

An Analysis of the Fed's Priced Services Activities

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Introduction

This report analyzes the Federal Reserve System's commercial check processing operations as well as related transportation activities. Based on annual revenue, these activities constitute approximately three-fourths of the Fed's total Priced Services business. The first section of this report discusses discrepancies and a lack of transparency pertaining to the Fed's Priced Services activities. The next section analyzes the understatement of certain Priced Services costs. The following section then focuses on the significant underpricing of a new Fed commercial check product, called "Nationwide City Sort." The final two sections of the report explain why Fed check processing costs are so high and what the Fed could do to lower them without impairing its service quality.

Discrepancies and Lack of Transparency Pertaining to the Fed's Priced Services

Although the Fed discusses its Priced Services activities in its Annual Report, annual Budget Review, and an annual Federal Register notice, it is difficult, but possible, for an outsider to analyze the Fed's Priced Services activities. Having conducted this analysis, it is my opinion that the Fed's charges for its various Priced Services, and specifically a new product called "Nationwide City Sort" (NCS), do not meet the mandate of 12 U.S.C. §248a(c) that the Fed recover "all direct and indirect costs actually incurred in providing" a priced service. This section of the report will summarize difficulties that arise in analyzing the Fed's Priced Services activities; cutting through these difficulties, though, provides important insights into shortcomings in the Fed's pricing of its Priced Services activities, notably in commercial check processing.

Income statement discrepancies

The Fed publishes income statements regarding its Priced Services activities in several places. However, there are numerous instances in these statements where different amounts are reported for the same line item. Further, these differences are extremely difficult to reconcile. For example, two different numbers are given for Priced Services revenue for 1995 -- \$738.8 million in the Board of Governor's Annual Report for 1996 (page 271) and \$765.2 million in the Budget Review for 1996-97 (page 11) as well as the Federal Register notice for Priced Services fees for 1997 (Vol. 61, No. 233, Page 64089, Table 1, Column 1). As another example, three different numbers for 1995's operating expenses for

the Fed's commercial check processing activities are provided: \$564.2 million in the Federal Register notice (Vol. 61, No. 233, Page 64089, Table 2, Column 4); \$507.4 million in the Fed's 1995 Annual Report, or \$559.8 million if imputed costs are added (page 273); and \$519.337 million in the 1996-97 Budget Review (page 32). A fourth number, expenses reported under the Fed's Planning and Control System (PACS), may differ from the other numbers (the 1995 PACS expense report was not available to the author of this report); however, the 1996 PACS report indicated commercial check operating expenses of \$551.391 million (page 272) while the 1996 Annual Report showed \$527.0 million as the commercial checks operating expense for 1996 (page 271).

Balance sheet differences

Balance sheets that the Fed publishes for its Priced Services activities differ in one significant regard which will be discussed further below. The Pro Forma Financial Statements for Federal Reserve Priced Services (1996 Annual Report, page 270) reports two related items, prepaid pension costs (an asset) and a postretirement/post employment benefits obligation (a liability). However, these two accounts do not appear in other presentations of the Priced Services balance sheet, specifically as reported in the 1996-97 Budget Review (page 52) and the Federal Register notice (Vol. 61, No. 233, page 64095, Table A-1). These are not insignificant items. The Fed's 1996 Annual Report showed, as of the end of 1996, prepaid pension costs of \$287.4 million and a postretirement/postemployment benefits obligations of \$178.6 million. The net amount of these two items was \$108.8 million (up from \$66.0 million at the end of 1995). According to the balance sheet presentation for Priced Services, this net amount was financed entirely with equity capital attributed to Priced Services. Hence, the equity capital figures for the Fed's Priced Services activity also differ between these reports.

Transportation revenues and costs

Substantial opaqueness, to the point of a brick wall, characterizes revenues and costs associated with the transportation of commercial checks and other items within the Fed's Priced Services business. For example, nowhere does the Fed publish a figure for the amount of its transportation revenues even though the Fed explicitly charges for some transportation activities, specifically hauling "consolidated shipments" of checks. Transportation revenues in 1996 could have been as much as \$25 million, or perhaps more. That amount approximates the total amount of revenue that the Fed reports separately for three Priced Services activities: book entry securities, noncash collection, and special cash services. Therefore, transportation revenues are not an insignificant source of revenue for the Fed. Surely, transportation revenue figures must be available since the Fed has to bill for them in the form of ITS surcharges.

Transportation expenses, specifically those that relate to ITS surcharges, are equally opaque. For 1996, the Federal Reserve banks reported total postage and other shipping costs of \$77.894 million (1996 Annual Report, page 294). Included in that amount were

"other shipping expenses" of \$66.818 million (1996 PACS expense report, page 7). Only two non-personnel expenses -- depreciation and repairs and maintenance -- exceeded the cost of "other shipping expenses" in 1996. It appears that approximately \$50 million of this amount was spent flying or trucking checks as well as other documents. A substantial amount of this expense represents the Fed's cost of transporting commercial checks which the Fed processed or hauled for banks that processed the checks themselves. The opacity of the Fed's shipping activities is further evidenced by the fact that \$35.508 million of shipping expense is reported as shipping expense in the Boston office of the Fed for ITS operations (page 452 of the 1996 PACS report). Of the tens of thousands of individual expense items reported in the 646 page PACS expense report, this amount is probably the largest single Federal Reserve bank expense for which there is no further breakdown. This is a number that, by its very size, cries out for further explanation.

If the transportation numbers for commercial check transportation shown above are correct, then they reveal another important, and highly opaque, aspect of the Fed's commercial check processing activities -- transportation expenses in 1996 exceeded explicit revenues by perhaps as much as \$25 million (\$50 million minus \$25 million), or perhaps even more. Some portion of this excess of expense over explicit revenues, perhaps as much as \$10 million, represents transportation costs incurred by the Fed in excess of its explicit check transportation revenues. This division of transportation expenses cannot be determined from the PACS report, in part because of a lack of data regarding the Fed's "transfer pricing" policies, which are discussed in the next section. In particular, the basis on which ITS's apparent operating loss (total cost minus explicit revenues) is allocated may not be sound. This loss allocation certainly should be examined for its propriety.

Transfer pricing

Transfer pricing is a well-established accounting concept that is utilized when one section of an organization performs a service for another section and a price, ideally a market price, can be determined for the service provided. No money actually changes hands; instead, accounting entries are recorded on the organization's books that credit the internal seller of a service with income and charge the internal buyer with an expense. It is through these internal charges and credits that management can determine the profitability, or lack thereof, of the organization's various lines of business and organizational units.

Because the Fed's Priced Services activities are, by congressional mandate, to be run as if they were provided by a private-sector business, good transfer pricing practices are essential to the sound and lawful operation of Priced Services, for two reasons. First, in order to determine the proper price to charge for a particular service, such as the new Nationwide City Sort (NCS) program, all costs incurred in providing that service must be fully accounted for. Hence, transfer pricing should permit the proper accumulation of all of those costs so that the Board of Governors and Congress can be assured that a particular service, such as NCS, is being properly priced.

Second, sound transfer pricing practices permit accurate profit-or-loss accounting for individual areas of responsibility within the Fed, such as a Federal Reserve bank or a check processing center of one of those banks. Only through such accounting can the Board of Governors and the directors of a Federal Reserve bank hold bank management fully and properly accountable for the provision of priced services. The relative performance of the banks should be an issue for the Fed, as will be discussed below. In this regard, it is important to note that from 1987 to 1994, the Board's annual reports showed the profitability of commercial check collection by Federal Reserve bank; this profitability varied significantly by bank and from year to year for each bank. Interestingly, the Fed did not disclose bank-by-bank profitability for commercial check processing for 1995 and 1996.

Accurate transfer pricing is especially important in determining the price that the Fed should charge for a check that is handled by two Fed check processing centers because the depository institution which deposited that check in the Fed is charged just one fee for the Fed's handling of that check. For example, a bank in Boston deposits in the Boston Fed a check drawn on a bank in Chicago. The depositing bank is charged just one fee (3.2 cents or 2.2 cents in the case of an NCS check) even though three elements of the Fed are involved in handling that check: the Boston Fed, which sorts the check according to the city to which it is going; the ITS, which flies the check from Boston to Chicago; and the Chicago Fed, which sorts the check by paying bank. Because the Boston Fed charges the depositing bank for this forward check collection service, both ITS and the Chicago Fed should charge the Boston Fed for the costs that they incurred in handling this check plus an overhead allocation and the Priced Services Adjustment Factor (PSAF). Only through such internal charging can the total costs of handling that check be accumulated in the Boston Fed and matched with the revenue that the Boston Fed collected for accepting that check. The PSAF is discussed in the next section of the report.

Despite numerous inquiries, it was not possible to determine the extent or accuracy of transfer pricing that occurs within the Federal Reserve System. However, one measure of the extent of transfer pricing, or "shared costs," in the Federal Reserve System can be derived from Table 6 of the Fed's annual reports, which details the income and expenses of the Federal Reserve banks. According to the 1996 Annual Report, the Boston Fed, which runs the ITS operation for the entire Federal Reserve System, and the Richmond Fed, which operates the Federal Reserve Automation Services (FRAS), charged to the other ten Federal Reserve banks, on a net basis, \$148.1 million, or 7.4 percent of total Federal Reserve bank spending. That net amount of shared costs is up from \$88.5 million in 1994 and \$17.6 million in 1992. This rapid growth in shared costs reflects the growing consolidation of specific activities at different Federal Reserve banks and thus the growing importance of accurate transfer pricing within the Federal Reserve System.

It also is interesting to note in the PACS expense report that the Fed spends a substantial amount of money -- \$9.1 million in 1996 -- accounting for its internal transfer pricing activities. This was the amount spent on the Interdistrict Accounting Activity (cost center 8325). Fed personnel devoted 201,775 hours, or 111.3 man-years, to this activity in 1996 during the course of processing 32.56 million accounting entries affecting the Fed's

interdistrict settlement and due-from accounts. Clearly, there is highly detailed transfer pricing data within the Fed from which to determine the profitability of various Fed activities, including ITS and the new NCS product.

