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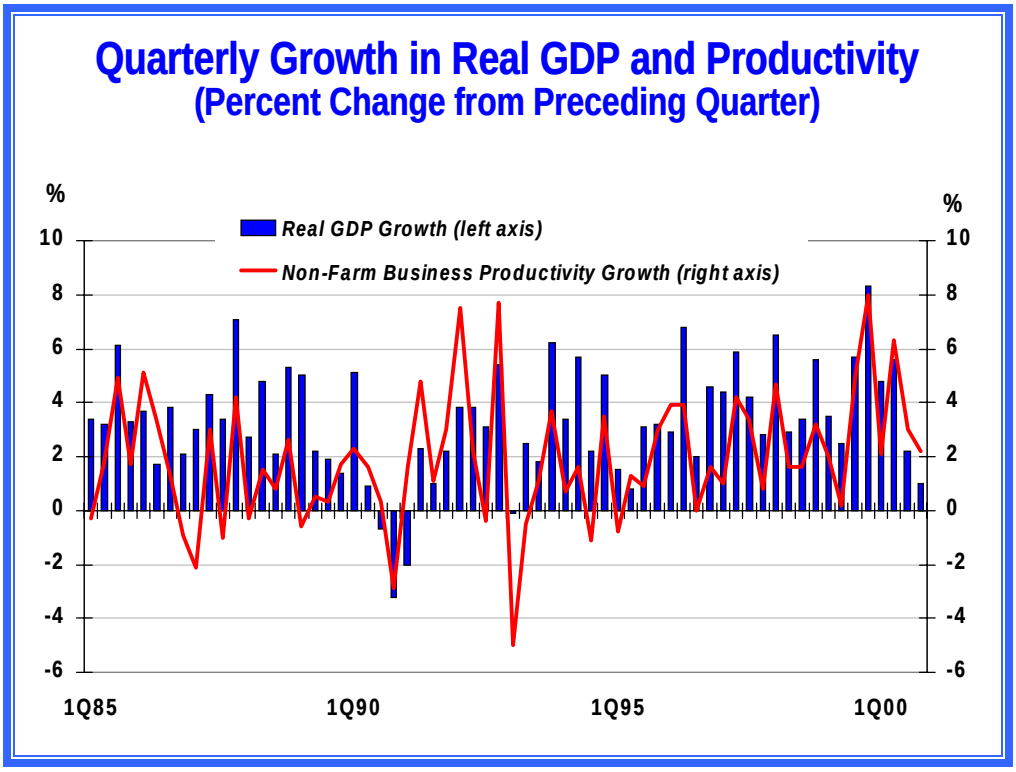
THE AGING OF THE NEW ECONOMY[1]

Summary

The belief that the US economy could sustain, perhaps indefinitely, above trend growth without igniting inflation is central to the "New Economy". A pick up in productivity, powered by a wave of invention and innovation, was seen as the principal driver of this expansion. However, productivity growth is slowing, as expected, in an economic downturn. While the productivity slowdown may be deeper and more prolonged than most anticipate across the course of this year, this does not preclude longer-term benefits of on-going, profound structural changes in the US economy. The productivity cycle, like the business cycle, is not dead, but it is likely to have greater amplitude, overshooting on the downside as it did on the upside of the expansion. The following provides an overview of the critical issues of the productivity debate, such as measurement problems, and some of the supports and impediments to a restoration of above trend growth in productivity.



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Introduction

The "New Economy" has carried different meanings for different people, including some who have long questioned whether there is a "new economy" at all. Slumping US economic activity and the slide of equity markets firmly into bear territory in 1Q 2001 have led many more to question its central tenets. Now, shorn of many flawed claims, it is easier to define and perhaps to assess the New Economy and where it is headed.

Adherents claimed that the remarkable performance of the US economy in the 1990's was evidence of a "paradigm shift": that profound structural changes had transformed fundamental economic relationships and a "new economy" had emerged. Specifically, the idea was that the US economy could sustain real economic growth in excess of 2.5% per annum, with unemployment rates below 5.5%, without fueling inflation. For the last decade this held true. This unprecedented length characterized the current expansion, along with low inflation and low unemployment. The US economy also showed: strong growth in real GDP growth, particularly in the last five years, and real GDP per capita; higher profitability; higher rates of investment, and a pick up in productivity.[2] These trends were self-reinforcing (and some thought indefinitely self-sustaining) and a virtuous circle helped heighten the amplitude of the business cycle.

Detractors of the New Economy pointed to growing imbalances on the current account of the balance of payments and on private sector balance sheets of both households and corporations.[3] From their view, what was remarkable about this expansion was a sustained boom in investment combined with a deep slump in savings. Some saw the New Economy as little more than a traditional "investment boom and bust" or in the case of inflated equity markets a classic "bubble and burst"[4]. The current expansion, while the longest on record, was not the strongest. Growth since 1991 has averaged 3.7% p.a., only 0.2% faster than the postwar average. What has been unusually high has been growth of private expenditure growth, which has averaged 4.6% and risen continuously relative to income over this period. Net savings has been moving ever more deeply into negative territory, with the gap filled by borrowing. Americans invested more than they saved, spent more than they earned and financed the shortfall with record levels of debt. Greater availability of credit, relaxed lending standards and reduced borrowing inhibitions were fueled by overly optimistic assumptions about future profits and an uninterrupted expansion. Eventually, overinvestment reduces the return on capital, confidence erodes and asset prices stop climbing. When they do, public overreaction, now on the downside, takes over as firms and households find themselves financially overextended. This begets the flip side of the virtuous circle: a negative feedback mechanism, which drives us to below trend growth until these imbalances are corrected.

Is there a New Economy? The consensus answer remains "Yes-in some respects"[5]. However, this conditional response begs further questions, which will be addressed below, including, principally: can higher productivity growth be restored?

The Slowdown in Productivity Growth

Higher productivity growth is seen as the principal reason for both our past good fortune and key to our short-term and long-term prospects. This higher productivity stemmed, in part, from various structural changes, such as increased globalization and attendant, heightened international competition, profound demographic shifts and equally dramatic changes in governance. But no reasons are more prominently cited than increase in capital intensity and the impact of technological innovations of recent decades, which reached broad dissemination and began to bear fruit in the mid-1990's. Stephen Oliner and Daniel Sichel of the Federal Reserve, for example, found that productivity resulting from information and communications technology (ICT) was gaining throughout the whole economy, as opposed to being unique to the hardware sector.[6] Even new applications in biotechnology, materials technology and nanotechnology, which are likely to be of rising significance in sustaining longer-term productivity growth, have been given less notice. It has been a revolution in ICT, which has arrived first and most profoundly and been

credited with a significant part of the increase in productivity growth.

> *"In judging an economy's prospects what is the most important measure? Growth in GDP? Inflation? The size of the budget surplus? The level of the stock market? None of the above. Far more important is growth in productivity, which is crucial in itself and which affects all of these things and more. The surge in productivity in recent years has been a key element in America's virtuous circle. Faster growth in productivity allowed faster growth in GDP with low inflation. This, in turn, boosted profits and share prices and encouraged more investment, which lifted productivity." --- "Productivity, profits and promises: Will America's "new economy" survive the downturn?" The Economist, February 10, 2001, p.22-23.*
>
> *"Crucial to the assessment of the outlook and the understanding of recent policy actions is the role of technological change and productivity in shaping near-term cyclical forces as well as long-term sustainable growth. The prospects for sustaining strong advances in the years ahead remain favorable. As one would expect, productivity growth has slowed along with the economy" --- Testimony of Chairman Alan Greenspan, Federal Reserve Board's semiannual monetary policy report to the Congress, February 13, 2001, p.2.*

Whether or not this credit was justified has been the subject of a number of studies. Robert J. Gordon of Northwestern U. concluded that "the impressive acceleration of productivity growth, 1.02% percentage points at an annual rate between 1995:4-1999:1 can be explained by three factors:" (1) ***remeasurement*** - changes in the measurement of GDP deflators; (2) ***the normal procyclical response*** of productivity, accelerating when output grows faster than trend, and; (3) an explosion in output and productivity in the 1.2% of the economy devoted to the production of ***computers*** and peripherals. He saw no evidence of "true structural" acceleration of productivity not explained by these three factors.[7]

