that coordination of material flows and staffing becomes so expensive that the best operating level is surpassed and diseconomies of scale results. This concept was recognized early on by economists. Charles Babbage warned that increasing capacity

beyond the optimal extension of specialization would not yield further economies.<sup>26</sup> Alfred Marshall, a systematic economic theorist in the early twentieth century, posited as a general principle that further increases in one input while keeping the others fixed would yield decreasing returns.<sup>27</sup>

Social Security's practice of establishing cost-per-case at the beginning of a fiscal year and not providing for situations when the volume of input increases beyond predicted levels is a prime example of failing to consider the above theories of capacity, best operating levels, and economies of scale. As the volume of case receipts increases, the caseloads of examiners expand proportionately. Without increasing the number of examiners to handle the increased volume, caseloads move past the best operating level to diseconomy because of the backlog of cases that accumulates beyond the capabilities of the examiners. This increased workload causes more time to be needed to complete each case, thus elevating the total cost-per-case.

This also violates the concept of productivity. Timeliness and efficiency are sacrificed in the situation described. The third element of productivity, effectiveness, will be explored in the following subsection.

#### **Accuracy**

Accuracy, as it has been illustrated above, may be also called quality or effectiveness. It is defined by Social Security and DDS as a case that has been correctly reviewed,

evaluated, and a decision made (as to the relative disability of the applicant) according to statutory and policy requirements delineated by Congress, the Social Security Administration, and Texas Disability Determination Services. It is also a performance evaluation element for examiners. Additionally, it has a direct influence on processing time because any case that has had an inaccurate evaluation, as determined by Quality Assurance, is returned for correction, and the clock is still running.

Accuracy is determined, as illustrated in Figure 1, by comparing output to a standard. From an economic perspective, when accuracy is emphasized and subsequently improved, waste is decreased or eliminated.<sup>28</sup> However, when the capability of a worker is exceeded, then quality decreases.<sup>29</sup> In addition, when attempts are made to increase output without providing comparable resources to accomplish the task, then an erosion in service quality is the result.<sup>30</sup> Where efficiency is stressed, employees may adapt their work routines to achieve measurable objectives regardless of client needs, thus sacrificing service quality.<sup>31</sup>

It follows then, that accuracy has a positive influence on cost-per-case, and should be considered when formulating a model to estimate a more accurate forecast. As shown, decreasing accuracy has a negative impact on service to the disability applicant by potentially prolonging processing

time. Also, if the applicant decides to appeal an adverse decision, increased costs will accrue through this process.

### Conclusion

Matzer points out that to develop and maintain a successful program it must be adequately staffed and financed, productivity must be integrated into the budget process, and a system must be established using workload, efficiency, and effectiveness measures.<sup>32</sup> An accurate estimate of cost-per-case must include the vital elements. As shown, the model must include not only the traditional inputs of personnel, medical, non-personnel, and indirect costs, but also productivity measures of timeliness and quality.

The following equation summarizes the hypotheses developed in this chapter. The (+) sign under the variables indicates the hypothesized direction of the relationship:

$$\begin{array}{l} \text{CPC} = \text{personnel costs} + \text{medical costs} + \text{non-personnel costs} \\ \quad \quad \quad (+) \quad \quad \quad (+) \quad \quad \quad (+) \\ \quad + \text{indirect costs} + \text{average processing time} + \text{accuracy} \\ \quad \quad \quad (+) \quad \quad \quad (+) \quad \quad \quad (+) \end{array}$$

## CHAPTER IV: DISABILITY DETERMINATION IN TEXAS

### History

Social Security legislation was first enacted by the U.S. Congress in 1936 to protect the aged wage earner from facing retirement without a source of income. In 1954, Congress added provisions that would provide benefits to the wage earner who became disabled prior to retirement age.<sup>33</sup> This program helps to alleviate the financial burdens resulting from inability to work and aids in returning the recipient to work, where feasible, by providing funds to the vocational rehabilitation programs in each state. It also provides assistance to the parents or guardians of disabled children who might not otherwise have the financial ability to cover the increased medical costs related to disabling childhood diseases.

A determination of whether or not an individual claimant is disabled was soon found to involve many complex and interrelated factors such as the documentation and interpretation of medical information relating to the impairment, consideration of the wage earner's past work history and education, and the evaluation of the wage earner's potential for employment. It was decided that this complex procedure could best be handled by the states. Congress authorized the Social Security Administration to enter into a contractual agreement with each state to prepare a written evaluation of every claim for disability benefits filed by claimants within the state.<sup>34</sup>

Texas' Disability Determination Service (DDS) was founded in 1955 with the prime purpose of establishing whether or not an individual claimant, in the state of Texas, is disabled within the meaning of the law as written by Congress. Although the size and complexities of the task have greatly increased since 1955, the basic task of the DDS remains the same. In each case, it is determined whether or not the claimant is unable to engage in any substantial gainful activity because of a medically determinable physical or mental impairment. If the claimant is disabled, the date that disability began is also established. A formal written evaluation clarifying the medical and vocational factors involved in the individual claim is prepared for each determination.<sup>35</sup>

Since it began operations in June 1955 as a section of the Vocational Rehabilitation Division, the DDS has grown as the laws relating to the disability program have become more inclusive and the number of applicants has increased from 3,637 in 1956<sup>36</sup> to 167,553 in fiscal year 1990.<sup>37</sup> DDS Operations' only revenue source is the Federal Government, with the Social Security Administration as its agent. In the 1990 fiscal year the DDS operated on a budget of \$44,288,779.<sup>38</sup>

Disability Determination has served under several different state agencies in its history. After its beginning in the Vocational Rehabilitation Division, it became a

Division of the Texas Education Agency in 1962. Texas Senate Bill 110 created the Commission for Rehabilitation in 1969, which was later renamed the Texas Rehabilitation Commission--an independent agency to provide vocational rehabilitation and disability determination services. In 1981, Congress authorized the Disability Determination Program to become based on public law instead of contracts between the Social Security Administration and the states.<sup>39</sup>

Disability Determination Services is an agency organized to facilitate the processing of disability claims in an efficient and effective manner while complying with nationwide standards and fully protecting the rights of citizens of Texas applying for Social Security benefits. The basic organizational structure of the Division is shown in Figure 4.1.