Understatement of Priced Services Costs

An analysis of the financial statements for the Fed's Priced Services activities raises some disturbing questions which suggest some significant ways in which the Fed is underpricing the Priced Services that it provides to the banking system, specifically in the commercial check processing arena. These include a pension cost credit, the calculation of its Priced Services Adjustment Factor (PSAF), certain expense deferrals, and its ITS surcharges.

Pension cost credit

For a number of years, the Fed's pension plan has been overfunded. That fact, plus the strong performance of the stock market in recent years, has caused the assets of the pension plan to grow faster than the plan's liabilities. The continued growth in the pension plan's overfunding caused the Federal Reserve banks to record a pension cost credit of \$140.566 million for 1996 (1996 Annual Report, Table 6, Page 296, Footnote 1). That is, the actual operating expense of the Federal Reserve banks (\$1,994.4 million, excluding earnings credit costs) was reduced 7.0 percent by the pension credit. All of this credit should accrue to the benefit of the federal taxpayer since past contributions to the Fed's pension plan were funded through a reduction in the amount of funds that the Fed turns back annually to the Treasury Department. However, in 1996, the Fed utilized \$45.3 million of its pension cost credit to subsidize its Priced Services activities. A substantial amount of this subsidy, at least \$24.4 million, was utilized in the commercial check collection activity in 1996. That amount represents the total amount of commercial check collection expense reported on page 272 of the 1996 PACS expense report (\$551.4 million) minus the amount of operating expense (\$527.0 million) for commercial check collection reported in the Board's Annual Report for 1996. This differential represents 4.1 percent of commercial check collection revenues reported for 1996. However, since commercial check services accounted for 90.6% of the total direct personnel services for all of the Fed's Priced Services activities, perhaps commercial check services were subsidized by as much as \$41 million in 1996 (\$45.3 million x .906); that amount equals 7.0% of the Fed's total commercial check revenues for 1996.

It is highly inappropriate for the Fed to use pension fund investment gains to reduce the prices that it charges for its Priced Services. First, any pension fund gain belongs to the taxpayers, not to users of Fed services. Second, investment gains are highly erratic; in some years there could even be losses. Reflecting investment gains and losses in Fed prices would cause pricing fluctuations unrelated to actual cost trends. For example, for the 1990-96 period, the pension cost credit ranged from \$60.5 million to \$140.9 million. Third, spending such gains, which represents the so-called "wealth effect," would be inflationary if

everyone followed the Fed's practice of using, or spending, investment gains to hold down the price of services provided on a current basis. Fed Chairman Alan Greenspan has expressed concern on several occasions regarding the wealth effect's inflationary potential.

Priced Services Adjustment Factor

A key element in the pricing of the Fed's Priced Services products and services is the amount that is added to the Fed's costs to compensate for the fact that, as a federal agency, the Fed is not subject to the same tax and other expense burdens to which private-sector businesses are subject. The Fed is required to adjust for this differential through the PSAF. However, the PSAF was understated in 1996, for four reasons. First, the cost of short-term debt was priced too low, at 3.9 percent; a 6 percent rate would have been more appropriate for 1996. The higher rate would have added \$1.8 million to the PSAF for 1996.

Second, a 14.2 percent pre-tax return on equity was used in determining the cost-of-equity-capital component of the PSAF for 1996. In sharp contrast, the commercial banking industry earned a 22.2 percent pre-tax return on capital in 1996, down slightly from a 22.6 percent pre-tax return for 1995. The PSAF's low rate-of-return percentage for 1996 reflects the average rate of return for America's 50 largest bank holding companies for the 1990-94 period. That rate of return average was depressed by the low earnings, due to loan losses, that many banking companies suffered during the early 1990s. However, because the Priced Services activity does not entail any credit risk, its cost of equity capital should not reflect loan losses. Therefore, a 22.2 percent pre-tax return on equity is a more appropriate rate to use in the PSAF calculation. The resulting 8.0 percent increase in return on equity would have added \$29.4 million to the PSAF for 1996. To some extent, the Fed corrected for this understatement of the PSAF in 1997 by raising the targeted pre-tax return on capital for Priced Services to 19.1 percent, but that higher percentage is still too low.

Third, Priced Services pricing should reflect the equity capital cost of carrying a prepaid pension cost asset if the pension cost credit is to be reflected in Priced Services pricing. This asset, which was discussed above, has built up on the Priced Services balance sheet as the opposite side of the accounting transaction which recognizes the pension cost credit as an expense reduction for the purpose of pricing Priced Services activities. In other words, the Fed cannot have its cake and eat it too -- it cannot both take the pension cost credit while ignoring the capital cost of holding an asset that the accumulated credit represents. The same argument applies in reverse to the postretirement/postemployment benefits obligation. Accordingly, this liability should be netted against the prepaid pension cost to determine the amount of additional equity capital that should be included in the PSAF calculation. For 1996, the average amount of this additional equity capital was \$87.4 million. Therefore, at a 22.2 percent cost of equity, the PSAF for 1996 should have been \$19.4 million higher, assuming, for the sake of this discussion, that the pension cost credit is an acceptable offset to the cost of providing Priced Services.

Fourth, it is not clear if the PSAF calculation properly accounts for all insurance expenses that a private-sector competitor of the Fed's Priced Services activity would have

incurred. While the PSAF does adjust for the cost of deposit insurance, there is no discussion of other insurances, including property, liability, worker's compensation, and insurance to cover the cost of identifying checks lost in transit. If the Fed does not buy such insurances or if it self-insures and it does not accrue for future losses, then the PSAF should be increased to cover the Fed's cost of buying such insurances or self-insuring itself. This is particularly important for pricing the Fed's transportation activities since insurance is a significant cost item for private check couriers.

Adding up these items, the PSAF for 1996 was understated by \$50.6 million (\$1.8 + \$29.4 + \$19.4) plus whatever amount should have been attributed to insurance expenses. The \$50.6 million understatement equals 6.6 percent of Priced Services revenues, as reported in the 1996-97 Budget Review, page 11. Any understatement of the PSAF actually reflected in Priced Services pricing is an explicit taxpayer subsidy of the Fed's Priced Services activity.

Expense deferrals

The Fed amortizes the cost of special projects, such as automation consolidation, over several years rather than reflecting the cost of these projects in Priced Services prices in the year in which they are incurred. The amount of such deferred costs was \$36.3 million at the end of 1995 and was estimated to be \$30.8 million at the end of 1996 (Federal Register, Vol. 61, No. 233, Page 64089, Table 1, Column 8). Although the Fed adds a financing factor to these deferred costs (this factor is too low, though, because of an understated PSAF, as discussed above), the effect of this cost deferral has been to hold down Priced Services prices. While an economic justification can be made for such cost deferrals, more conservative accounting would dictate that the Fed not engage in such cost deferrals. In fact, in corporate America, restructuring costs comparable to the Fed's automation consolidation project are recognized when incurred or before-the-fact through special restructuring charges which lower reported profits in the period in which the restructuring charge is recorded.

ITS surcharges

For the 1993-96 period, the Fed did not adjust any of its ITS surcharges. For 1997, ITS fees were increased about 11 percent on a volume-weight basis "to reflect more accurately the cost of serving certain low-volume and remote routes" (Federal Register, Vol. 61, No. 233, Page 64090). In fact, the charges on certain routes more than doubled. For example, ITS surcharges from Atlanta in 1996 ranged from .6 cents to 1.2 cents; for 1997, they range from .6 cents to 3.2 cents. Given the magnitude of the price adjustments to some cities and the lack of any adjustment to other cities, it is reasonable to ask if ITS pricing still is out of line with ITS costs, including all overhead costs and PSAF that should be associated with ITS.

Figure 1 illustrates a characteristic of ITS's 1997 pricing that may not be justifiable, based on ITS's cost structure. Briefly, on an unweighted basis (that is, each city with a Fed check processing center is given equal weight), the ITS surcharge for checks being shipped to a processing center usually is less than the surcharge for checks shipped from that city. For instance, at the right end of the scale, the unweighted average ITS surcharge for checks being shipped to the Philadelphia center is 1.061 cents while the unweighted ITS surcharge on checks being shipped from the Philadelphia center is 1.20 cents. However, for thirteen centers the reverse is true, with the surcharge-to exceeding the surcharge-from. The most extreme example is the Helena, Montana, center, which has an unweighted surcharge-to of 3.091 cents and an unweighted surcharge-from of almost half that amount, 1.682 cents. Generally, this reverse situation exists with the lower-volume processing centers; however, the reverse-situation condition also exists for a few medium volume centers, such as Houston, which had the 23rd highest check processing volume in 1996. The distribution of positive and negative differences between Surcharge-From minus Surcharge-To is shown in the lower portion of **Figure 1**.

Nationwide City Sort Is Materially Underpriced

The preceding sections set the backdrop for examining the pricing of the Nationwide City Sort (NCS) program. Implemented in the spring of 1996, NCS offers a uniform price for checks deposited in a Federal Reserve check processing center that are drawn on any bank located in any one of the other 45 cities with a Fed check processing center. The all-inclusive price for a check deposited under the NCS program is 3.2 cents, unless the check is moving to a nearby processing center, in which case the all-inclusive charge reportedly is 2.2 cents. Each processing center determines the centers for which it will charge the 2.2 cent price; NCS checks going to all other centers are therefore charged 3.2 cents. Reportedly, only checks moving within a Federal Reserve district benefit from the lower charge. There also is a separate "cash letter" fee (\$4.00) for each batch of checks deposited with the Fed under the NCS program. This charge has the effect of raising slightly the total NCS fee per check; for example, the cash letter charge would equal .2 cents per check for a batch with 2,000 checks. The all-inclusive NCS price includes all processing at both centers that handle the check as well as truck or air transport between the two centers.