The response was wide ranging. Organizational efficiencies arising at the firm and industry level were cited, in part because of how rapidly new entrants "competed away" excess profits as barriers to entry declined. Industry economists revived Solow's (1987) criticism that productivity increases were everywhere evident except in the productivity statistics. They saw a preponderance of microeconomic evidence of an acceleration of structural change in "hard to measure" industries such as services, in particular financial services, insurance and real estate. This was evident in industries engage extensively in the use (rather than the production) of innovations in ICT.[8] The measurement problem was not new and could be addressed and new measures applied to see whether ICT "advances in the last decade had brought about a sea-change in productivity growth."[9] William Nordhaus of Yale set out to do that in three papers for the NBER devoted to the measurement of productivity and productivity growth.[10]

Nordhaus developed alternative measures, looking at value-added, input-output and multifactor productivity data. He developed productivity data for total and business sector output and distinguished between industries that were "well measured"[11] and those that were not, such as construction, government and, of course, all services. He found a major acceleration in productivity in the period 1996-98 relative to the 1978-95 period for all three definitions. The rebound was 1.2% for total GDP, 1.8% for business sector and 2.1% for well-measured output. He also found that productivity growth in the "new economy sectors" (machinery, electrical equipment, telecommunications, software—which collectively grew from 3% to 9% of GDP in the three year period) made a significant contribution to economy-wide productivity growth, accounting for 0.65 percentage points of the 1.82% increase for business sector measure. "After removing the direct effects of new economy sectors, the productivity acceleration was 0.54% for GDP, 0.65% for business output, and 1.18 % for well measured output. It is clear that the productivity rebound is not narrowly focused in a few new-economy sectors."[12]

The Outlook for Productivity Growth

Extending the data to include 1999 and the first half 2000, the peak of productivity growth, as well as the ongoing decline from 5.3% (yoy) in 2Q 2000 to 3.4% in 4Q 2000 would help refine these measurements and resolve the central debate: whether these productivity gains dissipate as they disseminate further and whether the economy's potential for long-term expansion has changed. On this Nordhaus and others remain agnostic. Nordhaus does compare the current period to productivity accelerations that occurred in early 1960's, early 1970's and early 1980's, but draws no conclusions given the relatively short length of the data set used. Gordon[13] in a more recent paper remains deeply skeptical. Although conceding that US productivity has improved in recent years, he takes a historical perspective to argue that the contributions of computers and the Internet to long-term improvements in productivity and living standards are incremental compared to the cluster of inventions that fundamentally changed the economy and society at the turn of the previous century.

We believe Gordon's judgment to be premature. Further advances and still broader dissemination of ICT have occurred in the past two years and should continue to do so in the coming years[14], even with the dampening procyclical effects becoming evident during the current downturn. This procyclical effect could well be more pronounced than expected, as negative asymmetries (the negative impact on productivity of declining economic growth is stronger than the positive effects during an expansion) could be amplified and concentrated. Examples of how this asymmetry could be magnified may be in the shorter periods in the inventory adjustment cycle, largely as a result of application of ICT and improved business-to-business communication, anticipated by the Fed in coming months to shorten the length of the downturn. Thus far this does not appear to be the case as a sudden plunge in expectations and activity at year-end caught many unprepared and led to a greater than anticipated inventory overhang.

Production cutbacks were delayed and not immediately accompanied by comparable levels of layoffs, as employers expected only a short downturn in demand growth and feared difficulties in rehiring in a tight labor market. When output and capital spending cuts began in earnest in December, layoff announcements jumped, but actual payroll reductions were slower to materialize.

As productivity growth inevitably continues to slow with the economy in the first half of this year, some overreaction should be anticipated. Productivity will also be slowed by the impact of sharp reductions in profitability and slower growth of investment. Earnings expectations, which were positive at the start of the year, have collapsed and should shrink further. Currently earnings for S&P 500 companies are expected to fall 7.2% in the first quarter (compared to the same period a year ago) and 2.7% in the second quarter[15]. Further out estimates, while still positive, continue to slip, reflecting shorter horizons on corporate advisories, less guidance and greater uncertainty. While this has already led to cuts in capital spending plans, more are anticipated. Thus far access to capital markets has not been a constraint to investment spending for business as a whole, although certain sectors are clearly barred. While equity underwriting has fallen precipitously in 1Q 2001, debt underwritings have picked up the slack and a commercial bank credit "crunch" has materialized in only selected loan markets.

While the near term outlook for productivity growth looks bleaker, the long-term trends appear more encouraging. We expect productivity growth to decline further this year before recovering in the third quarter. The decline could be more extended if the hoped for U-shaped recovery of the economy fails to materialize by year-end. However, the ability and willingness to supply additional monetary stimulus, in the form of further interest rate cuts in the near-term and significant fiscal stimulus in the medium-term should mitigate the economic downturn and limit the deceleration in productivity growth. The record levels of private sector indebtedness are not thought to produce a significant "drag" on prospects for a recovery. Although debt levels are high, debt service burdens are not, given access to refinancing and low and declining rates of interest. While it is recognized that monetary policy might well be "behind the curve" and that

it may have reduced efficacy compared to past cycles, compensating adjustments are expected and this too should not be an impediment to a resumption of productivity growth.

However, if a prolonged recession ensues, leading to a more severe "market break" and a more rapid unwinding of imbalances on private sector balance sheets and the balance of payments, then longer-term prospects for productivity growth could well be impaired. As we mentioned above, other "waves" of scientific inventions and technological innovations are still on the horizon and adequate risk capital and risk-taking behavior will be need to foster these developments. In this regard, it must be remembered that to have a sustained impact on productivity, a "sea-change" in productivity growth, the ***rate*** of new product and new technology introductions must be greater than in the past, not just their number.[16] As the economy grows, an ever-larger number of new products and applications (and/or greater deployment of recent "waves") are required just to keep the productivity growth rate constant. If true, we need to monitor "clusterings" of innovations that may arrive sequentially and measure them on a logarithmic rather than arithmetic scale.

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FOOTNOTES

[1]The foregoing piece was in part the subject of a panel discussion, "The New Economy", presented at the 49th Annual Securities Industry Institute, March 15, 2001, at the Wharton School of the University of Pennsylvania. The panelists included: Jeremy Siegel, Russell E. Palmer Prof. Of Finance at the Wharton School; John Ryding, Senior Economist and Senior Managing Director, Bear Stearns & Co., Inc.; Michael Shamosh, Investment Strategist, Tucker Anthony Inc., and; the author as moderator. Although the author gratefully acknowledges the valuable contributions by the esteemed economists on the panel, the views expressed herein are solely those of the author.

[2]Steven J. Landenfield and Barbara M. Fraumeni, "Measuring the New Economy", Bureau of Economic Analysis, Advisory Committee Meeting, May 5, 2000.

[3]Frank A. Fernandez, "Razor Edge Adjustment: Prospects for a Soft Landing" SIA Research Reports, November 30, 2000.

[4]Robert J. Shiller, "The Fed Can't Prop Up Falling Markets", Wall Street Journal, March 15, 2001.

[5]OECD, "Is There A New Economy? First Report on the OECD Growth Project, Paris, June 2000.

[6]Stephen D. Oliner and Daniel E. Sichel, "The Resurgence of Growth in the Late 1990's: Is Information Technology the Story?" March 2000, see http://www.federalreserve.gov/pubs/feds/2000/index.html.

[7]Robert J. Gordon, "Has the "New Economy" Rendered the Productivity Slowdown Obsolete? Northwestern University and NBER, Revised Version, June 14, 1999.

[8]Jack E. Triplett, "Economic Statistics, the New Economy, and the Productivity Slowdown", Brookings Institution, prepared for Business Economics, January 1999. He found four industrial sectors—financial services, wholesale trade, misc. equipment renting and leasing, and business services—accounted for over 40% of computer investment (adding two more sectors—insurance and communications—raised the share to 50%) showed evidence of dramatic productivity improvement but measured productivity declined.

[9]The Economist, "Another look at productivity", February 10, 2001, p.78.

[10]William D. Nordhaus, "Alternative Methods for Measuring Productivity Growth", "New Data and Output Concepts for Understanding Productivity Trends", and "Productivity Growth and the New Economy", The last was, NBER Working Paper 8096, January 2001.

