



As the 1990s begin, we look back upon the conditions that brought DTC into being and on its evolution.

“The volume of securities in the latter 60s outran the capacity of many firms’ back offices to handle the paperwork necessary to complete the transactions.

“The chaotic conditions that resulted have been well documented . . . Suffice it to say that, at the peak of the crisis, securities transactions by the hundreds of thousands involving hundreds of millions of dollars were inordinately delayed in completion, with some not completed at all. Unclaimed dividends, and unsatisfied dividend claims, soared. Errors were rife, and clerical talent in short supply. Trading days had to be eliminated, and trading days shortened. Firms failed solely because of the inadequacies of their back offices, and others were shaken for the same reason.

“In short, a vital part of the financial mechanism in this country was in danger of being brought to its knees.”

from “BASIC - Interindustry Teamwork,” a 1974 report of the Banking and Securities Industry Committee

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The Depository Trust Company, a service company owned by members of the financial industry, is a national clearinghouse for the settlement of trades in corporate and municipal securities. DTC also performs securities custody services for its participating banks and broker-dealers. In 1989 those Participants delivered \$9.2 trillion of securities through the depository's book-entry system, and securities in its custody reached \$4 trillion at yearend.

DTC's primary mission is to reduce the cost of securities services offered to the public by its Participants. It does so through its automated systems, its telecommunications links with more than 600 Participants and others, and its relationships with the hundreds of firms that serve as transfer agents, paying agents, exchange agents, and redemption agents for securities issuers.

HIGHLIGHTS

<u>TOTAL FOR THE YEAR</u>	<u>1989</u>	<u>1988</u>
Book-entry deliveries		
Market value (<i>In trillions</i>)	\$9.2	\$8.1
Number (<i>In millions</i>)	73.9	67.2
Cash dividend and interest payments (<i>In billions</i>)	\$207.7	\$178.2
Reorganization, redemption, and maturity payments (<i>In billions</i>)	\$229.3	\$196.3
<u>AT YEAREND</u>		
Eligible securities issues	723,839	608,916
Value of securities on deposit (<i>In trillions</i>)	\$4.02	\$3.28
Number of shares on deposit (<i>In billions</i>)	116.5	106.6
Principal amount of corporate debt on deposit (<i>In billions</i>)	\$1,017.8	\$844.8
Principal amount of municipal debt on deposit (<i>In billions</i>)	\$750.9	\$623.8
Participants	606	607
Broker-dealers	408	415
Banks	189	183
Clearing agencies	9	9



A MESSAGE FROM MANAGEMENT

This year's annual report not only chronicles DTC's services and transaction volumes during 1989, but looks back at the depository's evolution from its starting point in the late 1960s. A retrospective look of this nature seems appropriate at the closing of a decade; and the passing of Herman Bevis, the principal architect of DTC, makes a reference to DTC's origins particularly timely.

As we hope the pages on the origins and evolution of DTC will show, what he and many others have tried to create over the past 20 years is a disciplined machine to reduce costs for everyone concerned with the post-trade settlement process for U.S. investment securities. DTC can best be understood as a cost-conscious, objective servicing arm for a large cooperative of broker-dealers and banks that are essentially competitors — by industry, region, city, and firm — but whose common interest is served by an organization that reduces their operating expense, improves their client services, and charges them based on the cost of the services they use. The sections of this annual report that immediately follow indicate the sustained effort by many parties over the years to achieve change and progress.

As DTC has expanded its services over this period, its effort to limit its operating costs has been exceeded only by its willingness to assume increased costs through automation, certificate immobilization, and centralization. The continuing growth in

DTC transaction volume, as detailed in this report, suggests the extent to which this has occurred.

As for Depository Trust activity in 1989, most service volumes showed double-digit percentage increases over 1988, despite the fact that both years were difficult years for the securities industry. This growth in depository transaction volume is due largely to more securities being made eligible for DTC services and to the addition of new automated service applications. These and other factors explain why once again in 1989, DTC did not have to raise its fees to users in order to increase total operating revenue. In fact, automation and other efforts on the expense side limited depository operating expense growth to 0.5% over the 1988 level, despite increased 1989 volumes.

The portrait of DTC's activity in 1989 can be understood only by looking at its components — service volumes, service plans, and systems improvements. The nature of DTC services and their transaction volumes are described later in this report. A few remarks about the program development process and systems improvements, however, are in order.

In its comprehensive effort to address program development, DTC distributes a proposed Program Agenda for comment roughly every two years, to inform Participants and confirm their priorities for new or improved DTC services. The conclusion of that process is a final Program Agenda, the latest of



which was released in May 1989 for the period ending in mid-1990.

At the other end of the program development spectrum is planning to develop a particular program. Because of the extraordinary effort involved, we are pleased to report that 1989 brought the resolution of all operational and risk management issues in the commercial paper program that DTC was asked by industry members to develop. We anticipate that this book-entry-only program will begin in the fall of 1990 as a component of our expanding Same-Day Funds Settlement system and that, when fully operative, it will add daily settlements of approximately \$50 billion to current daily trade settlement volumes of about \$37 billion.

We wish also to note another milestone reached in 1989. Of the \$155 billion in cash dividends and corporate interest payments to DTC last year for Participants in DTC's Next-Day Funds Settlement system, 99% was received on the payment date and in same-day funds. While this was an improvement of one percentage point over the prior year, this result represented the fruition of years of systematic effort. In 1980, when intensified efforts began, only 67% of the dollar amount of such payments was received on payment date and 76% in same-day funds.

At yearend 1989, DTC held securities with a market value of \$4 trillion for banks, broker-dealers, and other depositories. The market value of DTC Participant bank and broker-dealer assets held at

DTC, and held for DTC's account by its depository counterparts in Chicago and Philadelphia, amounted to approximately 98% of the total estimated market value of securities held by all three depositories.

Finally, we wish to thank all of the industry committees and the many Participants who advised the depository in 1989 and in prior years for their help in shaping our services. We rely on you to describe the diversity of your operational needs as we attempt to improve the clearance and settlement process.

Our sincere thanks, too, go to all of the DTC employees who make possible this cooperative effort to serve depository users. Our appreciation for your professionalism is shared by others who have seen it in the depository's daily performance, and who have come to expect a high level of that performance.

William T. Dentzer, Jr.
Chairman and Chief Executive Officer

Conrad F. Ahrens
President and Chief Operating Officer



RETROSPECTIVE

The *Origins of DTC*
The inter-industry character and governance of Depository Trust stem from the work of the Banking and Securities Industry Committee (BASIC) in 1970-72, a group formed by New York bank and stock exchange leaders determined to prevent another Wall Street paperwork crisis like that of the late 1960s.

The Street's back office problems had grown during the '60s well before they exploded in 1968. That is why the New York Stock Exchange (NYSE) began developing the Central Certificate Service (CCS) division of its Stock Clearing Corporation. CCS was to immobilize in its vault the many stock certificates held by individual NYSE member firms in "street name" and complete transfers of ownership among them by accounting entries on its records — book entry. The growing paperwork crisis led the NYSE to activate CCS on a limited basis in June 1968; by late 1969, initial systems and operations problems were sufficiently resolved to allow expansion. At yearend 1969, broker-dealers had 464 million shares on deposit with CCS.

After a blizzard of consultant studies and industry reports on the paperwork crisis, Robert Haack, NYSE President, and Ralph Saul, American Stock Exchange President, and the chairmen of the New York Clearing House banks agreed in late 1969 to form an inter-industry committee at the top management level. That group, BASIC, comprised the following members at its organizational meeting in March 1970:

John M. Meyer, Jr., *Chairman*
Chairman, Morgan Guaranty Trust Company

Herman W. Bevis, *Executive Director*
Retired Senior Partner, Price Waterhouse & Co.

Robert W. Haack
President, New York Stock Exchange

William H. Moore
Chairman, Bankers Trust Company

Ralph S. Saul
President, American Stock Exchange

Richard B. Walbert
President, National Association of Securities Dealers

Walter B. Wriston
Chairman, First National City Bank

After more than a year of reviewing the myriad solutions offered to prevent a future crisis — including

proposals to abolish the stock certificate or make it machine-readable in punch card form — BASIC made its most important recommendation: to immobilize certificates in a comprehensive, inter-industry securities depository system, including banks as well as broker-dealers, and to create such a depository in New York that would relate to similar depositories developed in any other U.S. financial center.

BASIC's operational phase concluded at the end of 1972, though it met as needed until 1975 to assist the implementation of its recommendations: that CCS be spun out of the NYSE to become an independent, inter-industry depository with its own data processing capability, that the New York banks deposit their securities with the depository and use it, and that users of the depository be given the right to purchase its stock in proportion to their annual use and to vote that stock cumulatively to elect its board of directors.

On May 11, 1973, The Depository Trust Company assumed the business and operations of CCS, Inc. DTC had been formed as a New York limited purpose trust company in part to meet provisions of American commercial law concerning the book-entry transfer and pledge of securities ownership.

In 1975, BASIC's campaign to modify state laws restricting depository ownership in order to accommodate DTC's user-ownership principle reached the point where the NYSE could sell DTC stock to the depository's bank users, as well as to the American Stock Exchange and the National Association of Securities Dealers (NASD). In keeping with BASIC's view that purchase of DTC stock should not be an investment vehicle, but rather a means to participate in DTC's governance, the depository already had adopted a policy of paying no dividends to stockholders. In 1976, the NYSE gave broker-dealer Participants in DTC the option to own DTC stock directly, rather than be represented in ownership by the exchanges and the NASD.

By the mid-1970s, then, the implementation of BASIC's plans to develop DTC had been completed. BASIC officers Herman Bevis and John Meyer, as well as Walter Wriston, were its driving forces, and it is to them and the other members of BASIC that DTC owes much of its present character.



HERMAN W. BEVIS



JOHN M. MEYER, JR.

Herman W. Bevis, retired Senior Partner of Price Waterhouse & Co., was the Executive Director of BASIC during its existence from 1970 to 1975 and an advisor to the management of DTC throughout its formative years. He died May 5, 1989, at the age of 80. John M. Meyer, Jr. was the Chairman of BASIC at its inception in 1970, when he was Chairman of the Board of Morgan Guaranty Trust Company. After retiring from the bank, he continued as BASIC's Chairman until 1974.

The Evolution of DTC

In the years since its creation in 1973, the programs and priorities of Depository Trust have reflected the priority needs of its Participants during any given period. This flows from DTC's basic mission, which is to reduce the costs and improve the results of its participating broker-dealers and banks by performing tasks they cannot do alone — such as complete automated book-entry deliveries of securities — and by absorbing operational tasks from them to achieve efficiencies from centralized processing. One such efficiency is the timely collection of cash dividends and interest from paying agents and their distribution to Participants. Because DTC's role as a central processing channel between users and paying agents provides scale economies, it can commit the resources required to perfect the collection process, at the same time making processing such payments easier for Participants.

In DTC's early years, major emphasis was on adding institutional participation to the depository's broker-dealer base in order to immobilize more stock certificates and substitute book-entry deliveries and pledges for the physical presentment of certificates. At that time, DTC's intermediary role with industry agents was primarily as a kind of central post office through which users could get newly registered certificates from transfer agents for customers, and receive payments due from paying agents.

As the depository expanded its user base, it sought ways to make it unnecessary for Participants to withdraw certificates from their DTC long positions in order to present them to agents for tender offers and other reorganization activity. This meant establishing procedures with such agents that protected all concerned, given the large sums involved.



In more recent times, after DTC took on more custody-related processing tasks for Participants, the depository has added to Participant efficiencies by giving them automated access to DTC's data base of historical records for quick answers to queries about their activity. With this automated research tool, it is increasingly more convenient for Participant operating units to check DTC's records of their past activity than it is to access their own.

In order to maximize its utility to Participants, DTC continually has sought to make more securities issues, and more types of securities, eligible for depository services. Having begun initially with NYSE-listed stocks, the depository added stocks listed on the American Stock Exchange, then Over-The-Counter and other equity issues, and then listed and unlisted corporate debt. In 1981 the depository began to make bearer municipal bonds eligible for its services, followed by registered municipal bonds. A number of types of securities that settle only in same-day (rather than next-day) funds were added beginning in 1987. That process is continuing, with commercial paper due to become eligible in the autumn of 1990. With the addition of more than 100,000 municipal bond and other issues each year for the last five years, more than 700,000 security issues are now eligible for book-entry and other DTC services.

Another continuing DTC effort has been to move away from paper documents and increase the flow of automated data between it and its Participants. BASIC in 1972 had identified the need for an "electronic communications" network in developing the depository. Beginning with the exchange of magnetic tapes, moving on to dedicated and dial-in telecommunications networks, and then exchanging data computer to computer in both batch and interactive modes, these steps are part of a never-ending effort to help users reduce costs and errors wherever possible and as rapidly as individual Participant resources permit. The great bulk of depository services are now accessed and delivered through DTC's Participant Terminal System of more than 1,200 terminals and printers across the country and computer-to-computer interfaces with over 400 Participants.

With Participants' customers desiring several million newly registered certificates each year, bringing efficiencies to the transfer process has always been an important DTC priority. The means of achieving those efficiencies were first spelled out by DTC to the industry in 1974: Where possible, place securities in DTC's custody with their transfer agents under the Fast Automated Securities Transfer (*FAST*) program, to reduce certificates not needed at DTC; collect transfer instructions from Participants in automated format and distribute them to transfer agents in similar form, with automatic analytical programs at DTC bridging the gap between Participant input and transfer agent requirements; and encourage agents to mail new certificates to users' clients directly, with safeguards and necessary reporting to Participants. Progress along those lines is still continuing. As 1989 closed, DTC had almost \$2 trillion of securities in the *FAST* program, received 99.5% of Participant transfer instructions in automated form, had 45 transfer agents accepting automated instructions from it, comprising about 58% of its transfer volume, and helped make a growing proportion — now 33% — of newly registered certificates obtained through DTC available to users' clients by direct mail.

The development of the Institutional Delivery (*ID*) system is another example of DTC's role as a change agent in the post-trade settlement process. Undertaken in 1973 to clear and settle institutional trades by efficient automated means, starting with the broker's report on the night of trade date, DTC faced the age-old problem that no one wanted to convert to a new system linking them to others until most others converted too. Years of effort and support by industry leaders finally achieved the critical mass of service use necessary to make the system universal. The 17 to 20 million *ID* trade confirmations of recent years and other *ID* activity — particularly during the October 1987 market break — testify to the value of that service to its more than 7,000 investment manager, custodian bank, and broker-dealer users. This system and its wide user base are now the foundation for developing DTC's International Institutional Delivery (*IID*) system to facilitate clearance and settlement of trades in



foreign securities executed abroad.

DTC's introduction in 1982 of book-entry-only debt securities, with no certificates available to investors was another example of its effort to seek post-trade processing efficiencies where issuers and investors would accept them. Issues of municipal securities increasingly are in this form, and book-entry-only issues of corporate debt oriented to institutional buyers are growing in number from underwritings distributed through the depository. In 1989, book-entry-only issues with a total principal amount of \$178 billion were distributed through DTC.

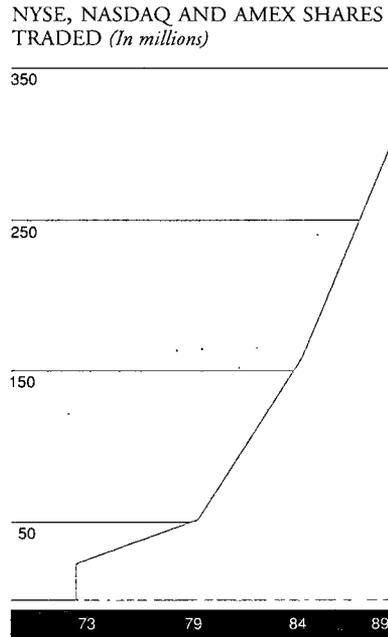
As 1990 began, BASIC's 1971 goal of immobilizing in a securities depository the securities held by institutional investors had been achieved to a degree beyond its expectations. Moreover, voluntary changes in investor preferences have caused a higher percentage of retail investors to leave their securities in street name, which now usually means they too are at DTC. While data are not available on the extent to which some types of securities are immobilized in DTC, the depository now holds approximately:

- 72% of the shares of companies represented in the Dow Jones Industrial Average,
- 65% of the shares of all NYSE-listed U.S. companies,
- 43% of the shares of both NASDAQ- and American Stock Exchange-listed U.S. companies,
- 74% of the corporate debt listed on the NYSE, and
- 85% of the principal amount of outstanding municipal bonds.

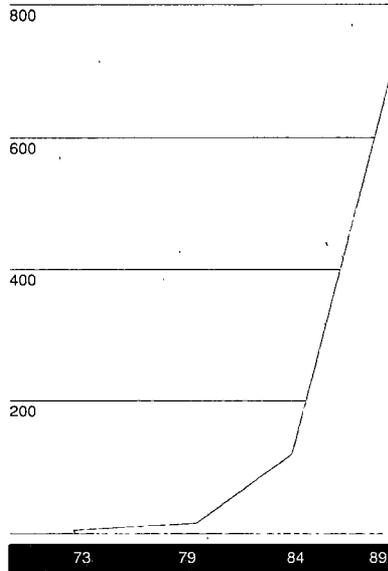
And all of these percentages will continue to slowly grow.

The table on the following page indicates DTC's growth since 1973 as seen by activity in selected services at the end of several periods. It demonstrates how much can be accomplished when an industry seeks efficiency and many organizations respond.