#### Decision Making Process<sup>40</sup>

The process begins when the claimant or the claimant's representative files an application at their local Social Security office. Each application provides a history of the illness and description of its affect on the claimant's ability to work (or potential work ability, in the case of a child), the kind of work done in the past, the length of time worked, how long it has been since work terminated, and includes information relating to education and vocational training. It also includes a description of medical

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Disability Determination Services

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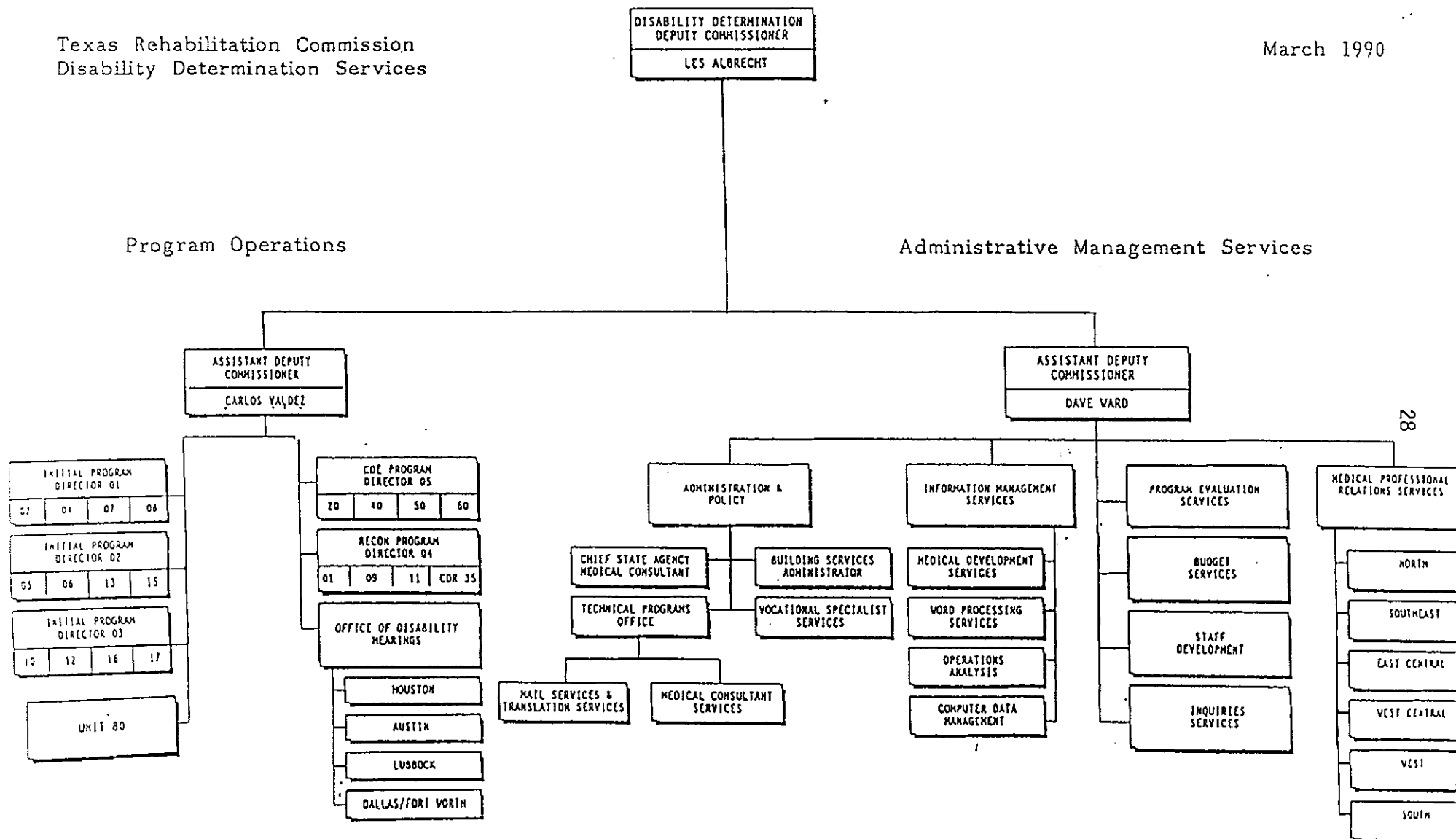


Figure 4.1

treatment received and a list of doctors and hospitals that can serve as sources of medical information. Before forwarding the application to DDS, the Social Security interviewer records their impression of the applicant and attaches a record of earnings and other records that establish coverage under the law.

Upon receipt at DDS, the application is processed by administrative and clerical staff and forwarded to the initial disability examiner. Primary responsibility for developing the case rests with the disability examiner. Quality, speed, and efficiency of the development is the direct reflection of the examiner's professional competence. Generally, the examiner's level of education is high, with most having Masters' degrees or related prior experience. Comprehensive orientation and training in the medical and administrative aspects of the program is provided the new examiner, and retraining and professional development studies are continual.

Development of medical information is usually initiated by the disability examiner as soon as the case is received. Medical evidence comes from many sources, including Veterans Administration Hospitals, the Commissions for the Blind and Deaf, the Vocational Rehabilitation Division of Texas Rehabilitation Commission, and local public and private hospitals. However, the most important and valuable source of medical information is the claimant's treating physician.

After medical evidence is secured, the examiner may find it necessary to consult with a member of the DDS medical staff. Medical staff members are practicing physicians in all areas of physical and mental sciences. This examiner-doctor relationship produces the team approach to evaluation. A doctor brings to the team medical knowledge and ability to interpret medical evidence that is beyond the professional scope of the examiner. Such evidence might include heart tracings, brain wave studies, pathology reports, CAT-scans, and x-rays. Examiners add their knowledge of the law's description of an allowable impairment, demands of the claimant's employment, and capacity to engage in other fields of work. Both the examiner and doctor weigh the evidence against technical guides prepared by the Social Security Administration from evidence and opinion supplied by specialists throughout the nation. These guides for evaluation and eligibility are essential tools to provide nationwide uniformity in awarding or denying benefits.

Should development fail to provide adequate medical evidence, a consultative examination might be scheduled with a specialist in the claimant's home community. Cost of this examination will be borne by the DDS and paid from funds allocated for this purpose by the Social Security Administration.

After all the necessary information has been gathered, it is time for a determination. Now the examiner prepares a written summary of all case-related material and concludes with a statement of allowance or denial with a supporting argument. Evaluating the medical evidence allows the examiner to determine what level of work the claimant could be expected to obtain, given age, education, background, and vocational training. If the claimant no longer retains the capacity to perform work for which he/she would be competitive, or is unable to do any work whatsoever, the the claim is allowed. If there are jobs the claimant could reasonably be expected to perform and such jobs exist in significant numbers in the economy, then the claim is denied. The completed case determination is then reviewed and approved by a medical consultant.

Once a case has been completed, it is forwarded to the appropriate Social Security office where a letter is sent to the claimant explaining the decision and payment is authorized if the decision is favorable. The final determination also includes a decision as to whether or not the claimant might benefit from Vocational Rehabilitation services. If it is determined that the claimant would benefit, a counselor at a local Vocational Rehabilitation office is alerted and provided pertinent evidence to assist in assessing the individual's potential.

