

**EUROPEAN FINANCIAL MARKET INTEGRATION:
THE PROBLEM OF CLEARANCE AND SETTLEMENTS**

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The Problem of Clearance and Settlements**

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ABSTRACT

In this paper, the economics of financial market utilities in Europe - notably those involved in the securities clearance and settlements process - are examined in the context of the creation of an efficient, unified pan-European capital market. Various models of cross-border clearance and settlement are considered, with the conclusion that the multiple-access model among national and international transactions utilities and custodians is probably in the best interests of end-users and financial market efficiency.

European Financial Market Integration: Clearance and Settlement Issues

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I. Introduction

In this paper, we examine the barriers posed to European financial market integration by imperfections and frictions relating to the clearance and settlement of equity trades.

In recent years, considerable attention has focused on the potential gains from international portfolio diversification (IPD). Specifically, by buying a wide array of international equities (and other securities) investors can potentially reduce their exposures to both local market risk and local currency risk. This has resulted in a rapid growth of specialized mutual and investment funds (and managers) seeking to maximize the gains from IPD to institutional and individual investors.¹

Reflecting this growth in interest in the potential gains from IPD has been the expansion in cross-border trading in equities. For example, in 1994, the turnover on the London Stock Exchange (SEAQ International) in foreign shares was £671 billion -- an increase of 83% over 1992. Moreover, European equities accounted for £428 billion -- with trading in the French equity sector of £114 billion and the German sector of £95 billion. This compares to turnover of £612 billion in the domestic (sterling) share market.

Much of the focus of IPD (and the asset allocation models underlying investment portfolio decisions) is on the *gross* portfolio return - risk trade-off. As a result, some important costs that affect both the *actual* return and risk of an equity investment are either implicitly or explicitly ignored. Potentially important costs that impact the return-risk matrix -- and that can drive a wedge between gross and net returns (and risks) -- are clearance and settlement costs. In general, the higher are such costs, the more constrained an investor is in achieving his (her) first optimum

¹In recent years, however, a growing body of evidence has pointed to an erosion of IPD benefits with increasing foreign ownership of local equities. Periods of high volatility have shown sharp increases in correlations across equity markets (Solnik, 1993). The impact of the 1994-95 Mexico crisis is one example.

portfolio. Moreover, such costs impose an explicit and implicit tax on trading, and can inhibit both the growth of domestic equity markets and the international or cross-border trade in equities. Potentially at least, costly and inefficient clearance and settlement services could hinder any move towards a pan-European equity market.

In this paper we first examine the economics of clearance and settlement, especially issues relating to the competitive structure of the market for such services. Where relevant, we will use examples from the clearance and settlement "industry" in the European equity market. This is then followed, in Section III, by an examination of the relative importance of the competitive structure of the clearance and settlement industry relative to other clearance and settlement frictions that pose "hidden costs" in the context of European equity market integration. Section IV presents some empirical evidence on settlement efficiency. Section V analyses the impact of greater (lesser) degrees of CSD service integration on different agents (institutions, issuers, investors etc.). Section VI is a summary and conclusion.

II. The Economics of Clearance and Settlement

Clearance and settlement services are rather unique products. *Clearance* involves the determination of what each party owes and is due to receive in an equity trade. *Settlement* involves the actual transfer of securities from the seller to the buyer with an offsetting payment of cash by the buyer to the seller. In most cases, the clearance and settlement organization or depository (hereafter CSD) directly handles the bookkeeping-type clearance function and the securities side of the settlement, while the cash side of settlement is usually effected through the banking/payments system. In many cases, CSDs also provide ancillary services such as corporate

dividend processing and transactions related to corporate events, such as mergers.

A Chain of Services

The very nature of CSD services renders the demand for them a "derived" demand. That is, as the demand for underlying equities expands (contracts) the demand for CSD services expands (contracts). However, restrictions or barriers to CSD services can potentially increase the cost of equity trades, and thus inhibit the demand for the equities themselves. Thus there is a "feedback" effect from CSD efficiency to investor demand for equities, inducing a complementarity between the demand for underlying tradable assets and the demand for CSD services.

The key feature of the clearing-and-settlement value chain is that it involves a sequence of related services of which clearing and settlement is but one element. This chain is illustrated in Figure 1. (For more details see Appendix 2). We can divide these services into three parts that follow one another in roughly chronological order.

Figure 1 Key Services in the Value Chain

The securities transaction business consists of a vertical set of services ranging from the information leading to a trade, through verification and settlement, to credit and custodial services

Pre-settlement services

1. Information and analytical services - e.g., Reuters, Bloomberg, Extel.
2. Trading systems and services - eg., SEAQ, Globex.

Settlement-type services

3. Trade information processing:
 - trade communication
 - matching
 - verification
 - regulatory reporting.
4. Clearance and netting.
5. Settlement: Delivery of good title to securities, whether material or non-material.
6. Payment: Transfer of final funds.
7. No-frills cash and securities depository services.

Agency and ancillary services

8. Essential custodial services - including coupon collection, redemption, global certificate exchanges, tax reporting and withholding tax relief processing, acting on client instructions on exercise of rights and voting
9. Extended custodial services - including accounting and reporting, foreign exchange, sale of rights; information provision on redemption payments, interest rate resets and corporate events
10. Credit and other services, ancillary to settlement, such as money transfer, providing participants with cash or securities lending in order to facilitate failure-free settlement; guarantees of performance; collateralized lending.
11. Fiduciary services: including making discretionary decisions as a trustee, portfolio management, cash management, discretionary short selling and securities lending services for institutional investors
12. Analytical services: performance measurement and comparisons, trend analysis, and on-line access to portfolio valuation and analytics.
13. Agent services provided to issuer: indenture trustees, registrars or ADR issuers, corporate events reporting, and payment, conversion and warrant agents unique to the security concerned.
14. Securities lending services for trading purposes, to meet the needs of broker-dealers implementing short selling trading strategies.

The first group includes pre-settlement services arising from information-gathering and dealing. The second group summarizes settlement-type services, as currently provided by national CSDs and by international ones (ICSDs) such as Euroclear and CEDEL. The third includes agency and other ancillary services closely related to the settlement and payments process. In many ways the third group is the most interesting, for it is the prime investor interface and as such offers the greatest scope for inhibiting or enhancing European financial integration.