NYSE, NASDAQ AND AMEX SHARES TRADED (In millions)



DTC-ELIGIBLE ISSUES (In thousands)





DTC SERVICE GROWTH*

	<u>1973</u>	<u>1979</u>	<u>1984</u>	<u>1989</u>
<u>AVERAGE DAILY</u>				
NYSE shares traded <i>(In millions)</i>	16.1	32.2	91.2	165.5
NASDAQ shares traded <i>(In millions)</i>	6.7	14.4	59.9	133.1
AMEX shares traded <i>(In millions)</i>	3.0	4.3	6.1	12.4
<u>AT YEAREND</u>				
Participants	270	316	507	606
Eligible issues	4,729	13,232	139,298	723,839
Market value on deposit <i>(In billions)</i>	\$60	\$305	\$1,437	\$4,022
<u>TOTAL FOR THE YEAR</u>				
Book-entry deliveries				
Value <i>(In billions)</i>	\$176	\$684	\$3,780	\$9,218
Number <i>(In millions)</i>	11	25	48	74
Cash dividend & all interest payments				
Value <i>(In billions)</i>	\$1.0	\$12.2	\$74.3	\$207.7
Payments to DTC <i>(In thousands)</i>	10.4	29.0	211.4	1,255.7
Reorganization, redemption and maturity payment value <i>(In billions)</i>				
	0	NA	NA	\$229
Total Underwritings				
Principal amount <i>(In billions)</i>	0	\$17	\$182	\$384
Number	0	342	5,762	23,256
Underwritings of book-entry-only issues				
Principal amount <i>(In billions)</i>	0	0	\$7	\$178
Number	0	0	2,712	14,803
Institutional Delivery system				
Users (at yearend)	‡	234	4,377	7,381
Total Confirmations <i>(In millions)</i>	‡	1.4	11.7	18.5
Total Affirmations <i>(In millions)</i>	‡	.4	6.8	11.9
Deliveries <i>(In millions)</i> ♦	0	.3	5.7	9.0

* Some figures rounded

‡ Pilot program only

♦ Scheduled automatic deliveries only



OWNERSHIP AND POLICIES

Governance of the Depository

DTC's governance is carefully framed to reflect the need for objectivity in serving diverse users in the financial community. The right to purchase capital stock of the depository is based on a formula that considers each Participant's use of the depository during the preceding calendar year. The calculation of Participant use is based 80% on fees paid to the depository and 20% on the market value of long securities positions in DTC at the end of each month during the year.

The amount of stock each Participant may purchase is recalculated each year to reflect variations in depository usage. Participants may purchase any, all, or none of the stock to which they are entitled, at a price based on the stock's yearend book value.

Stock is reallocated before the annual stockholders meeting in late March so that stockholders may vote newly acquired shares in electing the Board of Directors at that meeting. Elections are conducted by cumulative voting so no combination of stockholders controlling a simple majority of stock can elect all Directors. Board representation is thereby available to users from various sectors of the financial community in proportion to their use of the depository.

After the 1989 reallocation of DTC stock, the depository had 150 stockholders, comprising 52 broker-dealers, 92 banks, and 6 self-regulatory organizations and clearing agencies. Broker-dealer Participants owned 15.1% of DTC stock, while bank Participants owned 42.9%. Ownership interests of the self-regulatory organizations on behalf of broker-dealer Participants were 33.2% for the NYSE, 4.4% for the American Stock Exchange, and 4.4% for the National Association of Securities Dealers.

DTC policy prohibits dividend payments to stockholders, since DTC believes that depository ownership is not an investment vehicle, but a means for diverse users to encourage DTC's responsiveness to their needs through exercise of their cumulative voting rights to elect the Board of Directors.

DTC policy also limits its annual profit, so the depository returns to users revenues that the Board

of Directors determines exceed the funds required for the depository's operation.

As a registered clearing agency, DTC is regulated by the Securities and Exchange Commission under the Securities Exchange Act of 1934, as amended. As a member of the Federal Reserve System and a New York State limited purpose trust company, DTC is also regulated by the Board of Governors of the Federal Reserve System and the New York State Banking Department.



JEFFREY H. SMITH, RETIRING PRESIDENT OF THE SECURITIES INDUSTRY ASSOCIATION'S SECURITIES OPERATIONS DIVISION, TALKS WITH THE NEW PRESIDENT, JAMES P. MAHONEY, OUTSIDE DTC'S EXECUTIVE CONFERENCE ROOM.



DTC SENIOR
TRAINING OFFICER
JOSEPH WHEELER
CONDUCTS WORK-
SHOPS TO HELP
PARTICIPANTS MORE
EFFICIENTLY USE DTC.

SERVICES

Depository Trust's goal is to reduce the cost of securities processing for its Participants while increasing accuracy, security, and speed. DTC accomplishes this by:

- continually making more issues eligible for its services,
- reducing the number of certificates that must be shipped and handled within the financial community,
- automating and standardizing the flow of information,
- achieving economies of scale, and
- acting as a central intersection and "switch" for the flow of data, securities, and funds between Participants and agents for securities issuers.

DTC's services begin when participating banks and broker-dealers deposit securities with it. Participants can then affect their securities positions by instructing the depository to perform a service, such as delivering securities to another party through book-entry on DTC's records and collecting payment from that party. Participant use of depository services varies, depending on the services it offers its customers. The depository's services are briefly described in this section, followed by a listing of 1989 volumes in selected services.

Deposits

Certificate deposits in eligible securities issues can be made at DTC or at various banks and clearing corporation offices nationwide that cooperate with DTC as Depository Facilities. More than 25 million certificates were deposited with DTC in 1989.

Deliveries

Changes of securities ownership are made by book-entry deliveries on DTC's accounting records. They may be with or without an accompanying money payment and are reported to Participants daily. Deliveries in 1989 were valued at over \$9 trillion.

Pledges

Securities may be pledged by book-entry on DTC's accounting records to banks and other entities that have agreed to accept them as collateral. Banks participating in DTC's pledge program numbered 100 at yearend. In addition, the Federal Reserve Banks of Boston, Kansas City, New York, Philadelphia, Richmond, and St. Louis accept pledges to their DTC accounts from member banks to secure Treasury Tax and Loan accounts and deposits of public money, as well as advances at the discount window and intraday overdrafts. The Options



Clearing Corporation (OCC) also accepts pledges to its DTC account. Total pledges outstanding at yearend exceeded \$20 billion.

Underwriting Distributions

Underwriters for new and secondary issues distribute them by book-entry against payment, with certificates or book-entry-only positions then available to investors. Last year, approximately 250 lead managers used DTC to distribute more than 23,200 corporate and municipal underwritings valued at \$384 billion.

Custody

This DTC service allows Participants to reduce their costs of handling and safeguarding securities by leaving them with DTC, and to further reduce their costs by using other DTC custody-related services described here. At yearend, DTC held securities valued at \$4 trillion for its Participants.

Dividends and Interest

This service eliminates the need for Participants to collect dividend and interest payments directly from many sources on securities left with the depository. In 1989, DTC received almost 1.3 million payments for Participants—nearly 91,000 on peak days—with corporate cash dividends and interest reaching \$161 billion and municipal bond interest reaching \$46.7 billion.

The timeliness of corporate cash dividends and interest payments continued to improve, with 99% of these funds received on payable date, and 99% of their value in same-day funds. With municipal bonds, DTC receives virtually all payments on payable date.

Change Mode of Payment Service

DTC's Change Mode of Payment (CMOP) service enables Participants to change by book-entry the frequency (mode) of dividend payments on securities that permit such changes: unit investment trust (UIT) issues and variable mode preferred stock issues. Changes are made by moving a Participant's position from one CUSIP to another, via the Participant Terminal System, and making a similar

change in DTC's Fast Automated Securities Transfer (FAST) records and forwarding the change to the transfer agent for posting.

At yearend 1989, over 7,000 UIT issues (nearly 19,000 CUSIPs) were eligible for CMOP, as well as 27 variable mode preferred stock issues (roughly 250 CUSIPs). DTC processed over 10,500 CMOP instructions in UIT securities and nearly 1,100 in variable mode preferred stock issues during the year.

Voluntary Offerings

Tender and Exchange Offers: Participants may accept tender and exchange offers for securities in their accounts and deliver them to agents through DTC. The value of such acceptances in 1989 passed \$76 billion.



DTC MANAGERS FRANK MARTINEZ (RIGHT) AND DAN CONLON (CENTER) REVIEW AN AUTOMATED TENDER OFFER PROGRAM TRAINING AID OVER PTS WITH PARTICIPATING AGENT BILL GAUGER, VICE PRESIDENT, CITIBANK, N.A.



Conversions: Participants may instruct DTC to surrender convertible debt and equity securities in their accounts to conversion agents by book-entry for same-day credit in the underlying securities, usually common stock. Nearly 320 million shares resulted from such conversions in 1989.

Redemptions

When a security in the depository's custody matures or is fully or partially called by the issuer, DTC presents the security for redemption and pays the proceeds to affected Participants. With more issues DTC-eligible, the total number of issues in which DTC processed redemptions grew 25% in 1989, to more than 68,200, while the dollar value redeemed rose 39%, to almost \$134 billion. Those figures include maturities of municipal issues, which reached almost 34,600. In addition, partial calls in municipals increased to over 20,100 and partial calls in corporates declined to approximately 1,360.

Puts

"Put" provisions generally allow holders to obtain on demand the repayment of the principal value of their securities on a predetermined number of days' notice. DTC's Repayment Option Procedures is a growing service that enables Participants to submit put instructions through the depository in eligible issues, which numbered more than 3,600 in 1989. Those issues include many municipal and corporate issues, mortgage-backed bonds, and floating-rate notes and securities with similar repayment options. In 1989, DTC received roughly 19,000 instructions to exercise Participant puts and allocated approximately \$13 billion in payments. In addition, DTC processes optional repayments on certificates of deposit and rollover instructions on T-bills.

Dividend Reinvestment

When permitted by an issuer's reinvestment plan, the Dividend Reinvestment Service (DRS) allows Participants, for interested customers, to reinvest

dividends on some or all shares without withdrawing those shares from DTC. In 1989, DRS included 260 participating plans and helped reinvest \$1.2 billion of dividend distributions.

Units

Participants can separate units—such as a share and a warrant, or a bond and a put option—into their components or combine the components into units and deliver them by book-entry through DTC. The depository received almost 23,000 of these instructions in 1989.

Warrant Subscriptions

Warrants for common stock may be exercised by book-entry through DTC. Over 2,650 subscriptions in 84 eligible warrant issues were processed in 1989, resulting in the issuance of 95 million shares.

Options

Last year, over 180 banks and broker-dealers used DTC to deposit securities to satisfy OCC margin or clearing fund requirements. At yearend, the value of securities so deposited, or "pledged," totaled \$6.3 billion, representing 96% of the value of securities collateral with OCC from all sources.

Third-Party Pledge System: Banks may pledge securities on deposit at DTC to OCC on behalf of a broker-dealer to satisfy OCC requirements for the writer of a call option. The system also allows a put option writer to instruct its bank to move Treasury bills to DTC and then pledge them to OCC for the account of the OCC clearing member carrying the writer's short position, reducing the clearing member's margin requirements.

Withdrawals

Certificates can be withdrawn from DTC custody in three ways:

Withdrawals-by-Transfer (WTs): When a Participant's customer desires a certificate registered in any particular name, DTC arranges with the appropriate transfer agent for the issuance of that certificate. Approximately 5.8 million new



PAYING AGENTS CAN USE AUTOMATED MEANS TO PROVIDE PAYMENT DETAILS TO DTC AND REDUCE TIME, COSTS, AND ERRORS. (STANDING, FROM LEFT) DAVID FERRELL, VICE PRESIDENT, CITIZENS AND SOUTHERN TRUST COMPANY; DON M. IACCHERI, VICE PRESIDENT, BANK OF AMERICA N.T. AND S.A.; JOSEPH J. BELLANTONI, VICE PRESIDENT—OPERATIONS APPLICATIONS DEVELOPMENT DEPARTMENT, AND JOHN P. CONNORS, MANAGER—DIVIDEND DEPARTMENT, DTC. (SEATED) TERRY L. MCROBERTS, EXECUTIVE VICE PRESIDENT, SECURITY PACIFIC, AND CHERYL T. LAMBERT, DIRECTOR—DIVIDEND DEPARTMENT, DTC.

certificates were created in this manner in 1989. Depending on the issue, its transfer agent, and the agent's location, newly registered certificates are generally available one to two weeks after DTC has received instructions for these routine transfers.

Urgent CODs: In many issues, Participants can obtain certificates quickly and directly from the depository. Urgent Certificates-on-Demand (CODs) are available from DTC in all full-FAST securities, all corporate debt securities eligible for DTC's Same-Day Funds Settlement system, and all registered and bearer municipal issues.

The Rush Withdrawal-by-Transfer (RWT) Service: RWT enables DTC to expedite the processing of Participants' transfers when certificates are needed

urgently and CODs are not available.

During the two previous years, after consulting with Participants, transfer agents, and the Securities Transfer Association, DTC gradually curtailed urgent COD withdrawals in corporate debt and equity securities. Earlier, Participants needed these urgent withdrawals primarily to complete deliveries-versus-payment (DVPs) not settling in a book-entry environment. This need diminished, however, as book-entry delivery grew and rules of self-regulatory organizations were amended to mandate book-entry settlement of DVPs in corporate securities.

As a result, in July 1989 DTC began to eliminate its urgent COD withdrawal service for corporate securities settling in next-day funds (except for issues in the full-FAST program). These securities are now handled through RWT.



To use RWT, Participants submit rush transfer registration instructions to DTC via the Participant Terminal System. If the issue is in the RWT pilot program, the transfer agent receives these instructions from DTC the following day. After rush reregistration by the agent and retrieval by DTC, the depository promptly notifies the Participant that the transferred securities are available.

Participants can withdraw securities quickly through the service because RWT instructions are segregated for priority treatment by DTC and the agent, and because of an overnight express courier service between DTC and agents outside of New York City.

Fast Automated Securities Transfer

Under the *FAST* program, DTC reduces certificate movement by leaving some securities with transfer agents in the form of balance certificates registered in its nominee name, Cede & Co. Balance certificates are adjusted daily for DTC deposit and withdrawal activity.

Agents can participate in the WT portion of the program only, or they can also handle urgent COD withdrawals by taking part in the full-*FAST* program.

Direct Mail Service

A Participant can speed newly registered certificates to its customers or third parties by having transfer agents and DTC mail them directly, rather than returning them to its offices prior to mailing. More than 1.9 million certificates were handled this way in 1989.

When agents mail certificates, DTC receives registration information by automated means, reformats it if needed, and forwards it to transfer agents in machine-readable form. The agents then issue certificates and return transaction details to DTC for its records and for reporting to Participants. When a Participant wishes all transferred certificates mailed, DTC assumes the responsibility whenever transfer agents do not provide direct mail service.

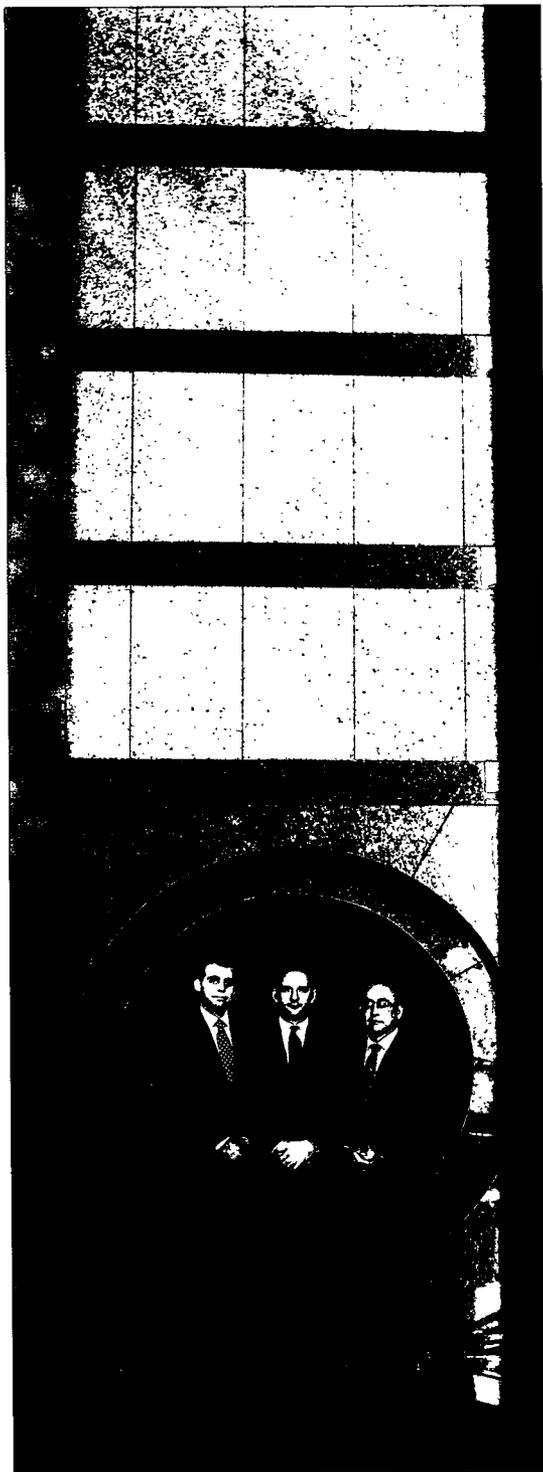
Developments in '89

- DTC began its Automated Tender Offer Program (ATOP), which enables Participants to send electronic acceptance instructions on tender offers over the Participant Terminal System (*PTS*) for transmission to tender and exchange agents, streamlining the process by replacing hard-copy instructions and reducing paper-related risks. By yearend, almost 270 Participants had used ATOP to submit over 12,000 instructions to DTC for \$6.6 billion in payments. Nine tender agents were in the program at yearend.
- DTC made a record \$16.5 billion payment to tendering Participants involved in the RJR Nabisco Inc. tender offer, with these funds credited to Participant accounts through its Next-Day Funds Settlement system on the same day that DTC received the funds. The 201 million shares tendered through DTC represented over 90% of the shares reportedly tendered for the offer.
- DTC's invitation to cover short positions program began, with specified CUSIP ranges made eligible for the program on a phase-in basis. All CUSIPs will be eligible by June 1990.

Under the program, a Participant with a short position in an issue can use *PTS* to invite Participants long the security to offer it for sale within a price range specified by the short Participant. Those interested contact DTC, which notifies the short Participant. The long and short Participants negotiate the transaction between themselves.

A short position can occur, for example, when a Participant's deposit in a certain CUSIP is subsequently rejected by DTC due to a previous call of some of the deposited certificates, insufficient documentation to permit transfer of the securities, or other problems, and the Participant has already delivered that security by book-entry.

- DTC revised its legal-deposit program to offer Participants a more cost-effective and flexible way to process legal deposits. Participants can now choose between a "Full" and "Basic" service for their deposits. With Full Service, DTC thoroughly



SENIOR VICE PRESIDENT RONALD DeCICCO (LEFT) AND MANAGING DIRECTOR GEORGE MINNIG (RIGHT) OF THE PERSHING DIVISION OF DONALDSON, LUFKIN & JENRETTE SECURITIES CORPORATION WITH DTC'S CLIFFORD DEAN, DIRECTOR-BROKER PARTICIPANT SERVICES LIAISON, AT THE DIVISION'S NEW LOCATION IN JERSEY CITY, NEW JERSEY.

examines Participants' legal deposits. Transferable deposits are forwarded to transfer agents, deficient ones are returned to Participants. With Basic Service, DTC routes legal deposits directly to agents, without examination.