[11]Agriculture, forestry, fishing, mining, manufacturing, transportation, public utilities and wholesale and retail trade.

[12]Op.cit. 3.

[13]Robert J. Gordon, "Does The "New Economy" Measure Up to the Great Inventions of the Past?", NBER Working Paper No. 7833.

[14]National Intelligence Council, "Global Trends 2015: A Dialogue About the Future With Nongovernment Experts", December 2000.

[15]Thompson Financial/First Call.

[16]Op.cit 2.

ACHIEVING CROSS-BORDER TRADE PROCESSING GOALS

Part 1: The Status of Cross-Border Clearing and Settlement

With the international appetite for foreign investment tripling every three years[1], improving cross-border trade processing has become one of the industry's top priorities. In addition, multi-national market structure developments encourage a focus on cross-border back office functions, since these processes are key to the success of any trading platform. As such, the market's initial focus on the efficacy of domestic clearing and settlement systems has rapidly developed into the current demand for innovations on the cross-border clearing and settlement front. The fervor is justified, since cross-border clearing and settlement systems currently in place do not effectively mitigate the risks and costs associated with cross-border trading. While clearing and settlement consolidation has begun in certain regions – particularly Europe – more decisive measures are necessary to realize any widespread effects.

To clarify and comment on these issues, SIA is presenting a two-part report. This month's installment provides a sketch of the current cross-border clearing and settlement universe in terms of recent developments and enduring obstacles (particularly in Europe). This will set the stage for next month's discussion of potential solutions.

I. A Challenge to the Industry

There are multiple impediments to cross-border trading. First, clearing and settling such a trade costs upwards of ten times the cost of domestic clearing and settlement[2]. Secondly, the cross-border post-trade process introduces foreign exchange risk and legal risk, in terms of discordant national regulatory approaches. Additionally, counterparty risk is increased due to both the presence of intermediaries and the discrepancies in regulatory approach across borders.[3] Finally, the lack of global conventions in settlement cycles and messaging protocol

CROSS-BORDER CLEARING AND SETTLEMENT BASICS

From the most simplistic standpoint, clearing and settlement encompasses everything that happens to a trade from the moment a price is agreed upon at a trading venue to the time when securities and cash are placed in the care of a trading entity's custodian. Brief descriptions of the elements of this process follow:

1. Trade Confirmation

After the price for a trade has been agreed upon on a trading platform, instructions are created for clearing and settlement. The first step is to confirm the quantity of securities changing hands and the price for the transaction. Any electronic trading platform will do this automatically, submitting "locked-in" or "matched" trades to the clearing entity. All other marketplaces will either compare manually written trades at the venue and submit "locked-in" trades to clearing entities or utilize a matching service provided by the clearing entity.

2. Clearing

The clearing process summarizes and finalizes the obligations of each party for settlement. The interface between trade counter-parties and a clearinghouse is either direct – if the firm involved is a member of the clearinghouse – or via a correspondent clearer, in which case the counter-party utilizes the services of a clearinghouse member. Positions for each clearing member are computed by the clearing system, either on a gross basis (i.e., trade for trade), or through netting. Settlement instructions are then issued based on the calculated positions.

3. Novation

Increasingly, the clearing process involves novation[1], in which a third party becomes the buyer to all sellers and the seller to all buyers. In some clearing and settlement systems, the central counterparty (CCP) is the exchange itself, while in other systems the service is provided by a clearinghouse.

complicate the process even further and introduce the risk of trade failure. Cross-border settlement is based on the settlement date, (as opposed to the trade date as in domestic settlement), and since settlement cycles vary across borders, there is no predictable schedule for the process and deadlines are agreed upon to suit the situation. The messaging protocols used to communicate trade confirmations and settlement instructions across borders are yet to be rationalized. Although widely-used protocols like ISTIC, FIX, and S.W.I.F.T.[4] have begun to achieve dominance, there is no single convention for global connectivity. Both of these factors introduce a much greater possibility of failure for trades involving foreign counterparties; it is estimated that 15-16% of all cross-border trades fail.[5]

Nevertheless, there has been a surging interest in foreign investment. Americans currently have over $4 trillion invested in foreign securities – three times the amount invested in 1990.[6] Although the National Securities Clearing Corporation (NSCC) has established linkages with a handful of foreign settlement entities in order to facilitate this activity, U.S. investors remain predominantly dependent on traditional cross-border clearing and settlement channels (see insert for a description of these channels). Regional cross-border trading has also skyrocketed, most notably in Europe, where this trend has been facilitated by a great deal of recent market innovation. Continued growth of foreign investment and the success of any cross-border trading initiatives will rest largely on the efficiency of associated clearing and settlement processes. An illustration of the validity of this statement can be found in U.S. market history; the clearing and settlement consolidation of the mid-70s[7] was critical to the success of the National Market System.

The global securities industry is attempting to rise to the challenges of cross-border trading. Solutions to the various problems associated with cross-border clearing and settlement are being proposed and developed at national, regional, and global levels. Some examples include the Global Straight Through Processing Association (GSTPA) and Omgeo, a joint venture of

4. Settlement

Cleared positions are "settled" when the funds and securities change hands. Traditionally, this occurred bilaterally and involved paper certificates, but the development of Central Securities Depositories (CSDs) (essentially, repositories for stock certificates) allows for the dematerialization of securities, and facilitates book-entry settlement. The CSD adjusts customer accounts to reflect new positions and issues instructions to the selected custodian bank for the transfer of funds. In order to minimize counter-party risk, many CSDs now settle on a delivery-versus-payment (DVP) basis, ensuring simultaneous transaction. This process is finalized three days after the trade (T+3) in the U.S., although the market is preparing to move to T+1.

5. Custody

Major banks with membership in the CSDs act as custodians for investors, ensuring the safekeeping of securities. Custodian banks also perform various administrative services – such as monitoring dividend payments and corporate actions – and securities lending services.

Cross-Border Channels

In a cross-border environment, the performance of these functions spans nations and may be coordinated by one or more intermediaries. There are various channels for the clearing and settlement of trades across borders, which are briefly described below:

1. CSD to CSD

It is relatively common for CSDs to build bilateral links to facilitate cross-border settlement between two markets without the involvement of external intermediaries for their members. However, cross-border costs and risks remain higher than they would be for domestic settlement or cross-border settlement utilizing an internationally shared settlement entity.

2. Local Agent

Non-resident counter-parties often employ a local agent or custodian bank with membership in the local CSD to facilitate cross-border settlement.

Depository Trust & Clearing Corporation (DTCC) and Thomson Financial, both of which are currently working on the creation of competing global connectivity solutions. In addition, the DTCC recently hosted an international conference for Central Counterparties (CCPs) to create a strategy for global CCP solutions. The European Union's Economic and Finance Ministers also recently appointed the "Committee of Wise Men" to draft a plan for Regulation of the European Union. Each of these efforts, and any other efforts that address some portion of the global challenge, will be examined in next month's article.

The following sections outline current cross-border clearing and settlement scenarios by region, noting any attempted regional solutions.

II. Focus on Europe

Europeans are trading more in general, and more across borders in particular. The increase in cross-border activity is a function of a growing but still nascent equity culture[8], the emergence of Pan-European trading platforms, and the introduction of the euro. To support this trend, European securities markets must address the tangled web of their cross-border back-office processes. This brings us to the current scenario. The European market's first priority is now the development of a cross-border clearing and settlement infrastructure incorporating synchronized cycles, rationalized regulations, a central counterparty, and fully linked settlement. In their White Paper on CCP Consolidation, the DTCC says of the European situation: "as these markets integrate and grow across the nations of Europe, what has been a costly inconvenience is becoming a critical impediment to further development." Attesting to the urgency of the challenge, nearly every European and international body with a finger in the clearing and settlement pie has issued a paper, held a conference, or made a statement regarding the issue.

3. Global Custodian

Similarly, if non-resident counter-parties trade in multiple locales, they will employ a global custodian – such as Citibank, Deutsche Bank, Paribas, etc. – with membership in multiple CSDs worldwide. Global custodian networks consist of local branches and sub-custodians in any location its customers might want to trade and settle, providing a "one-stop" service for international settlement instructions. Premier global custodians typically offer an array of account management services to complement settlement services.