Although we find it useful for analytical purposes to divide the transactions sequence into a number of subcategories, this is in a sense artificial – the driver wants a car, not a set of wheels, an engine and a body. Since investors ideally want a seamless *transactions service* that allows them to buy or sell without excessive costs or complications, it could well be the case that the

most successful provider of securities clearance and settlement services in the future will be the one who integrates all the above services under one roof? This indeed is what some of the settlement services' competitors or potential competitors seek to do. A good example is the Chicago Mercantile Exchange, where participants executing a futures or options transaction need not concern themselves with confirmation, delivery, payments clearing, marking-to-market or custodial issues. Some of the major domestic stock exchanges also seek to offer a vertically-integrated set of transactions services from quotation to settlement -- e.g., LSE controls Talisman.

It is thus tempting to think of increased vertical integration as the most logical and economical way for the future development of CSD services. Yet industrial economics seems to suggest the contrary. Most vertically integrated industries do not make sense on pure cost grounds. The firm and the consumer are typically best served if the firm buys from competing suppliers and sells to competing distributors. The chief exceptions are when vertical integration is necessary to wrest control from a monopolistic supplier or monopsonistic buyer, or when economies of *scope* are compelling.

Thus the range of services (or the degree of vertical integration) in national or international CSDs have important implications for the development and growth of national European equity markets, the cross-border trade in such equities, as well as the prospects for a pan-European equities market.

Currently, there are three models of CSD design to be found in the European Union: (1) National CSDs, (2) National CSDs with some international linkages², and (3) Euro-CSDs or

²Equities in the Republic of Ireland constitute a special case. All trades on the Dublin Stock Exchange (approximately 70% of all Irish stock) are cleared through Talisman in London. Thus the U.K. acts as a "mini-hub" for Ireland.

ICSDs such as Euroclear or Cedel.

National-based CSDs currently dominate European equity markets. Thus, Talisman clears and settles the vast bulk (over 99%) of UK equity trades, while Sicovam and Deutscher Kassenverein (KV) provide similar services for French and German shares. The accompanying boxes offer mini-case studies of the German and French clearing systems.

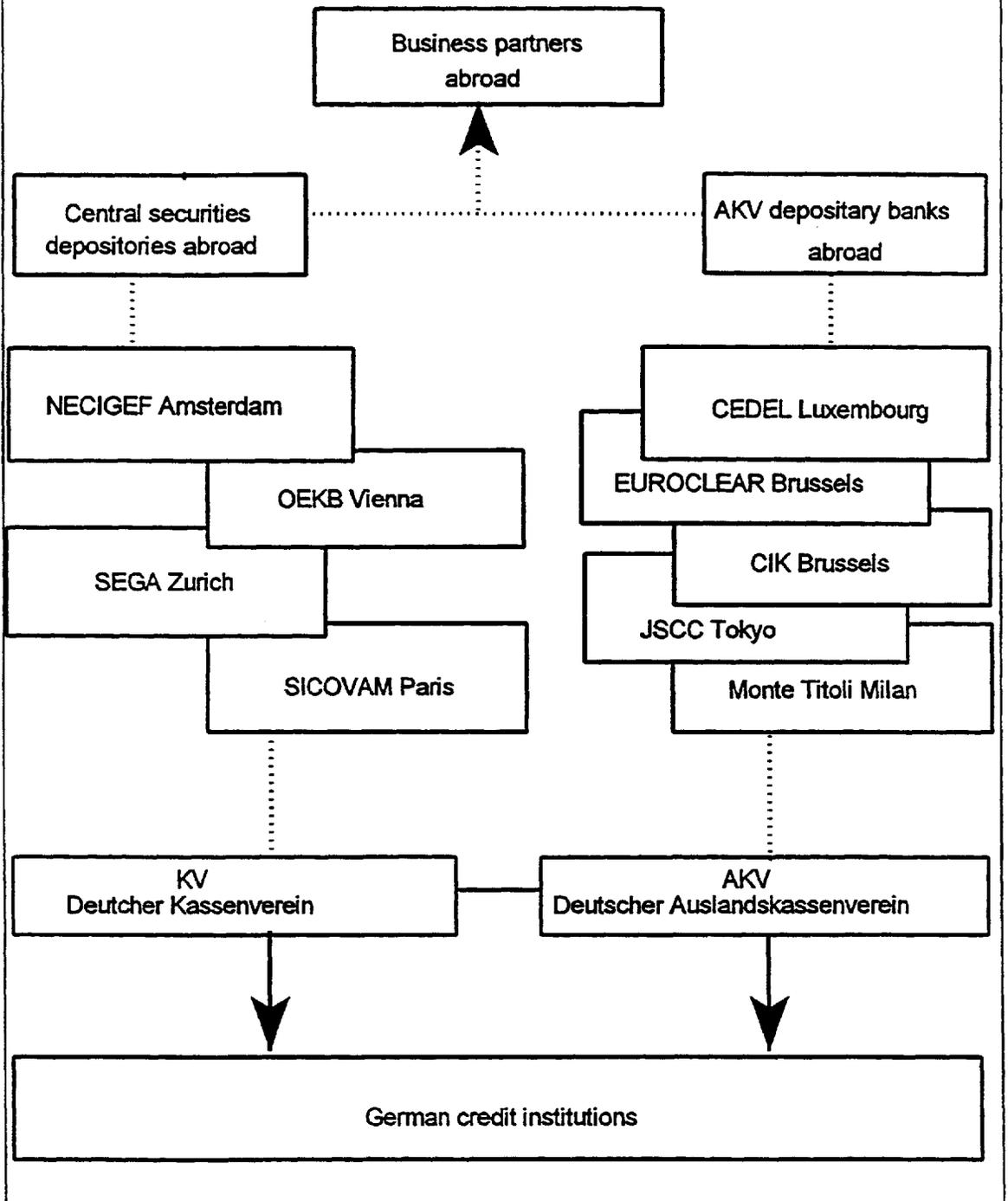
Case Study: The German Clearing System

Deutscher Kassenverein (DKV) is structured as a cooperative, with the owners being system users, and has a close link to the Bundesbank. Its focus has been to maintain state-of-the-art technology and speed³ and low costs for users, while at the same time minimizing operational risks. DKV has developed a number of international link-ups, beginning with the Dutch CSD and including that of Austria, France (Sicovam) Switzerland (SEGA) and the United States (DTC). See Figure 2. These linkages have required reconciling legal as well as operational differences among the national systems. German stocks are held in bearer form. For legal reasons, cross-border trades in equities in Germany are handled by a subsidiary of the KV called Deutscher Auslandskassenverein⁴.

³Settlement occurs in "t+2," that is, two business days after the trade is agreed upon.

⁴As will be discussed later the fact that all Irish shares are cleared through London is in large part a function of their common legal, cultural and economic systems. In short, there is a considerable degree of institutional harmonization already in place.