The uniform pricing for the NCS program is highly questionable given, one, the wide spread of NCS surcharges, which range from .4 cents to 3.2 cents, perhaps coincidentally the higher NCS price, and two, the great variability in check processing costs among the Fed's check processing centers. Based on a total cost per item passed (a check sorted once), including adjustment and overhead costs as well as the PSAF, the estimated cost per check processed in 1996 varied from 1.06 cents in Louisville to 2.80 cents in Chicago. (These figures understate NCS costs to the extent that NCS checks have to be sorted more than once in a processing center.) Further, the pricing of the predecessor to NCS, usually called "Other Fed Deposits," varied substantially across the Federal Reserve System. Generally, this predecessor product appears to have been priced one or two cents,

or more, above the higher NCS price of 3.2 cents per check. Additionally, at some Federal Reserve banks, there was more tiering or differentiation in the pricing of Other Fed Deposits, based on the distance a check must travel in order to be presented for payment, which reflects the obvious fact that it costs more to haul a check a longer distance. Clearly, the introduction of the NCS program was accompanied by a substantial and unjustifiable price reduction for this particular check processing product.

Figure 2 shows a distribution of the total cost, based on 1996 cost data and including the PSAF and the appropriate ITS surcharge, for processing a check under the NCS program for any "city pair;" that is, a check moving between any two of the 45 Fed check processing centers in operation both last year and at the present time (accordingly, Peoria is excluded because it did not open until this year). Hence, there are 1,980 data points plotted in this chart (45 centers x (45-1) centers), of which 148 represent intradistrict "city pairs" (checks moving within a Federal Reserve district) for which NCS checks presumably are charged 2.2 cents; the other 1,832 points represent interdistrict city pairs, for which 3.2 cents presumably is charged per NCS check. Note that all intradistrict city pairs have a total cost above the likely 2.2 cents charge; interestingly, 139 of the intradistrict city pairs had a total cost above 3.2 cents; only a handful (nine) were below 3.2 cents. Of the interdistrict city pairs, just three have a total cost below 3.2 cents; the other 1,829 city pairs have a total cost above 3.2 cents.

For all 1,980 city pairs, 1,968, or 99.4%, had a total estimated cost for handling NCS checks above the higher NCS price of 3.2 cents. These figures sharply refute a contention in a March 8, 1996, letter from Paul Connolly, First Vice President of the Boston Fed, to Clyde Farnsworth, Director of Reserve Bank Operations at the Fed's Board of Governors, that in only "a few cases, the average cost of collecting non-local city items for an individual [check processing center] is higher than the proposed high-tier per-item fee" of 3.2 cents. For the highest cost decile (top 10 percent) of city pairs, the total cost for handling an NCS check falls in the range of 5.44 cents to 7.36 cents (Chicago to Helena) and with an unweighted average total cost of 5.85 cents; the latter cost estimate is 83 percent above the higher NCS price. Given that almost all city pairs have a total cost above 3.2 cents, Mr. Connolly's statement still would be false if the cost for each city pair was weighted by check volume for that city pair; unfortunately, that volume data is unavailable to the author of this report. The wide distribution of costs for handling NCS checks, which occurs for reasons discussed in more detail below, completely destroys any rationale for uniform NCS pricing.

In the same letter, Mr. Connolly goes on to contend that "within each District the average cost [per NCS check] is lower than the average fee." As **Figure 3** illustrates, that contention is patently false -- for every single check processing center, and therefore for every Federal Reserve district, the unweighted average cost of handling NCS checks is substantially above the higher NCS price of 3.2 cents per check. The lowest cost processing center was Louisville, at 4.00 cents; that is, this figure is the sum of the unweighted average cost of processing a check in Louisville, transporting it via ITS to second Fed check processing center, and then processing the check at that second center. Chicago had the

highest average cost, 5.67 cents, which reflects the fact that Chicago is the highest cost processing center. Interestingly, and perhaps because ITS is managed by the Boston Fed, while Boston has the second highest processing cost, 5.38 cents, it has the second lowest unweighted average ITS Surcharge-From fee, or cost for outbound checks.

Clearly, the uniform nationwide pricing structure for the NCS program represents, to use Mr. Connolly's phrasing in the same letter, "a variation from our pricing policy regarding floor costs." This variation, or rather sharp deviation, creates a substantial cross-subsidy within the Fed's commercial check processing operations, with that subsidy flowing from other check processing programs (most likely checks handled by just one check processing center as well as checks drawn upon remotely located banks) and probably even taxpayers into the entire NCS program. The Fed has provided no public policy justification for the uniform NCS pricing. Instead, Mr. Connolly expressed only the desire "of offering a national product with consistent national prices." It is not clear what public policy objective is served by subsidizing that desire.

The highly questionable pricing of the NCS program also can be viewed by contrasting NCS pricing with the Fed's average revenue per check processed. **Figure 4** shows the history of Fed check processing volume, in number of checks and revenue, for the 1989-1996 period as well as average revenue per check (the solid line in this figure). The jump in average revenue per check after 1993 will be discussed shortly; what is important to note here is that the average revenue per check in 1996 was 3.8 cents, or 19 percent above the higher NCS price even though NCS checks should have a higher average processing cost than the average check the Fed handles! Even after adding in the NCS cash letter fee, the average revenue per check handled by the Fed in 1996 almost certainly exceeded the higher NCS price!

There are three reasons why NCS checks should have a higher processing cost than most checks the Fed handles. First, by definition, a check processed under the NCS program must be handled by two different Fed check processing centers plus it has to move through the ITS. However, most checks (over three-fourths) processed by the Fed (i.e., sorted at least once) are handled by just one check processing center; therefore, these checks do not incur an ITS cost nor do they have to be handled by a second processing center.

Second, a substantial amount of the Fed's check volume consists of pre-sorted or "fine-sort" checks; that is, a bank depositing fine-sort checks in the Fed has first sorted these checks by the banks on which the checks are drawn. Consequently, the Fed does not have to sort any "fine-sort" checks itself. Instead, the Fed merely accepts packages of pre-sorted checks which it then presents to the paying bank. Therefore, the average revenue per fine-sort check, including cash letter fees and ITS surcharges, should be substantially less than the cost of processing NCS checks. **Figure 5** reinforces the point that fine-sort checks generate less revenue per check handled than checks actually sorted by a Fed check processing center -- average revenue per check has climbed in large part because fine-sort volume has declined from 31 percent of all checks handled by the Fed in 1993 to 18.5 percent in 1996.

Third, the NCS program may impose additional "adjustments" cost on Federal Reserve banks because the Fed check processing center in which a batch of NCS checks is deposited becomes the depositor's contact point for resolving all problems arising from that deposit, such as processing errors, even if those errors arise in another check processing center. With other check products, the bank depositor has to deal with the processing center which discovers the error. While this centralization of problem resolution and error correction is beneficial to banks utilizing the NCS program, it may add to the Fed's already heavy cost, discussed below, of processing adjustments.

Figure 5 also illustrates an important point that touches on the economics of the Fed's commercial check processing operation -- 87 percent of the much publicized decline in the Fed's check processing volume since 1993 has occurred in the fine-sort segment of this business rather than with checks actually sorted by the Fed. Viewed from another perspective, fine-sort check volume declined by approximately 52 percent from 1993 to 1996 while processed or Fed-sorted check volume declined by just 3.5 percent.

The principal cause of the fine-sort volume decline, particularly in 1994 and 1995, was the advent of same-day-presentment and settlement (SDS) in January 1994. Because of SDS, banks that already had sorted their "on-others" checks by paying bank found it cheaper to directly present these checks to paying banks rather than present them through the Fed, for a fee. Hence, SDS stole volume from the fine-sort side of the Fed's commercial check processing business rather than from the processing or check sorting side. In this regard, it is interesting to note that 1996's decline in fine-sort volume was more than fully offset by an increase in checks processed by the Fed, which suggests that NCS, which for some banks represents a substitute for the fine-sort product, stole volume from the fine-sort business during 1996. This increased check processing volume raised the utilization of the Fed's costly check sorters.

Figure 5 suggests yet another phenomenon within the Fed's commercial check processing business -- it possibly has experienced a substantial decline in the utilization of ITS's transport capacity while suffering little, if any, decline in the volume of checks it actually processes or sorts. The combined volume of processed and fine-sort checks moving through the ITS may have declined by as much as 30 percent. (This percentage does not take into account consolidated shipment volume, for which no data is publicly available). Hence, ITS may be experiencing increasing losses unless it has downsized its transportation capacity over the last three years. A desire to avoid downsizing ITS may have been one of the motivations for launching the NCS product.

Why Fed Check Processing Costs Are So High

The Fed clearly has launched the NCS program to retain or perhaps even increase both its check processing volume as well as the volume of checks that it transports through the ITS. However, the below-cost pricing of NCS also reflects an unfortunate aspect of the Fed's check processing activities -- the Fed overall is not a very efficient check processor

because many of its check processing centers are not managed in a very efficient manner. The following five figures illustrate the tremendous cost and productivity disparity among the 45 processing centers analyzed for the purpose of this report.

In the main, these disparities are not caused by differences in economies of scale; that is, in terms of volume of checks processed by a center. Instead, as is quite evident from the next five figures, these cost and productivity disparities have other causes. Quoting Bauer and Ferrier, who published just last year an in-depth analysis of the Fed's payment system activities, ". . . the effects of [Federal Reserve] cost inefficiencies dominate those of scale economies. This is especially true for check processing where scale economies have been exhausted" [emphasis supplied].¹ As Bauer and Ferrier report (page 1021), ". . . unit cost drops dramatically as output initially rises, but quickly flattens out." That is, the economies of scale in Fed check processing centers peak at relatively low check processing levels. Perversely, because economies of scale are reached fairly quickly, from the Fed's perspective, it could lose substantial check processing volume without experiencing noticeably higher per-check processing costs. This would be especially true if it improved the efficiency of its less efficient processing centers.

Figure 6 illustrates one underlying cause of the Fed's productivity problem -- checks processed per man-hour in 1996 varied tremendously from center to center in a manner that bore no relationship to check processing volume. The differentiation in volume per man-hour was quite significant -- from a high of 5,304 checks per hour in the Jacksonville center to a low of 1,906 per hour in Omaha and Chicago. Differences between centers as to the average number of times a check has to be sorted account for some, but by no means all, of these productivity differences.