4. International CSDs (ICSDs)

The ICSDs (Euroclear and Clearstream – originally developed for the settlement of Eurobonds) have developed linkages with CSDs all over Europe. There is also a bridge between Euroclear and Clearstream. The ICSDs have built an infrastructure for cross-border settlement in Europe and act as a single point of entry for their participants in all eligible securities. Trades submitted by a member (or a domestic clearinghouse acting on behalf of the member) will settle via:

- book-entry transfer if the counter-parties are both ICSD members
- linkage to the CSD in which the counter-party is member
- across the ICSD Bridge (Euroclear to Clearstream) if the counter-party is a member of the other ICSD

Alternatively, a trading entity may hold direct membership in a foreign CSD.

FOOTNOTE:

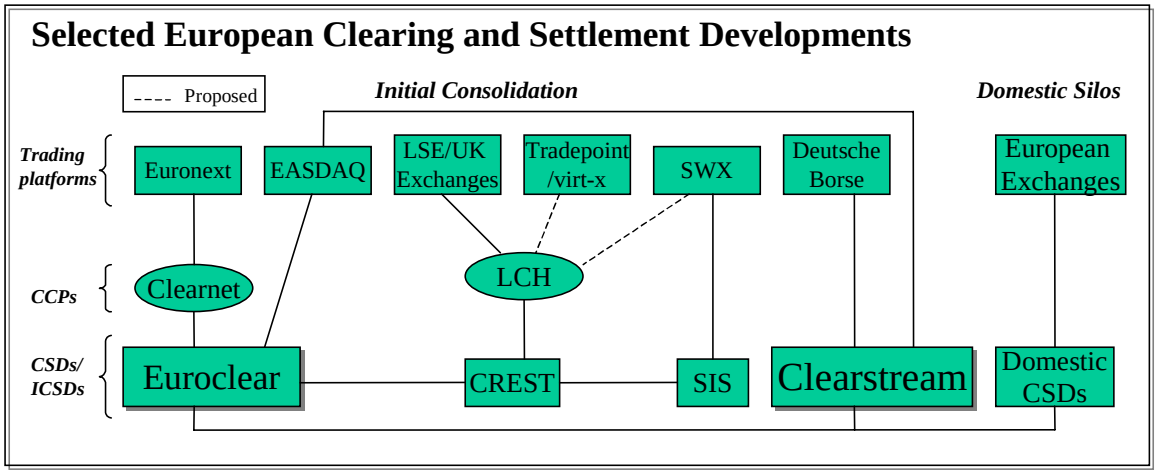
[1] Some argue that true, legally binding novation, in which the interposed party assumes full liability, occurs only in the U.S., and that CCPs in Europe and elsewhere do not offer the same legal guarantees.

Despite acknowledgement of the need for consolidation in Europe, a true Pan-European effort has yet to emerge. Operational, legal, and financial constraints combined with lingering preference for independent national systems impede the development of such an initiative. Nevertheless, as we will see, a number of individual players have been motivated to ally on smaller scales, thus beginning the process of coalescence in both the clearing and the settlement spaces. This activity has served to intensify the debates regarding the ideal model for European cross-border clearing and settlement.

Two ideal Pan-European settlement structures have been suggested, based on 'hub', or central settlement agency, and 'network', or multilaterally linked settlement agencies, market models. In the clearing space, the ultimate goal is widely agreed upon: a single central counterparty serving all of Europe (and, some would advocate, the entire world). Current consolidation efforts reflect these end-goals to a certain extent, although they only provide the benefits associated with back-office alignment in very limited contexts.

The first wave of back-office coordination in Europe involved the linkage of national Central Securities Depositories (CSDs); this strategy facilitates direct channel settlement and minimizes intermediaries. The linkage trend was in full force a decade ago: as soon as European securities markets developed domestic, vertically efficient clearing and settlement systems, these began to link among themselves. And in 1997, the European CSD Association (ECSDA) was formed for the promotion of a "spaghetti network" (bilateral links between multiple CSDs) for cross-border equities settlement. ECSDA urged – and did help to foster – the creation of a number of CSD-to-CSD linkages based on a common model. Current initiatives take this trend one step further by merging CSDs to create entities that are fully shared by multiple securities markets. Mergers bring the cross-border clearing and settlement cost and risk threshold down a few more notches.

There has traditionally been less cross-border cooperation on the clearing side. The first priority of most European markets with regard to clearing is the development of netting functions and domestic CCPs. Most European markets have yet to fully achieve this goal. Exceptions include France, whose Clearnet system acted as CCP for French derivatives since 1986 and for equities since 1990. In the U.K., London Clearing House has been acting as CCP for LIFFE[9] and the Tradepoint marketplace, and just rolled out CCP service for the London Stock Exchange. Having accomplished the establishment of domestic CCPs, these markets are beginning to consider and implement CCP consolidation schemes.



The current wave of coordination involves more significant consolidation among European clearing and settlement bodies (see graphic for an illustration). The most notable efforts involve the two International Central Securities Depositories (ICSDs – see insert for a definition), Euroclear and Clearstream (previously Cedel). Originally created to handle the settlement of Eurobonds, Euroclear and Clearstream are – through mergers and linkages to additional CSDs – expanding the range of instruments and markets in which they provide service, and beginning to live up to their potential for effective international settlement service.

Euroclear

The merger of the Paris Bourse, Amsterdam and Brussels Exchanges in the fall of 2000 created Euronext, a single market for all instruments listed at the original exchanges utilizing the French trading platform. To make the merged entity meaningful, the three markets have also begun integrating their back office systems. The first step taken was to consolidate clearing operations in Clearnet, the French system, which will act as CCP for all trades made through Euronext. This system feeds into Euroclear France, a settlement entity created through the merger of Sicovam (the original French CSD) and Euroclear. For the time being, settlement instructions can also be directed to Nicegef and CIK, the CSDs of the Amsterdam and Brussels Exchanges, although these bodies are also planning to merge into Euroclear.

Euroclear is now the primary CSD for three markets, as well as an ICSD offering settlement services to its individual members (see insert for description). Euroclear's strategy is to become – either on its own or as a partner to Clearstream – the "hub" for European settlement, and will presumably be attempting to merge with additional domestic CSDs.

Clearstream

Created from a merger of Cedel and Deutsche Borse Clearing, Clearstream operates in Luxembourg (Cedel's old headquarters) in the service of its individual members and in Frankfurt, where it performs clearing and settlement functions for Deutsche Borse. Settlement is currently done on a trade by trade basis, with plans in place for the implementation of netting and DVP settlement.

Clearstream is owned 50/50 by Deutsch Borse and Cedel International. Its development model is based on expectations of expanding this shared structure to other domestic CSDs. Clearstream favors a network approach to consolidated European settlement, with individual CSDs operating on a shared system with shared standards.

The relationship between the ICSDs is still crystallizing. The possibility of a merger has been discussed, but at this time, the ICSDs have different visions of the future of European cross-border settlement: Euroclear has advocated a "hub" approach, while Clearstream still says it favors a "network" approach. (These models will be further discussed in next month's article.)

The Settlement Network

A new entrant to the competition for European dominance is The Settlement Network, a recent (2000) innovation of CREST and SIS (SegaIntersettle, Switzerland's clearing and settlement powerhouse). The two CSDs have agreed to act as conduits to each others' markets, passing instructions through from one CSD to any markets in which the partner has a presence. In addition, the system will utilize Intersettle, a network of global custodians created by the Swiss banks. The Network is an example of the emergence of a new model created to compete with ICSDs for the elusive goal of Pan-European settlement.

Aside from these aspirants for dominance, intimations at consolidation are to be found elsewhere in Europe, as well. In Italy, the self-contained Borsa Italiana system has made a gesture to Clearstream, while Monte Titoli, the domestic CSD, and Clearstream have just exchanged stakes in each other.