Figure 2
Structure of Deutscher Kassenverein



Case Study: The French Clearing System

Sicovam in France dates back to work begun in 1942 by the Caisse de Dépôts et de Virements de Titres (CCDVT), with two milestones being implementation of dematerialization in 1984 and DVP under the Relit system in 1991. The CCDVT reforms created both the CSD institutional framework and book-entry accounting of transactions following stock market trades, and was followed by the formation of Sicovam in 1949 as a *société anonyme* under French corporate law, with shareholders being the major financial institutions and stock brokerage firms. Both the Banque de France and the national stock exchange association are represented on its board. Its mandate is to “facilitate the circulation of shares among member institutions.”⁵ The ownership structure of Sicovam means close ownership and board linkages to both the major domestic intermediaries using the system and the principal regulators.

The evolution of Sicovam has meant steady progress toward dematerialization in order to achieve greater accuracy and cost reductions for its members, ultimately resulting in the disappearance of bearer securities. It also meant broadening its range of activities to include oil shares (1957), convertible bonds (1964) open-end mutual fund shares and unlisted shares (1957) and bonds redeemable by lottery (1977).

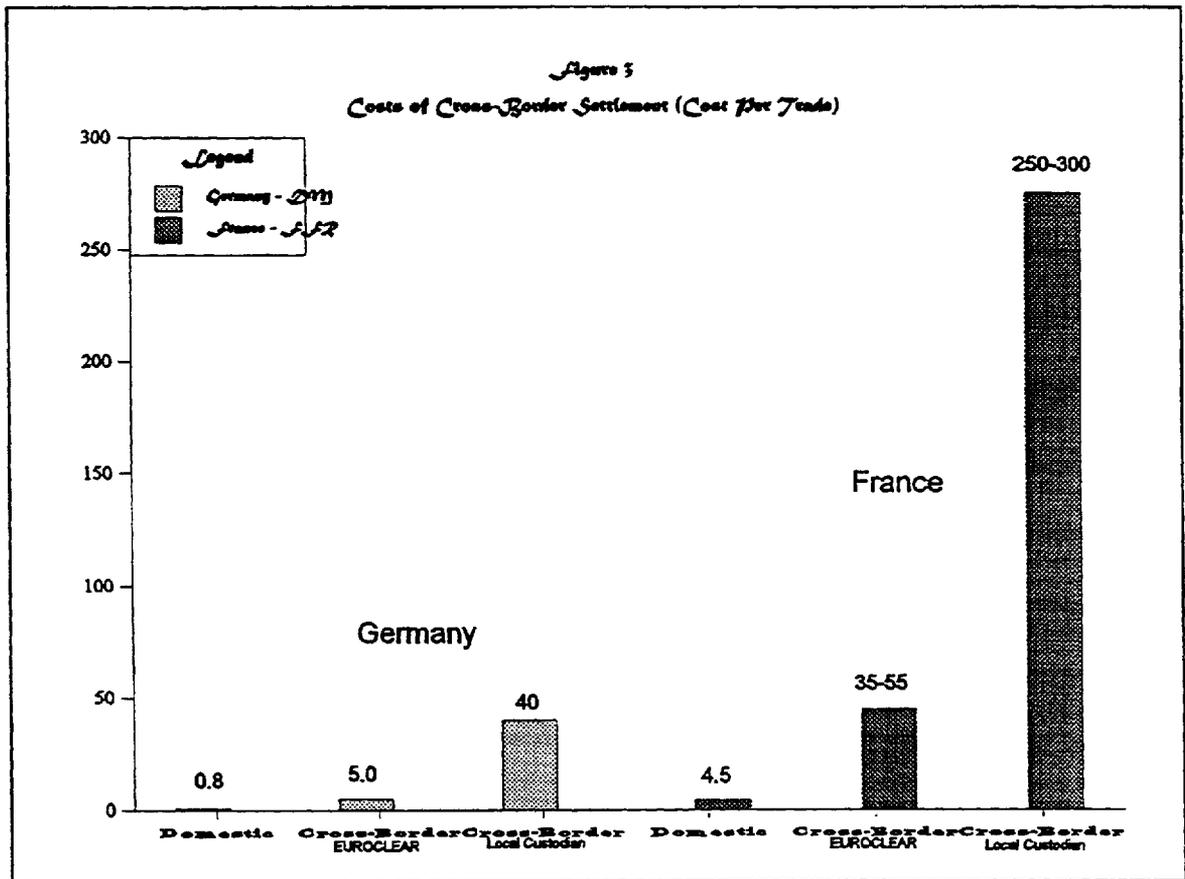
A distinguishing feature of the French approach has been the balanced development of front-office and back-office functions, with back-office reform (dematerialization), followed by front-office reform (creation of Monep and Marif in the derivatives sector and implementation of computerized continuous trading), followed in turn by the Relit initiative involving settlement via simultaneous delivery and payment, adherence to t+5 for all market transactions, and simultaneous processing of securities transactions by Sicovam and payments transactions by the Banque de France. By 1990, therefore, the French clearance and settlements system was already broadly in conformity with the Group of 30 recommendations with the t+3 DVP deadline being implemented in March 1992. “All systems for order routing, trading, settlements, delivery versus payment and management of securities operations are now fully automated and operate virtually in real time.”⁶

The Sicovam approach to operating a CSD means that it has an effective monopoly on clearance, settlement and payments (via the Banque de France) regarding French stock transactions. It is, however, an open system: any firm certified as a credit institution or broker-dealer -- foreign or domestic -- may participate in Sicovam .

⁵Sicovam , *History of France's Depository Institution* (Paris: Editions les Djinn, 1992), p .9.

⁶*Ibid.*, p. 21.

Both the German and French CSDs clear the vast majority of both domestic and international trades. For example, it was noted earlier that trading in French and German stocks on the London stock exchange amounted to £114 billion and £95 billion respectively in 1994. However, while these trades take place in London, clearance and settlement takes place on the local CSDs (in this case Sicovam and the KV). Hence internationalization of equity trading *has not been* mirrored by a general internationalization of the clearance and settlement process in Europe. That is, CSD services have remained predominantly national-based.



Comparing the cost of clearance and settlement in the French and German markets, Figure 3 suggests that the cost of a domestic trade is significantly cheaper in France than in Germany,

but that a cross-border trade vis an ICSD (in this case Euroclear) is more expensive in France than in Germany, while the cost of clearing and settling a cross-border trade via a local custodian is by far the most expensive in both cases, and roughly comparable in France and Germany.