In addition, a Telephone Notification feature was added, in which the depository informs Participants when extra documentation is needed to process a legal deposit, as well as a Status Tracking feature, which Participants use to monitor over *PTS* the status of legal deposits throughout the processing cycle.

- By referring to an ever-increasing data base of almost 600,000 previously called certificate numbers in over 5,200 bearer CUSIPs, DTC can now review Participants' municipal bearer bond deposits and, in many cases, quickly determine if the certificates have already been called. Certificates identified as having been called are checked against the original call notice and rejected to the depositing Participant on the next business day, accompanied by a hard-copy explanation of the reject and a copy of the original call notice. By doing this, DTC reduces the risk of losing interest because of undetected called certificates, as well as paying agent reject charges.

Training

Training for Participant employees has grown in importance as procedures become more automated and less paper-intensive. The depository's training courses, given at both DTC and Participant sites, are designed to help Participants communicate with DTC in the most effective and cost-efficient manner. For example, Participants learned which inquiries need to be researched at DTC and which they can resolve themselves by accessing DTC's various data bases and other information sources.

In 1989, nearly 2,800 Participant employees were instructed in using DTC's Next-Day and Same-Day Funds Settlement systems, the Participant Terminal System, and Participant Operating Procedures.



SELECTED 1989 SERVICE STATISTICS

Deposits (Total for the Year)

Registered Certificates	19.0 million
Bearer Certificates	6.1 million
Total	25.1 million

Deliveries (For the Year)

Number	73.9 million
Value	\$9.2 trillion

Pledges (At Yearend)

To Banks	\$9.1 billion
To Options Clearing Corporation	\$6.3 billion
To Federal Reserve District Banks	\$5.0 billion
Total	\$20.4 billion

Underwriting Distributions

Number of Underwritings	23,256
Number of Issues (CUSIP numbers)	99,256
Total Value	\$384 billion

Dividends and Interest

Number of Payments Received	1,255,674
Number of Paying Agents	2,187
Total Corporate Cash Dividends and Interest	\$161 billion
Total Municipal Bond Interest	\$46.7 billion
Total Stock Dividends	6.1 billion shares

Change Mode of Payment Instructions

In UIT Securities	10,583
In Variable Mode Preferred Stock Issues	1,090

Tender and Exchange Offers

Offers Processed and Allocated	513
Agents Involved	112
Value of Acceptances	\$76.1 billion

Conversions

Eligible Issues	412
Number of Resulting Shares	319 million

Redemptions

Full Calls and Maturities	46,692
Municipal Partial Calls	20,156
Corporate Partial Calls	1,367

Puts

Eligible Issues	3,666
Instructions to Exercise	18,958
Value of Allocations	\$13 billion

Units

Eligible Issues	664
Instructions to Combine	7,598
Combining 978 million components into 315 million units	
Instructions to Separate	15,310
Separating 362 million units into 1.2 billion components	

Warrant Subscriptions

Eligible Issues	84
Subscriptions Processed	2,652
Resulting Shares	95 million

Certificate Withdrawals

Daily Average Withdrawals-by-Transfer	19,100
Total 1989 New Registered Certificates	5.8 million
Daily Average Certificates-on-Demand For Registered Securities*	1,200
Total Certificates Withdrawn in 1989*	600,000
Total Certificates Withdrawn through RWT Service in 1989**	67,500
Daily Average Certificates-on-Demand For Bearer Securities	820
Total Certificates Withdrawn in 1989	1.3 million

Direct Mail Service

Number of Participants	97
Participating Transfer Agents	14
Certificates Mailed by Agents	681,364
Certificates Mailed by DTC	1,243,774
Total Certificates Mailed	1,925,138
Percentage of All WT Certificates Transferred	33

* Includes corporate NDFS issues (non-full-FAST):
January 1-July 20.

** Between July 21 and December 31



CHART 1
Market Value of Securities on Deposit (\$ trillions)

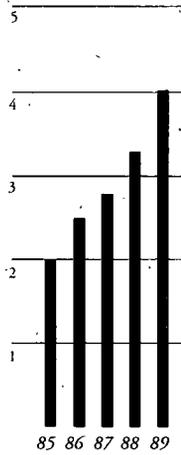


CHART 2
Equity Securities On Deposit (billions of shares)

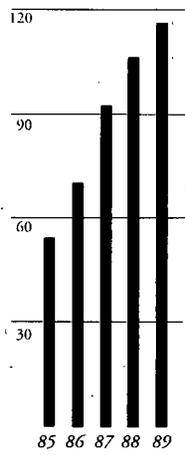


CHART 3
Corporate Debt Securities on Deposit (\$ billions/principal amount)

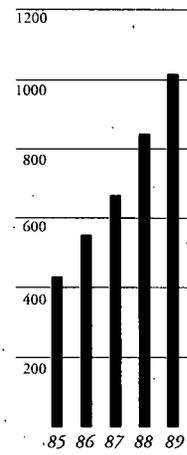


CHART 4
Municipal Bonds On Deposit (\$ billions/principal amount)

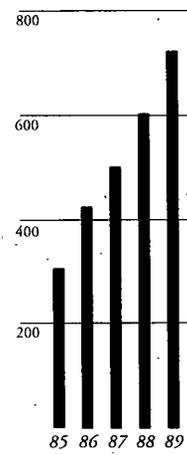
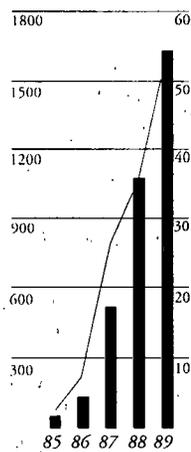
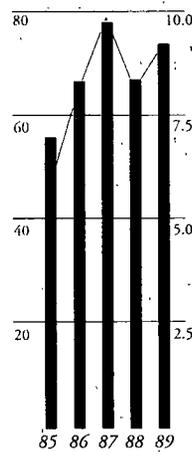


CHART 5
Book-Entry-Only Municipal Bond Issuance



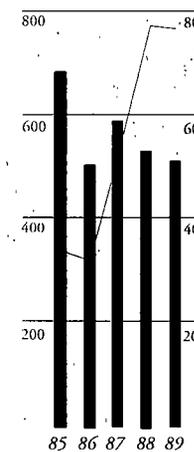
■ Number of New Issues
■ Principal Amount (\$ billions)

CHART 6
Book-Entry Deliveries



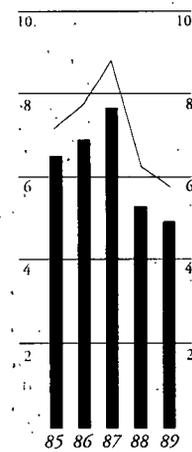
■ Number (millions)
■ Value (\$ trillions)

CHART 7
Tender and Exchange Offers Processed

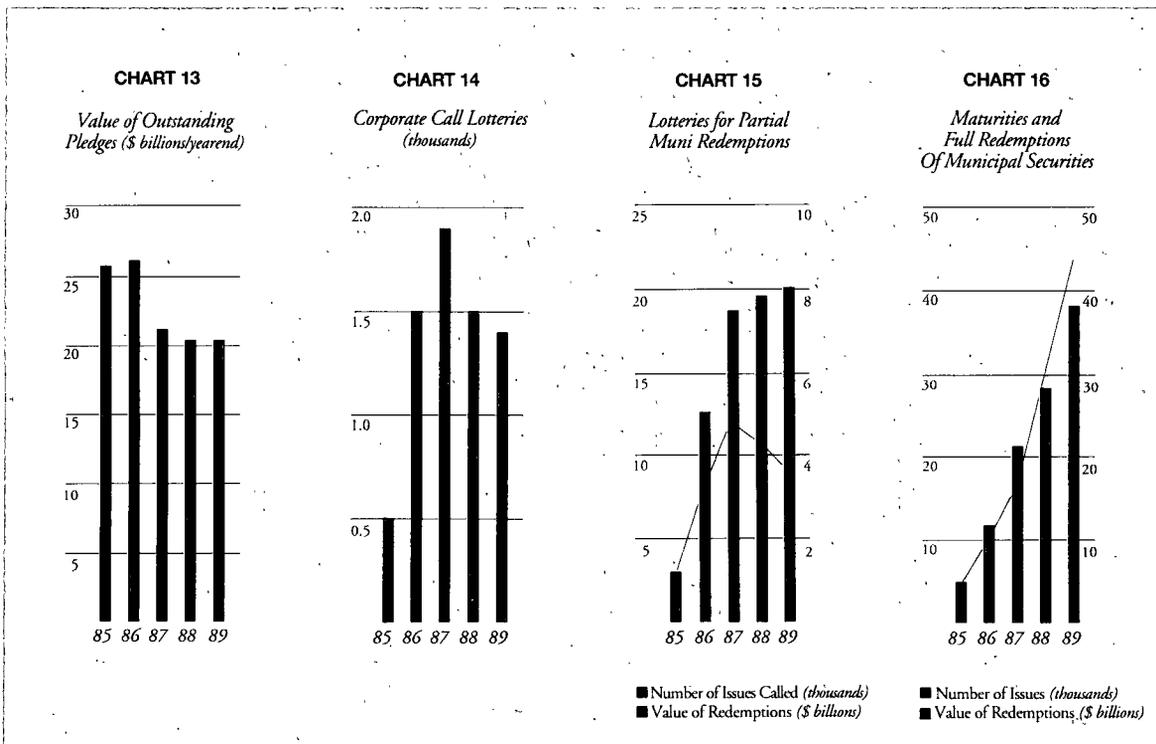
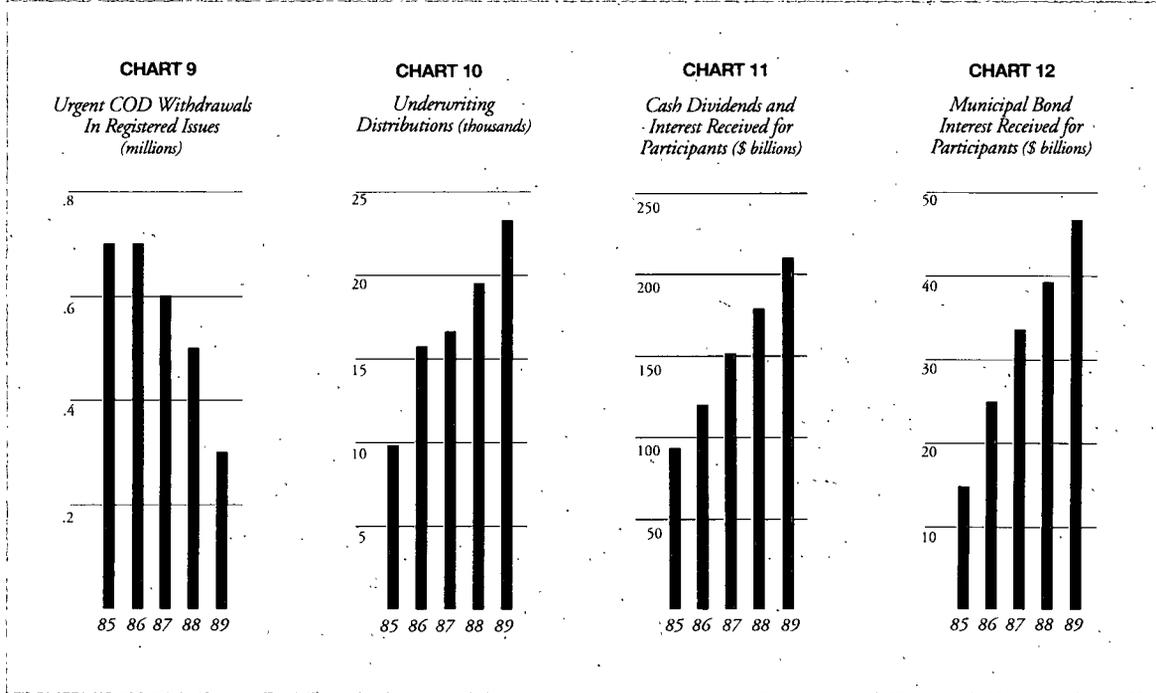


■ Number of Offers
■ Value of Acceptances (\$ billions)

CHART 8
Withdrawals-by-Transfer



■ Instructions (millions)
■ Certificates Obtained (millions)



ELIGIBLE ISSUES

The more issues made eligible for DTC services, the more useful the depository is to its Participants. DTC originally made listed equities eligible, then over-the-counter (OTC) equities, and listed and unlisted corporate debt. The municipal securities program began in 1981, and in 1987 eligibility was broadened to a variety of securities that settle in same-day rather than next-day funds.

During 1989, 189,497 issues were made eligible, bringing the total number of eligible issues to 723,839 by yearend, an increase of 19%. Of that increase, 80,382 were in serial or term issues of municipal bonds distributed by underwriters through the depository. Of the newly eligible issues, some 6,000 were securities that settle in same-day funds.

The following table shows the number of eligible issues by type of security:

ELIGIBLE ISSUES*	
<u>CORPORATE ISSUES</u>	
Listed Equity Issues	3,263
OTC Equity Issues	21,266
Corporate Debt Securities**	18,129
Collateralized Mortgage Obligations	2,968
Units	743
Warrants	1,484
American Depositary Receipts	822
Unit Investment Trusts	19,836
Certificates of Deposit	17,276
Total Corporate Issues	85,787
<u>MUNICIPAL ISSUES</u>	
Registered Municipal Bonds	383,321
Bearer or Interchangeable Municipal Bonds	251,999
Municipal Notes	425
Total Municipal Securities	635,745
<u>GOVERNMENT ISSUES</u>	
U.S. Treasury and Federal Agency Issues	2,307

* By CUSIP number, as of December 31, 1989.

** Includes asset-backed securities.

Eligibility for New Issues

DTC's *Operational Arrangements for Issue Eligibility* memorandum, first distributed in 1987, outlines criteria that must be met to ensure a new issue's eligibility for depository services. The arrangements, which include observance of Securities and Exchange Commission-endorsed call notification standards for municipal bonds, aim to maximize the number of eligible issues while maintaining orderly processing and ensuring timely dividend, interest, principal, and redemption payments. DTC internal planning consultants often help investment bankers and their operations staffs apply the arrangements to new issues during structuring, whether certificates are available to investors or an issue is in book-entry-only (BEO) form.

Voting Rights

Registration of deposited securities in DTC's Cede & Co. nominee name enables the depository to:

- Promptly determine whether certificates are transferable or whether replacement securities should be required from the depositing Participant.
- Permit retransfer of certificates quickly and simply, when necessary.
- Ensure receipt of dividends, distributions, and voting rights to DTC for their allocation to Participants properly and without delay.

Although these reasons require it to be the owner of record, DTC's objective is to avoid being a barrier to communications between issuers and beneficial owners. Indeed, in some cases, the existence of DTC may assist a corporate issuer in keeping up with changes in ownership of its voting stock.

Several reports serve issuers: The *Security Position Listing* shows the total amount of a security issue on deposit at DTC and the amount each Participant has on deposit. DTC sends this report to each issuer of equity securities annually without charge, indicating Participant positions as of the record date for the issuer's annual meeting. Issuers may also obtain daily, weekly, monthly, or dividend-record-date listings for a modest fee.



DTC's *Participant Proxy Contact List* specifies each Participant's name and address for purposes of handling proxies, and the name and phone number of a contact person there. The depository updates this list quarterly and sends it to issuers without charge.

The *Omnibus Proxy* enables Participants to exercise voting rights of securities they have on deposit at DTC. The *Omnibus Proxy* is, in effect, an assignment: Cede & Co., the holder of record, assigns each Participant the voting rights on securities in that Participant's DTC account as of record date. The depository forwards the *Omnibus Proxy*, with a list of Participants, to the issuer, while notifying each Participant listed there that it has sent the *Omnibus Proxy* and specifying the quantity of securities the Participant is entitled to vote.

After DTC completes these steps—soon after record date—communication between issuers and beneficial owners occurs as if the depository did not exist. A brochure on this subject, *Shareholder Communications and The Depository Trust Company*, is available on request.

ISSUES MADE ELIGIBLE IN 1989

Equity	6,068
Preferred Stock	101
Corporate Debt	36,140
Bearer Municipal Bonds	51,024
Registered Municipal Securities	95,082
U.S. Treasury and Federal Agency	1,082
TOTAL	189,497



DTC'S LOUIS PANICO, MANAGER—UNDERWRITING (LEFT), AND MICHAEL J. TULANEY, DIRECTOR—SETTLEMENT, DISCUSS THE PROCESSING ASPECTS OF A NEW SECURITY ISSUE.

MUNICIPAL SECURITIES PROGRAM

With issuers well aware of the advantages of using DTC, the depository's municipal securities program completed its eighth straight year of sharp growth.

For example, the volume of municipal bond, note, and variable-rate demand obligation (VRDO) underwritings distributed through DTC in 1989 increased 14% to \$134 billion, out of \$150.9 billion of municipal securities issued last year. The principal amount of municipal securities on deposit at DTC at yearend exceeded \$750 billion—20% above 1988's tally.

Depository services benefit Participants and their customers by reducing costs and "fails," as well as

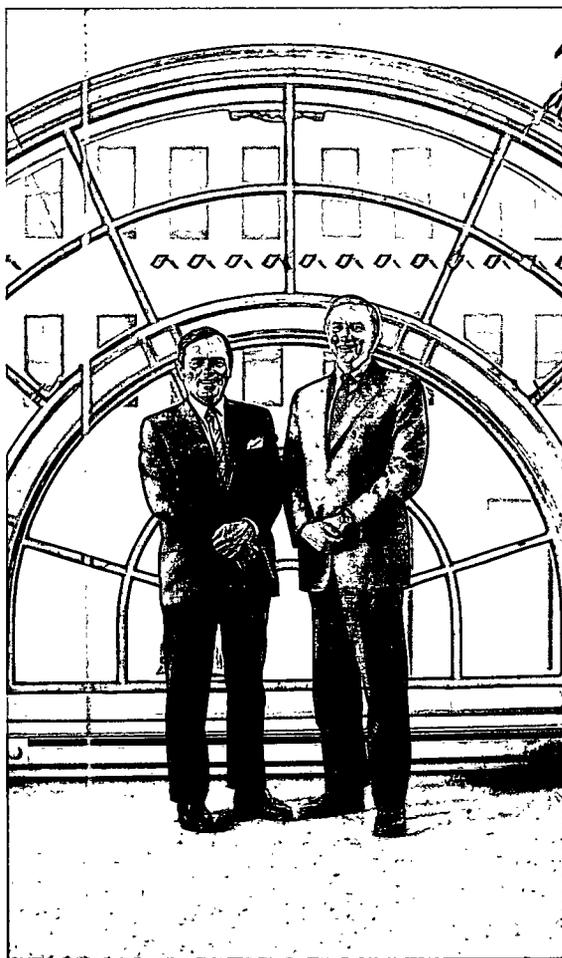
the risk of loss while securities are handled and shipped. The depository also facilitates prompt collection of municipal bond interest, and improves redemption processing—particularly for partial calls—thereby reducing problems and losses from delayed or missing call notifications. The problems such procedures present for the industry and investors where issues are not depository-eligible should diminish as future underwritings are distributed through DTC, the depository makes more bearer bond issues eligible for its services, and older issues mature.