Costs also vary greatly among the Fed check processing centers, in part because of differences in salary scales, occupancy costs, and other local operating costs. **Figure 7** shows the distribution of "activity cost" per check processed for the 45 centers analyzed for this report. Activity cost includes all direct and support costs; it excludes adjustment costs, allocated overhead costs, the PSAF, and ITS surcharges. **Figure 8** shows activity cost per item passed, which essentially is the average cost for each time a check is sorted. Cost per item passed, versus cost per check processed, may be a fairer way to compare check processing costs since, at least to some extent, individual check processing centers do not have much control over how many times they have to sort a check before they have completed the sorting process. Under either analysis, Chicago is the highest cost processing center. Reportedly, this has long been the case. On the other hand, Atlanta has long been viewed within the Federal Reserve System as an efficient check processor; that efficiency is evident from both **Figure 7** and **Figure 8**.

Figure 9 illustrates one of the most troubling aspects of the Fed's check processing operation -- the wide variance in the cost of "adjustments" activity (that is, error correction) relative to the cost of check processing. For example, Helena's check processing cost in 1996 was \$3.004 million while its adjustments cost was an additional \$268,000, or 8.9 percent of its actual check processing costs. The Utica check processing center provides a

sharp contrast -- its adjustments cost of \$2.951 million equalled 54.1 percent of its \$5.456 million check processing cost. For the Federal Reserve System as a whole, adjustments costs totaled \$54.12 million, excluding overhead and the PSAF factor, for handling 3.328 million "cases," or \$16.26 per error correction. The total cost of the Fed's check adjustment activity added 25.6 percent to the cost of Fed check processing in 1996.

Processing errors arise for many reasons -- they are of either "internal origin" (arising in the check processing center where the error is discovered) or of "external origin" (arising from the processing of checks elsewhere in the payments system). Regardless of the source of the error, the Fed does not charge for this error correction work; instead, the cost of making adjustments is covered by check processing fees, such as the NCS charges of 2.2 cents and 3.2 cents per check. Interestingly, the Fed's cost in 1996 of handling return items (bounced checks), for which the Fed does charge a fee, and return adjustments actually was less, at \$44.1 million, than the cost of handling adjustments. While there are various reasons for the wide range of percentages illustrated in **Figure 9**, quality of management appears to be the biggest single factor. In other words, the managers at some Fed check processing centers are much better than other Fed managers in holding down their adjustments cost.

More broadly, **Figure 10** shows the distribution of nine other measures of productivity or efficiency that give a more detailed sense of the performance disparities among Fed check processing centers. The scope of these disparities demonstrates in greater detail just one reason why uniform nationwide pricing for the NCS program masks a substantial cross-subsidy that flows from checks passing between nearby and efficient Fed check processing centers (such as between Atlanta and Jacksonville, Florida) versus checks passing between distant and quite inefficient centers, such as Boston and Chicago.

How the Fed Could Rectify Its Check Processing Cost Problems

There are numerous ways in which the Fed could rectify the cost problems that it currently faces in commercial check processing; in fact, these efficiencies might improve the Fed's ability to provide banks, and especially smaller banks, with more timely and even cheaper service. These efficiency enhancing measures include:

- Adopting better contracting procedures, particularly with regard to transportation services. Key to good contracting is not tilting the request for bids towards or away from any type of service provider. In the transportation area particularly, the Fed should be more open to contracting with couriers who already are flying on or close to the routes for which the Fed needs courier services.
- Improving the operating efficiency of high-cost Fed check processing operations. **Figures 6, 7, 8, 9, and 10** discussed above illustrate the substantial dispersion of various cost and efficiency measures for Fed check processing centers. Each processing center's performance should be compared frequently to the best

performing centers; that is, those with the lowest operating costs, including overhead and adjustment costs. The potential for cost reduction is quite significant. For example, if the processing cost per item passed (a check sorted once) was lowered to one cent per item in the fifteen check processing centers above the one cent level in 1996, the Fed would trim \$13.6 million from its operating costs, based on 1996 cost data. **Figure 8** shows the wide dispersion of cost-per-item-passed among the centers; the average cost in 1996 per item passed was .90 cents. The biggest dollar savings potential lies in certain larger centers, specifically Chicago, East Rutherford, Boston, Kansas City, Denver, and Los Angeles; cost reduction is not a burden that must rest solely on the smaller centers.

- Providing full transparency for all Priced Services activities, including revenues, expenses, and profit or loss by specific products as well as by product line. Permitting "the world," including competitors and potential contractors, to examine Fed Priced Services figures will provide Fed managers with a powerful incentive to run their activities more efficiently. The transparency of the Priced Services activity would be greatly enhanced if this activity was audited annually by an independent auditing firm to ensure Priced Services' conformity with the Monetary Control Act of 1980.
- Contracting out or joint venturing the operation of certain check processing centers, specifically those centers with low processing volumes. For example, El Paso, Texas, which has the smallest Fed check processing center in terms of volume, also has six banks headquartered there. One of these banks might be able to assume the Fed's El Paso check processing business, on behalf of the Fed, or possibly several of these banks could establish a check processing joint venture with the Fed. The four independent banks headquartered in El Paso have asset sizes of \$98 million, \$222 million, \$316 million, and \$613 million, respectively. In addition, Norwest owns a \$1.2 billion asset bank headquartered in El Paso while NationsBank has a \$117 million bank headquartered there. Possibly, there are other parties, such as EDS, a bankers' bank, or a local check clearing house, with whom the Fed could contract for check processing and related services in a particular city.
- Pricing each specific service to recover annually all costs, including a share of overhead and a properly calculated PSAF, incurred in providing that service. This pricing philosophy will ensure maximum Priced Services revenue consistent with the Fed's Priced Services activity being a fair competitor against private-sector firms. In particular, the Fed should hold to an absolute minimum any marginal pricing designed to retain or build a certain volume of business for a particular Priced Services product. This pricing philosophy also entails eliminating long-standing, unpriced services, such as free check transportation between Fed check processing centers and commercial banks that several Federal Reserve banks reportedly provide.

Conclusion

The Fed has long provided check presentment and settlement services to the nation's banks, thrifts, and credit unions. However, the Monetary Control Act of 1980 mandated that the Fed run its check processing and other Priced Services activities in a business-like manner. That manner includes charging prices that reflect, as accurately as possible, the full cost of providing that service. It also means operating as efficiently as possible in every aspect of the Fed's Priced Services activities. The Fed falls short in this regard, as documented above. Congress should direct the Fed to adhere to both the spirit as well as the letter of the Federal Reserve Act as it applies to the Fed's Priced Services activity.

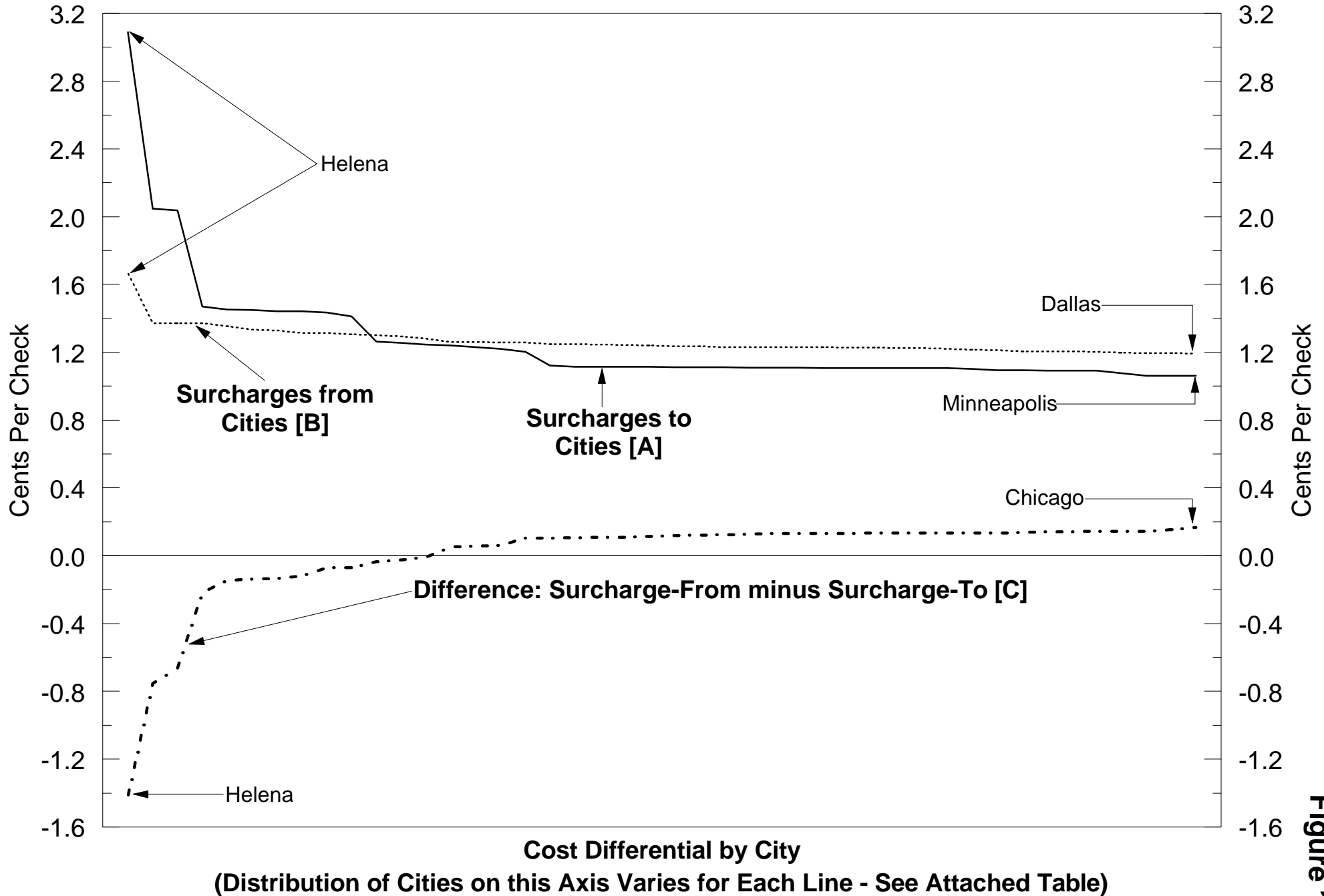
September 12, 1997

Endnote

1. Bauer, Paul W., and Ferrier, Gary D., "Scale Economies, Cost Efficiencies, and Technological Change in Federal Reserve Payments Processing," Journal of Money, Credit, and Banking, Vol. 28, No. 4 (November 1996, Part 2), pp. 1004-1039, at pg. 1029.