In recent years some limited and tentative moves have been made toward the internationalization of CSD services. The first has been the development of bilateral links (or bridges) between national CSDs.⁷ This has allowed some international trades to settle outside their domestic CSD. Two examples of this development are the links between the German KV and the French Sicovam , and the links between the German KV and the Austrian CSD. The second has been the attempted move by both Euroclear and Cedel into equity clearance and settlement. Both of these competitive international CSDs (ICSDs) have developed expertise and customer networks through clearing Eurobonds. They have attempted to piggy-back on this expertise by offering to settle cross-border European equity trades for their customers as well. Yet, despite the fact that both Euroclear and Cedel can settle trades in over twenty equity markets, the share of their business in cross-border equity settlement remains small (in the 1%-2% range).

Two immediate questions arise. First, is European capital market integration and cross-border trading best served by national CSDs, national CSDs with bilateral links or a single (or a few) European ICSDs or hub(s), e.g., a "Euroclear" or Cedel?⁸ Second, if a European central CSD hub is to be preferred, what are the current barriers to achieving it? In particular, is the

⁷ICSDs such as Cedel and Euroclear have also improved their bridge.

⁸Here the term "Euroclear" is used more generally to imply a European-wide CSD hub that may or may not embody the existing Euroclear organization (including its ownership and membership structure). For example, as noted, the U.K. acts a hub to clear all Irish shares.

major barrier the fact that many European CSDs are owned directly by the local Stock Exchange (e.g., Talisman by the London Stock Exchange) or have strong links to the national central bank (e.g., Sicovam and the Banque de France).

To answer the question of optimality of the organization of European CSDs we have to look at the fundamental industrial economics of CSDs. In particular, as will be argued below, the economics of CSDs seem to favor centralization of services over competition in "like products". That is if UK, French and German equities are "like products" *i.e.*, sufficiently homogeneous financial contracts -- a strong economic welfare case can be made for a single (or few) large ICSDs for European equities.⁹ If European stocks are viewed as heterogeneous or nationally distinct products for a number of legal, regulatory, institutional and currency reasons, then nationally-based CSDs will generally be preferred.

The relative homogeneity/hétérogenéity of European stocks will be examined in detail in the next section. In this section we will assume that European equities are relatively homogeneous financial contracts. We can then examine the advantages of a centralized Euro-hub (monopoly ICSD) over smaller, potentially competing (national) CSDs. However, as the number and type of clearance/settlement and other frictions to Euro-equity trading increase, any relative advantages of a centralized ICSD over national CSDs will fall.

⁹Interstetle is a further development of the Swiss SEGA system intended to create a third ICSD. It involves a cooperative effort among the three large Swiss banks (Crédit Suisse, Swiss Bank Corporation and Union Bank of Switzerland), although each has its own interests and historic ties to either Euroclear or CEDEL. While these divergences may pose some problems, Interstetle may have a systems advantage, being of more recent vintage than the competing systems, together with real-time settlement with the Swiss National Bank. Moreover, there will be no borrowing/netting facilities for securities because the positions of the beneficiaries is unknown. On the other hand, there will be 2-day settlement in spot foreign exchange.

This implies that one cannot examine the efficiency of CSD arrangements independently of the legal, regulatory, institutional and currency environment for trading equities across borders.

The Benefits of an ICSD

There are at least three economic reasons for centralizing CSD services as much as possible. These have been identified by Kyle and Marsh (1993), Giddy, Saunders and Walter (1992) and Economides (1993) among others. Indeed, under certain conditions a centralized (and monopoly) CSD can be shown to be preferable to (smaller) competitive CSDs. Specifically, while a monopolist generally has an incentive to restrict output and raise prices, the benefits of a centralized CSD to a consumer can still dominate the amount the monopolist-CSD operator can expropriate (see Economides (1993) and Economides and Himmelberg (1993)).

The major reason for this relates to the economics of centralized networks and the "critical mass" services they provide. As has been shown for airline networks (Brueckner and Spiller (1991)) a network system with a central hub can provide consumers with considerable positive (beneficial) *externalities*. In the context of CSDs, these take the form of greater market liquidity for equities and a reduction in uncertainty regarding true equity prices. To see the favorable externalities created by a large CSD network, consider the addition of an extra member (e.g., market-maker) to an existing n -member (CSD) network. Suppose that this market maker could be either on the buy or sell side of an equity trade. The addition of an extra member (network node) creates $2n$ additional (demand plus supply) trade connections. That is, each current network member has an additional potential trading partner, increasing the liquidity (market depth) of the

equities traded on the network. Indeed, each member has received a positive externality from the addition of that extra member (and the resulting increase in liquidity) without paying for it. Note that private marginal cost pricing would ignore this benefit, since it takes the form of an "unpriced" externality. Indeed, marginal cost pricing, as under pure competition, would not produce the first-best outcome in this case. Since the size of the externality depends on the law of large numbers and the "critical mass" of the CSD, a monopoly CSD may well dominate a system of smaller CSDs, even when the monopolist seeks to restrict output by raising prices (fees). This is especially so if the CSD has sufficient critical mass to attract increasing numbers of new participants.

A second reason why a centralized CSD may dominate smaller competing CSDs is in the efficient use of members' collateral. While members of a CSD want efficient settlement with a minimal risk they have the private incentives to pledge the minimum amount of collateral to back their clearance and settlement activities. The advantage of a centralized CSD is that collateral is potentially never wasted (*i.e.*, there is an efficiency gain). For example, with two competitive CSDs a member of both with excess collateral in one and deficient collateral in the other will generally be unable to cross-collateralize or cross-margin, unless special arrangements or links are made between the CSDs. If the CSDs are competitive (or non-cooperative) the member would end up holding more collateral than in a centralized CSD. Excess collateral limits the members leverage, and thus the ability to trade to the maximum extent possible.

The third advantage relates to potential economies of scale. If network economies produce scope-economies attributable to centralization, then transaction-size benefits produce economies of scale. For example, Kyle and Marsh (1993) show that there are potential economy-of-scale

benefits resulting from the centralization of the five U.S. options exchanges' CSD activities in one centralized facility -- the Option Clearing Corporation (OCC). Indeed, member fee schedules of existing national CSDs -- to the extent that they reflect average costs -- often reflect economies of scale.¹⁰

Given that there are such large potential benefits from a centralized CSD, why have we not seen a dominant centralized Euro-equity ICSD emerging?¹¹ There are two possible reasons. The first is that national exchanges want to preserve the monopoly power over the stocks traded on their exchanges by restricting access to national CSDs (e.g., restricting membership and minimizing cross-exchange linkages of the Sicovam - KV type). The second is that there are other CSD barriers and frictions which are so large as to offset the potential gains from conglomeration of equity clearing and settlement at the European level -- making national CSDs a more economically efficient structure. That is, the costs of euro-equity heterogeneity (legal, regulatory, tax etc..) offset the potential benefits of network externalities, economies of collateral conservation and economies of scale from centralization.