In 1989, 6,454 new issues of municipal bonds—80,382 issues as measured by CUSIP number—with a principal amount of over \$113 billion were distributed through DTC. Based on data from the Public Securities Association (PSA) and other sources, they represent 81% of all new, long-term bond issues last year and 94% of their principal amount.

DTC's municipal note program, which uses its Same-Day Funds Settlement (SDFS) system, has attracted all sizes of municipal note issues nationwide. In 1989, issues ranged from a \$280,000 distribution for a San Diego school district to a \$3.9 billion New York State offering. Four hundred thirty-six note issues with a par value of \$19.8 billion were distributed through DTC, representing 15% of all such new issues last year and 70% of their par value, based on PSA figures. Almost 92% of the par value of note issues through DTC was in book-entry-only (BEO) form.

VRDOs became eligible for DTC's municipal program in SDFS during 1988. Twenty-two VRDO issues were distributed through the system that year, with a total principal amount of more than \$400 million. In 1989, 98 issues totaling \$1.4 billion were distributed through the system. Municipal note and VRDO activity may also be found in the "Same-Day Funds Settlement System" section, page 26.

New issues distributed in BEO form, with no certificates available to investors, reduce underwriting and ongoing costs to issuers. In 1989, of new municipal bond issues distributed through DTC, 25% of the issues and 47% of their principal



J.J. KENNY CO., INC.'S J. KEVIN KENNY, PRESIDENT AND
CHIEF EXECUTIVE OFFICER, AND THOMAS A. MULROONEY,
SENIOR VICE PRESIDENT AND MANAGER OF TRADING, AT
COMPANY HEADQUARTERS IN NEW YORK CITY.



amount—\$53.6 billion—were distributed in BEO form. For municipal notes, the corresponding figures for BEO were 70% and 92%, or \$18.1 billion, while VRDOs distributed BEO accounted for 58% of the issues and 60% of the principal amount—roughly \$900 million. Municipal securities in BEO form are also discussed in the “Securities in Book-Entry-Only Form” section, page 28.

DTC’s municipal bearer bond exchange program continues to grow, with DTC exchanging more than 3 million certificates in 1989, a 23% increase

from 1988. Here, DTC surrenders to exchange agents batches of bearer interchangeable certificates and generally converts the certificates into a “jumbo” registered certificate. Over the years, DTC has converted nearly 15 million bearer certificates, at an estimated annual savings in handling, storage, and other costs of one dollar per certificate. In addition to these savings for Participants, registered certificates offer better call notification, better interest-payment collection, no risk of coupon theft or loss, and reduced risk of certificate theft or loss.

MUNICIPAL STATISTICS

	<u>1989</u>	<u>1988</u>
<u>BONDS</u>		
Principal Amount of Municipal Bonds on Deposit (<i>Billions</i>)	\$723.8	\$604.6
Municipal Bond Underwritings Distributed through DTC	6,454	5,609
Total Principal Amount (<i>Billions</i>)	\$113.1	\$101.9
Eligible Municipal Bonds (by CUSIP Number)	634,528	532,448
Daily Average Municipal Bond Book-Entry Deliveries	13,300	13,200
Municipal Bond Issues with Partial Redemptions For Which Lotteries Were Run	20,156	19,309
Resulting Call Proceeds (<i>Billions</i>)	\$3.9	\$4.5
Bond Coupons Cut (<i>Millions</i>)	41.2	40.9
<u>NOTES</u>		
Municipal Note Issues Distributed through DTC (By CUSIP Number)	436	229
Total Principal Amount (<i>Billions</i>)	\$19.8	\$15.5
Eligible Municipal Note Issues at Yearend (by CUSIP Number)	425	212
Principal Amount on Deposit (<i>Billions</i>)	\$17.4	\$14.3
<u>VRDOs</u>		
VRDO Issues Distributed through DTC (by CUSIP Number)	98	22
Total Principal Amount (<i>Billions</i>)	\$1.4	\$0.4
Eligible VRDO Issues (by CUSIP Number)	792	319
Principal Amount on Deposit (<i>Billions</i>)	\$9.7	\$4.9

SAME-DAY FUNDS SETTLEMENT SYSTEM

DTC's Same-Day Funds Settlement (SDFS) system offers depository services to certain types of securities that settle in same-day, or Federal, funds.

In 1989, the system continued its strong growth trend, with 368 direct and indirect Participants, a 545% rise in the number of underwritings distributed, and over \$245 billion in principal amount of securities on deposit at yearend—more than double the amount at the end of 1988.

Collateralized mortgage obligations (CMOs) represented the largest principal amount on deposit by security type, rising from \$700 million at yearend 1988 to \$67 billion. Medium-term notes (MTNs) also increased significantly, from \$600 million to nearly \$16 billion over the same period. In addition, MTN issuers numbered 136 at yearend 1989, compared to five at yearend 1988.

Asset-backed securities and corporate and municipal variable-mode obligations became eligible for the system during the year, boosting the number of SDFS-eligible issue types to 10.

In addition, DTC and the Commercial Paper (CP) Task Force of the Public Securities Association's Money Market Committee resolved the major CP processing issues. DTC expects to phase commercial paper into the SDFS system on a book-entry-only basis in the fall.

System Benefits

SDFS Participants generally follow operating procedures virtually identical to those for DTC-eligible issues settling in next-day funds. The system benefits users by:

- Replacing costly, error-prone certificate delivery with book-entry efficiency.
- Reducing securities custody costs.
- Permitting trade confirmation and automatic settlement through DTC's Institutional Delivery system.
- Providing virtually all periodic payments of interest and principal on payable date.
- Extending the book-entry-only option to issuers of securities that settle in same-day funds.
- Providing significant control features for trade settlement, which place a limit (cap) on and require

collateralization of each Participant's intra-day net settlement debit.

Other SDFS Highlights

- The first new CMO issues distributed through the system were issued in January, and DTC began to reclassify CMOs from its Next-Day Funds Settlement (NDFS) system to SDFS in February.

By yearend, 1,253 previously issued CMOs that had not been eligible for NDFS had been included in SDFS, and DTC had reclassified 833 previously issued CMOs from NDFS to SDFS. The total principal amount on deposit in the 2,968 issues eligible for both systems was \$97.2 billion.

- Also in January, the first non-CMO asset-backed securities were distributed through the system: two home equity loan asset-backed certificates totaling nearly \$750 million.

- In May, SDFS deliver orders were sent to DTC via its Mainframe Dual Host (MDH) system on a pilot basis. The service became available to all MDH users in June.

- May also saw the largest SDFS issue (as well as the largest municipal book-entry-only issue) distribution: New York State's \$3.9 billion Tax and Revenue Anticipation Notes.

- On June 30, DTC allocated \$7 billion in redemption payments to SDFS Participant accounts—a single-day record. This included the largest redemption payment made through the system: \$3.4 billion in principal and interest payments for the June 30 maturity of the State of California's 1988 Revenue Anticipation Note book-entry-only issue.

- DTC's Computer-to-Computer Facility (CCF) and CCF II were made available for Participants to send SDFS deliver orders to DTC on a computer-to-computer basis in August.

- December marked the distribution of a \$2.2 billion asset-backed issue: the first security distributed through the system backed by assets such as automobile, boat, and credit card contracts.

By yearend, 11 asset-backed issues had been included in SDFS, and the principal amount of asset-backed securities on deposit at DTC totaled \$6.1 billion.



SDFS GROWTH	1989	1988
Direct Participants	179	161
Indirect Participants	189	186
Settling Banks	73	60
Total SDFS Accounts	321	278
Principal Amount of SDFS		
Securities on Deposit (<i>Billions</i>)	\$245.6	\$103.4
SDFS-Eligible Issues (CUSIPs)	9,746	3,806
Value of Trades Settled (<i>Billions</i>)	\$429.2	\$196.8
SDFS Underwritings	2,619	406
Their Total Principal Amount (<i>Billions</i>)	\$70.3	\$41.9

SDFS-ELIGIBLE ISSUES*

Security Type	Issues (CUSIPs)	Principal Amount On Deposit**
Asset-Backed Securities	11	6.1
Auction-Rate and Tender-Rate Preferred Stock and Notes	606	25.5
Collateralized Mortgage Obligations	2,183	67.0
Corporate and Municipal Variable-Mode Obligations	15	0.6
Government Agency Securities	349	22.0
Government Trust Certificates	317	15.0
Municipal Notes	425	17.4
Municipal Variable-Rate Demand Obligations	792	9.7
Short- and Medium-Term Notes	2,001	16.2
Zero Coupon Bonds	3,047	66.1

* As of December 31, 1989 ** In \$ billions



DTC'S FRED J. HAMPTON, DIRECTOR-PLANNING DEPARTMENT (FRONT), AND ARTHUR L. THOMAS, FIRST VICE PRESIDENT, DIRECTOR OF CAPITAL MARKETS OPERATIONS, MERRILL LYNCH, PIERCE, FENNER & SMITH INCORPORATED, IN THE WORLD FINANCIAL CENTER IN NEW YORK CITY.



SECURITIES IN BOOK-ENTRY-ONLY FORM

The issuance of debt securities in book-entry-only (BEO) form continues to gain momentum as issuers reduce expenses and investors grow more comfortable owning securities without holding certificates. In 1989, issuers distributed BEO securities valued at \$178.4 billion in principal amount through DTC.

With book-entry-only, issuers authorize the deposit at DTC of a single "global" certificate for each issue (each maturity of a debt issue). This certificate is issued in DTC's nominee name and held for the issue's life. Changes in ownership are recorded by book-entry at DTC and, in turn, reflected on the records of its Participants and their correspondents. These records are used to allocate dividend and interest distributions and principal redemptions. Investors receive transaction confirmations and periodic statements from the bank or broker-dealer reporting activity and balances in their securities accounts.

Since DTC often holds more than 80% of the value of debt issues in which certificates are available to investors, the ability through BEO to achieve 100% on new issues appeals to many municipal issuers, who realize reduced costs. BEO also appeals to many investors, who reduce or eliminate the risk, expense, and inconvenience of safekeeping their certificates.

Book-Entry-Only in '89*Municipal Bonds*

- 40% of the principal amount of all new municipal bond issues in the U.S. during 1989 was issued in book-entry-only form through DTC, up from approximately 33% last year.
- BEO muni bonds represented 47% of the total principal amount of all new muni bonds distributed through DTC in 1989, up from 35% in 1988.
- The \$53.6 billion principal amount of BEO muni bonds distributed through DTC last year raised the total for the past eight years to \$126.0 billion.

Municipal Notes

- The \$18.1 billion principal amount of notes in BEO form accounted for 66% of the principal amount of all new muni notes issued in the U.S. last year, compared with more than 50% in 1988.
- 92% of the principal amount of all note issues distributed through DTC was BEO. Given the many privately placed notes, this figure might be the best indicator of BEO's share of the publicly traded market.

Corporate Securities

Corporate security types distributed by BEO through DTC:

- Asset-Backed Securities
- Auction-Rate and Tender-Rate Preferred Stock and Notes
- Certificates of Deposit
- Conventional Corporate Notes
- Medium-Term Notes
- Mortgage-Backed Securities
- Warrants Linked to Currency Exchange Rates

- At yearend 1989, 136 issuers were using DTC's medium-term note (MTN) program, compared with five issuers at yearend 1988. MTNs are unsecured corporate debt securities with maturities that can range from 9 months to 40 years, but are usually between one and seven years. Shelf-registered and continuously offered, their flexibility permits issuers to match the funding of assets and liabilities. Nearly \$16 billion in MTNs (face value) was outstanding at yearend.

Information Available

DTC has book-entry-only publications and a video presentation designed for issuers, available on request.



RECENT DTC GROWTH BY SECTOR IN SELECTED SERVICES

<u>ELIGIBLE ISSUES</u>	<u>1989</u>	<u>1988</u>	<u>1987</u>
Equities	28,891	24,282	20,578
Corporate debt	19,096	16,016	13,324
Municipal debt	635,745	532,979	428,243
Other	40,107	35,639	28,475
Total	723,839	608,916	490,620
<u>SELECTED SERVICES</u>			
Value of securities on deposit <i>(In trillions)</i>			
Banks	\$3.06	\$2.49	\$2.16
Broker-dealers	.93	.76	.62
Other depositories	.03	.03	.04
Total	\$4.02	\$3.28	\$2.82
Shares on deposit <i>(In billions)</i>			
Banks	51.3	44.6	42.3
Broker-dealers	63.3	61.0	49.3
Other depositories	1.9	1.0	1.0
Total	116.5	106.6	92.6
Principal amount of corporate debt on deposit <i>(In billions)</i>			
Banks	\$ 804.0	\$663.0	\$548.5
Broker-dealers	203.7	170.4	102.5
Other depositories	10.1	11.4	17.4
Total	\$1,017.8	\$844.8	\$668.4
Principal amount of municipal debt on deposit <i>(In billions)</i>			
Banks	\$566.5	\$471.0	\$393.2
Broker-dealers	176.3	144.0	101.7
Other depositories	8.1	8.8	11.7
Total	\$750.9	\$623.8	\$506.6
<u>PARTICIPATION*</u>			
DTC Participants	606	607	604
Broker-dealers	408	415	421
Banks	189	183	177
Clearing agencies	9	9	6

* Excludes indirect participation in DTC, including for 1989 more than 1,250 banks and nearly 2,850 broker-dealers that are correspondents of Participants.

INSTITUTIONAL USE OF DTC

Custody of *Institutional Assets*
Banks and their institutional customers continued to take advantage of depository services in 1989, with their assets in DTC increasing by \$600 billion to a total of \$3.1 trillion.

Pension Fund Assets

Bank Participants continued to deposit private pension fund assets into their DTC accounts in 1989, although to a lesser extent because most assets had been placed in the depository previously.

Growth also continued in the deposit of state and municipal retirement system assets. Historically, state and municipal pension fund assets were sometimes required to be kept in-state by state laws or regulations—most of which were enacted long before the development of the depository system.

Following a wave of amendatory legislation aimed at bringing state laws in line with modern financial practices, it is understood that all states and the District of Columbia currently permit their state and municipal pension fund assets to be placed in a depository. At yearend 1989, 49 states and the District of Columbia had all or part of their pension fund assets in eligible securities on deposit at DTC through custodian banks.

Insurance Company Assets

As with public pension funds, depository custody of securities owned by insurance companies often had been historically obstructed by state restrictions, typically by a statutory requirement that assets be physically kept within the state.

At yearend 1989, the District of Columbia and all but one state permitted their domestic insurance companies to deposit their assets out-of-state. Wyoming, the lone exception, requires its eight domestic insurers to maintain their assets within the state. DTC continues to work to eliminate this one remaining state restriction. Currently, several hundred insurance companies are known to have their securities on deposit at DTC through custodian banks.

Investment Company Assets

Virtually 100% of DTC-eligible investment company assets are on deposit. In addition, as more securities become DTC-eligible, custodian banks can deposit eligible instruments such as medium-term notes, variable-rate demand obligations, and mortgage and other asset-backed securities that settle in same-day funds.

Institutional Delivery (ID) System

The *ID* system, a method for reporting and settling institutional trades in U.S. securities, reduces costs and increases assurance of timely settlement. It introduces a single, automated entity—DTC—to coordinate all clearance and settlement activity of broker-dealers, institutions, and their agents.

ID in '89

- The *ID* system expanded by yearend to include 7,381 institutions, broker-dealers, custodian banks, and other agents. Average monthly volume of *ID* confirmations processed through the system was 1.6 million for the fourth quarter, up 17% from the comparable 1988 period. For the year, 39.4 million confirmations, affirmations, and prescheduled deliveries were processed through *ID*, a 10% increase from 1988.
- The industry affirmation rate of trade confirmations reported by broker-dealers through the *ID* system was 92% for corporate debt and equity securities at yearend. Each percentage-point increase represents roughly 12,000 additional confirmations affirmed monthly.
- The industry affirmation rate of trade confirmations reported by broker-dealers through the *ID* system was 73% for municipals at yearend, up from 68% the year before.
- *ID* Participants are now able to receive trade confirmation input edit, and trade date + 3 and trade date + 4 unaffirmed reports over the Participant Terminal System (*PTS*). With this enhancement, the reports are now available to Participants through all communications media.



▪ DTC inaugurated the Broker Mailed Confirmation Elimination Agreement program. By signing the agreement, *ID* users authorize their broker-dealers to stop delivering mailed confirmations of transactions for which they already receive automated *ID* confirmations. In 1989, 450 *ID* users acting as agents, institutions, and interested parties signed the agreement, representing over 1,000 *ID* accounts of a total of nearly 10,000.

How the ID System Works

(1) *A broker-dealer or bank executing an institutional trade furnishes DTC with transaction details—such as price, quantity, and date—which the depository passes on as a legal confirmation to the broker's institutional customer, the customer's agent, and other interested parties.*

(2) *If the ID confirmation accurately reflects the institution's order, the institution sends an affirmation to DTC. If the confirmation does not match the institution's trade order records, the institution can act early enough in the settlement cycle so the broker can enter a corrected confirmation into the ID system. If the broker's trade details are insufficient to generate a confirmation, DTC rejects the trade details to the firm so the problem may be resolved for timely settlement.*

(3) *When affirmation of the trade confirmation is received, DTC forwards settlement instructions to the agent and submitting broker.*

(4) *If the security is DTC-eligible and the deliverer has sufficient securities in its DTC account, the depository can automatically complete delivery by book-entry on the morning of settlement date. If the deliverer's position is not sufficient at that time, delivery may be accomplished later that day.*

(5) *If the security is not DTC-eligible, the deliverer and receiver settle the transaction outside DTC based on depository instructions that facilitate the delivery's completion on settlement date.*

International ID System

DTC's International Institutional Delivery (*IID*) system extends certain *ID* system benefits—trade confir-

mations, affirmations, and receive/deliver instructions—to investors for trades in non-U.S. securities.