Unweighted Average Surcharge for ITS Transportation To and From Cities with Federal Reserve Check Processing Offices

Effective January 1, 1997

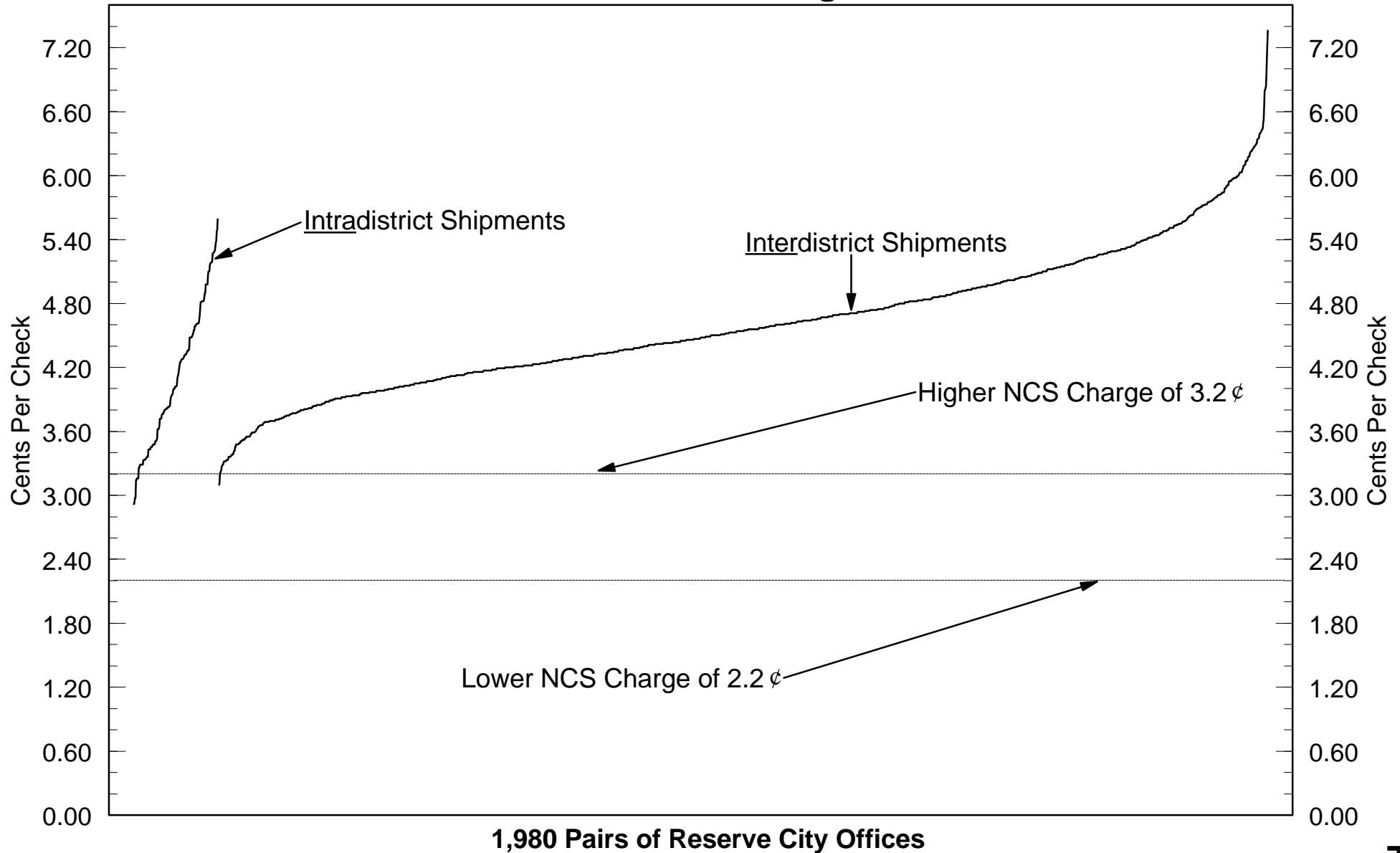


Unweighted Average ITS Surcharge for 1997

(Revised to exclude Lewiston, which is closed)

<u>Surcharge To [A]</u>		<u>Surcharge From [B]</u>		<u>Surcharge Difference [C] = ([B] - [A])</u>	
Helena	3.088	Helena	1.670	Helena	-1.4186
Little Rock	2.047	El Paso	1.372	Little Rock	-0.7535
El Paso	2.037	Seattle	1.372	El Paso	-0.6651
Charleston	1.470	Portland	1.372	Oklahoma City	-0.2163
Omaha	1.453	Salt Lake City	1.353	Omaha	-0.1465
Columbia	1.451	Charleston	1.333	Charleston	-0.1372
Seattle	1.442	Columbia	1.330	Kansas City	-0.1326
Portland	1.442	Los Angeles	1.314	Columbia	-0.1209
Kansas City	1.435	San Francisco	1.314	Portland	-0.0698
Oklahoma City	1.412	Omaha	1.307	Seattle	-0.0698
San Francisco	1.263	Kansas City	1.302	San Antonio	-0.0349
Los Angeles	1.256	Little Rock	1.293	Houston	-0.0256
Salt Lake City	1.247	Denver	1.281	Dallas	-0.0093
San Antonio	1.240	Louisville	1.260	San Francisco	0.0512
Houston	1.230	Detroit	1.260	Los Angeles	0.0581
Denver	1.221	Richmond	1.258	Denver	0.0605
Dallas	1.202	Utica	1.258	Cleveland	0.1023
Richmond	1.121	Milwaukee	1.249	New Orleans	0.1023
Louisville	1.116	Windsor Locks	1.249	Salt Lake City	0.1070
St. Louis	1.116	Indianapolis	1.247	Memphis	0.1093
Indianapolis	1.114	Columbus	1.242	St. Louis	0.1093
Utica	1.114	Pittsburgh	1.240	Boston	0.1140
Cincinnati	1.112	EROC	1.237	Cincinnati	0.1186
Columbus	1.112	Miami	1.237	Baltimore	0.1209
Boston	1.112	Cincinnati	1.230	Des Moines	0.1233
New Orleans	1.109	Chicago	1.230	Atlanta	0.1256
Pittsburgh	1.109	Des Moines	1.230	Miami	0.1302
Baltimore	1.109	Birmingham	1.230	Jacksonville	0.1302
Milwaukee	1.107	Baltimore	1.230	Pittsburgh	0.1302
Memphis	1.107	Nashville	1.228	Columbus	0.1302
Des Moines	1.107	Charlotte	1.228	Nashville	0.1326
Miami	1.107	Boston	1.226	Indianapolis	0.1326
Detroit	1.107	St. Louis	1.226	Minneapolis	0.1326
Windsor Locks	1.107	Jacksonville	1.221	Charlotte	0.1349
Cleveland	1.102	Memphis	1.216	Philadelphia	0.1349
Nashville	1.095	New Orleans	1.212	Birmingham	0.1349
Birmingham	1.095	Houston	1.205	Richmond	0.1372
EROC	1.093	Cleveland	1.205	Milwaukee	0.1419
Charlotte	1.093	San Antonio	1.205	Windsor Locks	0.1419
Jacksonville	1.091	Atlanta	1.202	Louisville	0.1442
Atlanta	1.077	Philadelphia	1.198	Utica	0.1442
Chicago	1.063	Minneapolis	1.195	EROC	0.1442
Philadelphia	1.063	Oklahoma City	1.195	Detroit	0.1535
Minneapolis	1.063	Dallas	1.193	Chicago	0.1674

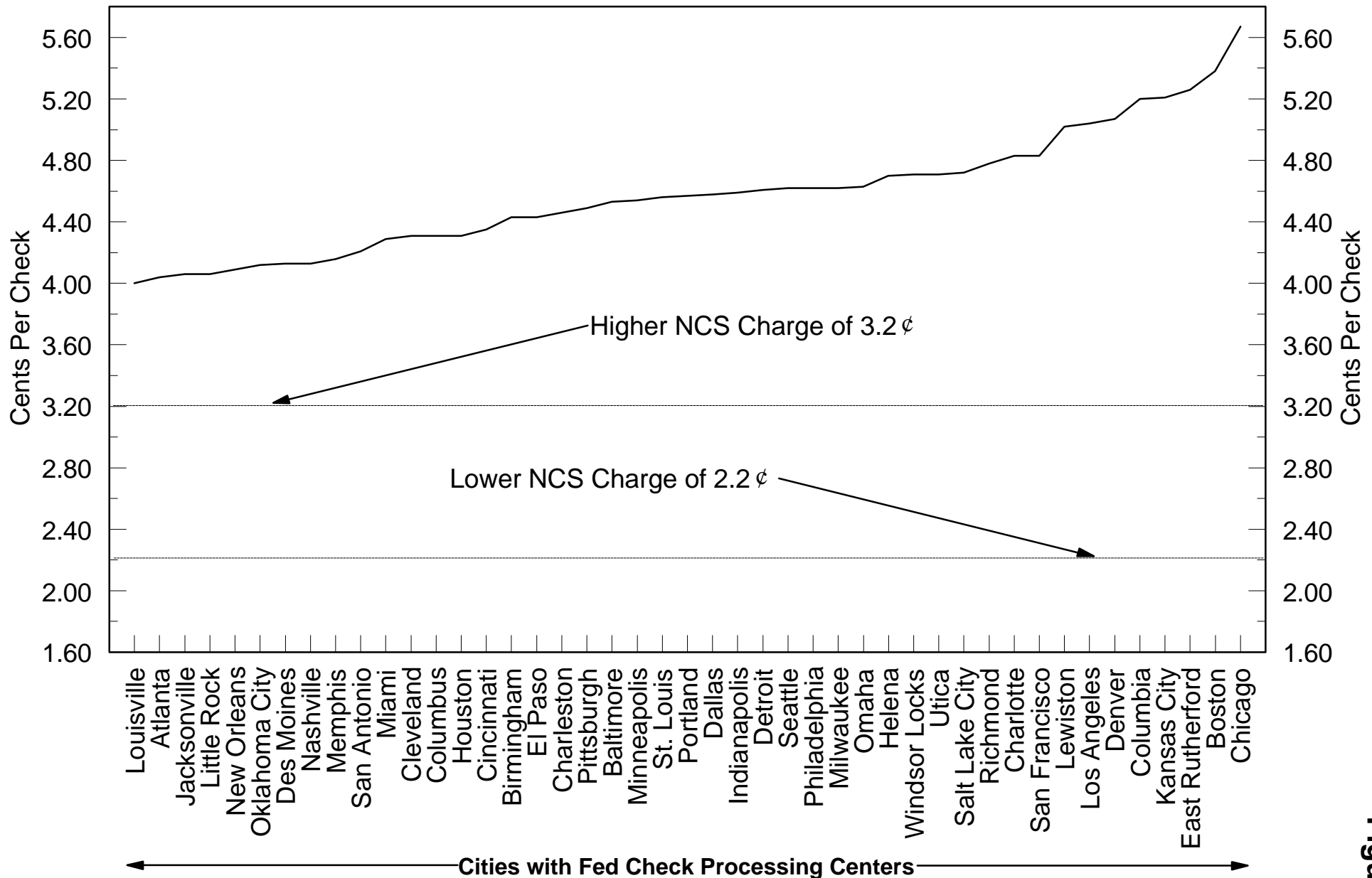
The Total Cost plus PSAF for Checks Processed Under the NCS Program Exceeded in 1996 the NCS Price for Almost All Pairs of Cities Where Fed Check Processing Centers Are Located