Should the claimant be found ineligible for disability benefits, an independent case review may be requested through a local Social Security office. The case file is returned to DDS and assigned to a different disability examiner in the Reconsideration Section. A fresh look at the case will be done with additional consultation with the medical staff and possible additional testing. Existence of the Reconsideration Section enables the DDS to provide a safeguard for the claimants' rights.

A second vital function is provided by the Continuing Disability Review section through a review of claims that have been allowed in the past. In many of these cases the claimant has regained the physical and/or mental capability to perform gainful work. The decision then becomes one of whether or not to continue the claimant's benefits.

#### Benefits to the Disabled in Texas

It is important to the citizens of Texas that the part of the Social Security disability program which is the responsibility of the Division of Disability Determination Services be administered efficiently and equitably. A great deal depends on the decisions made by a DDS. During the 1990 fiscal year the DDS's made determinations on 162,753 disability claims.<sup>41</sup> The efficiency of Texas' DDS is reflected in the fact that the actual cost-per-case for its operations is considerably below the national average.

However, efficiency has not been achieved at the cost of reduced quality, because the percentage of decisions questioned by SSA quality control is also significantly below the national average.

Although Texas DDS has accomplished these goals within the parameters established by the SSA, it has done so through laborious efforts to manipulate resources to accommodate a workload that has consistently exceeded federal projections. Cost-per-case estimates by the SSA have been persistently inaccurate when compared to actual costs. As can be seen in Table 4.1, the cost-per-case estimates set by the SSA have continuously underestimated actual costs year after year (except in fiscal year 1986 when the SSA inflated the cost-per-case allotment to allow for their new policy of requiring consultative examinations on approximately half of all applications--a policy that was subsequently abandoned the next fiscal year). It becomes clear, then, that a more accurate and consistent estimation model is needed to eliminate the constant inefficiencies resulting from the SSA's current approach.

Table 4.1

Comparison of Actual Cost-Per-Case (CPC)  
and Social Security Estimated Cost-Per-Case (SSCPC)

| <u>Date</u>    | <u>CPC<sup>a</sup></u> | <u>SSCPC<sup>b</sup></u> |
|----------------|------------------------|--------------------------|
| <u>FY 1986</u> |                        |                          |
| Oct '85        | 447.39                 | 363.65                   |
| Nov '85        | 378.10                 | 363.65                   |
| Dec '85        | 520.94                 | 363.65                   |
| Jan '86        | 305.61                 | 363.65                   |
| Feb '86        | 339.29                 | 363.65                   |
| Mar '86        | 353.52                 | 363.65                   |
| Apr '86        | 397.67                 | 363.65                   |
| May '86        | 274.67                 | 363.65                   |
| Jun '86        | 305.79                 | 363.65                   |
| Jul '86        | 401.15                 | 363.65                   |
| Aug '86        | 240.24                 | 363.65                   |
| Sep '86        | 301.91                 | 363.65                   |
| <u>FY 1987</u> |                        |                          |
| Oct '86        | 206.70                 | 260.90                   |
| Nov '86        | 258.99                 | 260.90                   |
| Dec '86        | 297.31                 | 260.90                   |
| Jan '87        | 235.08                 | 260.90                   |
| Feb '87        | 263.46                 | 260.90                   |
| Mar '87        | 273.06                 | 260.90                   |
| Apr '87        | 289.64                 | 260.90                   |
| May '87        | 219.35                 | 260.90                   |
| Jun '87        | 281.66                 | 260.90                   |
| Jul '87        | 228.19                 | 260.90                   |
| Aug '87*       | 764.83                 | 260.90                   |
| Sep '87        | 214.57                 | 260.90                   |
| <u>FY 1988</u> |                        |                          |
| Oct '87        | 266.39                 | 268.32                   |
| Nov '87        | 245.91                 | 268.32                   |
| Dec '87        | 319.57                 | 268.32                   |
| Jan '88        | 268.58                 | 268.32                   |
| Feb '88        | 298.58                 | 268.32                   |
| Mar '88        | 270.98                 | 268.32                   |
| Apr '88        | 201.41                 | 268.32                   |
| May '88        | 251.58                 | 268.32                   |
| Jun '88        | 281.42                 | 268.32                   |
| Jul '88        | 216.67                 | 268.32                   |
| Aug '88        | 290.52                 | 268.32                   |
| Sep '88        | 287.92                 | 268.32                   |

Table 4.1 continued

Comparison of Actual Cost-Per-Case (CPC)  
and Social Security Estimated Cost-Per-Case (SSCPC)

| Date           | CPC <sup>a</sup> | SSCPC <sup>b</sup> |
|----------------|------------------|--------------------|
| <u>FY 1989</u> |                  |                    |
| Oct '88        | 275.02           | 273.57             |
| Nov '88        | 269.48           | 273.57             |
| Dec '88        | 227.30           | 273.57             |
| Jan '89        | 283.12           | 273.57             |
| Feb '89        | 320.21           | 273.57             |
| Mar '89        | 256.48           | 273.57             |
| Apr '89        | 313.70           | 273.57             |
| May '89        | 288.72           | 273.57             |
| Jun '89        | 223.34           | 273.57             |
| Jul '89        | 291.79           | 273.57             |
| Aug '89        | 315.59           | 273.57             |
| Sep '89        | 222.94           | 273.57             |
| <u>FY 1990</u> |                  |                    |
| Oct '89        | 289.65           | 276.44             |
| Nov '89        | 277.17           | 276.44             |
| Dec '89        | 230.06           | 276.44             |
| Jan '90        | 282.89           | 276.44             |
| Feb '90        | 289.46           | 276.44             |
| Mar '90        | 251.17           | 276.44             |
| Apr '90        | 283.67           | 276.44             |
| May '90        | 293.49           | 276.44             |
| Jun '90        | 240.51           | 276.44             |
| Jul '90        | 297.34           | 276.44             |
| Aug '90        | 252.28           | 276.44             |
| Sep '90        | 295.48           | 276.44             |

\*anomalous month not used in calculations.

<sup>a</sup>CPC = actual monthly cost-per-case, derived by dividing total monthly obligations by total monthly clearances.

<sup>b</sup>SSCPC = Social Security estimated cost-per-case based on the previous base year and calculated using the CEMS method.

## CHAPTER V: METHODOLOGY

### Introduction

This chapter deals with the methodological aspects of this research project. The first section describes the data base. Section two deals with the determination and operationalization of the dependent measure. Independent variables are discussed in the third section. Finally, the statistical technique used to test hypotheses is reviewed.