Meanwhile, Pan-European exchanges are tapping into and building upon existing infrastructures out of necessity (as they have no domestic structures to rely on). Virt-x, the recent venture of

Tradepoint Consortium and the Swiss Stock Exchange, will eventually use LCH as a CCP, and Euroclear, CREST, and SIS (the Swiss CSD) for settlement. EASDAQ, a multiple market maker system for blue-chip stocks, also had to throw its stake in with existing entities. Originally, the system used an off-the-shelf matching system, TRAX, to confirm trades made over the phone based on the quotations displayed by its system. The information fed directly into Intersettle for settlement via global custodians. In response to participant demands, EASDAQ switched to Euroclear and what was then Cedel.

EASDAQ's entire design is about to change, however, since it is being acquired by Nasdaq and renamed Nasdaq Europe (see press releases of March 28th). Nasdaq Europe will initially continue to use Euroclear and Clearstream, but plans to establish its own Pan-European clearing and settlement system in Phase 2 of its development. The system will feature a central counterparty solution provided by DTCC with optional multilateral netting through novation. Various CSDs and the ICSDs will be linked to the system for settlement. Jiway, a Pan-European trading platform, also steps in as CCP for trades made on its system, and employs links to CSDs and global custodians for settlement. With enough liquidity, such systems can shift from dependence on external links to internal settlement between customer accounts.

All of the consolidations described here represent small to mid-scale clustering, in which a few vertically integrated domestic systems (or "silos") group together or otherwise connect. In many of these cases, the reduced costs of settling via shared platforms and/or direct links are reflected in lower fees and slightly mitigated risks. However, there are still multiple silos – and multiple intermediaries – on the scene.

The situation in Europe is, therefore, far less than ideal. Settlement links and partial consolidation may address immediate needs for cross-border settlement, but do not resolve the long-term problems inherent to a decentralized structure. Cross-border settlement costs are still far too high, both in terms of cost per trade and the cost of failures due to inefficient cross-border settlement structures. Risk of failure remains high, due to the lack of connectivity and settlement cycle conventions, and the involvement of multiple and non-standardized intermediaries. It is generally estimated that full-scale netting of cross-border European trades would reduce settlement instructions by one-half to one-third[10], thereby greatly reducing associated risks. In terms of capacity, local systems and bilateral links are not likely to withstand the types of volume increases currently being projected. Finally, the absence of a single point of entry and a shared set of standards may be deterring trading across a variety of European markets. Proposed solutions to these dilemmas will be examined in April's article.

III. The Rest of the World

Outside of Europe, cross-border clearing and settlement innovation is an ideal but not an urgent priority. Nothing as dramatic as a regional currency has developed elsewhere in the world, and the boundaries separating domestic markets have not blurred to the extent they have in Europe.

Asia

Asia presents a much more stable cross-border scenario than Europe, in that domestic markets remain somewhat isolated. Top tier Asian markets – such as the Tokyo Stock, Osaka Securities, Hong Kong Stock and Singapore Stock Exchanges – have succeeded in building efficient domestic silos complete with sophisticated clearing and settlement systems and CCP service. These systems are much more insular than their European counterparts **in** terms of foreign investment and market structure. Elsewhere in Asia, development of efficient domestic systems has yet to occur and remains the top priority in clearing and settlement, precluding any international considerations. Nevertheless, the idea of an Asian regional CCP and settlement hub has been introduced, and will be discussed further in next month's article.

The Americas

The United States continues to be a leader in back office processing, having long ago created common clearing and settlement entities for all equities markets. The consolidation process is about to progress further, with the incorporation of Emerging Markets Clearing Corporation (EMCC) and Government Securities Clearing Corporation (GSCC) into DTCC. The DTCC has bilateral links to many American markets, including Canada, Brazil, and Peru, with more in the pipeline.

In Latin America, Argentina, Brazil, and Mexico have developed domestic systems with CCPs. Again, as in Asia, the silo structure is not as much of an issue in this region. If further consolidation occurs, the U.S. may play a leadership role. This consideration will be addressed next month.

To conclude, the process of developing efficient domestic systems – the prime focus of long-ago commissions and White Papers – is nearing completion in the world's major markets. The challenge to integrate and meet cross-border trading demands now looms very large on the horizon. Attempts to meet this challenge have already begun in Europe, although the uneven progress means that current solutions are partial. The regionally and globally-coordinated scenarios being presented by numerous interested parties will be held up against this context in Achieving Cross-Border Trade Processing Goals Part 2: Proposed Solutions.

Mariya Rosberg
Consultant, Research Department

FOOTNOTES:

[1]KPMG Peat Marwick, "Global Straight Through Processing: Is it an Example of Archimedes Lever?" for the GSTP Association

[2]Angelique van Engelen, Editor, Europe, Netrisk, "Jiway – Will LSE Op Risks Prevent Cross-Border Settlement Solution?" November, 2000

[3]For a more complete discussion of cross-border clearing and settlement risks, see the Bank for International Settlement's (BIS) *Cross-Border Securities Settlements*, 1995.

[4]ISTIC format is used by buy side firms to communicate settlement and delivery instructions to custodian banks; FIX format is used to communicate trade details between investment firms and broker-dealers; S.W.I.F.T. is an industry owned world-wide provider of messaging services to banks, broker-dealers, investment managers and others.

[5]Global Investment Technology, "Messaging Standards Continue to be Key to T+1 as Industry Falls in Tune with Market Realities," March 19, 2001

[6]Jill Considine, Keynote address to Fifth Conference of CSDs, 1999

[7]In 1975, cross-market activity among regional exchanges and across instruments increased dramatically in the U.S. At that time, separate clearing houses supported the different U.S. regional trading venues, creating a situation in which cross-market trading involved multiple intermediaries – adding to both the cost and the risk of inter-market trading. After an SEC cost-benefit analysis touting the benefits of consolidation – and a good deal of protest and effort on the industry's part – the disparate entities consolidated. In 1979, the centralized clearing functions performed by NSCC saved market participants about $13 million.

[8]European trading has been growing at rates of 30-40%; note also that 10% of cross-border trades in Europe are retail (this is especially impressive in a region where until recently only a very small portion of domestic trades have been retail).

[9]London International Financial Futures and Options Exchange

[10]BTA Consulting, Presentation to the European Financial Markets Convention 2000.

SELIGMAN ADVISORY COMMITTEE ON MARKET INFORMATION: MEETING THREE

Note: This meeting overview is not meant to be an actual transcript of the meeting, and therefore does not reflect direct quotes from participants. For background on the formation of this Committee, as well as a short summary from the first and second meetings, please see the Appendix following this article.

Summary of Third Meeting

There were several questions on the agenda for the March 1, 2001 meeting at the SEC. The first question was, "What market information should vendors and broker/dealers be required to provide to customers?" The second question was, "How should market information be consolidated?" The third question was, "How should the consolidators be governed?" The fourth question was, "How should user fees be determined and revenues allocated among plan participants?" There was not quite enough time left to address the last question fully. This meeting was to be used to discuss reforming the current market data system.

First, Dean Seligman announced his intention to follow a "judicial model" in writing up the recommendations. This model involves circulating drafts of the document in a "round robin" fashion. Advisory committee members can comment on the draft. If members disagree with the final draft, it will be noted in the document. It was announced that Professor Donald Langevoort will chair the subcommittee on alternative models. The subcommittee will not be able to make any decisions, but will rather decide the right questions to be asking, and consider the costs, risks, benefits, and the magnitude of risks associated with various systems. Annette Nazareth of the SEC then commented on the Amicus brief filed in the Reuters case brought by OPRA. The issue was whether the fact that the vendor was disseminating last sale and quote information only for the market that had the dominant volume for the prior month was consistent with Display Rule 11A. The SEC said no, the information from all markets should be displayed.

What market information should vendors and broker/dealers be required to provide to customers?

The discussion points given to the participants by Dean Seligman on this issue were the following:

A. We could recommend retaining the current Display Rule requirements.

B. We could recommend increasing or reducing the minimum level of information that must be provided to customers under the Display Rule.

C. We could recommend eliminating the Display Rule, and relying solely on broker/dealers' best execution obligations and current demand to determine the appropriate level for market information.

D. With respect to the provision of market information beyond the mandatory minimum, we could recommend that (1) it should be left relatively free from regulation or (2) any additional information should be provided in a consolidated format.