(Each data point represents the Fed's total cost of processing a check in the city of deposit, transporting it to the payer bank's city, and then processing it in that city)

Note: Excludes Peoria, for which there is no 1996 cost data.

The Unweighted Average Cost plus PSAF for Every Fed Check Processing Center Significantly Exceeded in 1996 the Maximum NCS Price of 3.2¢ Per Check



Note: Excludes Peoria, for which there is no 1996 cost data.

Figure 3

Trends in the Fed's Commercial Check Volume and Revenue:

Volume - Down

Average Revenue Per Check - Up

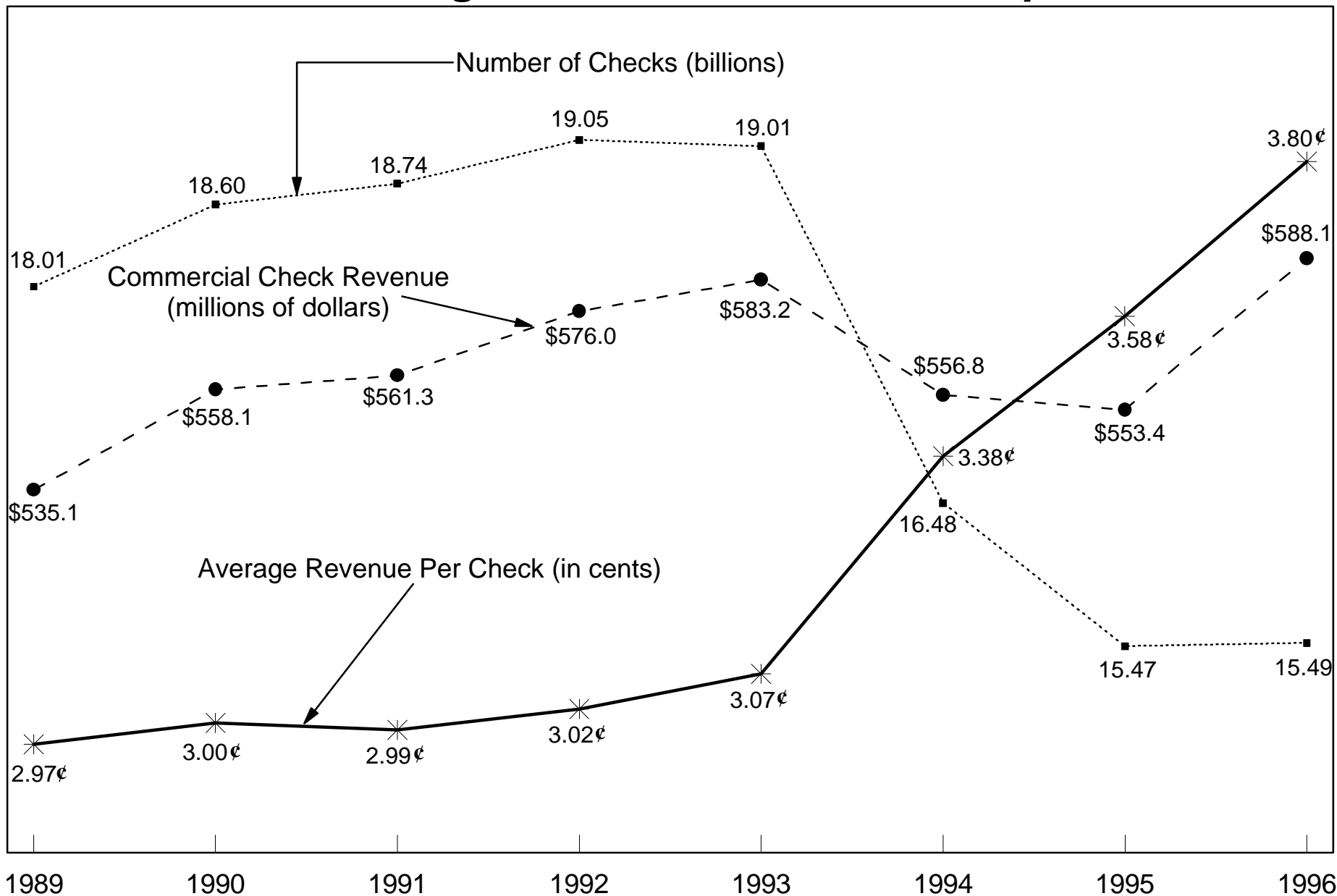


Figure 4

Fine Sort Check Volume Has Dropped By Half Since 1993

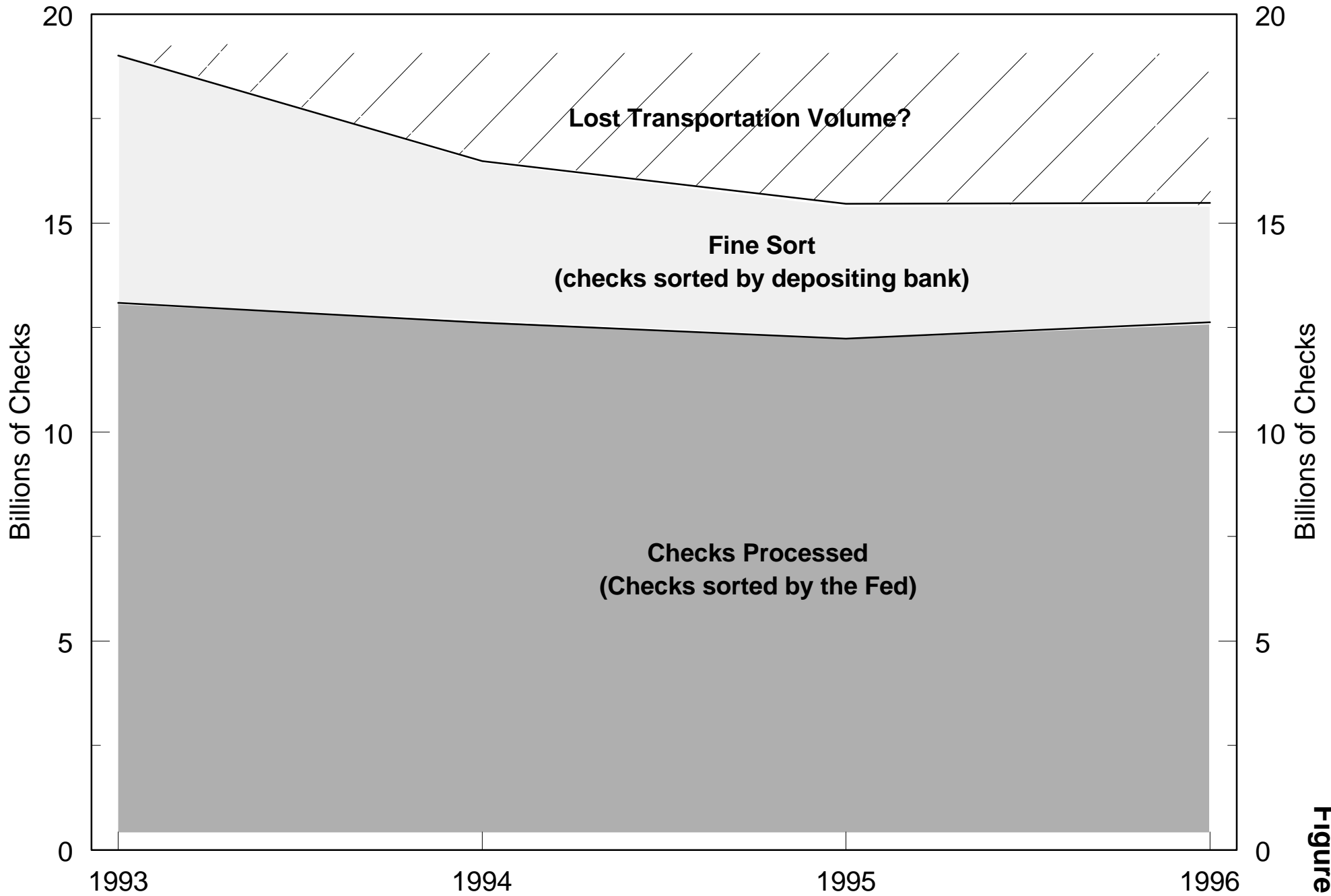
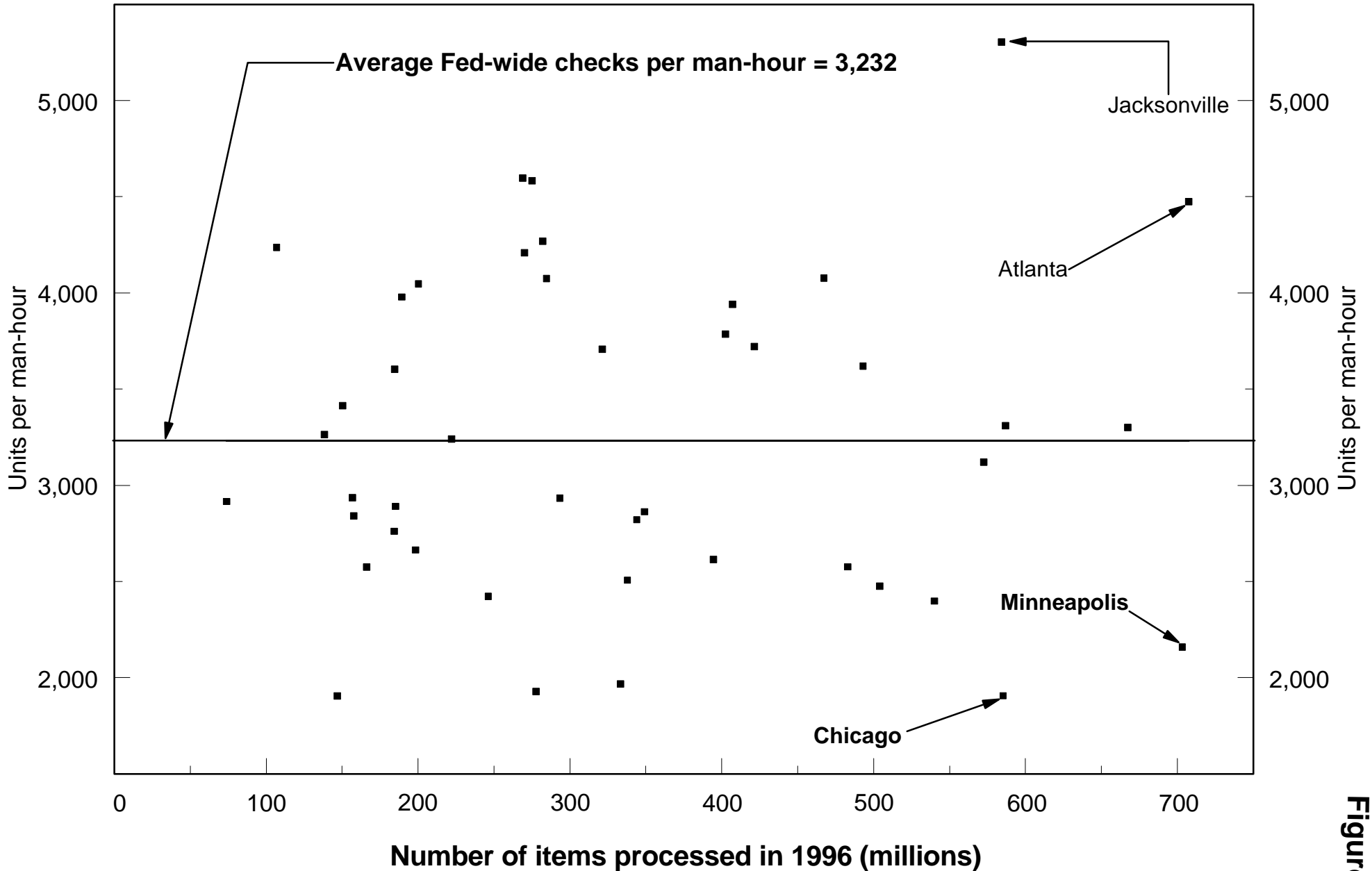