Stock Exchange Control as a Barrier

We end this section by evaluating the first of these arguments -- that national stock-exchange control of CSDs is a major barrier to euro-equity integration.

At first glance such an argument seems plausible. The stocks traded on a national

¹⁰For example, Talisman charges £0.50 for trades in the £0.01 -£1,000 range, £0.40 (per \$1000) for trades in the £1000.01 - £13,500 range, with no additional charge for trades of £13,500.01 and over.

¹¹As noted earlier, both Euroclear and Cedel have very small market shares of existing cross-border trades in European equities.

exchange are a valuable franchise; by restricting access to a CSD facility to local members of the exchange (and/or operating the CSD itself) an exchange can endeavor to keep a degree of control and monopoly power over its franchise. However, in the context of major European market CSDs, only Talisman is directly controlled and operated by the (London Stock) Exchange.¹² Even in this case, in 1996 a new CSD called CREST will become operational in London. This has been sponsored (not owned) by the Bank of England and has open access to users, in the sense that any investor – subject to certain (as yet unspecified) criteria – can become a member. In particular, the London Stock Exchange's ownership share of the new British CSD is limited to 3% (with some 60 other financial institutions also having initial ownership claims in the CREST system). In both France (Sicovam) and Germany (KV) the ownership of the CSD is largely divorced from the exchange(s). As noted earlier, the German KV is largely owned by German banks while the French Sicovam is 30% owned by the Banque de France with the rest of the shares owned by banks as well as brokers.

Further, it is increasingly unclear that even if a national exchange owned a CSD that this would protect its franchise over shares traded. In the UK a new trading system, Trade point, which is competitive to the London Stock Exchange, is about to go on-stream. Not only is it trading system different from the London Stock Exchange (based on a limit order book and periodic auctions) it also plans to settle and clear trades through the London Clearing House (rather than through Talisman). While it is difficult to say at this point in time how successful Trade point will be, it is clear that national exchange franchises plus their control over local CSDs

¹²The Spanish CSD and Exchange are also directly connected.

are becoming increasingly contestable.

If monopoly power of local exchanges and their members over national CSDs is not the real barrier to a centralized hub, what is? In Section III we consider a wide number of other frictions and barriers in the Euro-equity CSD environment that appear at this point to be sufficiently strong to militate against the potential benefits of a centralized hub.

III. Other Barriers Militating Against a Centralized CSD

These other barriers -- discussed in detail below -- largely relate to legal, contractual, payment institutional and regulatory differences across European community members' equity markets that appear to add sufficient additional costs to centralizing CSD arrangements at the Euro-hub level so as to offset potential benefits from centralization.

Legal, Institutional, Payment and Regulatory Barriers to CSD Centralization

A great deal of attention and myth has arisen surrounding the nine benchmarks for CSD efficiency laid down by the Group of Thirty Report in 1989. Indeed, most European countries would (and have) argued that they have either achieved and in some cases gone beyond the Group of Thirty recommendations. In many cases the reality of these achievements has deviated some distance from the claims made. Moreover, in the context of a single market, the key point is that even if countries deviate from Group of Thirty objectives (e.g., do not achieve settlement by T+3) they should seek to *harmonize* those deviations so as to allow competition and create equality of access for national CSDs and investors who use them. The degree of disharmonization across national CSDs with respect to institutional, legal, payment and regulatory practices are significant and it is arguably these differences -- rather than local monopoly CSDs -- that pose the greatest barriers

to CSD centralization at the European level. These heterogeneous practices are considered next.

Settlement Cycles

Although the Group of Thirty task force advocated moving towards T+3 as the target for equity trade settlement a wide variety of settlement dates still exists in European markets, and pose significant problems for cross-border investors. In the three major European equity markets, Germany now settles at T+2, France at T+3 and the UK at T+5 (having moved from T+10 in July 1995).

As a result, an investor selling UK stocks (T+5 settlement) and buying German stocks (T+2) would have to borrow money for 3 days to bridge the settlement date differences. This imposes additional transactions costs on active investors. In addition, as shown by Ireland and Ryan (1993), the number of settlement failures are higher in Germany than in the U.K. In general the shorter the settlement cycle the greater the probability of fails. Again, settlement fails impose costs on investors especially in the absence of an efficient securities lending market. In France, moreover, despite the official existence of T+3, many trades are still settled on the old monthly account cycle (effectively T+20)¹³.

All this suggests that there is a considerable degree of heterogeneity in settlement cycles that interferes with international equity investment efficiency. What clearly is required is a move by European regulators to seek greater harmonization of settlement cycles, whether T+3 or longer, if the objective is to attain greater Euro-equity market integration and a higher level of cross-border trading efficiency for investors.

¹³Italy also uses the one month settlement account.

Paper vs. Book-entry

Not only do settlement cycles differ across countries but so does the degree to which countries have dematerialized their equities. In France, for example, equities have been completely dematerialized and immobilized at Sicovam . By contrast Talisman is still paper - based, literally moving millions of pieces of paper a week as ownership to equities are transferred. This paper based system has posed a barrier to entry to both Euro-clear and Cedel (the existing potential and actual ICSDs) acting as CSDs in the UK equity market. However, with the advent of CREST and its centralized book-entry system in 1996, both Cedel and Euroclear are likely to form links to the new system and start to clear UK equities. Nevertheless, it should be noted that even post-CREST the UK will still allow those investors who so choose to continue to hold physical certificates. This contrasts with the public-burning of share certificates by Sicovam in 1989 (and their replacement by electronic records).

The difference in approach, and timing of dematerialization, between France and the UK accentuates another key difference in the regulatory and legal CSD environment. Specifically, since the establishment of Sicovam in 1949 the French government has issued a variety of rules and orders moving it towards full dematerialization (this might be viewed as the regulatory approach to CSD development). By contrast, the UK approach has been largely free-market based, and it was only the failure of the Stock Exchange TAURUS project in 1993, that prompted the Bank of England to endorse the development of the new CREST system.

As with settlement cycles there is a clear need for European community wide agreement on (1) the superiority of book-entry equity depositories as well as (2) the method of achieving such

systems in each national market (legal versus free-market).