### Data Base

All of the data examined in this project was extracted from the Texas Disability Determination Division's monthly obligations reports to SSA and other data files. Information used spanned the five Federal fiscal years (October 1 through September 30) of 1986 through 1990--in other words, October 1985 through September 1990. Dollar obligations were broken down into four categories: personnel, medical, non-personnel, and indirect costs. Total monthly case clearances included all types: Title II, Title XVI, reconsiderations, and continuing disability reviews. Other data involved monthly average processing time in days, average case accuracy expressed as a percentage (from SSA quality review), and SSA's projected cost-per-case for each upcoming fiscal year. Listings of all data used in this research may be found in the appendix.

In August of 1987 Texas DDS had to reprogram their computer management system to accomodate a new updated reporting system required by SSA. Consequently, the data for that month is not consistent with the other months and was not used in the model for this research. Therefore, only 59 cases, instead of 60, were used in the calculations to preclude any anomolous influence on the analysis.

#### Dependent Variable

In this model, the dependent variable (CPC) is defined as the actual monthly cost-per-case. It was calculated by totaling the monthly dollar obligations for personnel, medical, non-personnel, and indirect costs and dividing this total by the total monthly case clearances. This measure was used as the dependent variable since it is the element that both Social Security's CEMS model and this research project's proposed model is attempting to predict.

#### Independent Variables

Initially, in this project it was hypothesized that the individual factors of monthly personnel costs, medical costs, non-personnel costs and indirect costs should be included in the model as separate independent variables. However, since the actual monthly cost-per-case is calculated directly from these factors, including them in the model formula would create an identity. Therefore, the proposed model was

modified to include only three independent variables. Processing time and monthly average accuracy were retained in the model formula and Social Security's five projected cost-per-case figures for fiscal years 1986 through 1990 was added. Social Security's projected cost-per-case figures were used as an independent variable because the purpose of this research was to develop a new estimate and compare this estimate with Social Security's cost-per-case. In fiscal years 1986 through 1989 Social Security was not using the CEMS method instituted in the pilot program for fiscal year 1990. However, the appropriate data from each of these first four fiscal years were included in the same formula used for fiscal year 1990 to arrive at the cost-per-case figures used in the regression analysis.

Consequently, Social Security's model is used as a base and the two new independent variables, time and accuracy, are introduced to show their influence. The new model is expressed mathematically as:

$$\begin{array}{ccccccc} \text{CPC} & = & \text{SSCPC} & + & \text{TIME} & + & \text{ACCURACY} \\ & & (+) & & (+) & & (+) \end{array}$$

where:

|          |   |                                           |
|----------|---|-------------------------------------------|
| CPC      | = | actual cost-per-case                      |
| SSCPC    | = | Social Security's estimated cost-per-case |
| TIME     | = | average monthly processing time           |
| ACCURACY | = | average monthly accuracy                  |
| (+)      | = | positive effect                           |

### Statistical Methodology

The hypotheses described in the preceding Conceptual Framework chapter will be tested by means of multiple regression analysis with all the explanatory variables expressed in integral form. Means were also calculated for each variable. All calculations were done by a computer program called STAT1: A Statistical Toolbox (1989) by Jerry M. Brennan and Lawrence H. Nitz.

Multiple regression is one of the most commonly used multivariate statistical techniques. It is useful to managers in three different ways: for forecasting or prediction, for hypothesis testing, and for program evaluation.<sup>42</sup> Multiple regression analysis is the most useful when there is an interest in determining the relative importance of individual variables in an equation. Of the many different ways of addressing importance with regression analysis, cost projection can be one of the most beneficial, because, in management decision situations, there are only certain factors that are controllable by managers and it is necessary to be aware of these limits when interpreting the results of the analysis. This technique was selected because of the perceived neglect of this principle by CEMS.

## CHAPTER VI: EMPIRICAL RESULTS AND ANALYSIS

On the whole, the results of the regression analysis supports the hypotheses of this research (see Table 2). The model  $R^2$  of 0.43 shows that the equation accounts for 43% of the variation in the dependent variable. In addition, the individual  $R^2$ 's of time (0.04) and accuracy (0.14) indicates their contribution along with SSCPC's  $R^2$  of 0.24. While a higher overall  $R^2$  would have been preferred, the .43 is large enough to study the model further.

Table 6.1  
REGRESSION RESULTS OF THE  
COST-PER-CASE MODEL

| Variable              | Coefficient | F-Value | $R^2$ | Mean   |
|-----------------------|-------------|---------|-------|--------|
| CPC <sup>a</sup>      | -----       | -----   | --    | 284.82 |
| time <sup>b</sup>     | -0.80       | 0.89    | .04   | 56.37  |
| accuracy <sup>c</sup> | 2.90        | 0.54    | .14   | 95.88  |
| SSCPC <sup>d</sup>    | 0.96        | 23.25** | .24   | 289.05 |
| Constant              | -226.77     | 0.40    | ---   | -----  |
| Model                 | -----       | 13.77   | .43   | -----  |

n = 59

\*\* significant at .001 level

<sup>a</sup> actual cost-per-case calculated by dividing total monthly obligations by monthly case completions.

<sup>b</sup> average monthly processing time in days

<sup>c</sup> average monthly accuracy expressed as percentage

<sup>d</sup> Social Security's estimated cost-per-case

The most disappointing aspect of the results was the low F-values for the time and accuracy independent variables, since Social Security's cost-per-case (23.25) is significant. This indicates that the coefficient for each is not statistically different than zero (the coefficient for time was negative--the opposite of the hypothesis), and there is not a statistically significant relationship between these variables and the dependent variable.

Most importantly, however, the F-Value for the model or equation (13.77) is strong enough to prove that the inclusion of the first two variables in the equation is significant. In other words, the estimate of cost-per-case will be stronger if these variables are included. This is true because multiple regression produces the Best, Linear and Unbiased Estimators (BLUE).<sup>43</sup> Hence, the model, as an estimation tool, is stronger with the inclusion of these variables. Even if one variable might prove insignificant in terms of F-Value, the total sum of the equation gives the BLUE estimate for CPC. In other words, the estimated cost-per-case (ECPC) is better than if SSCPC were used alone.

In addition, the purpose of this research was to develop an estimation method--not test relationships between independent and dependent variables. For that reason, while significant F-values for the accuracy and time variables would have been preferred, it is not an insurmountable problem given the research agenda.