One buy-side representative said that displaying the NBBO is certainly insufficient. They require five levels of price to be displayed. Limit orders can be aggregated at the 10,000 or 20,000 share level. The other buy side representatives agreed with this point of view.

An exchange representative said that they are not in the display business, and some exchanges are beginning to publish their limit order display books. He said that a minimum level of information should be mandated, i.e. the NBBO and last sale data, and let everyone compete on providing the rest of the information. An online brokerage representative agreed with this position. Another exchange representative noted that it costs more to receive all of the information, so it shouldn't be mandated that customers pay for it. Another online brokerage representative thought that the impact of decimals may require that more information be available, but at the same time, he was concerned with mandating leading to information overload. Others were also concerned with the impact of decimals.

A professor made the point that there must be a distinction between what must be available to customers and what must be given to customers.

A vendor argued that the display rule should be eliminated, and that customers should choose what they want to buy. A market-maker firm representative argued that it doesn't make sense to try to figure out what to mandate before it is figured out how the fees would work. An SEC representative said that some level of mandate makes sense, so that decisions are not being made for those investors by vendors. Others were concerned that mandating information would lead to the need to revise regulation constantly, and that the regulation would stifle incentive.

With regard to how mandated information should be increased if it were to be increased, suggestions included: the high and low price of the day and the last five minutes of trading information, the whole book, some aggregation of limit orders. It appeared that most of the participants favored some level of mandate, but that there was a split between those who wanted to mandate just NBBO and last sale, versus mandating more.

How should market information be consolidated?

The discussion points given to the participants by Dean Seligman on this issue were the following:

A. We could recommend retaining the current model, with SIAC and Nasdaq acting as consolidators of market information pursuant to joint SRO plans.

B. We could recommend retaining the existing joint SRO Plans, but making the exclusive consolidation function subject to active competitive bidding at the end of each contract term.

C. We could recommend dissolving the joint SRO Plans and having each exchange and the NASD file a separate transaction reporting plan, but retaining an exclusive consolidator of market information that would be selected through competitive bidding.

D. We could recommend placing the obligation to provide market information to the exclusive consolidator on entities other than, or in addition to, the SROs (e.g., market makers and ECNs).

E. At the same time, we could recommend allowing markets to make available their information separately, subject to the mandatory consolidation requirements of Section I.

The idea of multiple competing consolidators was taken off the table purely for the purposes of this meeting. Dean Seligman assured participants that that issue would be discussed in detail at a subsequent meeting. Therefore, the first question that arose was whether or not SIAC's position should be up for competitive bidding periodically. On the whole, representatives of exchanges thought that SIAC has done a great job, and that from an efficiency standpoint, not much would be gained by introducing competitive bidding. Another exchange representative made the point that the Plan participants would be free to choose someone else, but that SIAC's fees are modest, $7 million for the consolidation service, and that SIAC has not had any systems outages since performing the service. Some were concerned that periodic switching of consolidators cold be disruptive.

One ECN representative, however, voiced an opinion in favor of competitive bidding. A vendor representative agreed with him, as did the representative of a market maker firm and two representatives of buy-side firms. A professor agreed with competitive bidding, and also made the point that it would be worthwhile to make sure that the consolidator has an "arm's length" relationship from Plan participants in terms of ownership. Several other participants who are in favor of multiple competing consolidators were in favor of neither option. It was not clear which opinion, for or against competitive bidding, had the majority.

Next, there was a discussion about whether or not the joint SRO Plans should be dissolved. A participant from the buy side was concerned that there would be no oversight to the consolidation process if the Plan were to be dissolved. Another buy side representative agreed that there is value in having a single entity oversee the process. The representative of a market maker wondered why

it is necessary to dissolve the Plan if a single consolidator is going to be retained. The representative of an ECN wanted to keep the Plan as a contingency in case competition in the form of multiple consolidators does not emerge. Others who favored multiple competing consolidators, such as the representative of a large online brokerage, feel that the Plan is unnecessary. On the whole, it did not appear that there was a majority in favor of dissolving the Plan.

Finally, there was a discussion about whether or not ECNs and other market centers besides SROs should be allowed to provide their data directly to the consolidator, instead of going through the SRO. The representative of a buy side firm agreed with an exchange representative, saying that SRO oversight is important in terms of providing data. Other buy side representatives agreed that there should be no special mechanism for ECNs to provide data, as they are basically acting as brokers. If one allows ECNs to do that, then brokers should be allowed to do the same. One exchange representative argued that the functions of the SRO would get watered down. Another exchange representative argued that ECNs should not be able to do that if it continues to use that SROs market execution and display facilities. An online brokerage firm representative argued that such a decision should be a function of the bargain struck between an SRO and its members. One ECN representative argued that ECNs should be able to participate directly. However, that was the minority opinion – most thought that the current rules should be retained.

How should consolidators be governed?

The discussion points given to the participants by Dean Seligman on this issue were the following:

A. We could recommend that the existing composition and voting requirements of the Operating Committees be retained.

B. We could recommend that the composition of the Operating Committees, or other Plan committees, be broadened to include representatives of other constituencies (e.g., vendors, broker/dealers, public investors).

C. We could recommend that the voting requirements of the Operating Committees be modified (e.g., permitting Plans to be amended with a majority or two-thirds vote).

D. Our recommendations on governance should ensure that new market entrants are admitted to the Plans on fair and reasonable terms.

One buy side representative argued that there should be broader representation in the Plans, and that one participant shouldn't have veto power. An online brokerage firm representative agreed, saying that if the Plan is governing a utility, then representation should be as broad as possible. However, an exchange representative argued that attention is being paid to the wrong vehicle. Key decisions are not made at the Plan level, but at the Board level. There was agreement among quite a few participants that there could be a non-voting advisory committee, comprised of broker/dealers and others, who would act as "informed outsiders" to the Plan. When asked about the voting structure of the Plan, many participants felt that they were not sure how to answer that question without knowing the history of Plan votes or how revenues from market data would be allocated. One exchange representative said that there had only been one veto in the history of the Plan.

How should user fees be determined and revenues allocated among Plan participants?

The discussion points given to the participants by Dean Seligman on this issue were the following:

A. We could recommend that the existing mechanisms for determining user fees and allocating revenues among the SRO participants be retained.

B. If participation in Plan governance is broadened, we could recommend primary reliance on this governance process to set fees and allocate revenues, with backdrop SEC oversight.

C. We could recommend a more precise standard for evaluating the fairness and reasonableness of fees (e.g., a cost-based limit with specifications of appropriate costs) and for distributing market information

revenues (e.g., to fund more fully certain SRO functions).

D. We could recommend that each entity providing information to the central processor be permitted to negotiate fees for its market information directly and separately with the exclusive consolidator, subject only to backstop SEC oversight. (Our recommendations should include a discussion of the market power the larger market centers will have, and the ways in which pricing abuses can be avoided.)

Dean Seligman acknowledged that there was not enough time left in the day to address the question of fees and revenues in full, but that it would be addressed in great detail at the April 12 meeting. Robert Colby of the SEC commented that it was necessary to identify which costs of data consolidation should be paid for, and which parts of SRO operation should be paid for. In order to ensure the widest possible use of data, low fees are needed. In the time that was left, the representative of a market maker firm made the point that the cost-based approach outlined by the SEC in its original concept release on market data was going to be too big a job for the SEC. The representatives of two exchanges agreed that it was necessary to think twice before racheting up the SEC's role in fee determination, and that fees could still be hard to agree on. It became clear that there was very little or no support among participants for the cost-based approach, as Annette Nazareth acknowledged in a subsequent Dow Jones press release.[1]

Appendix

Background of the Formation of the Committee

On July 25, 2000, the SEC announced the establishment a federal advisory committee to assist it in evaluating issues relating to the public availability of market information in the equities and options markets. The Advisory Committee on Market Information has a broad mandate to explore both fundamental matters, such as the benefits of price transparency and consolidated market information, and practical issues such as the most effective methods of consolidating market data. Joel Seligman, Dean of the Washington University School of Law in St. Louis, chairs the Committee.