Bearer vs. Registered Shares

Another "hidden" barrier to CSD integration across European markets relates to the legal form of ownership of shares. In the UK (and Italy) shares are still predominantly held in registered form, often at the individual investor level.¹⁴ This means that following each trade, company registrars' have to update records of individual share ownership. Under the proposed CREST system an electronic interface with major company registrars should update these records in a matter of hours (two-hours is the target). Under the existing Talisman (paper-based) system such updating involves considerable delays often extending to weeks. By contrast, in France and Germany shares are in bearer form (even if dematerialized), with many held with large institutional nominees, such as the German universal banks. While the purpose of bearer shares has traditionally been tax avoidance and owner anonymity, the centralization of shares at a few nominees has a potential CSD transactions cost advantage over the individual investor registration system. It might also be noted that Euroclear and Cedel's expertise in the CSD area has arisen with clearing and settling bearer form Euro-bonds.

Taxation

Another, hidden cost of clearing and settling cross-border euro-equities trades, and, in particular, cross border trades in UK equities, relates to taxation. Specifically, in the UK a stamp duty of 1/2% is imposed on domestic trades in UK shares. However, in the case of cross-border

¹⁴Although there is a nominee system for institutional trades called SETON.

trades the stamp duty rises to 1.5%. The UK government's logic is that once a share trades outside the country it cannot levy further stamp duties -- hence the 1.5%. However, for ICSDs such as Euroclear and Cedel such a tax -- which their customers directly bear -- is viewed as a direct barrier to entry to providing CSD services for their clients trading UK equities. This is given as another reason -- over and above the paper form of certificates -- why neither Cedel nor Euroclear currently clear UK equities. Although, the UK is unique -- in a European context -- in imposing this type of stamp duty on cross-border transactions (and harmonization of transaction or CSD costs across Euro-equity markets would argue for its elimination) whether a country will freely give up a revenue source that produces some £1 billion or more a year is moot¹⁵.

Multiple Currencies and Payment Systems Integration

On the face of it, the existence of a national currency backing each national equity market imposes an additional cost in cross-border equity trading and hinders integration. Thus a German investor, on selling German shares to buy UK shares (ignoring settlement cycle differences), would have to convert his DM proceeds into pounds. The potential cost of doing this depends on: (i) the degree of intra-European exchange rate volatility and (ii) the depth and liquidity of the FX markets in which European currencies trade. Arguably European FX markets -- especially those in London -- are among the deepest and most liquid in the world, with extremely small transaction costs. Further, whether or not full currency integration is achieved, increasing fixity of European exchange rates lowers currency risk -- although major Euro-currency realignments cannot be discounted and occurred in 1992, 1993 and 1995.

¹⁵Ireland imposes a similar stamp duty.

Thus it is arguable that multiple European currencies are barriers, *but not decisive barriers*, to euro-equity trading and market integration. This view is reinforced by the fact that a number of national CSDs have capabilities to allow for multiple currency payments e.g., CREST, while ICSDs such as Euroclear and Cedel allow for payment in over 25 different currencies including ECU. Further, there has been a rapid growth in the ECU wire-payment system largely as a result of the growth of the euro-commercial paper market. This wholesale wire transfer system (based in Brussels) clears over 7000 ECU transactions a day among over 40 member banks. Indeed, the increasing use of ECU and any increasing fixity of exchange rates is likely to make the gains from a single currency of relatively small-order in terms of its impact on cross-border Euro-equity trading and integration.

The question nevertheless remains open regarding the likely pattern of European clearance and settlement under full currency unification, bringing with it the creation of a single central bank, elimination of intra-EU currency-related transaction costs, and the need to harmonize or possibly unify EU CSDs and possibly ICSDs to encompass what will in effect be “seamless” equity and debt markets and wholly new classes of securities.

For example, national as well as municipal governments under EMU will have to compete for capital in private markets there being no national central banks to engage in open-market purchases of sovereign debt instruments and hence no possibility of debt monetization. To attract investment capital to national debt issues under such circumstances, national governments will be encouraged to do all they can to reduce transaction costs, as well as tax and other impediments to investment. This will have to include encouraging improvements in domestic clearance and settlement facilities, or removing barriers to the use of international clearing and settlement

facilities by cross-border investors, or both. Financing needs for cross-border investment may compete with demands for protection of domestic infrastructure. Also selective regulation of pension funds, insurance companies or other institutional investors may force them to take disproportionately large allocations of national government issues. But EU initiatives -- especially in the pensions field -- and the need to maximize performance over the long term -- will tend to reduce the ability of governments to force investment in sovereign paper. This, in turn, may add to the factors forcing public issuers to compete more actively for international investment.

In the absence of monetary unification, payments systems in the EU will continue to be national in nature, generally under the auspices of the national central bank. Cross-border intra-European transactions will likely be handled by payments utilities such as SWIFT. One can envisage short-term as well as longer-term effects of monetary union on payments systems -- with the short-term being defined as the period 1995-99 and the long-term the post-1999 period -- assuming the 1999 deadline for EMU is met. In the 1995-99 period, one might see little change in the formal structure of domestic payments systems -- i.e., basically the individual country wire-transfer/payments systems could be expected to continue much as before, except that each EU central bank is likely to encourage private payments netting and settlement services in ECUs (or other common currency unit), and eventually to provide a settlement service themselves.

Specifically, the need for ECU payment-related services will likely grow as inter- and intra-European commercial and financial flows are increasingly conducted in ECUs rather than in the domestic currencies and the likely proportions of domestic and Eurobonds as well as other securities denominated in ECUs rise relative to those denominated in dollars, yen and other non-EU currencies. The role and importance of the ECU in this period will depend on whether central

bank policies provide conditions for public confidence and acceptability of the unit, both as a medium of exchange and as a store of value, and whether or not final settlement services are provided by the central banks themselves or by private organizations.

A lender-of-last-resort is important, since the ECU is an artificial currency and can only be created (in the absence of a lender of last resort) by banks bundling or unbundling currencies. That is, an imbalance between a bank's ECU liabilities and assets can only be covered by the potentially costly and difficult procedure of buying and selling the basket components in return for ECU. Currently, lender of last-resort type facilities for ECU transactions are principally provided by the BIS. Since August 1991, if a bank fails to meet its ECU payment commitments it can get temporary help from the BIS, which operates an existing ECU clearing system on behalf of the ECU banking Association. After 24 hours, if the bank is unable to meet its liabilities the burden has to be shared among all other ECU clearing banks in the association. Private-sector or quasi-governmental backing is not as credible as full central bank backing through lender-of-last-resort facilities, so that residual liquidity, credit and systemic risk concerns will remain until full central bank lender-of-last-resort backing of an ECU system becomes operational.