The “International *ID*” initiative stems from trade clearance and settlement problems in non-U.S. securities that result in high costs for broker-dealers, custodians, and investors. Since non-U.S. issues considered for *IID* are not DTC-eligible, services for such issues stop short of DTC book-entry delivery and settlement. Instead, use of *IID*'s standardized receive/deliver instructions can assist the international broker and global custodian in communicating settlement instructions to local markets.

Industry representatives from U.S. banking, brokerage, and investment manager sectors have worked with DTC through an ad hoc committee to develop *IID*.

IID in '89

International *ID* began as a pilot program in 1988 with a dozen users, and expanded to 68 users in 1989. With an increasing number of major firms serving the international market adapting to its use, International *ID* is positioned for continued growth in 1990 and beyond. This interest is evidenced by widened testing efforts of broker-dealers, global custodians, and investment managers, as well as by the commitment of data processing resources of Participants that will be among the system's largest users.

▪ *IID* provides for intra-day turnaround of confirmations, affirmations, and deliver/receive instructions. In addition, investment managers can append funding instructions for trade settlement at the time of affirmation.

▪ Several International *ID* users have established computer-to-computer links with DTC that permit the rapid transmission of data concerning trade confirmations and deliver/receive instructions.

▪ New or expanded confirmation fields on items such as currency codes and alternate currency instructions have been added, as have International Standards Organization (ISO) deliver/receive instruction formats.



AUTOMATION OF DEPOSITORY SERVICES

Automating depository operations and communications links with Participants, transfer agents, and other users remains a high priority at DTC. By continuing to expand the capabilities of its computer systems, the depository reduces operating costs and, more important, makes it possible for Participants to reduce their processing costs.

DTC has five principal means of automated communications with Participants:

Computer-to-Computer Facility

The Computer-to-Computer Facility (CCF) is used for direct computer-to-computer communication between DTC and user IBM mainframes. CCF provides about 50 input and output functions, with others scheduled to be added. CCF II serves the same purpose and can be used for communication with non-IBM user mainframes as well. All output files available through CCF are available through CCF II, which in addition to communicating with non-IBM mainframes allows IBM mainframe users to transmit highly compressed data at greatly reduced transmission time.

Participant Terminal System

The Participant Terminal System (PTS) is a network of over 1,200 computer terminals—located in Participant offices in the U.S. and Canada—linked directly to DTC's computers. Participants use PTS to send instructions, inquiries, and other messages to DTC, and to receive depository messages and reports.

Nearly 2,800 Participant operations employees attended DTC's nationwide seminars aimed at improving bank and broker-dealer Participants' PTS usage and introducing new PTS functions.

PTS Jr.

An alternative to PTS, PTS Jr. is available to low-volume users—189 at yearend 1989. It performs all PTS functions at lower cost, though at reduced line speed. PTS Jr. requires only a user's compatible personal computer, DTC-supplied software, a modem, and a telephone connection.

Mainframe Dual Host

Mainframe Dual Host (MDH), a mainframe-to-mainframe communications system, enables users to transmit and receive deliver order (DO), night deliver order (NDO), and payment order instructions in a "real-time" environment for quick turnaround and automatic matching of deliver order receives. In 1989, MDH deliver orders that settle in same-day funds were processed for the first time at DTC.

MDH users can send and receive machine-readable data between their mainframes and DTC's mainframe, eliminating the intermediate minicomputer that another DTC system, Dual Host PTS, requires. MDH reduces costs and potential hardware problems and will replace Dual Host PTS.

Automated Participant Interface

The Automated Participant Interface (API) allows Participants or their data-processing service bureaus



DISCUSSING DTC'S DATA COMPRESSION CAPABILITY ARE (FROM LEFT) DTC'S CHARLES HORSTMANN, VICE PRESIDENT; PRUDENTIAL-BACHE SECURITIES INC.'S RALPH SORRENTINO, FIRST VICE PRESIDENT, AND JOHN CIRRITO, SENIOR VICE PRESIDENT; AND DTC'S MICHAEL FEDORCHKO, SENIOR VICE PRESIDENT.



to enter instructions directly into DTC's computer system by hand-delivered or electronically transmitted magnetic tape. API capabilities include magnetic tape instructions for routine Withdrawals-by-Transfer, *ID* trade confirmations, and *ID* affirmations.

Automation in '89

Depository accomplishments in automating services for Participants during the past year include the following:

Computer-to-Computer Facility (CCF)

- Through a new Decompress Software program, CCF users can receive compressed data files from DTC for Institutional Delivery (*ID*) system confirmations, *ID* eligible and cumulative trade files, and closing balances, reducing transmission time by up to 80%.
- DTC has made available a number of functions for CCF and CCF II users receiving data transmissions from DTC. Among them are legal deposit tracking, call lottery results, security position listing, and for the International Institutional Delivery system all confirmation, trade confirmation data edit, and deliver/receive instruction files.
- CCF II users are now able to send night deliver orders, security and premium payment orders, *ID* trade confirmation data, and Withdrawal-by-Transfer (WT) instructions to DTC.

Participant Terminal System (PTS)

DTC has developed several *PTS* functions that help Participants avoid expenses associated with rejects and out-of-balance conditions, and save time in researching activity differences and cash and share adjustments.

- With Books Closing (BOOK), Participants can view current day and two future business days of record date and cutoff date CUSIPs to help them submit timely deposit and WT requests.
- Dividend/Reorganization Cash Adjustment (CADJ) gives Participants information on charges and credits that appeared on their Dividend/Reorganization Settlement statements during

the previous five business days.

- Through Legal Deposit Inquiry (STSL), Participants can determine if their legal deposits were accepted or rejected by DTC or the transfer agent.
- The Participant Activity Research Tool (PART)—an on-line function that gives Participants information about their activity, position, and journal histories as well as collateral loans—now also displays explanatory comments for Participant position adjustments.

Securities Transfer System (STS)

To help speed securities transfer, DTC has automated areas of transfer processing to simplify and expedite its communication with transfer agents. This past year, DTC developed the Fast Balance Confirmation System, which enables transfer agents in its Fast Automated Securities Transfer (*FAST*) program to electronically confirm their balances, and report and resolve any discrepancies with DTC.

DTC can now better monitor and track aging transfer letters exchanged between transfer agents and the depository. The letters are electronically scanned and stored for easy retrieval by DTC staff to help expedite the resolution of aging transfers.

Through the Securities Transfer System Inquiry (STSE) on their *PTS* terminals, Participants can now view more informative messages about the reasons for and status of their aging transfers.

AUTOMATION STATISTICS	1989	1988
Number of CCF Users	662	617
Number of CCF II Users	170	119
Number of <i>PTS</i> Terminals	1,281	1,183
Average Daily Number of <i>PTS</i> Transactions	749,200	688,500
<i>PTS Jr. Users:</i>		
Participants	160	141
Pledgee Banks	21	24
Others	8	8
MDH Users	19	15
Dual Host <i>PTS</i> Users	5	12



INTERFACES AND THE NATIONAL CLEARANCE AND SETTLEMENT SYSTEM

DTC's interfaces with other U.S. clearing agencies are a major part of the national securities clearance and settlement system. They are based on the close working relationship between DTC and the National Securities Clearing Corporation (NSCC), which permits hundreds of broker-dealers that participate in both NSCC and DTC to conveniently use the trade comparison and clearing facilities of NSCC and the trade settlement and securities custody services of DTC. DTC also works closely with NSCC's subsidiary, the International Securities Clearing Corporation (ISCC), to support the clearance and settlement of international transactions. The Central Depository (Pte.) Ltd. (Singapore) and the Japan Securities Clearing Corp. have ISCC-sponsored accounts at DTC as part of that arrangement.

Through interfaces between clearing corporations and securities depositories, users of any of them can settle with users elsewhere, without requiring certificates to be shipped. These interfaces also permit users of more than one depository—DTC, Midwest Securities Trust Company, or Philadelphia Depository Trust Company—to move securities positions between depositories. Moreover, DTC uses its Institutional Delivery system to process the institutional trade data reported to other depositories for clearance and settlement through their systems.

DTC also maintains interfaces with other clearing agencies to serve its Participants. An interface exists between the Boston Stock Exchange Clearing Corp., NSCC, and DTC to assist trade settlement on the Boston Stock Exchange. A similar arrangement exists between The Pacific Stock Exchange, NSCC, and DTC to settle trades on the Pacific Exchange. The Canadian Depository for Securities Limited (CDS), NSCC, and DTC maintain a link to assist Canadian broker-dealers that participate in DTC.

DTC's efforts to reduce Participant time and cost of processing mutual fund transactions for customers produced the depository's Fund/SERV Interface in the fall. The DTC Fund/SERV Interface electronically links Participants directly to NSCC's automated Fund/SERV program through DTC's terminal connections. The interface allows Participants to

input purchase, redemption, and registration data and receive output; dispatches information from DTC to NSCC and then to the mutual funds; and returns trade confirmation information to Participants. Purchase and redemption transactions are settled by Participants in DTC's daily net settlement system. DTC in turn settles with NSCC.

Fund/SERV Interface's development for load mutual funds was initially guided by an ad hoc user advisory committee. This later expanded to include no-load funds, with help from an ICI No-Loads/Banks Committee, including a broad cross section of DTC Participants and funds.

This latter committee also began work on linking DTC Participants and no-load mutual funds over NSCC's Networking system. Begun in 1988, Networking enables the electronic flow of non-trade account information between Fund/SERV mutual funds and NSCC participants.

The depository is also linked with The Options Clearing Corporation (OCC) so that banks and brokers may pledge securities to satisfy segregation and margin requirements on put and call option contracts, as well as their obligations to OCC's clearing fund. This eliminates repeated paper movements between parties to pledge transactions and provides an alternative to issuing escrow receipts. The OCC/DTC Participant Terminal System (*PTS*) pledge/release pilot expanded in 1989 to include all DTC Participants. Under the program, Participants can input pledges of securities and release requests over their *PTS* terminals, a more efficient method than the use of hard copy.

In 1989, Participants avoided the need to reclaim withholding taxes of about \$31.2 million on \$814.9 million of dividends on Canadian shares under the Tax Exempt Dividend Service (TEDS), operated in cooperation with CDS. Instructions on approximately 664.9 million shares were presented. TEDS accommodates withholding exemptions at source—that is, permits full payment of dividends without withholding—on Canadian dividend and interest payments for U.S. tax-exempt beneficial owners whose securities are deposited with DTC. TEDS may serve as a model for processing dividend payments from other countries through DTC.



PROTECTION FOR PARTICIPANTS' SECURITIES

DTTC is the world's largest custodian of corporate equity and debt securities and municipal bonds. Its elaborate system of safeguards is widely regarded as the most comprehensive for monitoring securities movement and custody.

Internal Controls

DTC records the movement and location of each certificate in its custody, helping to resolve processing errors and facilitate reconciliation and audits.

- An automated certificate-number control system cross-indexes certificates by issue, number, denomination, date of receipt, and—for bearer bonds—the depositor's identity. This lets DTC control and rapidly reconstruct paper flow, regardless of volume.
- On receipt of registered certificates, quick transfer into DTC's nominee name, Cede & Co., allows for prompt validation of certificates and enhances timely dividend and interest collection and disbursement to Participants.
- "Jumbo" certificates consolidate securities into large denominations, making unauthorized negotiation extremely difficult, as well as conserving vault space.
- Restrictive endorsements on the back of certain jumbo certificates help prevent unauthorized negotiation.
- Registered certificates remain in non-negotiable form while in DTC custody.
- DTC microfilms registered certificates and related data that enter and leave its premises.
- Duplicate computer files of transactions, stored in various locations, permit prompt file reconstruction if processing is interrupted. These and the microfilm records supplement comprehensive files of original documents and production reports.
- Backup computer and communications arrangements help ensure DTC's data-processing functions throughout any emergency. Periodic tests of these contingency facilities are conducted with Participants.

Physical Security

DTC's physical security system combines sophisticated electronic and physical devices with an extensive security force.



DTC VAULT SECURITY OFFICER BRUCE PETTWAY USES NEW
BAR CODE-READING WAND, CALLED THE GUARD TOUR
INFORMATION SYSTEM.



- A computerized access-control system restricts entry into sensitive areas to appropriate personnel.
- A closed-circuit television system monitors entry points, vaults, and other securities processing areas.
- Alarm systems, which use such sensors as motion, vibration, and heat detectors, are monitored locally and at a central station. Line encryption protects individual control panels from compromise.
- DTC's security force monitors the many systems, and screens persons and packages entering and leaving restricted areas.
- Deposited securities are stored in various locations, with special access requirements and extensive controls.
- Registered securities are in non-negotiable form when delivered to or from transfer agents and other parties.
- Special wastepaper treatment and disposal methods help prevent unauthorized release of certificates.

Recordkeeping Systems

Double-entry recordkeeping systems help ensure that all Participant input is recorded, that the location of underlying certificates is known, and that moneys are properly transferred to and among Participants. DTC uses the recordkeeping systems to report to Participants and to research differences detected by Participants or DTC control mechanisms.

User Verifications

User verification of DTC records (users compare their activity records with depository reports) helps ensure the integrity of the depository's system and encourages maximum operational cooperation. Each morning, Participants and pledgees receive a DTC report that itemizes and summarizes their previous day's account activity. In addition, DTC sends daily reports of cash transactions and a monthly statement showing each Participant's and pledgee's securities positions.

DTC Rules require Participants to report differences between their records and DTC statements; Participants and pledgees also must confirm the

accuracy of their monthly position statements. DTC's research staff helps reconcile differences.

Internal and External Audits

DTC's internal auditors and its independent accountant, Price Waterhouse, review internal controls.

- The internal audit program reviews and tests controls in key operating areas and in automated systems (including those being developed). Certificates in selected issues are counted every day through random sampling techniques.
- Price Waterhouse examines DTC's financial statements, and performs an annual study and evaluation of the internal accounting control system. Participants, pledgees, and their accountants may request copies of Price Waterhouse's report on the system.
- The Audit Committee of DTC's Board of Directors oversees the General Auditor and the Auditing Department. It reviews the scope of the Price Waterhouse audits and meets with them periodically to discuss their findings. In addition, the Board of Directors receives results of the New York State Banking Department's and the Federal Reserve Bank of New York's annual regulatory examinations of DTC.

Participants Fund

The Participants Fund exists to satisfy any uninsured loss or liability suffered by DTC. DTC's Rules provide that any such loss may be charged against undivided profits or retained earnings, or to the Participants Fund, at the discretion of the Board of Directors.

Should DTC sustain a loss because of a Participant's failure to satisfy obligations to the depository related to the Next-Day Funds Settlement (NDFS) system or the Same-Day Funds Settlement (SDFS) system, DTC would first charge the loss to that Participant's deposit to the Fund. Should the loss exceed the deposit (or should it be sustained for reasons other than Participant failure), DTC might then charge (pro rata) the excess to



SECURITY OFFICER ABRAM WALKER PRESIDES OVER AN EXPANDED SURVEILLANCE/CONSOLE ROOM AT DTC'S NEW YORK CITY HEADQUARTERS.

other Participants' deposits to the Fund. Should DTC make a charge against a Participant's deposit to the Fund (pro rata or otherwise), the Participant must make an additional deposit to the Fund in an amount equal to the charge.

The Fund has two components. One component, exceeding \$200 million, is allocated to DTC's NDFS system. The other component of the Fund, exceeding \$260 million, is allocated to the SDFS system.

There has never been a pro rata charge to the Participants Fund.

Other Protective Procedures

Additional procedures protect Participants by minimizing the possibility of loss arising from a Participant's unexpected insolvency. If DTC learns of a possible operational or financial inadequacy, it carefully monitors that Participant's activity and takes protective steps as events warrant.

Insurance Coverages

DTC's insurance coverage program for securities is one of the most extensive programs for private insti-

tutions in the financial industry. Through a combination of interlocking blanket bonds and all-risk insurance policies involving both the London and United States domestic insurance markets, DTC's coverage provides:

- \$250 million for loss of securities in transit;
 - \$200 million for loss of securities on premises.
- In addition:
- For any loss of non-negotiable securities being moved by certain modes of transportation, additional coverages are provided by DTC's insurers.
 - For any loss of securities moving by armored car carrier service, \$500 million is provided by the armored car carrier's insurance.
 - For any loss occurring in the mail, DTC's mail policy provides:
 - \$15 million in coverage for non-negotiable securities sent by registered mail, express mail, or express courier;
 - \$1 million for non-negotiable securities sent by first-class mail;
 - \$1 million for negotiable securities sent by registered mail, express mail, or express courier.



OFFICERS OF THE DEPOSITORY TRUST COMPANY



William T. Dentzer, Jr.
Chairman and Chief Executive Officer



Conrad F. Ahrens
President and Chief Operating Officer



William F. Jaenike
Executive Vice President



Thomas J. Lee
Executive Vice President



Dennis J. Dirks
Senior Vice President



Michael Fedorochko
Senior Vice President



Glenn E. Mangold
Senior Vice President



Thomas C. Cardile
Senior Vice President



Richard B. Nesson
Senior Vice President and General Counsel



Edward J. McGuire, Jr.
Secretary

Vice Presidents

Michael A. Agnes
Joseph J. Arney
Nicholas J. Arrigan
Joseph J. Bellantoni
Neil F. Brander
John J. Colangelo
Raymond R. DeCesare
Donald F. Donahue
Stuart A. Fishbein
Ronald A. Garguilo
Charles J. Horstmann
W. Win Hubley
James Koster
Vincent A. Mauro
Michael T. Mullen
Richard J. O'Brien
Frank Petrillo
Lawrence W. Postel
Joseph F. Reale
James V. Reilly
Martin J. Rizzi
John L. Scheuermann
Kenneth M. Scholl

Comptroller

Gary J. LaCara

Treasurer

Philip E. Plasencia

Assistant Secretary

Jane C. Klueger

Assistant Treasurer

Leonard A. Miele

Committees of the Board of Directors

Nominating Committee

Thomas C. Schneider,
Chairman
John F. Lee
Richard S. Pechter
H.J. Runnion, Jr.

Audit Committee

C. Howell Scott,
Chairman
Sheldon Harrison
Sandra S. Jaffee
Richard F. Morrison
DuWayne J. Peterson

Compensation Committee

Richard S. Pechter,
Chairman
Robert A. Friedman
Thomas C. Schneider
C. Howell Scott

Retiring from the depository during 1989 were Senior Vice Presidents John P. Crowley and Arnold Fleisig. Mr. Crowley joined the depository in 1973. Mr. Fleisig came to the depository in 1972, on completion of his work on the staff of the Banking and Securities Industry Committee.