Table 6.2  
Comparison of SSCPC and ECPC

| Date           | CPC <sup>a</sup> | ECPC <sup>b</sup> | ADIFF <sup>c</sup> | SSCPC <sup>d</sup> | BDIFF <sup>e</sup> |
|----------------|------------------|-------------------|--------------------|--------------------|--------------------|
| <u>FY 1986</u> |                  |                   |                    |                    |                    |
| Oct '85        | 447.39           | 371.40            | 75.98              | 363.65             | 83.74              |
| Nov '85        | 378.10           | 368.65            | 9.45               | 363.65             | 14.45              |
| Dec '85        | 520.94           | 357.30            | 163.64             | 363.65             | 157.29             |
| Jan '86        | 305.61           | 342.38            | -36.77             | 363.65             | -58.04             |
| Feb '86        | 339.29           | 345.80            | -6.51              | 363.65             | -24.36             |
| Mar '86        | 353.52           | 346.40            | 7.11               | 363.65             | -10.13             |
| Apr '86        | 397.67           | 354.63            | 43.04              | 363.65             | 34.02              |
| May '86        | 274.67           | 356.27            | -81.61             | 363.65             | -88.98             |
| Jun '86        | 305.79           | 355.49            | -49.70             | 363.65             | -57.86             |
| Jul '86        | 401.15           | 354.76            | 46.38              | 363.65             | 37.50              |
| Aug '86        | 240.24           | 356.72            | -116.48            | 363.65             | -123.41            |
| Sep '86        | 301.91           | 358.63            | -56.73             | 363.65             | -61.74             |
| <u>FY 1987</u> |                  |                   |                    |                    |                    |
| Oct '86        | 206.70           | 261.76            | -55.07             | 260.90             | -54.20             |
| Nov '86        | 258.99           | 264.16            | -5.18              | 260.90             | -1.91              |
| Dec '86        | 297.31           | 261.29            | 36.02              | 260.90             | 36.41              |
| Jan '87        | 235.08           | 257.64            | -22.57             | 260.90             | -25.82             |
| Feb '87        | 263.46           | 257.92            | 5.53               | 260.90             | 2.56               |
| Mar '87        | 273.06           | 259.07            | 13.99              | 260.90             | 12.16              |
| Apr '87        | 289.64           | 268.45            | 21.18              | 260.90             | 28.74              |
| May '87        | 219.35           | 270.63            | -51.29             | 260.90             | -41.55             |
| Jun '87        | 281.66           | 262.11            | 19.55              | 260.90             | 20.76              |
| Jul '87        | 228.19           | 258.05            | -29.86             | 260.90             | -32.71             |
| Aug '87*       | 764.83           | 249.60            | -348.60            | 260.90             | -359.93            |
| Sep '87        | 214.57           | 252.42            | -37.85             | 260.90             | -46.33             |
| <u>FY 1988</u> |                  |                   |                    |                    |                    |
| Oct '87        | 266.39           | 269.99            | -3.60              | 268.32             | -1.93              |
| Nov '87        | 245.91           | 279.00            | -33.09             | 268.32             | -22.41             |
| Dec '87        | 319.57           | 266.81            | 52.76              | 268.32             | 51.25              |
| Jan '88        | 268.58           | 264.63            | 3.96               | 268.32             | 0.26               |
| Feb '88        | 298.59           | 261.83            | 36.75              | 268.32             | 30.26              |
| Mar '88        | 270.98           | 266.29            | 4.69               | 268.32             | 2.66               |
| Apr '88        | 201.41           | 263.72            | -62.31             | 268.32             | -66.91             |
| May '88        | 251.58           | 266.23            | -14.65             | 268.32             | -16.74             |
| Jun '88        | 281.42           | 263.88            | 17.54              | 268.32             | 13.10              |
| Jul '88        | 216.67           | 263.18            | -46.50             | 268.32             | -51.65             |
| Aug '88        | 290.52           | 264.57            | 25.95              | 268.32             | 22.20              |
| Sep '88        | 287.92           | 275.84            | 12.08              | 268.32             | 19.60              |

Table 6.2 continued

Comparison of SSCPC and ECPC

| Date           | CPC <sup>a</sup> | ECPC <sup>b</sup> | ADIFF <sup>c</sup> | SSCPC <sup>d</sup> | BDIFF <sup>e</sup> |
|----------------|------------------|-------------------|--------------------|--------------------|--------------------|
| <u>FY 1989</u> |                  |                   |                    |                    |                    |
| Oct '88        | 275.02           | 279.01            | -3.99              | 273.57             | 1.45               |
| Nov '88        | 269.48           | 271.43            | -1.95              | 273.57             | -4.09              |
| Dec '88        | 227.30           | 266.10            | -38.80             | 273.57             | -46.27             |
| Jan '89        | 283.12           | 268.83            | 14.29              | 273.57             | 9.55               |
| Feb '89        | 320.21           | 271.29            | 48.92              | 273.57             | 46.64              |
| Mar '89        | 256.48           | 277.34            | -20.86             | 273.57             | -17.09             |
| Apr '89        | 313.70           | 271.68            | 42.03              | 273.57             | 40.13              |
| May '89        | 288.72           | 270.24            | 18.48              | 273.57             | 15.15              |
| Jun '89        | 223.34           | 263.97            | -40.63             | 273.57             | -50.23             |
| Jul '89        | 291.79           | 263.99            | 27.80              | 273.57             | 18.22              |
| Aug '89        | 315.59           | 255.72            | 59.88              | 273.57             | 42.02              |
| Sep '89        | 222.94           | 257.99            | -35.05             | 273.57             | -50.63             |
| <u>FY 1990</u> |                  |                   |                    |                    |                    |
| Oct '89        | 289.65           | 257.09            | 32.56              | 276.44             | 13.21              |
| Nov '89        | 277.17           | 262.59            | 14.58              | 276.44             | 0.73               |
| Dec '89        | 230.06           | 264.13            | -34.07             | 276.44             | -46.38             |
| Jan '90        | 282.89           | 258.85            | 24.04              | 276.44             | 6.45               |
| Feb '90        | 289.46           | 265.58            | 23.87              | 276.44             | 13.02              |
| Mar '90        | 251.17           | 264.63            | -13.47             | 276.44             | -25.27             |
| Apr '90        | 283.67           | 270.80            | 12.87              | 276.44             | 7.23               |
| May '90        | 293.49           | 264.42            | 29.07              | 276.44             | 17.05              |
| Jun '90        | 240.51           | 259.97            | -19.46             | 276.44             | -35.93             |
| Jul '90        | 297.34           | 266.50            | 30.84              | 276.44             | 20.90              |
| Aug '90        | 252.28           | 266.49            | -14.21             | 276.44             | -24.16             |
| Sep '90        | <u>295.48</u>    | <u>269.24</u>     | <u>26.24</u>       | <u>276.44</u>      | <u>19.04</u>       |
| Means          | 284.82           | 289.67            | 1.16               | 289.05             | -4.24              |

\*anomalous month not used in calculations.

<sup>a</sup>Actual monthly cost-per-case, derived by dividing total monthly obligations by total monthly clearances.

<sup>b</sup>Estimated cost-per-case, calculated using the model of this research project.

<sup>c</sup>The difference calculated by subtracting ECPC from CPC.

<sup>d</sup>Social Security estimated cost-per-case based on the previous base year and calculated using the CEMS method.