Figure 5

Productivity Varied Widely in 1996 Among the Fed's 45 Check Processing Centers While Economies of Scale are Not Readily Evident

Checks Processed per Man-hour

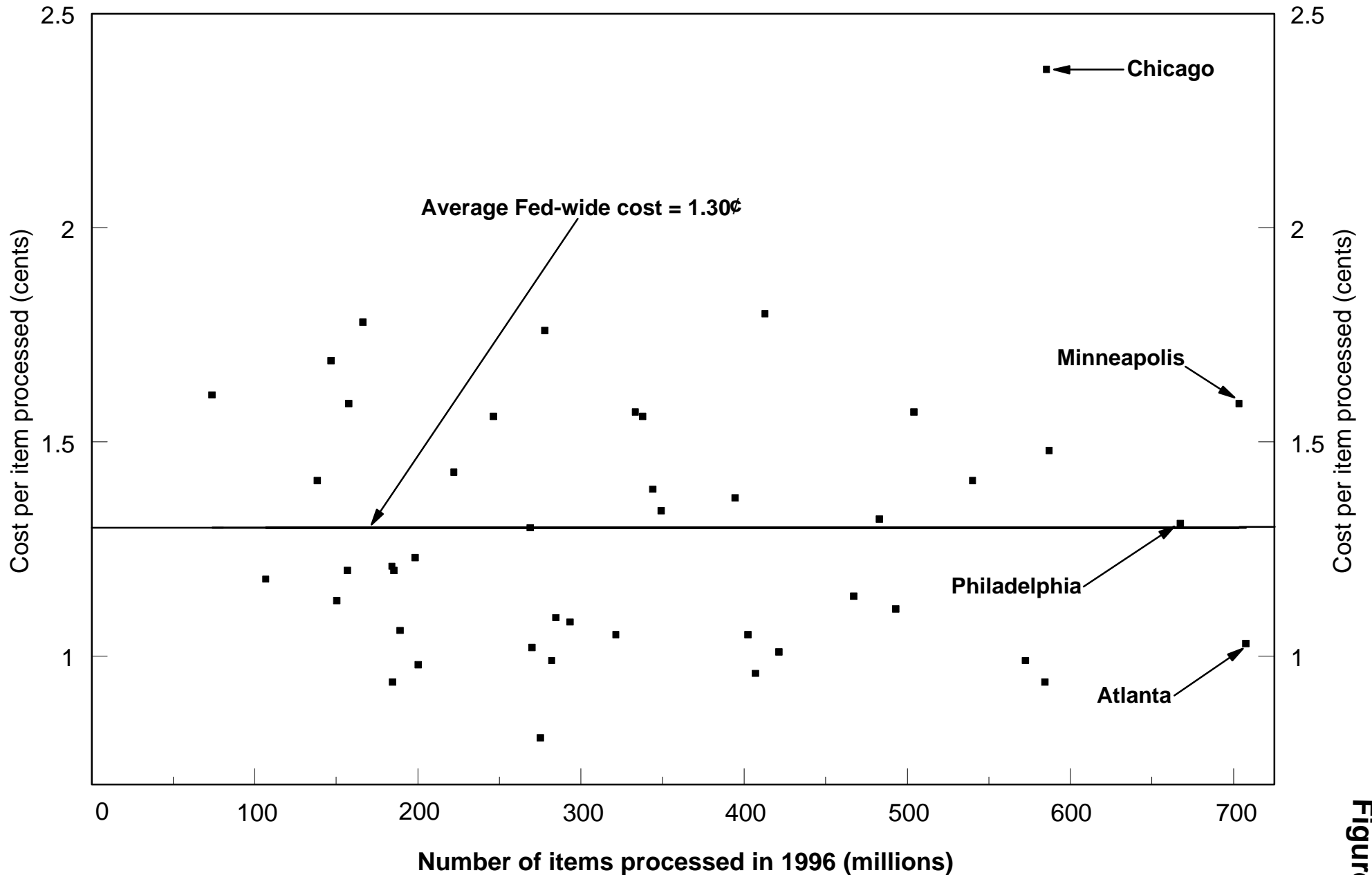


Note: Excludes Peoria, for which there is no 1996 cost data.

Figure 6

Processing Costs Per Unit Varied Widely in 1996 Among the Fed's 45 Check Processing Centers While Economies of Scale are Not Readily Evident