Summary of First Meeting

The agenda for the first meeting on October 10, 2000 at the SEC was first to have an overview of the three current market data plans, and then discuss 1) the value of transparency to the markets, and 2) the merits of providing consolidated information. Everyone agreed on the theoretical value of transparency to the markets, but many complained that transparency is poorly defined and means different things to different kinds of market participants. As for consolidation, there was disagreement about whether any information consolidation should be mandated, whether participants should instead compete on that basis, or some combination of the two. There was also disagreement about whether the position of consolidator should be a for-profit or non-profit utility. Many agreed about the necessity of at least displaying last sale information and NBBO.

Summary of Second Meeting

The central question posed for the second meeting on December 14, 2000 at the SEC was, "Should the Committee proceed to attempt to develop an alternative model for disseminating market information, in addition to exploring ways to improve the existing model? Or should we focus solely on improving the existing model?" The plan was to review five alternative models that had been sent to Dean Seligman, have the SEC staff make some general comments about what they are looking for in an ideal model, and then to discuss whether or not to consider alternative models at all. It was decided that alternative models would be considered after ways to fix the current system were considered.

Judith L. Chase
Vice President and Director, Securities Research

FOOTNOTE:

[1]Judith Burns, "SEC Sees Light At End Of Market Data Debate Tunnel," *Dow Jones Newswires*, March 5, 2001.

MONTHLY STATISTICAL REVIEW

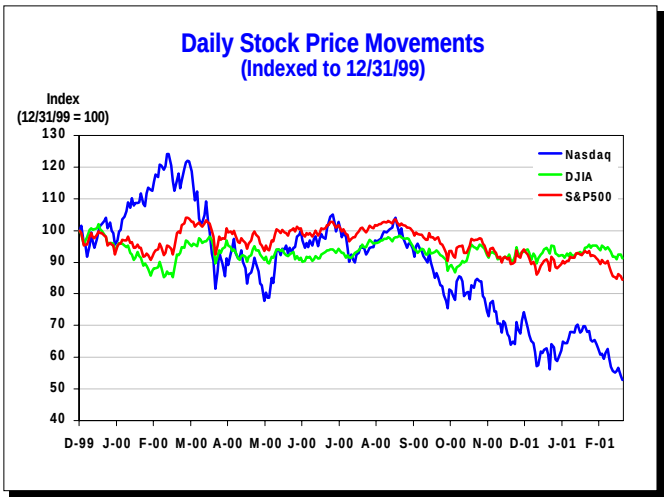
U.S. Equity Market Activity

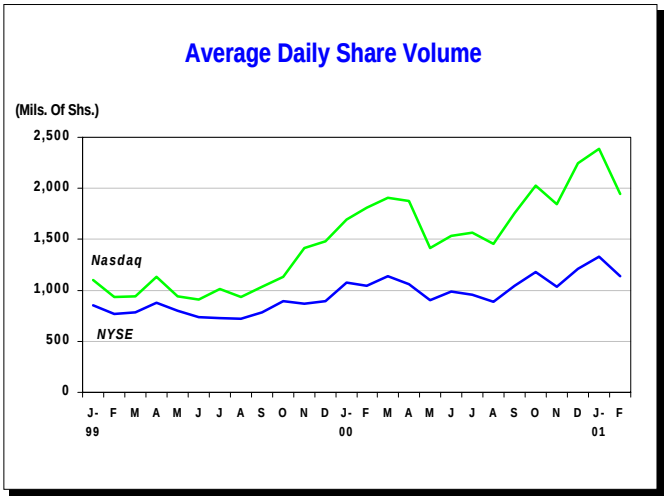
Stock Prices - Widespread worries over a rapidly deteriorating earnings outlook, slow economic growth and higher inflation sent stocks reeling in February. The Nasdaq Composite closed out February with a 22.4% decline - the third worst ever after a 27.2% plunge in the October 1987 stock market crash and a 22.9% drop in November 2000. The sell-off pushed down the Nasdaq index to 2,151.83 by month end, its lowest close since December 1998, thus wiping out Nasdaq's amazing gains of 1999 and 2000. The broader-based market suffered as well, as the S&P 500 dropped 9.2% in February, its largest monthly setback in 2-½ years. Meanwhile, the Dow Jones Industrial Average fell 3.6% to finish at 10,495.28.

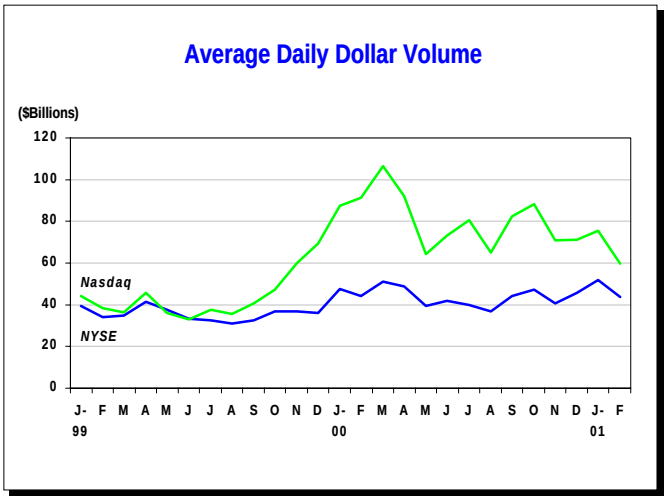
The Nasdaq Composite was down 12.9% for 2001 through February and was 57.4% off its record set last March. The S&P 500 descended 6.1% since the start of the year and 18.8% below its peak. The Dow Jones Industrials shed 2.7% this year through February and has fallen 10.5% from its record set last January. Stock prices continued to spiral downward in March as "March madness" gripped the market.

Share Volume - Trading on the major U.S. equity markets in February subsided from January's record levels yet remained respectable. On the NYSE, 1.14 billion shares traded daily in February, 14% short of January's average. Nasdaq's average daily volume of 1.95 billion shares in February was 18% below January's record 2.39 billion shares changing hands daily.

Despite the slowdown in trading during February, volume on both Nasdaq and the NYSE year-to-date remain well above last year's record levels. At 2.18 billion shares daily YTD through February, volume on Nasdaq is 24% higher than 2000's 1.76 billion average, while NYSE daily volume of 1.24 billion shares year-to-date is 19% above last year's 1.04 million daily average.



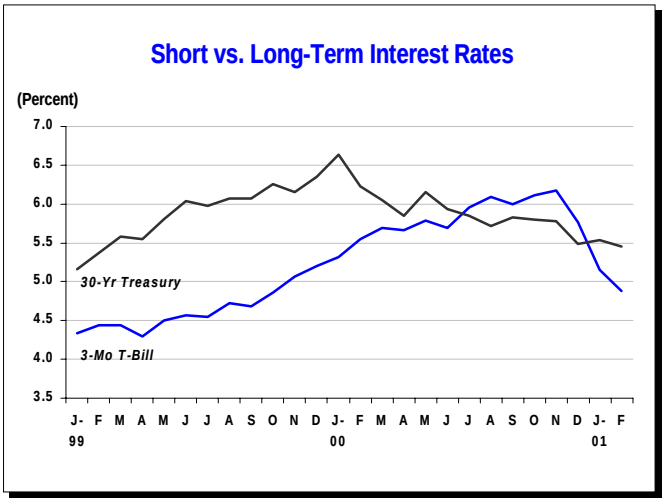




Dollar Volume - Reduced trading activity and lower share prices in February dragged down dollar volumes on both the NYSE and Nasdaq. With the average price of Nasdaq stocks sinking to a two-year low of $30.66, Nasdaq's average daily dollar volume dropped 21% from $75.6 billion in January to $59.7 billion daily in February. This pushed the year-to-date value of daily trading on Nasdaq down to $68.1 billion, a 16% decline from 2000's $80.9 billion daily average.

Average daily dollar volume in NYSE stocks fell 16% from January's level to $43.8 billion in February. Even so, the year-to-date value of trading on the NYSE, at $48.2 billion daily, is up 10% from 2000's $43.9 billion daily average.