<sup>e</sup>The difference calculated by subtracting SSCPC from CPC

Table 6.2 demonstrates this concept. This table compares the differences calculated when monthly figures of Social Security's cost-per-case, and monthly ECPC are subtracted from actual monthly cost-per-case. Monthly ECPC is calculated by inserting monthly figures of time, accuracy, and SSCPC into the model equation. That is,  $Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3$  or  $ECPC = (-226.77) + (-0.8(\text{time})) + (2.9(\text{accuracy})) + (0.96(\text{SSCPC}))$ . A comparison of the differences demonstrates that ECPC is more accurate 45% of the time.

Another way to evaluate these same data is to compare the means of actual cost-per-case, Social Security's cost-per-case, and ECPC. All three means are very close, with SSCPC being +\$0.62 closer to the actual cost-per-case than ECPC. On the other hand, if the aberrant SSCPC of fiscal year 1986 is discarded, then the mean of SSCPC becomes \$269.81--which is a -\$15.01 difference from the mean of actual cost-per-case. Thus, with a +\$4.85 difference, ECPC is again shown to be a more accurate estimate of actual cost-per-case.

## CHAPTER VII: SUMMARY AND CONCLUSION

This study is an investigation to determine an equitable and accurate cost-per-case model to be used by the Social Security Administration when determining funding allotments to state Disability Determination Services. Data from the last five fiscal years was used to focus on the appropriate elements to be included in the model. In addition to the four basic elements used by the Social Security Administration, it was proposed that the inclusion of average monthly figures for processing time and accuracy would produce an estimate closer to the actual cost-per-case. These hypotheses were tested by uniting data relating to processing time, accuracy and Social Security's cost-per-case estimates for the appropriate fiscal years into a multiple regression analysis. Subsequently, the analysis produced an equation to be used for future cost-per-case estimates.

The findings of this research shows an important need to include processing time and case accuracy when calculating future cost-per-case figures. By using these two new elements, a more accurate approximation was attained than if Social Security's method was used alone. If this information is assimilated into a new cost-per-case model, it will have important implications on the elements involved in processing Social Security disability applications. A funding level closer to the actual needs of a disability determination

service will permit case processing approaching optimal efficiency and productivity, which in turn, will result in increased accuracy and an overall consistent decrease in processing time. It will also diminish the administrative nightmare of maneuvering revenue to fit workloads that surpass projections. All this will have a positive influence on the most important reason for improvement--better service to the disabled community.

# NOTES

<sup>1</sup>The Social Security Disability Insurance (DI) program, established in 1954 under title II of the Social Security Act, provides benefits to disabled workers and their families. The Supplemental Security Income (SSI) program, established in 1972 under title XVI of the act, provides cash assistance to needy aged, blind, and disabled persons. Statutory definition of disability is substantially the same for both programs.

<sup>2</sup>One agency in each state (except South Carolina, which also has an agency for the blind), the District of Columbia, Guam, and Puerto Rico.

<sup>3</sup>U.S. General Accounting Office, "The Social Security Administration Should Provide More Management and Leadership in Determining Who is Eligible for Disability Benefits" GAO/HRD-76-105 (Washington, D.C.: GAO, 7 August 1976).

<sup>4</sup>U.S. General Accounting Office, "Current Status of the Federal/State Arrangement for Administering the Social Security Disability Programs" GAO/HRD-85-71 (Washington D.C.: GAO, 30 September 1985), 3.

<sup>5</sup>1980 Disability Amendment to the Social Security Act, U.S. Code Annotated, Title 42 (1980).

<sup>6</sup>GAO, "Current Status...", 4.

<sup>7</sup>Franklin Frazier, Associate Director of Human Resources Division, General Accounting Office, statement in hearing before the U.S. Congress, House, Subcommittee on Social Security, Committee on Ways and Means, Condition of State Agencies That Determine Disability Under Social Security, 100th Cong., 1st sess., 6 October 1987, 9-10.

<sup>8</sup>GAO, "Current Status...", 9.

<sup>9</sup>Frazier (1987), 11.

<sup>10</sup>Ibid.

<sup>11</sup>Department of Health and Human Services, Social Security Administration, Office of Disability, "Request for Comments on Proposed System of Resource Allocation," Disability Determination Services Administrator Letter No. 57, by David A. Rust, 18 November 1988, 2.

<sup>12</sup>See for example: Richard B. Chase and Nicholas J. Aquilano, Production and Operations Management (Boston: Irwin Publishers, 1989); Edward M. Gramlich Benefit-Cost Analysis of Government Programs (Englewood Cliffs, N.J.: Prentice-Hall, 1981); Everett E. Adam, Jr. and Ronald J. Ebert, Production and Operations Management (Englewood, N.J.: Prentice-Hall, 1989); David R. Anderson, Dennis J. Sweeney, and Thomas A. Williams, An Introduction to Management Science (St. Paul: West Publishing, 1985); Michael Q. Anderson and R. J. Lievano Quantitative Management (Boston: Kent Publishing, 1986); and John L. Mikesell Fiscal Administration (Chicago: Dorsey Press, 1986).

<sup>13</sup>U.S. Department of Health and Human Services, Social Security Administration, Office of Disability Programs, Office of Systems, Cost Effectiveness Measurement System (CEMS): Financial Procedures Handbook. ([Washington, D.C.): U.S. Department of Health and Human Services, Social Security Administration, Office of Disability Programs, Office of Systems, October 1989), I-6 and II-4.

<sup>14</sup>Warren Napier, Budget Officer, interview by author 4 June 1990, Austin, Texas Rehabilitation Commission, Disability Determination Services, Austin.

<sup>15</sup>CEMS Financial Procedures Handbook, I-7 and II-5.

<sup>16</sup>*Ibid.*, II-12 to II-13.

<sup>17</sup>*Ibid.*, II-13 to II-19.

<sup>18</sup>*Ibid.*, II-19 to II-21.

<sup>19</sup>Michael R. Dulworth and Robert C. Taylor, "Assessing and Improving Organizational Productivity," in Improving Government Performance, eds. Joseph S. Wholey, Kathryn E. Newcomer, and Associates (San Francisco: Jossey-Bass Publishers, 1989), 144-5.

<sup>20</sup>Walter L. Balk, Improving Government Productivity: Some Policy Perspectives (Beverly Hills, Calif.: Sage Publications, 1975), 11.

<sup>21</sup>*Ibid.*, 11-12.

<sup>22</sup>Richard B. Chase and Nicholas J. Aquilano, Production and Operations Management (Boston: Irwin Publishers, 1989), 273.

<sup>23</sup>*Ibid.*

<sup>24</sup>Ibid., 274.

<sup>25</sup>Ibid.