Cost per Check Processed

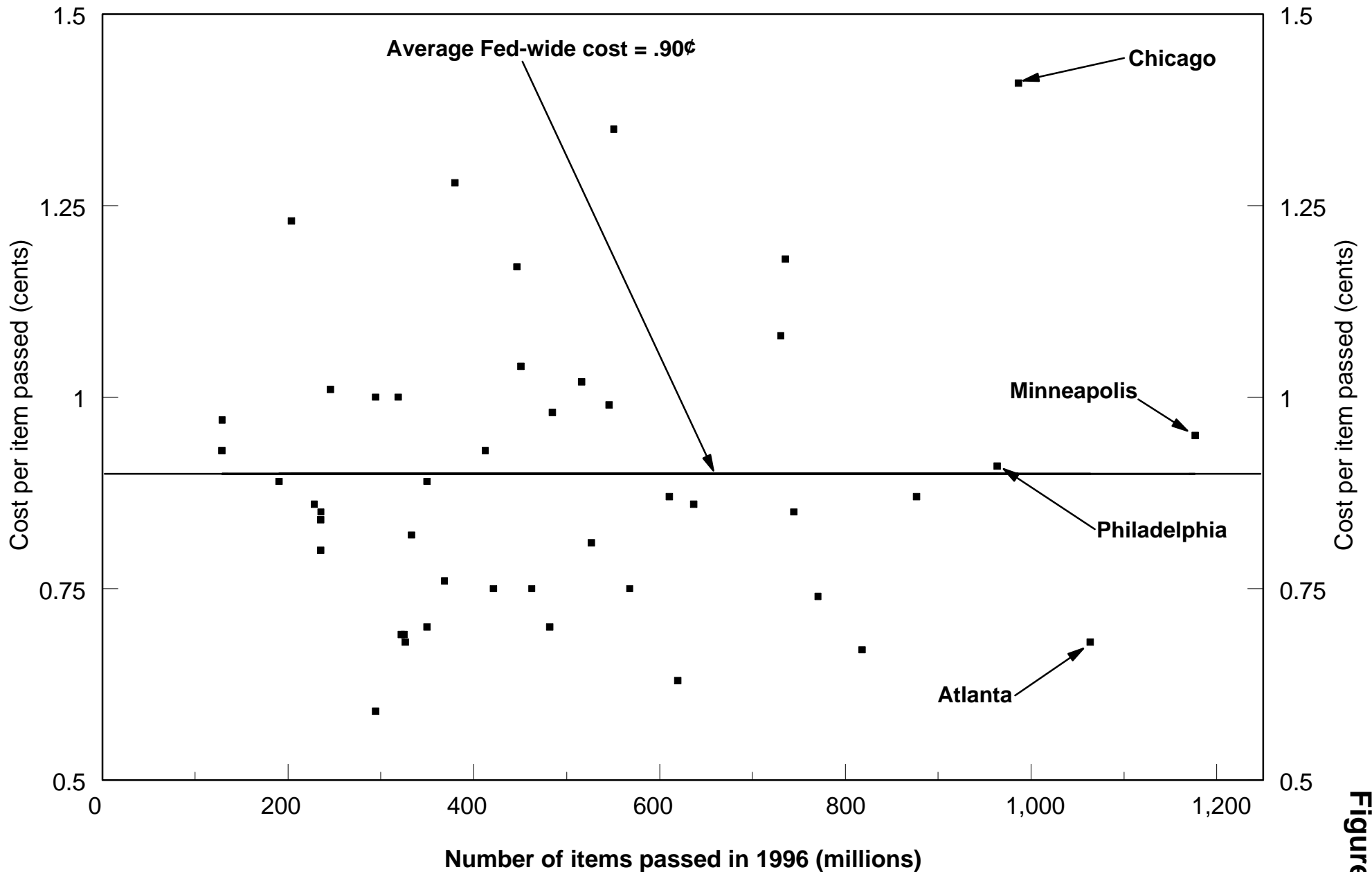


Note: Excludes Peoria, for which there is no 1996 cost data.

Figure 7

Processing Costs Per Unit Varied Widely in 1996 Among the Fed's 45 Check Processing Centers While Economies of Scale are Not Readily Evident

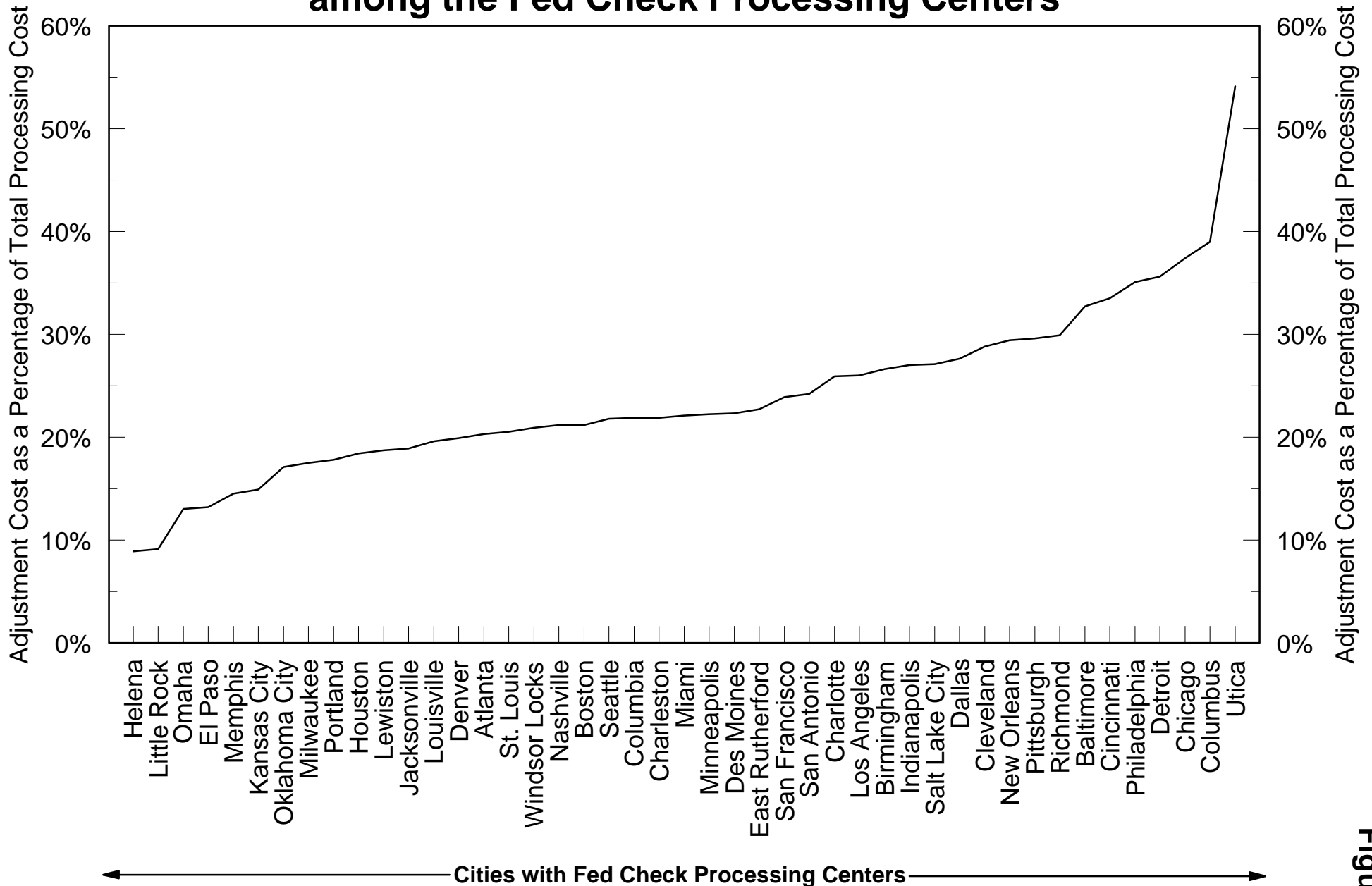
Cost per Item Passed (each time a check is sorted)



Note: Excludes Peoria, for which there is no 1996 cost data.

Figure 8

The Ratio of Adjustment Costs (Error Correction) to Check Processing Costs Varied Tremendously in 1996 among the Fed Check Processing Centers

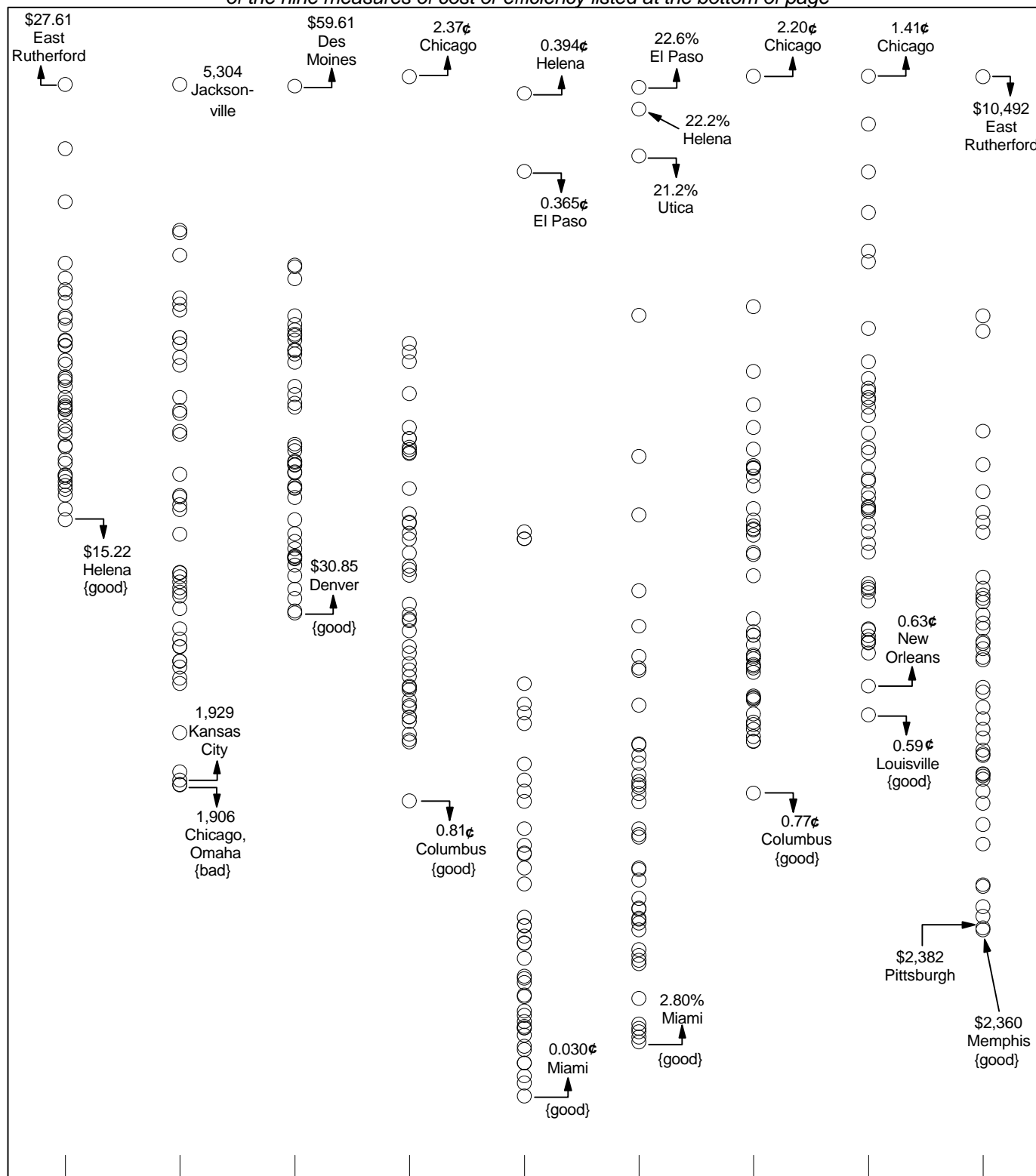


Note: Excludes Peoria, for which there is no 1996 cost data.

Figure 9

Costs and Efficiencies Varied Greatly in 1996 Among the 45 Fed Check Processing Centers

Each column shows the distribution of the processing centers for each of the nine measures of cost or efficiency listed at the bottom of page



Ratio:
High /
Low

1.81

2.78

1.93

2.93

13.27

8.05

2.86

2.38

4.45