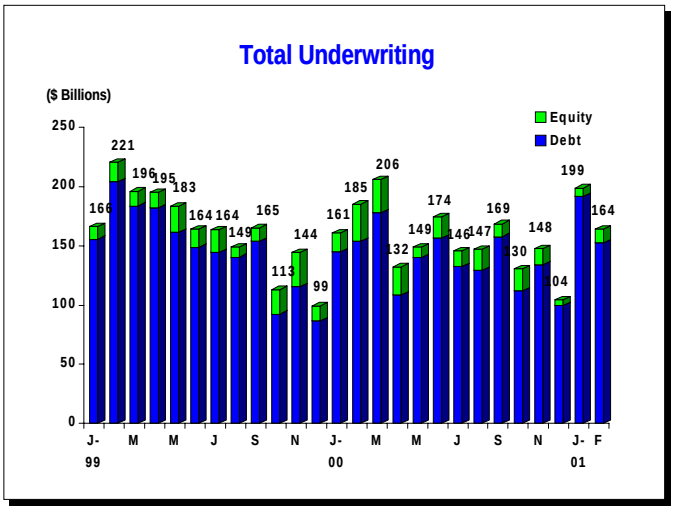
Interest Rates – Treasury prices rose as nervous investors moved money out of stocks and sought the safety of government securities. The yield on 3-month Treasury bills slid 27 basis points from January's average to 4.88% in February. It was the first time that the yield closed below the 5% level since October 1999. A rally in 30-year Treasuries pushed down the yield 9 basis points to 5.45% in February.

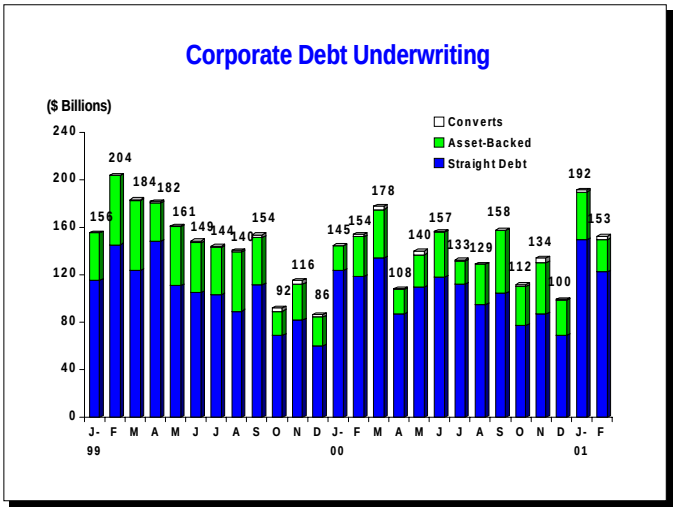


U.S. Underwriting Activity

Total Underwriting – Underwriting activity of debt and equity in the U.S. market slowed in February due to a cutback in debt offerings. Dollar proceeds slid 17% from January's elevated level to $164.1 billion in February. Nevertheless, dollar volume is running ahead of last year's pace, as issuance stood at $363.0 billion year-to-date compared with $345.8 billion in 2000. However, the number of deals completed so far this year, at 2,157, was down 14% from the 2,496 deals offered during the corresponding period last year.

Debt Offerings – Domestic underwriting of straight corporate bonds decreased 18% from January's monthly record $149.6 billion to $122.5 billion in February. Although down from January, February's activity was still relatively strong and well above 2000's monthly average of $103 billion. Year-to-date, $272.2 billion was raised via straight corporate bond underwriting, 12% above the amount raised in last year's comparable period.





Despite a 33% plunge in asset-backed bond issuance in February to $27.0 billion from $40.4 billion in January, dollar proceeds year-to-date are up 25% compared to the same period last year.

New offerings of convertible securities climbed from $1.5 billion in January to $3.1 billion in February, which boosted the year-to-date total to $4.6 billion, more than double the amount raised in 2000's like period.

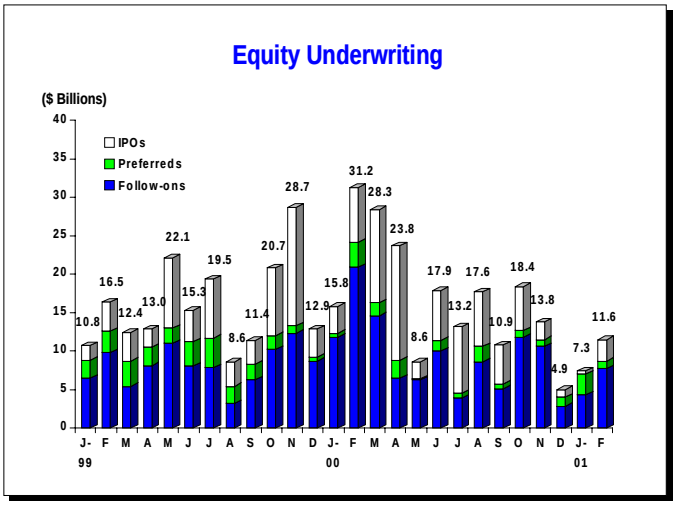
A further interest rate reduction by the Fed in March, and expectations of future rate cuts, should lead to an enhanced calendar of debt deals.

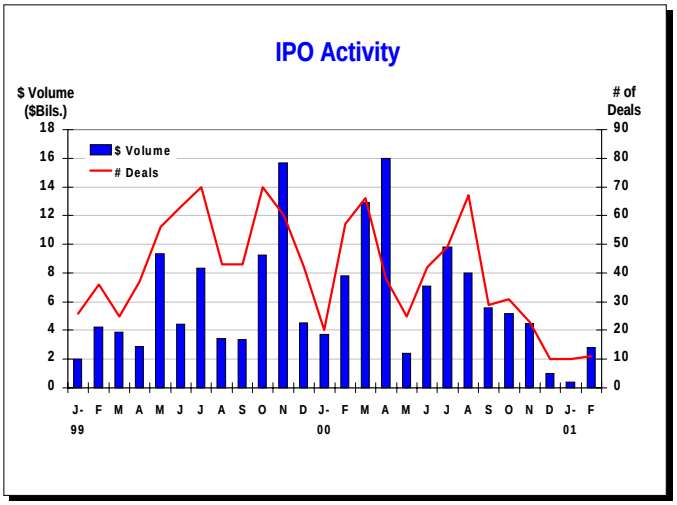
Equity Underwriting – Common and preferred stock issuance jumped 59% to $11.6 billion in February from $7.3 billion in January. Even with the increased issuance, overall equity volume of $18.9 billion year-to-date was 60% below the $47.0 billion raised a year ago.

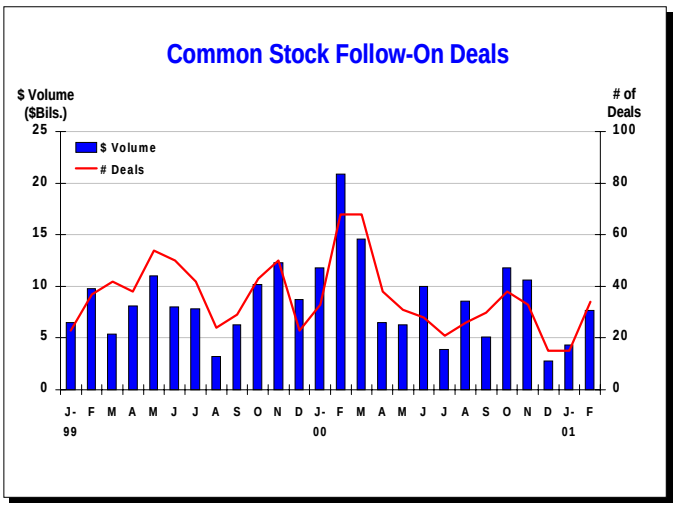
After tumbling to a mere $0.4 billion in January, the amount raised via initial public offerings surged to $2.8 billion in February. However, KPMG Consulting's $2 billion deal accounted for over 70% of the total, masking the still sluggish deal volume. So far this year, 21 companies raised $3.2 billion in the IPO market. By contrast, 76 companies raised $10.6 billion in the same period a year ago. With the recent rash of withdrawn deals, it is unlikely that the IPO market will bounce back anytime soon.

Follow-on offerings soared 79% from $4.3 billion in January to $7.7 billion in February. The number of secondary deals more than doubled to 34 in February from 15 deals in January. Even so, year-to-date, follow-on offerings of $12.0 billion are running 63% below the $32.7 billion offered in the comparable year-earlier period.

Grace Toto
Assistant Vice President and Director, Statistics







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