While there have been no systematic moves by central banks in the direction of collective backing, the Bank of France has launched a scheme to give lender-of-last-resort backing to French banks involved in clearing ECU transactions – using bank reserves as collateral. In 1992 the Bank of England introduced a similar scheme based on ECU bonds, T-bills and deposits as collateral. The bank of Portugal committed itself to a similar plan.

However, it is far from clear that such an uncoordinated set of policies will give sufficient credibility to the safety of ECU-denominated trades and instruments relative to the individual

currencies of the EU. Indeed, the BIS clearing house appears similar to the type of clearing-house that existed in the U.S. prior to the establishment of a single currency and the Federal Reserve.

Using the U.S. payments system as a model, a credible low-cost single currency is only likely to emerge when the five following policies are adopted by the EU central banks:

- Unambiguously fixed exchange rates.
- Allowing domestic economic agents to make payments by check or wire-transfer in any EU currency.
- Banks in the EU clearing checks or payments at par, independent of origin or denomination of the EU currency.
- A central bank organized and operated inter-EU check/payment clearing system.
- A credible central bank lender-of-last-resort facility denominated in ECUs.

In the presence of full monetary unification, the payments system (but not necessarily the clearance and settlement system) is likely to be centralized under a new European central bank, with the sole right to print money and a continuing role played by the national central banks as utilities in a manner similar to the U.S. regional Federal Reserve banks under Fedwire. However, using the U.S. and Federal Reserve as an example the implications of a single currency and central bank for the European Unions CSD structure is far from clear. In particular, in the U.S. the emergence of the DTC as the major or dominant CSD occurred many years after the Federal Reserve was created (in 1914) and a single currency adopted. Thus, the links between the creation of the Fed and the gradual dominance of the DTC in domestic securities clearance and settlement is tenuous at best. At a minimum the most that can be said is that a single currency adds to the potential efficiency of a single CSD but its absence is not an overwhelming barrier (e.g., the multi-currency ICSDs such as Euroclear and CEDEL and the multi-currency U.K. Crest CSD).

Payment System Competition

An additional payment system related question is the degree of competition among domestic payments systems. In particular, do barriers to entry to payment systems inhibit the integration of clearing and settlement systems? In some countries the payment system is private sector run or operated (e.g., APACS in the UK), other countries such as France and Germany have effectively nationalized their payment systems (e.g., the Banque de France and Bundesbank own and operate the French and German payment systems). Concerns have been raised about access to both private and public payments systems. While the EU Treaty and the Second Banking Directive of 1989 require (where public systems are set up) the freedom to allow the establishment and operation of private systems this has not generally occurred.¹⁶ Of course the overwhelming barrier to competing private systems are the explicit and implicit guarantees against credit risk provided by public system operators such as central banks.

Where private systems do operate (as in the UK) the EU's Competition rules apply.¹⁷ As a general rule, a payments system that constitutes an essential facility must be open to further membership (on similar criteria) as existing members. The EU has proposed making membership exclusion subject to an independent review procedure. Moreover, discriminatory pricing such as double charging of non-national users is also discouraged by the Community's competition rules.¹⁸

¹⁶It might be noted that in the U.S. private wholesale payment systems (such as CHES) have failed in the face of competition from Fedwire.

¹⁷See, Notice on the Application of the EU Competition Rules to Cross-Border Transfer System, (Annex 2) EC, Brussels, 1994.

¹⁸For example, charging a foreign user an interchange fee and then deducting another fee from the gross funds before transferring them to the ultimate funds receiver.

The only case where extra fees might legitimately be charged to an overseas user (as a consequence of a cross-border equity trading) are where the following conditions hold:

- (i) A cross-border transfer may need to be reported to the balance of payments authorities as an incoming payment;
- (ii) The payment may need to be converted into the currency of the beneficiary;
- (iii) The beneficiary may require more information (for example, details relating to the payment order) than is normally given for domestic payments;
- (iv) The details of the beneficiary, their account number and the bank sort code need to be verified since this information is often incomplete or incorrect; and
- (v) The payment order needs to be reformatted if it is to be processed by the clearing circuit in the destination country.¹⁹

In such circumstances an additional ("interchange") fee to cover these costs may be justified as long as it is based on actual costs, *i.e.*, there should be complete transparency in setting these fees.

While the Notice on the Application of EU Competition Rules regarding accessibility and pricing of private payment systems is extremely useful in harmonizing the rules and costs of accessibility, there is still the issue of direct accessibility to national public payment systems -- especially those run by National central banks -- to outside (non-national) participants. Recent proposals to interlink or network national European payment systems as a move in anticipation of a single currency may go some way towards solving the problem of cross-border accessibility

¹⁹See, Notice on the Application.... (Annex 2).

to national publicly-owned and operated payment systems.

A 1995 study²⁰ of the payments system environment has suggested that private-sector initiatives in response to growing international capital flows and exclusionary practices by national payments system are focused on bilateral netting systems including electronic data interchange (EDI). This is in addition to various national initiatives to institute real-time gross settlement (RTGS) services, collateralization of intraday settlement credit extended by central banks, formalization of minimum standards for private-sector multilateral netting systems, expansion of operating hours and the introduction of daylight overdraft facilities. The major problems that need to be addressed are intraday risk on central bank-operated RTGS systems, finality-of-settlement risk on private-sector net settlement systems, and time-zone risk associated with multi-currency settlement (“Herstatt risk”). The problem of exclusionary practices in national payments systems may well be alleviated in the future as a result of private-sector initiatives.

Other Areas of CSD Non-Harmonization

At least two other areas of non-harmonization across national CSDs are evident. The first is with respect to delivery versus payment (DVP). Virtually all European equity markets claim to have some form of DVP, although in reality no country has achieved exact simultaneity in real time.²¹ For example, in the UK under Talisman, settlement of equity trades is made on the

²⁰New York Clearing House Association, Risk Reduction and Enhanced Efficiency in Large-Value Payments Systems: A Private-Sector Response (New York: The New York Clearing House Association, 1995).

²¹Although arguably the U.S. Federal Reserve has achieved this for bond transactions on Fedwire.

evening before the day of payment. Further, on CREST settlement in stock will be in real time (up to some trade cap limits) with a single net payment in cash among member accounts at settlement banks at the end of the day. As with settlement cycles there would be a clear advantage of harmonizing DVP standards across European markets -- so that equity traders and market participants -- would have to understand just one common European wide DVP standard. Of course ideally this would involve simultaneous real time settlement.

The second is with respect to the equity settlement system itself. On some national CSDs trades are netted for settlement (e.g., Sicovam and KV), while on others (e.g., CREST) the system is a trade by trade gross settlement system. It might also be noted that exact DVP is not possible in a system that nets equity trades, since the cash payment can only occur after the end of some period over which trades have been tallied and then netted.