<sup>26</sup>Charles Babbage, On the Economy of Machinery and Manufacturers (London: Knight Publishers, 1833), 212-4.

<sup>27</sup>Alfred Marshall, Principles of Economics (London: MacMillan, 1920), 356.

<sup>28</sup>Everett E. Adam, Jr. and Ronald J. Ebert, Production and Operations Management (Englewood, N.J.: Prentice-Hall, 1989), 43.

<sup>29</sup>Ibid., 42.

<sup>30</sup>Jeffrey L. Brudney and David R. Morgan, "Local Government Productivity: Efficiency and Equity," in Promoting Productivity in the Public Sector, ed. Rita Mae Kelly (New York: St. Martin's Press, 1988), 163.

<sup>31</sup>Ibid., 164.

<sup>32</sup>John Matzer, Jr., ed., Productivity Improvement Techniques (Washington, D.C.: International City Management Association, 1986), 5-6.

<sup>33</sup>1954 Disability Amendment to the Social Security Act, U.S. Code Annotated, Title 42 (1954).

<sup>34</sup>Texas Rehabilitation Commission, Status Report: Division of Disability Determination (and) Division of Vocational Rehabilitation (Austin: Texas Rehabilitation Commission, August 15, 1969), 2-3.

<sup>35</sup>Ibid., 3-4.

<sup>36</sup>Texas Rehabilitation Commission, Annual Report 1989 (Austin: Texas Rehabilitation Commission, 1989), 7.

<sup>37</sup>Charles Harrison, Controller, Texas Rehabilitation Commission, Obligations Report to the Social Security Administration (Austin: Texas Rehabilitation Commission, 5 October 1990), 5.

<sup>38</sup>Ibid., 1.

<sup>39</sup>Annual Report 1989, 9-13.

<sup>40</sup>Status Report, 13-24.

<sup>41</sup>Obligations Report, 5.

<sup>42</sup>Leanna Stiefel, Statistical Analysis for Public and Nonprofit Managers (New York: Praeger Publishers, 1990), 9.

<sup>43</sup>Ibid., 30-33.

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APPENDIX ATotal Obligations<sup>a</sup> for Fiscal Years 1986-1990

| <u>Date</u>    | <u>Personnel</u> | <u>Medical</u> | <u>Nonpersonnel</u> | <u>Indirect</u> | <u>Total</u> |
|----------------|------------------|----------------|---------------------|-----------------|--------------|
| <u>FY 1986</u> |                  |                |                     |                 |              |
| Oct '85        | 1811146          | 1104691        | 216343              | 250519          | 3382699      |
| Nov '85        | 1803450          | 1094749        | 174461              | 245176          | 3317836      |
| Dec '85        | 1797673          | 1018225        | 240712              | 244065          | 3300675      |
| Jan '86        | 1966001          | 1059213        | 267641              | 263253          | 3556108      |
| Feb '86        | 1930139          | 825158         | 217569              | 237838          | 3210704      |
| Mar '86        | 1964494          | 1137122        | 238472              | 267207          | 3607295      |
| Apr '86        | 1973453          | 1309034        | 268611              | 284054          | 3835152      |
| May '86        | 1969267          | 1088159        | 262142              | 265137          | 3584705      |
| Jun '86        | 1928882          | 949884         | 188420              | 254314          | 3321500      |
| Jul '86        | 1932268          | 1987681        | 280402              | 264008          | 4464359      |
| Aug '86        | 1884479          | 1027621        | 202838              | 249194          | 3364132      |
| Sep '86        | 1865916          | 1062422        | 287664              | 254440          | 3470442      |
| <u>FY 1987</u> |                  |                |                     |                 |              |
| Oct '86        | 1902585          | 1009406        | 212399              | 264845          | 3389235      |
| Nov '86        | 1835994          | 759718         | 177232              | 235701          | 3008645      |
| Dec '86        | 1925109          | 765210         | 155367              | 241881          | 3087567      |
| Jan '87        | 1892678          | 740559         | 220252              | 242476          | 3095965      |
| Feb '87        | 1878556          | 707910         | 256193              | 241614          | 3084273      |
| Mar '87        | 1906017          | 815018         | 259903              | 250786          | 3231724      |
| Apr '87        | 1887024          | 803209         | 282576              | 251729          | 3224538      |
| May '87        | 1854120          | 754979         | 200979              | 238601          | 3048679      |
| Jun '87        | 1856217          | 852618         | 205722              | 246811          | 3161368      |
| Jul '87        | 1821409          | 837278         | 316453              | 246229          | 3221369      |
| Aug '87*       | 1794450          | 724287         | 216299              | 230963          | 2965999      |
| Sep '87        | 1903218          | 927018         | 326477              | 266772          | 3423485      |
| <u>FY 1988</u> |                  |                |                     |                 |              |
| Oct '87        | 1922085          | 979858         | 253251              | 482593          | 3637787      |
| Nov '87        | 1887360          | 768462         | 224979              | 440717          | 3321518      |
| Dec '87        | 1932971          | 869163         | 200127              | 359919          | 3362180      |
| Jan '88        | 1920478          | 861038         | 260720              | 431633          | 3473869      |
| Feb '88        | 1917048          | 794061         | 231590              | 417204          | 3359903      |
| Mar '88        | 1948246          | 897491         | 192537              | 431377          | 3469651      |
| Apr '88        | 1924727          | 670935         | 222142              | 398255          | 3216059      |
| May '88        | 1903090          | 771428         | 299498              | 422256          | 3396272      |
| Jun '88        | 1895710          | 893461         | 239263              | 429387          | 3457821      |
| Jul '88        | 1878671          | 814786         | 233369              | 415373          | 3342199      |
| Aug '88        | 1905804          | 993590         | 273261              | 447250          | 3619905      |
| Sep '88        | 1952807          | 922740         | 231573              | 439195          | 3546315      |