THE BOARD OF DIRECTORS



*William T. Dentzer, Jr.
Chairman and Chief
Executive Officer,
The Depository
Trust Company*



*Conrad F. Ahrens
President and Chief
Operating Officer,
The Depository
Trust Company*



*William F. Aldinger
Executive Vice
President, Wells Fargo
Bank, National
Association*



*Robert A. Friedman
Partner, Goldman,
Sachs & Co.*



*Richard A. Grasso
President, New York
Stock Exchange, Inc.*



*Sheldon Harrison
Senior Executive Vice
President, The Bank
of New York*



*C. Richard Justice
Executive Vice
President, National
Association of
Securities Dealers, Inc.*



*John F. Lee
President, New York
Clearing House
Association*



*Peter E. Madden
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Operating Officer,
State Street Bank
and Trust Company*



*Richard F. Morrison
Senior Executive
Vice President,
Shearson Lehman
Hutton Inc.*



*Richard S. Pechter
Chairman, DLJ
Financial Services
Group*



*DuWayne J. Peterson
Executive Vice
President, Merrill
Lynch & Co., Inc.*



*H.J. Runnion, Jr.
Vice Chairman
and Chief Financial
Officer, Wachovia
Bank & Trust
Company, N.A.*

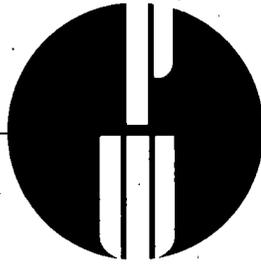


*Thomas C. Schneider
Executive Vice
President and Chief
Financial Officer,
Dean Witter Financial
Services Group Inc.*



*C. Howell Scott
Executive Vice
President, Bankers
Trust Company*

Retiring from the Board in March, at the end of his term, was James T. Flynn, Executive Vice President, Morgan Guaranty Trust Company of New York. Sandra S. Jaffee, Executive Vice President, New York Stock Exchange, Inc., retired from the Board in December.



TO THE BOARD OF DIRECTORS AND
STOCKHOLDERS OF THE DEPOSITORY
TRUST COMPANY

In our opinion, the accompanying statement of condition and the related statements of revenues and expenses and undivided profits and of cash flows present fairly, in all material respects, the financial position of The Depository Trust Company at December 31, 1989 and 1988, and the results of its operations and its cash flows for the years then ended in conformity with generally accepted accounting principles. These financial statements are the responsibility of the Company's management; our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits of these statements in accordance with generally accepted auditing standards which require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for the opinion expressed above.

Price Waterhouse

153 East 53rd Street, New York, NY, February 1, 1990



Statement of Condition

December 31,

	1989	1988
	(Dollars in thousands)	
Assets		
Cash and money market accounts	\$ 5,778	\$ 140,416
Repurchase agreements	1,526,323	1,222,938
Receivables:		
Participants:		
For settlements	40,146	59,485
For services	22,703	20,997
Dividends, interest and other	307,787	58,247
Deferred income taxes	7,323	6,448
Prepaid expenses	2,721	2,465
Equipment and leasehold improvements, less accumulated depreciation of \$50,974,000 in 1989 and \$45,047,000 in 1988	56,484	56,257
Contributions to Participants Funds, callable on demand	351,085	281,254
	<u>\$2,320,350</u>	<u>\$1,848,507</u>
Liabilities and stockholders' equity		
Liabilities:		
Drafts payable	\$1,194,365	\$ 875,566
Accounts payable and accrued expenses	65,533	70,572
Payable to Participants:		
For refunds	30,134	22,826
On settlements	1,742	856
On receipt of securities	87,989	94,185
Dividends, interest and other	442,581	395,468
Notes payable, including \$3,004,000 in 1989 and \$3,110,000 in 1988 due within one year	8,749	11,635
	<u>1,831,093</u>	<u>1,471,108</u>
Participants Funds:		
Deposits received	120,675	79,941
Contributions callable on demand	351,085	281,254
	<u>471,760</u>	<u>361,195</u>
Stockholders' equity:		
Capital stock—authorized, issued and outstanding, 18,500 shares of \$100 par value	1,850	1,850
Surplus	950	950
Undivided profits	14,697	13,404
	<u>17,497</u>	<u>16,204</u>
	<u>\$2,320,350</u>	<u>\$1,848,507</u>

The accompanying notes are an integral part of the financial statements.

Statement of Revenues And Expenses and Undivided Profits	<i>For the years ended December 31,</i>	
	1989	1988
	<i>(Dollars in thousands)</i>	
Revenues:		
Services to Participants	\$241,856	\$221,746
Interest income	127,199	102,990
	369,055	324,736
<i>Less—Refunds to Participants</i>	121,253	78,195
	247,802	246,541
Expenses:		
Employee costs	148,371	145,041
Rent, maintenance and utilities	37,475	34,766
Data processing rentals and supplies	15,637	15,618
Professional and other services	12,576	14,192
Depreciation and amortization	9,480	10,133
Interest	966	957
Other expenses	22,004	24,663
	246,509	245,370
Excess of revenues over expenses and refunds	1,293	1,171
Undivided profits, beginning of year	13,404	12,233
Undivided profits, end of year	\$ 14,697	\$ 13,404

The accompanying notes are an integral part of the financial statements.

Statement of Cash Flows

*For the years ended
December 31,*

	1989	1988
	<i>(Dollars in thousands)</i>	
Cash flows from operating activities:		
Excess of revenues over expenses and refunds	\$ 1,293	\$ 1,171
Adjustments to reconcile excess of revenues over expenses and refunds to net cash provided by operating activities:		
Depreciation and amortization	9,480	10,133
Pension and deferred compensation	2,602	1,370
Provision for uncollectible dividend receivables	305	533
Provision for deferred taxes	(875)	1,348
Provision for abandonment costs	—	(1,280)
(Increase) decrease in receivables from Participants	17,633	(55,288)
(Increase) decrease in dividends, interest and other receivables	(250,108)	215,978
Increase (decrease) in accounts payable, accrued expenses and other, net	(7,634)	15,261
Increase in Participants Funds deposits received	40,734	61,163
Increase (decrease) in drafts payable	318,799	(110,581)
Increase in payables to Participants	49,111	37,456
Total adjustments	<u>180,047</u>	<u>176,093</u>
Net cash provided by operating activities	181,340	177,264
Cash flows from investing activities:		
Purchases of equipment and leasehold improvements	(9,707)	(18,291)
Cash flows from financing activities:		
Proceeds from borrowing	—	10,000
Principal payments on notes	(2,886)	(4,470)
Increase in cash and cash equivalents	168,747	164,503
Cash and cash equivalents, beginning of year	<u>1,363,354</u>	<u>1,198,851</u>
Cash and cash equivalents, end of year	<u><u>\$1,532,101</u></u>	<u><u>\$1,363,354</u></u>

The accompanying notes are an integral part of the financial statements.



**Notes to
Financial Statements**
December 31, 1989 and 1988

Note 1—Business and Ownership:

The Company is a limited purpose trust company providing central securities depository and related services to the securities, banking and related industries. At December 31, 1989, New York Stock Exchange, Inc. owned approximately 33% of the capital stock of the Company, with the remainder owned by the American Stock Exchange, National Association of Securities Dealers and a number of Participants or their representatives. A Stockholders Agreement provides for an annual reallocation of the entitlement to purchase outstanding capital stock by eligible Participants or their representatives based on relative depository activity of Participants during the prior year.

Pursuant to a policy adopted by the Board of Directors, the Company does not pay dividends to stockholders, but refunds to all of its Participants each year revenues in excess of current and anticipated needs. In 1989, this refund amounted to \$21,840,000 (1988—\$4,580,000). The Board of Directors also adopted an additional refund policy to provide for a monthly refund to Participants of income earned from the overnight investment of cash dividend and corporate interest and reorganization payments to the Company for Participants, reduced by certain related expenses. Such net monthly refunds totaled \$99,413,000 in 1989 (1988—\$73,615,000).

Note 2—Summary of Significant Accounting Policies:

A. Securities on deposit:

Securities held by the Company for Participants are not recorded in the accompanying financial statements. Cash dividends and interest received or due on such securities and in process of distribution or awaiting claim are recorded in the statement of condition.

B. Cash, short-term investments and cash flows:

Repurchase agreements represent U.S. Government and U.S. Government Agency securities purchased under agreements to resell at predetermined prices, generally over periods of three days or less. These agreements are recorded at cost and interest is accrued as earned.

The Company invests available federal funds in repurchase agreements and money market accounts and at the same time makes

disbursements to Participants in clearinghouse funds. The resulting book overdrafts are included in drafts payable and are eliminated the next business day when the repurchase agreements and money market accounts are converted back to cash.

For cash flow reporting, cash and cash equivalents include cash on hand, money market accounts and repurchase agreements.

C. Equipment and leasehold improvements:

Equipment and leasehold improvements are recorded at cost. Equipment is depreciated over estimated useful lives (generally five to eight years), using principally accelerated methods. Leasehold improvements are amortized on the straight-line method over the lives of the related leases or the useful lives of the improvements, whichever is less.

D. Income taxes:

Provision is made for deferred income taxes applicable to revenues and expenses reported in the financial statements in periods which differ from those in which they are subject to taxation.

Note 3—Participants Funds:

Participants in the depository are required to deposit to one or both of two Participants Funds amounts which relate to their activity in the depository. The Funds are available to satisfy the Participants' obligations to the Company, and to satisfy certain uninsured losses, if such should occur, of the Company. Required deposits are received in cash or in securities of the United States Government, its agencies or instrumentalities, states and political subdivisions and certain eligible nonconvertible registered corporate debt securities that are pledged to the Company, held by it, or callable on demand.

Note 4—Dividends and Interest on Securities on Deposit:

The Company receives cash and stock dividends and interest on securities registered in the name of its nominee and interest on bearer securities which it distributes to its Participants for the owners of the securities. Amounts received on registered securities withdrawn before the record date but not transferred from the name of the Company's nominee cannot be distributed unless claimed by the owners of the securities through a Participant or other financial institution. At December 31, 1989, cash dividends and interest payable amounted to



\$353,254,000, of which \$161,355,000 was awaiting distribution to Participants and \$191,899,000 was held pending claim on behalf of the record date owners of the applicable securities. Stock dividends payable and unclaimed are not recorded in the accompanying financial statements. Unclaimed cash and stock dividends and interest on securities registered in the name of the Company's nominee and interest on bearer securities are transferred to New York State when required by abandoned property laws.

Cash dividends and interest receivable at December 31, 1989 amounted to \$288,815,000 (1988—\$44,887,000) before reduction by an allowance of \$1,035,000 (1988—\$1,992,000) for possible losses. Stock dividends receivable are not recorded in the accompanying financial statements.

Note 5—Pension Plan:

The Company has a noncontributory defined benefit pension plan covering substantially all full-time operational, professional, administrative and other employees. Plan benefits are based on a formula percentage of annual earnings for each year of continuous participation. The Company's funding policy is to contribute annually the maximum amount that can be deducted for federal income tax purposes.

Net pension costs for 1989 and 1988 included the following components:

	1989	1988
	<i>(Dollars in thousands)</i>	
Service cost—benefits earned during the year	\$3,509	\$2,715
Interest cost on projected benefit obligation	2,651	2,119
Actual return on assets	(5,200)	(3,910)
Net amortization and deferral	<u>1,207</u>	<u>152</u>
Net periodic pension cost	<u>\$2,167</u>	<u>\$1,076</u>

The following table sets forth the plan's funded status and amounts recognized in the Company's Statement of Condition at December 31:

	1989	1988
	<i>(Dollars in thousands)</i>	
Plan assets at fair value, primarily equity securities and deposits under group annuity contracts	<u>\$37,630</u>	<u>\$32,896</u>
Accumulated benefit obligation for service rendered:		
Vested	23,391	18,739
Non-vested	<u>2,592</u>	<u>1,997</u>
	25,983	20,736
Additional amounts related to projected compensation increases	<u>11,247</u>	<u>9,387</u>
Projected benefit obligation for service rendered	<u>37,230</u>	<u>30,123</u>
Plan assets in excess of projected benefit obligation	400	2,773
Unrecognized net asset existing at the date of initial application of FAS No. 87	(9,640)	(10,443)
Unrecognized net loss from past experience different from that assumed and effects of changes in assumptions	<u>2,282</u>	<u>2,879</u>
Unfunded accrued pension cost included in accounts payable and accrued expenses	<u>(\$ 6,958)</u>	<u>(\$ 4,791)</u>

The discount rate used in determining the actuarial present value of the projected benefit obligation was 8.75% (1988—9.25%). The assumed rate of future compensation levels was based on anticipated inflation and merit increases. The expected long-term rate of return on assets was 10% (1988—10.25%). The unrecognized net asset that existed when Statement of Financial Accounting Standards No. 87 was adopted, as of January 1, 1986, is being amortized over 16 years.



Note 6—Income Taxes:

Income taxes are included in other expenses. The net income tax provisions for 1989 and 1988 are summarized as follows:

	1989	1988
	(Dollars in thousands)	
Current provision (benefit):		
Federal	\$1,431	(\$ 546)
State and local	502	21
Deferred provision (benefit):		
Federal	(912)	1,152
State and local	(314)	202
	<u>\$ 707</u>	<u>\$ 829</u>

The primary differences between pretax accounting income and taxable income are related to unfunded pension expense and the reserve for possible losses on cash dividends and interest receivables.

Income taxes paid during 1989 totaled \$2,240,000 (1988—\$1,601,000) and refunds of \$1,109,000 were received from the utilization of net operating loss carrybacks.

In December 1987, the Financial Accounting Standards Board issued Statement No. 96, "Accounting for Income Taxes." The adoption of the standard, which is required by 1992, would result in a reduction of approximately \$5,000,000 of the deferred income tax asset and a corresponding reduction of undivided profits at December 31, 1989.

Note 7—Notes Payable:

The Company has notes payable totaling \$8,749,000 of which \$409,000 is collateralized by equipment with comparable book value. The notes are being repaid in monthly installments. The interest rate applicable to \$7,575,000 of such notes is fixed at a weighted annual rate of 9.0% and \$1,174,000 currently bears interest at 8.9%, based upon a periodic election of the Company, of either the prime rate or the London interbank offered rate plus .375%. Interest paid during 1989 totaled \$987,000 (1988—\$897,000).

Aggregate maturities of notes payable as of December 31, 1989 are summarized as follows:

	(Dollars in thousands)
1990	\$3,004
1991	2,537
1992	2,041
1993	1,167
Total notes payable	<u>\$8,749</u>

The Company has available with commercial banks two short-term lines of credit of \$5,000,000 each at rates approximating the prime rate, and a revolving credit loan agreement of \$50,000,000 at the Federal funds rate plus .375%. A commitment fee of .125% is required on the \$50,000,000 revolving credit loan agreement which is available to support the Same-Day Funds Settlement system. These facilities were not utilized during 1989.

Note 8—Leases and Other Commitments:

The Company has entered into leases for office space and data processing and other equipment. Leases for office space and various data processing and other equipment are classified as operating leases. The leases for office space provide for rent escalations subsequent to 1989. Rent expense in 1989 was \$29,826,000 (1988—\$27,202,000) for office space and \$13,702,000 (1988—\$13,839,000) for data processing and other equipment.

Presented below are the future minimum payments, by year and in the aggregate, under operating leases having noncancelable lease terms in excess of one year as of December 31, 1989:

	(Dollars in thousands)
1990	\$ 46,518
1991	35,230
1992	31,149
1993	31,000
1994	30,988
Thereafter	129,644
Total future minimum lease payments	<u>\$304,529</u>

Participants

Banks

Amalgamated Bank of New York (The)
 American National Bank & Trust Company of Chicago
 AmeriTrust Company
 AmSouth Bank, N.A.
 BancOhio National Bank
 Bank IV Wichita, National Association
 Bank of America National Trust and Savings Association
 Bank of Bermuda International Limited
 Bank of Boston Connecticut
 Bank of California (The)
 Bank of Montreal, New York Branch
 Bank of New England, N.A.
 Bank of New York (The)
 Bank of Nova Scotia (The), New York Agency
 Bank of Oklahoma, N.A.
 Bank of Tokyo Trust Company (The)
 Bank One Trust Company, N.A.
 Bank One Wisconsin Trust Company, N.A.
 Bank South, N.A.
 Bankers Trust Company
 Barclays Bank PLC, New York Branch
 Barnett Banks Trust Company, N.A.
 Bessemer Trust Company
 Boatmen's National Bank of St. Louis (The)
 Boston Safe Deposit and Trust Company
 Brown Brothers Harriman & Co.
 Canadian Imperial Bank of Commerce-New York Agency
 Cape Ann Savings Bank†
 Capital Trust Company
 Central Bank of Denver
 Central Bank of the South
 Central Fidelity Bank, N.A.
 Central Trust Bank (The)
 Central Trust Company
 Chase Lincoln First Bank, N.A.
 Chase Manhattan Bank, N.A. (The)
 Chemical Bank
 Citibank, N.A.
 Citizens and Southern National Bank (The)
 Citizens Fidelity Bank and Trust Company
 City National Bank
 Citytrust
 Comerica Bank-Detroit
 Commerce Bank of Kansas City, N.A.
 Commercial National Bank of Peoria
 Connecticut Bank and Trust Company (The)
 Connecticut National Bank (The)
 Continental Bank, National Association
 Crestar Bank
 Custodial Trust Company
 Dai-Ichi Kangyo Bank, Limited (The), New York Branch
 Daiwa Bank, Limited (The), New York Agency
 Denver National Bank
 Dominion Trust Company
 Equitable Bank, National Association
 Exchange National Bank of Chicago (The)
 Fidelity Bank, National Association
 Fiduciary Trust Company International
 Fiduciary Trust Company of Boston
 Fifth Third Bank (The)
 First American Bank, N.A.
 First Bank National Association
 First City, Texas-Houston, National Association
 First Fidelity Bank, National Association, New Jersey
 First Interstate Bank of Arizona, N.A.
 First Interstate Bank of California
 First Interstate Bank of Denver, N.A.
 First Interstate Bank of Oregon, N.A.
 First Interstate Bank of Washington
 First Kentucky Trust Company (The)
 First National Bank and Trust Company of Tulsa (The)
 First National Bank of Boston (The)
 First National Bank of Chicago (The)
 First National Bank of Colorado Springs (The)
 First National Bank of Maryland (The)
 First National Bank of Omaha
 First Tennessee Bank N.A. Memphis
 First Trust Company, Inc.
 First Trust Corporation
 First Union National Bank
 First Union National Bank of Florida
 First Wisconsin Trust Company
 Fleet National Bank
 Florida National Bank
 Fort Wayne National Bank
 French American Banking Corporation
 Frost National Bank
 Fuji Bank & Trust Company (The)
 Harris Trust & Savings Bank
 Hibernia National Bank
 Huntington National Bank
 IBJ Schroder Bank & Trust Company
 IDS Bank & Trust
 INB National Bank
 Imperial Trust Company
 Industrial Bank of Japan Trust Company (The)
 Investors Bank and Trust Company
 Investors Fiduciary Trust Company
 Kellogg-Citizens National Bank
 Key Trust Company
 Key Trust Company of the Northwest
 LTCB Trust Company
 LaSalle National Bank
 Liberty National Bank and Trust Company of Louisville
 Liberty Street Trust Company
 Lincoln National Bank & Trust Company of Fort Wayne
 Lloyds Bank Plc
 M&I Marshall & Ilsley Bank
 Manufacturers and Traders Trust Company
 Manufacturers Hanover Trust Company
 Manufacturers National Bank of Detroit
 Marine Midland Bank
 Marquette Bank Minneapolis, N.A.
 Mellon Bank, N.A.
 Mercantile Bank National Association
 Mercantile—Safe Deposit and Trust Company
 Merchants National Bank & Trust Company of Indianapolis
 Michigan National Bank—Grand Rapids
 Midlantic National Bank
 Morgan Guaranty Trust Company of New York
 Morgan Stanley Trust Company
 NCB National Bank of North Carolina
 NCB Texas National Bank
 National Bank of Detroit
 National Bank of Washington (The)
 National City Bank
 National Westminster Bank N.J.
 National Westminster Bank PLC
 National Westminster Bank USA
 Nationalar
 Northern Trust Company (The)
 Norwest Bank Minnesota, National Association
 Old Kent Bank and Trust Company
 Old Kent Bank—Chicago
 Philadelphia National Bank (The)
 Pittsburgh National Bank
 Provident National Bank
 Republic National Bank of New York
 Rhode Island Hospital Trust National Bank
 Riggs National Bank of Washington, D.C. (The)
 Rockland Trust Company ‡
 Royal Bank of Canada (The)
 Santa Barbara Bank & Trust
 Sanwa Bank California
 Seattle-First National Bank
 Security Pacific Bank Washington, N.A.
 Security Pacific National Bank
 Security Trust Company, N.A.
 Seligman (J. & W.) Trust Company
 Shawmut Bank of Boston, N.A.
 Signet Trust Company
 Society National Bank
 Southeast Bank, N.A.
 SouthTrust Bank of Alabama, N.A.
 Sovran Bank, N.A.
 Star Bank, National Association, Cincinnati
 State Street Bank and Trust Company
 Stock Yards Bank and Trust Company
 Sumitomo Bank of California
 Sumitomo Trust & Banking Co. (USA)
 Summit Bank
 Summit Trust Company (The)
 Swiss Bank Corporation New York Branch
 Texas American Bank/Fort Worth National Association
 Texas Commerce Bank National Association
 Toronto Dominion Bank (The)—New York Branch
 Trust Company Bank
 Trust Services of America, Inc.
 Trustcorp Bank, Ohio
 Trustmark National Bank
 U.S. Bank of Washington, N.A.
 Union Bank
 Union Bank of Switzerland
 Union Planters National Bank
 Union Trust Company
 United Bank of Denver, National Association
 United Jersey Bank
 United Missouri Bank of Kansas City, N.A.
 United States National Bank of Oregon
 United States Trust Company of New York
 Valley National Bank of Arizona
 Valley Trust Company
 Wachovia Bank & Trust Company, N.A.
 Wells Fargo Bank, National Association
 Wheeling Dollar Bank
 Wilmington Trust Company
 Women's Federal Savings Bank
 Wyoming National Bank Casper
 Zions First National Bank

† As of December 31, 1989

‡ Boston Stock Exchange Sponsored Account

**Broker-Dealers#**

ABD Securities*
ABD Securities Corporation
AGF Securities Inc.*
Adams-Fastnow Company Inc.*
Adams, Harkness & Hill, Inc.
Adler, Coleman & Co., Inc.
Advest, Inc.
Affina Brokerage Services Inc.
Agora Securities, Inc.
Alexander (J.) Securities, Inc.*
Alger (Fred) & Company, Incorporated
Allen & Company Incorporated
Alpine Associates
American Securities Corporation
Amster & Co.
Andras Research Capital, Inc.*
Arnhold and Bleichroeder (S.), Inc.
Asiel & Co.
BHC Securities Inc.
BHF Securities Corporation
BSE Specialist Account*
BT Securities Corporation
Baer (Julius) Securities Inc.
Baird, Patrick & Co., Inc.
Baird (Robert W.) & Co. Incorporated
Barr Brothers & Co., Inc.
Bateman Eichler, Hill Richards Inc.*
Baum (George K.) & Company
Bear, Stearns & Co. Inc.
Beckman & Co. Inc.*
Benton & Company
Bernstein (Sanford C.) & Co., Inc.
Bidwell & Company*
Blackmore & Co., Inc.*
Blair (Charles M.) & Co., Inc.*
Blair (William) & Company
Blinder, Robinson & Co., Inc.*
Bodell, Overcash Anderson & Co., Inc.*
Bradford (J.C.) & Co.
Branch, Cabell & Co.
Brault, Guy, O'Brien Inc.*
Brawley Cathers Limited*
Brounoff, Claire, & Co., Inc.
Brown (Alex.) & Sons, Inc.
Brown & Company Securities Corporation
Brown, Lisle/Cummings, Inc.
Buell Securities Corp.*
Bunting (Alfred) & Co. Limited*
Burke (P.R.) & Co.
Burns Fry Hoare Govett Inc.
Burns Fry Limited*
Burns, Pauli & Co., Inc.
Butler (K.R.), Inc.*
Campbell (D.A.) Co., Inc.*
Campbell, Waterman, Inc.*
Canarim Investment Corporation*
Cantella & Company (Retail)*
Cantor Fitzgerald & Co.
Cantor Fitzgerald Corporate Brokers, Inc.
Cantor Fitzgerald Municipal Brokers, Inc.*
Cantor (S.B.) & Co., Inc.*
Capital Group Securities Limited*
Capital Shares, Inc.*
Carr & Thompson, Inc.*
Carr Securities Corporation
Carroll McEntee & McGinley Securities, Inc.
Carty & Company, Inc.
Cazenove Incorporated
Cenpac Securities Inc.*
Challenge Securities Inc.
Chapdelaine & Co.*
Charles-Bush (JW) Securities, Inc.
Chicago Corporation (The)
Chicago Corporation (The)*
Childs (S.W.) Management Corporation
Citicorp Securities Markets, Inc.
Coast Options, Inc.*
Commerzbank Capital Markets Corporation
Connor, Clark & Co. Limited*
Coughlin and Company, Inc.*
County NatWest Securities Corporation USA
Cowen & Co.
Craig-Hallum, Inc.
Craigie Incorporated
Cresvale International, Limited
Crews & Associates, Inc.
Crowell, Weedon & Co.*
Dain Bosworth Incorporated
Daiwa Securities America Inc.
Daiyer Canada Inc.*
Datek Securities Corporation*
Daugherty, Cole Inc.*
Davenport & Co. of Virginia, Inc.
Davidson (D.A.) & Co., Inc.*
Davis (Shelby Cullom) & Co.
de Cordova, Cooper & Co.
Deacon, Morgan, McEwen, Easson, Limited*
Deltec Securities Corporation*
Deragon Langlois Ltd.*
Deutsche Bank Capital Corporation
Diamant Investment Corp.*
Dillon, Read & Co. Inc.
Disnat Investment Inc.*
Doft & Co., Inc.
Dominick & Dominick, Incorporated
Donaldson, Lufkin & Jenrette Securities Corp.*
Donaldson, Lufkin & Jenrette Securities Corporation
Doyle (F.W.) & Company*
Drexel Burnham Lambert Incorporated
Easton & Co.
Edwards (A.G.) & Sons, Inc.
Egan, Marrin & Rubano Inc.*
Einhorn & Co.
Eppler, Guerin & Turner, Inc.
Equity Securities Trading Co., Inc.*
Ernst & Co.
Essex Company
Exchange Services, Inc.*
Execution Services Incorporated
Fagenson & Co., Inc.
Fahnestock & Co., Inc.
Fechtor, Detwiler & Co., Inc.*
Fernandez, Bartsch & Mirra
Financial Clearing & Services Corporation
First Alabama Investments, Inc.
First Albany Corporation
First Boston Canada Limited*
First Boston Corporation (The)
First Canada Securities Corporation*
First Investors Corporation
First Manhattan Co.
First Marathon Securities Limited*
First of Michigan Corporation*
First Options of Chicago, Inc.*
First Southwest Company
First Wachovia Brokerage Service Corporation
Fossett Corporation*
Frank (Walter N.) & Co.
Frankel (Wm.V.) & Co., Inc.*
Freeman Securities Company, Inc.
Freeman Welwood & Co., Inc.
Fried (Albert) & Co.
Fundamental Corporate Bond Brokers, Inc.
Gage-Wiley & Company, Inc.*
Gant (J.W.) & Associates, Inc.*
Garat & Co.*
Geldermann Securities Inc.
Geoffrion, Leclerc Inc.*
Gintelco, Inc.
Glickenhau & Co.
Goldberg Securities, Inc.*
Goldman, Sachs & Co.
Gordon & Co.
Gordon Capital Corporation
Gowell Securities Corporation (Retail)*
Gradison & Company Incorporated
Greenfield Partners
Greenline Investor Services Inc.*
Greenwich Capital Markets, Inc.
Gruss (Oscar) & Son Incorporated
Guardian Trust Company*
Hanauer (J.B.) & Co.
Hancock (John) Clearing Corporation
Hanifen, Imhoff, Inc.*
Hartfield (J.F.) & Co., Inc.*
Haynes, Lawson & Co.*
Heitner Corporation (The)*
Henderson Brothers, Inc.
Herzog, Heine, Geduld, Inc.
Hibbard Brown & Co., Inc.*
Hill, Thompson, Magid & Co., Inc.*
Hilliard (J.J.B.), Lyons (W.L.), Inc.
Hoelscher (Shiels) & Co.*
Hopkins, Harbach & Co.*
Hough (William R.) & Co.
Howard, Weil, Labouisse, Friedrichs Incorporated
Hummer (Wayne) & Co.
Huntleigh Securities Corporation
Hutchinson, Shockey, Erley & Co.
INC Trading Corporation*
Icahn & Co., Inc.
Illinois Company Investments, Inc.
Ingalls & Snyder
Instant Funds Incorporated*
Interstate/Johnson Lane Corporation
InvestNet Corporation
Investors Discount Corporation*
Jacobson (Benjamin) & Sons
Janney Montgomery Scott Inc.
Jefferies & Company, Inc.*
Jefferies & Company, Inc.*
Jesup & Lamont, Incorporated
Johnston, Lemon & Co., Inc.*
Jones (Edward D.) & Co.
Josephthal & Co. Incorporated
Judah (S.A.) & Co., Inc.*
K.K. & Company*
Kalb, Voorhis & Co.
Kaufmann, Alsborg & Co., Inc.
Kawano (H.) & Co., Inc.*
Keeley (K.J.) & Co., Inc.*
Kellner, DiLeo & Co.
Kemper Clearing Corp.
Kenny (J.J.) Drake, Inc.*
Kidder, Peabody & Co. Incorporated
Kimball & Cross*
King (C.L.) & Associates Inc.
Knox (W.L.) & Company



THE DEPOSITORY TRUST COMPANY

- Koonce Securities, Inc.*
Krieger (Henry) & Co.
LIT America Inc.
LaBranche & Co.
Lafferty, Harwood & Partners Ltd.*
Larkin (Emmet A.) & Co., Inc.*
Lasker, Stone & Stern
Lawrence (C.J.), Morgan Grenfell, Inc.
Lawrence, O'Donnell, Marcus & Co.
Lazard Frères & Co.
Legg Mason Wood Walker, Inc.
Lerner (David) Associates, Inc.
Levesque, Beaubien Inc.*
Lewco Securities Corp.
Loewen Ondaatje, McCutcheon & Company Ltd.*
Lomas Securities USA, Inc.*
MKI Securities Corp.
Mabon, Nugent & Co.
MacAllaster Pitfield Mackay, Inc.
MacDougall, MacDougall & MacTier, Inc.*
Madoff (Bernard L.)
Manufacturers Hanover Securities Corporation
Marcus Schloss & Co., Inc.
Mayer & Schweitzer, Inc.
McCarthy Securities Ltd.*
McCourtney-Breckenridge & Company*
McDaniel Lewis & Co.
McDonald & Company Securities, Inc.
McNeil Mantha Inc.*
Meehan (M.J.) & Company
Melville (Ronald E.) Inc.*
Mercator Partners
Mericka & Co., Inc.*
Merit Investment Corporation*
Merrill Lynch, Pierce, Fenner & Smith Incorporated
Merrill Lynch Specialists Inc.*
Merrimack Valley Investment Inc.*
Mesirow Capital, Inc.
Meuse, Rinker, Chapman, Endres & Brooks
Midland Doherty Inc.
Midland Doherty Limited*
Mitchum, Jones & Templeton, Inc.*
Montgomery Securities
Morgan (J.P.) Securities Inc.
Morgan, Keegan & Company, Inc.
Morgan, Olmstead, Kennedy & Gardner, Incorporated*
Morgan Stanley & Co. Incorporated
Murphey Favre, Inc.*
Murphey, Marseilles, Smith & Nammack
Murphy & Durieu
NB Clearing Corporation
National Financial Services Corporation
Nesbitt Thomson Deacon Inc.*
Neuberger & Berman
New Japan Securities International, Inc.
New Windsor Associates, L.P.
Newbold's (W.H.) Son & Co./Hopper Soliday & Co., Inc.
Newbridge Securities Inc.
Newhard, Cook & Co. Incorporated
Nikko Securities Co. International, Inc. (The)
Nippon Kangyo Kakumaru International Inc.
Nomura Securities International, Inc.
Nuveen (John) & Co. Incorporated
O'Connor & Associates
O'Connor Securities
- Odlum Brown Limited*
Offerman & Co., Inc.*
Olde Discount Corporation
Oppenheimer & Co., Inc.
Pacific Brokerage Services, Inc.
Paine Webber Incorporated
Paine Webber Specialists Inc.*
Parker (S.C.) & Co., Inc.*
Payson (H.M.) & Co.*
Pflueger & Baerwald Inc.*
Pforzheimer (Carl H.) & Co.
Pictet (Canada) and Company, Limited*
Piper, Jaffray & Hopwood Incorporated
Porter, White & Yardley, Inc.
Preferred Technology, Inc.*
Prudential Bache Securities Canada Ltd.*
Prudential-Bache Securities Inc.
Purcell, Graham & Co.
Quinn (E.J.) & Co., Inc.*
Quinn (F.P.) & Co.*
RAF Financial Corporation*
RBC Dominion Securities Corporation
RBC Dominion Securities, Inc.*
RFG Company*
RSF Partners
Ragen MacKenzie Incorporated
Rauscher Pierce Refsnes, Inc.
Raymond, James & Associates, Inc.
Reaves (W.H.) & Co., Inc.
Refco Securities, Inc.
Regional Clearing Corp.
Richardson Greenshields of Canada, Ltd.*
Richardson Greenshields Securities, Inc.
Rimsohn (M.) & Co., Inc.
Robb, Peck, McCooney Clearing Corporation
Robertson, Stephens & Company
Rodman & Renshaw, Inc.
Roney & Co.
Roosevelt & Cross Inc.
Rothschild Inc.
Rothschild (L.F.) & Co. Incorporated
Roulston Research Corp.
Ryan Beck & Co.*
SBCI Swiss Bank Corporation Investment Banking Inc.
SLS Securities Limited Partnership
Sage Clearing Corporation*
Sage, Rutty & Co., Inc.
Salomon Brothers Inc
Schapiro (M.A.) & Co., Inc.
Schwab (Charles) & Co., Inc.*
ScotiaMcLeod Inc.*
ScotiaMcLeod (USA) Inc.
Scott & Stringfellow, Inc.
Seasongood & Mayer
Seattle-Northwest Securities Corporation
Securities Settlement Corporation
Seidel (Morton) & Co. Inc.*
Seidler Amdec Securities Inc.*
Seligman Securities, Inc.
Shearson Lehman Hutton Inc.
Shearson Lehman Hutton Inc.*
Shearson Lehman Hutton Special Securities Inc.
Shelter Rock Securities Corporation*
Smith Barney, Harris Upham & Co. Incorporated
Smith, Moore & Co.*
Smith New Court, Carl Marks Inc.
- Southwest Securities, Inc.
Spear, Leeds & Kellogg
Spear Securities, Inc.*
Steichen (R.J.) & Company*
Stephens, Inc.
Stern & Kennedy
Stern (M.L.) & Co., Inc.*
Sterne, Agee & Leach, Inc.
Stifel, Nicolaus & Company Incorporated
StockCross, Inc.*
Stoever, Glass & Co., Inc.
Stokes, Hoyt & Co.
Stone & Youngberg*
Streicher (J.) & Co.
Stuart-James Company Inc.*
Swift (Henry F.) & Co.*
Swiss American Securities Inc.
TCW Inc.*
Thomson Kernaghan & Co., Ltd.*
Thomson McKinnon Securities Inc.
Timber Hill Inc.
Titus & Donnelly Inc.*
Transatlantic Securities Company
Trust La Laurentienne du Canada*
UBS Securities Inc.
U.S. Clearing Corp.
Universal Securities Corporation
Vail Securities Investment, Inc.
Van Kampen Merritt Inc.
W&D Securities
WSI Stock Loan*
Wachtel & Co., Inc.
Wagner Stott & Co.
Wagner Stott Clearing Corp.
Wall Street Clearing Company
Wall Street Equities Incorporated*
Walsh, Greenwood & Co.
Walwyn Stodgell Cochran Murray Limited*
Warburg (S.G.) & Co. Inc.
Waterhouse Securities Inc.
Weber, Hall, Sale & Associates, Inc.
Wechsler & Krumholz, Inc.
Wedbush Morgan Securities Inc.*
Weeden & Co.*
Weiss, Peck & Greer
Wellington (H.G.) & Co. Inc.
Wheat, First Securities, Inc.
Whitaker (Don C.) Inc.*
White (Thomas F.) & Co., Inc.*
Williams Securities Group, Inc.*
Wilshire Associates Incorporated*
Wilson (L.W.) & Co., Inc.*
Winslow Investment Company*
Winston (T.R.) McKinney & Company*
Witter (Dean) Reynolds (Canada) Inc.*
Witter (Dean) Reynolds Inc.
Wolfe & Hurst Bond Brokers, Inc.
Wolfe & Hurst Bond Brokers, Inc.*
Wood (Arthur W.) Company*
Wood Gundy Corp.
Wood Gundy Inc.*
Yamaichi International (America), Inc.
Yamaichi International (America), Inc.*
Yorkton Securities Inc.*
Ziegler (B.C.) and Company
Ziegler Thrift Trading, Inc.*