APPENDIX A continuedTotal Obligations<sup>a</sup> for Fiscal Years 1986-1990

| <u>Date</u>    | <u>Personnel</u> | <u>Medical</u> | <u>Nonpersonnel</u> | <u>Indirect</u> | <u>Total</u> |
|----------------|------------------|----------------|---------------------|-----------------|--------------|
| <u>FY 1989</u> |                  |                |                     |                 |              |
| Oct '88        | 1928360          | 784956         | 253293              | 358946          | 3325555      |
| Nov '88        | 1948708          | 844428         | 267986              | 370396          | 3431518      |
| Dec '88        | 1998851          | 803886         | 206073              | 364066          | 3372876      |
| Jan '89        | 2048936          | 810706         | 197899              | 369631          | 3427172      |
| Feb '89        | 2036056          | 782406         | 189681              | 363985          | 3372128      |
| Mar '89        | 2063612          | 968882         | 261049              | 398463          | 3692006      |
| Apr '89        | 2053062          | 813632         | 313727              | 384831          | 3565252      |
| May '89        | 2063255          | 931848         | 306152              | 396373          | 3697628      |
| Jun '89        | 2042350          | 906282         | 231908              | 384815          | 3565355      |
| Jul '89        | 2016989          | 806392         | 231709              | 367898          | 3422988      |
| Aug '89        | 2019094          | 917272         | 322626              | 394305          | 3653297      |
| Sep '89        | 2132144          | 974717         | 473494              | 401835          | 3982190      |
| <u>FY 1990</u> |                  |                |                     |                 |              |
| Oct '89        | 2161265          | 830911         | 276730              | 395453          | 3664359      |
| Nov '89        | 2120685          | 849557         | 271956              | 392306          | 3634504      |
| Dec '89        | 2121346          | 717797         | 234966              | 371967          | 3446076      |
| Jan '90        | 2162315          | 833017         | 223652              | 351087          | 3570071      |
| Feb '90        | 2114269          | 817674         | 407118              | 394050          | 3733111      |
| Mar '90        | 2145648          | 946150         | 203027              | 388790          | 3683615      |
| Apr '90        | 2128786          | 840395         | 263863              | 381499          | 3614543      |
| May '90        | 2183107          | 895636         | 291733              | 397659          | 3768135      |
| Jun '90        | 2165309          | 837833         | 248549              | 383157          | 3634848      |
| Jul '90        | 2149617          | 848343         | 271444              | 385549          | 3654953      |
| Aug '90        | 2147819          | 946854         | 234848              | 392884          | 3722405      |
| Sep '90        | 2171192          | 1134842        | 420928              | 435197          | 4162159      |

\*anomalous month not used in calculations.

<sup>a</sup>In total dollars.

APPENDIX BMonthly Clearances<sup>a</sup>, Processing Times<sup>b</sup>, and Accuracy<sup>c</sup>

| <u>Date</u>    | <u>Clearances</u> | <u>Processing Time</u> | <u>Accuracy</u> |
|----------------|-------------------|------------------------|-----------------|
| <u>FY 1986</u> |                   |                        |                 |
| Oct '85        | 7561              | 45                     | 98.3            |
| Nov '85        | 8775              | 48.8                   | 98.4            |
| Dec '85        | 6336              | 59                     | 97.3            |
| Jan '86        | 11636             | 79.1                   | 97.7            |
| Feb '86        | 9463              | 79.9                   | 99.1            |
| Mar '86        | 10204             | 74.8                   | 97.9            |
| Apr '86        | 9644              | 62.7                   | 97.4            |
| May '86        | 13051             | 59.2                   | 97              |
| Jun '86        | 10862             | 60.9                   | 97.2            |
| Jul '86        | 11129             | 62.9                   | 97.5            |
| Aug '86        | 14003             | 59                     | 97.1            |
| Sep '86        | 11495             | 60.6                   | 98.2            |
| <u>FY 1987</u> |                   |                        |                 |
| Oct '86        | 16397             | 57.3                   | 97.9            |
| Nov '86        | 11617             | 54.3                   | 97.9            |
| Dec '86        | 10385             | 53.9                   | 96.8            |
| Jan '87        | 13170             | 55.2                   | 95.9            |
| Feb '87        | 11707             | 50.5                   | 94.7            |
| Mar '87        | 11835             | 45.8                   | 93.8            |
| Apr '87        | 11133             | 43.5                   | 96.4            |
| May '87        | 13899             | 44.4                   | 97.4            |
| Jun '87        | 11224             | 44.9                   | 94.6            |
| Jul '87        | 14117             | 44.9                   | 93.2            |
| Aug '87*       | 3878              | 49.3                   | 91.5            |
| Sep '87        | 15955             | 55.2                   | 94.1            |
| <u>FY 1988</u> |                   |                        |                 |
| Oct '87        | 13656             | 43.6                   | 94.5            |
| Nov '87        | 13507             | 47.2                   | 98.6            |
| Dec '87        | 10521             | 53.3                   | 96.08           |
| Jan '88        | 12934             | 59                     | 96.9            |
| Feb '88        | 11253             | 56.7                   | 95.3            |
| Mar '88        | 12804             | 47.5                   | 94.3            |
| Apr '88        | 15968             | 48.9                   | 93.8            |
| May '88        | 13500             | 48.3                   | 94.5            |
| Jun '88        | 12287             | 48.7                   | 93.8            |
| Jul '88        | 15425             | 50.3                   | 94              |
| Aug '88        | 12460             | 51.1                   | 94.7            |
| Sep '88        | 12317             | 49.7                   | 98.2            |

APPENDIX B continuedMonthly Clearances<sup>a</sup>, Processing Times<sup>b</sup>, and Accuracy<sup>c</sup>

| <u>Date</u>    | <u>Clearances</u> | <u>Processing Time</u> | <u>Accuracy</u> |
|----------------|-------------------|------------------------|-----------------|
| <u>FY 1989</u> |                   |                        |                 |
| Oct '88        | 12092             | 52.4                   | 98.3            |
| Nov '88        | 12734             | 53.9                   | 96.1            |
| Dec '88        | 14839             | 54.4                   | 94.4            |
| Jan '89        | 12105             | 55.7                   | 95.7            |
| Feb '89        | 10531             | 57.7                   | 97.1            |
| Mar '89        | 14395             | 56.3                   | 98.8            |
| Apr '89        | 11365             | 55.4                   | 96.6            |
| May '89        | 12807             | 57.2                   | 96.6            |
| Jun '89        | 15964             | 56.7                   | 94.3            |
| Jul '89        | 11731             | 60.3                   | 95.3            |
| Aug '89        | 11576             | 62.3                   | 93              |
| Sep '89        | 17862             | 62                     | 93.7            |
| <u>FY 1990</u> |                   |                        |                 |
| Oct '89        | 12651             | 63.3                   | 92.8            |
| Nov '89        | 13113             | 61.5                   | 94.2            |
| Dec '89        | 14979             | 63.2                   | 95.2            |
| Jan '90        | 12620             | 66.9                   | 94.4            |
| Feb '90        | 12897             | 63.2                   | 95.7            |
| Mar '90        | 14666             | 60.4                   | 94.6            |
| Apr '90        | 12742             | 57.4                   | 95.9            |
| May '90        | 12839             | 57.4                   | 93.7            |
| Jun '90        | 15113             | 59.7                   | 92.8            |
| Jul '90        | 12292             | 60.6                   | 95.3            |
| Aug '90        | 14755             | 61.7                   | 95.6            |
| Sep '90        | 14086             | 60                     | 96.08           |

\*anomalous month not used in calculations.

<sup>a</sup>Number of cases completed.

<sup>b</sup>In days.

<sup>c</sup>Expressed as a percentage.