Excludes some firms with limited activity
* National Securities Clearing Corporation Sponsored Account



Clearing Agencies

Boston Stock Exchange Clearing Corp.
 Canadian Depository for Securities Limited (The)^{**}
 Central Depository (Pte.) Ltd. (Singapore)^{**}
 International Securities Clearing Corporation
 Japan Securities Clearing Corp.^{**}
 Midwest Securities Trust Company
 National Securities Clearing Corporation
 Options Clearing Corporation (The)
 Philadelphia Depository Trust Company

^{**} National Securities Clearing Corporation Sponsored Account
^{**} International Securities Clearing Corporation Sponsored Account

Participants in the Same-Day Funds Settlement System §

Adams, Harkness & Hill, Inc.
 Advest, Inc.
 Amalgamated Bank of New York (The)
 Asiel & Co.
 BT Securities Corporation
 Baird, Patrick & Co., Inc.
 Baird (Robert W.) & Co. Incorporated
 Bank of America National Trust and Savings Association
 Bank of New England, N.A.
 Bank of New York (The)
 Bank of Tokyo Trust Company (The)
 Bankers Trust Company
 Baum (George K.) & Company
 Bear, Stearns & Co. Inc.
 Blair (William) & Company
 Boston Safe Deposit and Trust Company
 Bradford (J.C.) & Co.
 Brown (Alex.) & Sons, Inc.
 Brown Brothers Harriman & Co.
 Central Bank of the South
 Chase Manhattan Bank, N.A. (The)
 Chemical Bank
 Chicago Corporation (The)
 Citibank, N.A.
 Citicorp Securities Markets, Inc.
 Citizens Fidelity Bank and Trust Company
 City National Bank
 Connecticut Bank and Trust Company (The)
 Connecticut National Bank (The)
 Continental Bank, National Association
 Cowen & Co.
 Craigie Incorporated
 Crestar Bank
 Custodial Trust Company
 Dai-Ichi Kangyo Bank, Limited (The), New York Branch
 Dain Bosworth Incorporated
 Daiwa Bank, Limited (The), New York Agency
 Daiwa Securities America Inc.
 Davenport & Co. of Virginia, Inc.
 Deutsche Bank Capital Corporation
 Dillon, Read & Co. Inc.
 Dominick & Dominick, Incorporated
 Donaldson, Lufkin & Jenrette Securities Corporation
 Drexel Burnham Lambert Incorporated
 Edwards (A.G.) & Sons, Inc.
 Eppler, Guerin & Turner, Inc.
 Exchange National Bank of Chicago (The)
 Fahnestock & Co., Inc.

Fidelity Bank, National Association
 Fiduciary Trust Company International
 Fifth Third Bank (The)
 Financial Clearing & Services Corporation
 First Alabama Investments, Inc.
 First Albany Corporation
 First Bank National Association
 First Boston Corporation (The)
 First Fidelity Bank, National Association, New Jersey
 First Interstate Bank of California
 First Interstate Bank of Denver, N.A.
 First National Bank of Boston (The)
 First National Bank of Chicago (The)
 First National Bank of Maryland (The)
 First Tennessee Bank N.A. Memphis
 First Trust Company, Inc.
 Freeman Welwood & Co., Inc.
 Fried (Albert) & Co.
 Fuji Bank & Trust Company (The)
 Gintelco, Inc.
 Goldman, Sachs & Co.
 Gradison & Company Incorporated
 Greenwich Capital Markets, Inc.
 Hancock (John) Clearing Corporation
 Harris Trust & Savings Bank
 Herzog, Heine, Geduld, Inc.
 Hibernia National Bank
 Hilliard (J.J.B.), Lyons (W.L.), Inc.
 Hough (William R.) & Co.
 Howard, Weil, Labouisse, Friedrichs Incorporated
 Hummer (Wayne) & Co.
 Huntington National Bank
 Hutchinson, Shockey, Erley & Co.
 IBJ Schroder Bank & Trust Company
 IDS Bank & Trust
 Illinois Company Investments, Inc.
 Interstate/Johnson Lane Corporation
 Janney Montgomery Scott Inc.
 Jefferies & Company, Inc.
 Jones (Edward D.) & Co.
 Kellogg-Citizens National Bank
 Kemper Clearing Corp.
 Kidder, Peabody & Co. Incorporated
 LaSalle National Bank
 Lazard Frères & Co.
 Lerner (David) Associates, Inc.
 Lewco Securities Corp.
 MKI Securities Corp.
 Mabon, Nugent & Co.
 Manufacturers and Traders Trust Company
 Manufacturers Hanover Securities Corporation
 Manufacturers Hanover Trust Company
 Manufacturers National Bank of Detroit
 Marine Midland Bank
 McDonald & Company Securities, Inc.
 Mellon Bank, N.A.
 Merchants National Bank & Trust Company of Indianapolis
 Merrill Lynch, Pierce, Fenner & Smith Incorporated
 Mesirov Capital, Inc.
 Meuse, Rinker, Chapman, Endres & Brooks
 Morgan Guaranty Trust Company of New York
 Morgan (J.P.) Securities Inc.
 Morgan, Keegan & Company, Inc.
 Morgan Stanley & Co. Incorporated
 NCB National Bank of North Carolina
 National Bank of Detroit
 National City Bank
 National Financial Services Corporation

National Westminster Bank N.J.
 National Westminster Bank USA
 Neuberger & Berman
 New Japan Securities International Inc.
 Newbridge Securities Inc.
 Nikko Securities Co. International, Inc. (The)
 Nomura Securities International, Inc.
 Northern Trust Company (The)
 Norwest Bank Minnesota, National Association
 Nuveen (John) & Co. Incorporated
 O'Connor Securities
 Old Kent Bank—Chicago
 Olde Discount Corporation
 Oppenheimer & Co., Inc.
 Paine Webber Incorporated
 Philadelphia Depository Trust Company
 Philadelphia National Bank (The)
 Piper, Jaffray & Hopwood Incorporated
 Provident National Bank
 Prudential-Bache Securities Inc.
 Purcell, Graham & Co.
 Rauscher Pierce Refsnes, Inc.
 Raymond, James & Associates, Inc.
 Refco Securities, Inc.
 Regional Clearing Corp.
 Rodman & Renshaw, Inc.
 Roney & Co.
 SBCI Swiss Bank Corporation Investment Banking Inc.
 Salomon Brothers Inc
 Sanwa Bank California
 Scott & Stringfellow, Inc.
 Seattle-First National Bank
 Securities Settlement Corporation
 Security Pacific Bank Washington, N.A.
 Security Pacific National Bank
 Shawmut Bank of Boston, N.A.
 Shearson Lehman Hutton Inc.
 Shearson Lehman Hutton Special Securities Inc.
 Smith Barney, Harris Upham & Co. Incorporated
 Society National Bank
 Southwest Securities, Inc.
 Sovran Bank, N.A.
 State Street Bank and Trust Company
 Stephens, Inc.
 Sterne, Agee & Leach, Inc.
 Stifel, Nicolaus & Company Incorporated
 Swiss American Securities Inc.
 Swiss Bank Corporation New York Branch
 Trust Company Bank
 UBS Securities Inc.
 U.S. Clearing Corp.
 Union Planters National Bank
 United Bank of Denver, National Association
 United Missouri Bank of Kansas City, N.A.
 United States National Bank of Oregon
 United States Trust Company of New York
 Van Kampen Merritt Inc.
 Wachovia Bank & Trust Company, N.A.
 Wagner Stott Clearing Corp.
 Wall Street Clearing Company
 Weber, Hall, Sale & Associates, Inc.
 Weiss, Peck & Greer
 Wells Fargo Bank, National Association
 Wilmington Trust Company
 Witter (Dean) Reynolds Inc.

§ As of December 31, 1989

*Indirect SDFS Participation* ***

ABD Securities Corporation
Adler, Coleman & Co., Inc.
American Securities Corporation
American Security Bank, N.A.
AmSouth Bank, N.A.
BHF Securities Corporation
Baer (Julius) Securities Inc.
Bank IV Wichita, National Association
Bank of Bermuda International Limited
Bank of Boston Connecticut
Bank of California (The)
Bank of Montreal, New York Branch
Bank of Oklahoma, N.A.
Bank One Trust Company, N.A.
Barnett Banks Trust Company, N.A.
Bernstein (Sanford C.) & Co., Inc.
Branch, Cabell & Co.
Buell Securities Corp.
Cantor Fitzgerald Corporate Brokers, Inc.
Centerre Bank, N.A.
Centerre Trust Company
Central Bank of Denver
Central Fidelity Bank, N.A.
Central Trust Company
Charles-Bush (JW) Securities, Inc.
Chase Lincoln First Bank, N.A.
Citizens and Southern National Bank (The)
Citytrust
Comerica Bank—Detroit
Commerce Bank of Kansas City, N.A.
Commerzbank Capital Markets Corporation
Craig-Hallum, Inc.
Crestar Bank, N.A.
Crews & Associates, Inc.
Daiwa Securities Trust Company
Davidson (D.A.) & Co., Inc.
Denver National Bank
Deseret Trust Co.—Zions
Doft & Co., Inc.
Dominion Trust Company
Easton & Co.
Equitable Bank, National Association
Equity Securities Trading Co., Inc.
Ernst & Co.
Essex Company
FKT—First National Bank of Louisville
Fiduciary Trust Company of Boston
First American Bank, N.A.
First Chicago-Underwriting
First City, Texas-Houston, National Association
First Interstate Bank of Oklahoma City
First Interstate Bank of Oregon, N.A.
First Interstate Bank of Washington
First Kentucky Trust Company (The)
First Manhattan Co.
First National Bank and Trust Company of
Tulsa (The)
First National Bank of Colorado Springs (The)
First National Bank of Omaha
First National in Palm Beach, a Division of
Southeast Bank, N.A.
First of Michigan Corporation
First Southwest Company
First Trust Corporation
First Union National Bank
First Union National Bank of Florida
First Wachovia Bank and Trust
First Wachovia Brokerage Service Corporation
First Wisconsin National Bank of Madison

First Wisconsin Trust Company
Fleet National Bank
Florida National Bank
Fort Wayne National Bank
Freeman Securities Company, Inc.
Frost National Bank
Fundamental Corporate Bond Brokers, Inc.
Gruss (Oscar) & Son Incorporated
Hanifen, Imhoff Inc.
Imperial Trust Company
Indiana National Bank (The)
Investors Bank and Trust Company
Josephthal & Co. Incorporated
Kenny (J.J.) Drake, Inc.
Key Trust Company
King (C.L.) & Associates Inc.
Larkin (Emmet A.) & Co., Inc.
Lawrence (C.J.), Morgan Grenfell, Inc.
Liberty National Bank and Trust Company of
Louisville
Lloyds Bank Plc
M&I Marshall & Ilsley Bank
Marine Trust Company, N.A.
Mellon Bank (East) N.A.
Mercantile—Safe Deposit and Trust Company
Mercantile Trust Co.
Mercantile Trust Company National Association
Michigan National Bank—Grand Rapids
Morgan, Olmstead, Kennedy & Gardner,
Incorporated
Murphey Favre, Inc.
NCNB Texas National Bank
National Bank of Washington (The)
New Jersey National Bank
Offerman & Co., Inc.
Old Kent Bank and Trust Company
RAF Financial Corporation
Ragen MacKenzie Incorporated
Republic National Bank of New York
Rhode Island Hospital Trust National Bank
Riggs National Bank of Washington, D.C. (The)
Robb, Peck, McCooley Clearing Corporation
Ryan Beck & Co.
SLS Securities Clearance
Savings Banks Trust Company
Schwab (Charles) & Co., Inc.
Seligman Securities, Inc.
Signet Trust Company
Southeast/Palm Beach Capital Securities Inc.
Star Bank, National Association, Cincinnati
Steichen (R.J.) & Company
Stern (M.L.) & Co., Inc.
Stuart-James Company Inc.
Summit Bank
Texas American Bank/Fort Worth National
Association
Texas Commerce Bank National Association
Toronto Dominion Bank (The)—New York
Branch
Trust Services of America, Inc.
Trustcorp Bank, Ohio
Trustcorp Bank, South Bend
U.S. Bank of Washington, N.A.
Union Bank
Union Trust Company
Valley National Bank of Arizona
Valley Trust Company
Wachovia Bank & Trust Company, N.A.
Wedbush Securities, Inc.
Wellington (H.G.) & Co. Inc.

Wheat, First Securities, Inc.
Wheeling Dollar Bank
Williams Securities Group, Inc.
Wilmington Trust Company
Winslow Investment Company
Wyoming National Bank Casper
Ziegler Thrift Trading, Inc.
Zions First National Bank

* These firms are also direct Participants in DTC's
Next-Day Funds Settlement system

** As of December 31, 1989



DTC Stockholders †

American Stock Exchange Clearing Corporation
 American Stock Exchange, Inc.
 AmeriTrust Company
 AmSouth Bank, N.A.
 Amster & Co.
 Arnhold and Bleichroeder (S.), Inc.
 Baer (Julius) Securities Inc.
 Bank of America National Trust and Savings Association
 Bank of Boston Connecticut
 Bank of California (The)
 Bank of Montreal, New York Branch
 Bank of New England, N.A.
 Bank of New York (The)
 Bank of Tokyo Trust Company (The)
 Bank One Trust Company, N.A.
 Bankers Trust Company
 Barclays Bank PLC, New York Branch
 Barnett Banks Trust Company, N.A.
 Bear, Stearns & Co. Inc.
 Boatmen's National Bank of St. Louis (The)
 Boston Safe Deposit and Trust Company
 Brounoff, Claire, & Co., Inc.
 Brown (Alex.) & Sons, Inc.
 Brown Brothers Harriman & Co.
 Cazenove Incorporated
 Central Bank of the South
 Chase Lincoln First Bank, N.A.
 Chase Manhattan Bank, N.A. (The)
 Chemical Bank
 Cincinnati Stock Exchange (The)
 Citibank, N.A.
 Citizens and Southern National Bank (The)
 City National Bank
 Connecticut Bank and Trust Company (The)
 Connecticut National Bank (The)
 Continental Bank, National Association
 County NatWest Securities Corporation USA
 Craigie Incorporated
 Crews & Associates, Inc.
 Denver National Bank
 Dominion Trust Company
 Donaldson, Lufkin & Jenrette Securities Corporation
 Drexel Burnham Lambert Incorporated
 Edwards (A.G.) & Sons, Inc.
 Equitable Bank, National Association
 Execution Services Incorporated
 Fagenson & Co., Inc.
 Fahnestock & Co., Inc.
 Fidelity Bank, National Association
 Fiduciary Trust Company International
 Fiduciary Trust Company of Boston
 First Albany Corporation
 First Bank National Association
 First Boston Corporation (The)
 First City, Texas-Houston, National Association
 First Fidelity Bank, National Association, New Jersey
 First Interstate Bank of California
 First Interstate Bank of Denver, N.A.
 First Interstate Bank of Oregon, N.A.
 First National Bank and Trust Company of Tulsa (The)
 First National Bank of Boston (The)
 First National Bank of Chicago (The)
 First National Bank of Colorado Springs (The)
 First National Bank of Maryland (The)
 First Tennessee Bank N.A. Memphis
 First Trust Company, Inc.
 Fleet National Bank
 Fort Wayne National Bank
 Frost National Bank
 Goldman, Sachs & Co.
 Gradison & Company Incorporated
 Gruss (Oscar) & Son Incorporated
 Hough (William R.) & Co.
 Huntington National Bank
 IDS Bank & Trust
 Imperial Trust Company
 Investors Bank and Trust Company
 Jesup & Lamont, Incorporated
 Key Trust Company
 LaBranche & Co.
 Lewco Securities Corp.
 MacAllaster Pitfield Mackay, Inc.
 Manufacturers and Traders Trust Company
 Manufacturers Hanover Trust Company
 Marcus Schloss & Co., Inc.
 Marine Midland Bank
 Mayer & Schweitzer, Inc.
 Mellon Bank, N.A.
 Merchants National Bank & Trust Company of Indianapolis
 Merrill Lynch & Co., Inc.
 Michigan National Bank—Grand Rapids
 Midlantic National Bank
 Morgan Guaranty Trust Company of New York
 Morgan Stanley & Co. Incorporated
 NCB National Bank of North Carolina
 NCNB Texas National Bank
 National Association of Securities Dealers, Inc.
 National Bank of Washington (The)
 National City Bank
 National Westminster Bank N.J.
 National Westminster Bank PLC
 National Westminster Bank USA
 New York Stock Exchange, Inc.
 Northern Trust Company (The)
 Norwest Bank Minnesota, National Association
 Oppenheimer & Co., Inc.
 Pforzheimer (Carl H.) & Co.
 Philadelphia National Bank (The)
 Reaves (W.H.) & Co., Inc.
 Rhode Island Hospital Trust National Bank
 SBCI Swiss Bank Corporation Investment Banking Inc.
 Salomon Brothers Inc
 Santa Barbara Bank & Trust
 Sanwa Bank California
 Scott & Stringfellow, Inc.
 Seattle-Northwest Securities Corporation
 Securities Settlement Corporation
 Security Pacific National Bank
 Security Trust Company, N.A.
 Shawmut Bank of Boston, N.A.
 Shearson Lehman Hutton Special Securities Inc.
 Smith New Court, Carl Marks Inc.
 Sovran Bank, N.A.
 Star Bank, National Association, Cincinnati
 State Street Bank and Trust Company
 Stock Clearing Corporation
 Stock Yards Bank and Trust Company
 Swiss American Securities Inc.
 Swiss Bank Corporation New York Branch
 Texas American Bank/Fort Worth National Association
 Texas Commerce Bank National Association
 Thomson McKinnon Securities Inc.
 Timber Hill Inc.
 Trust Company Bank
 United Missouri Bank of Kansas City, N.A.
 United States Trust Company of New York
 Valley National Bank of Arizona
 Van Kampen Merritt Inc.
 Wachovia Bank & Trust Company, N.A.
 Waterhouse Securities Inc.
 Wechsler & Krumholz, Inc.
 Wells Fargo Bank, National Association
 Wilmington Trust Company
 Wood Gundy Corp.
 Zions First National Bank

† As of December 31, 1989



The Depository Trust Company
 55 Water Street, New York, NY 10041
 (212) 898-1200