Custodians: Business and Competition Issues

The evolution of European clearance and settlement system will also be profoundly affected by the competitive dynamics of the global custody business. Custody of securities comprises a more or less elaborate cluster of services: (1) Basic cash and securities *depository services*; (2) *Essential custody services* -- including coupon collection, redemption, global certificate exchanges, tax reporting and withholding tax relief processing, acting on client instructions on exercise of rights and voting; (3) *Extended custody services* -- including accounting and reporting, foreign exchange, sale of rights; provision of information of redemption payments, interest rate resets and corporate events, as well as (4) *Securities lending services for trading purposes*, to meet the needs of broker-dealers implementing short selling trading strategies.

Custody services usually include coupon collection, redemption, meeting certification requirements for exchanges of global certificates, tax reporting (and assistance with withholding tax exemption or recovery procedures where possible), acting on instructions with respect to corporate events (exercising warrants, conversions, puts or similar options), and assisting with voting in annual meetings or debt-holders' proceedings. They may also include carrying out money transfer, sale of rights a client elects not to exercise, and related functions. Information provision with respect to income and redemption payments, interest rate resets, corporate events and the like may be looked upon as a separate function from custody or fiduciary services.

Custody services need to be distinguished from fiduciary services where the custodian undertakes not only to carry out instructions as a pure agent, but also to take decisions as a trustee or investment manager with respect to investment decisions, cash management, securities lending, etc. For example, reporting of income payments, corporate actions taken, securities lending results, etc. may be looked upon as part of custody or fiduciary services, or as a separate communications function. Trust services to issuers performed by banks as indenture trustees, registrars or ADR issuers, or as fiscal, paying, conversion, and warrant agents are related but need to be distinguished from custody functions. These services are provided by banks acting as issuers' agents, not as security holders' agents.

"No frills" depository services have few barriers to entry and are unlikely to command high returns. In fact the service is becoming marginalized with the spread of dematerialized securities. The core safekeeping service can be provided by a centralized depository similar to the Depository Trust Company (DTC) in the U.S., which immobilizes or dematerializes securities and uses a computerized accounting system to record and transfer ownership of securities. This

facilitates securities transfers and reduces risks, especially if transfer of securities can be integrated with a money transfer system, allowing final delivery to be made contingent upon final payment.

Most institutions providing safekeeping will also offer the next level, "essential" custody services, where there are again few barriers to entry (although there may be some economies of scale in processing securities information). Some banks have earned significant returns by offering these services in a far more efficient fashion than local competitors, but in developed countries they constitute a low-return industry segment. Logically, these services are geographically dispersed for two reasons: (1) Physical securities are generally best held in the market where they are serviced by the issuer's agent, and this is typically the country of the issuer. Dematerialized securities are less closely tied to a particular location in principle, but the legal integrity of final transfer along the chain of custody might dictate that custody is still best located in the same system where ownership is directly recorded. This need not be true if there is a legal framework that allows a clear choice of law at each level of custody to protect rights in transactions settled at such level, e.g., the proposed revisions to UCC Article 8²² go a long way towards this goal. (2) The custody system for particular securities -- notably national financial instruments -- is probably best developed in a system in which the bulk of trading and corporate events occur -- that is, in the home market. Extended custody services command higher returns because they are differentiated products. The type and quality of service can vary significantly from institution to institution making price competition less significant than in the basic and essential custody services.

²²Article 8 of the Uniform Commercial Code of the United States.

All custody-type services can, in principle, be dispersed geographically and by institution. Nevertheless, from the *investor's* viewpoint there are potential economies involved in the consolidation of custody of different securities in a portfolio in one entity or location (one-stop shopping). Consequently, custody represents a category of services that exhibits some potential economies of scale, but not to the degree inherent in information, trading or clearing and settlements services. On the one hand, there are probably gains from proximity of the custody function to the location where issuer-related services -- such as corporate events reporting -- must be carried out. On the other hand, there may be gains from the consolidation of the investor-related services in the custody cluster, such as management of the information associated with a geographically diversified portfolio -- i.e., "global custody."

Custody has indeed become a highly competitive business, in part because of its comparatively low credit risk and regulatory capital demands, its relatively long-lived relationships (on the order of ten years), and its tie-in to other financial services such as banking, accounting, cash management and foreign exchange facilities as well as enhanced fee-based services. Table 1 shows the size rankings of global custodians in 1993.

Table 1			
Global custodian			
Ranked by size, 1993	Total		Non-
(\$bn)	Assets	Domestic	Domestic
	249.1	52.3	196.8
Citicorp	213.0	119.0	94.0
Chase Manhattan	200.0	24.0	176.0
JP Morgan	147.0	96.0	51.0
Bankers Trust*	129.9	88.7	41.2
Bank of Tokyo	114.1	33.2	80.9
ABN Amro	110.0	79.3	30.7
State Street	100.0	30.0	70.0
Chemical Banking*	95.0	63.3	31.8
Barclays Bank*	75.0	59.0	16.0
Brown Brothers	66.2	45.2	21.0
HSBC	61.3	53.3	8.0
Bank of New York	59.2	21.1	38.1
NatWest	50.0	42.0	8.0
Morgan Stanley**	44.4	36.3	8.1
Boston Safe/Mellon	40.9	17.6	23.3
Sumitomo (US)**	32.7	20.4	12.3
Northern Trust	31.5	7.5	24.0
BankAmerica	27.5	2.0	25.5
Bank of Bermuda	25.6	18.9	6.7
Lloyds			

* As of December 1992 ** As of June 1993

Source: Salomon Brothers

National and Cultural Interests

Even if a good deal of settlement and payment harmonization across national CSDs could be achieved, there will still be a number of national and cultural barriers to Euro-equity market integration (and a centralized hub) that will be very difficult to remove in the near-future.

The first is that unlike bonds, equities are claims to corporate control. In many countries, such as the UK, there are national security concerns regarding excessive foreign ownership of

defense industry stocks and stocks in other sensitive industries such as banking. This has resulted in legal caps being placed on foreign ownership of such shares. Such legal impediments limit cross-border merger and acquisition activity and thus euro-market integration.

Second, politicians tend to look at the costs of CSDs in other than a sunk-cost manner. This implies a preference towards tampering with existing national CSDs rather than facing the once and for all costs of switching to a centralized Euro-CSD hub even if the economic case were strong. This is likely to be especially true when a significant proportion of the one-time switching costs are likely to be borne by customers of national CSDs and their employees, many of whom are also voters and party contributors. This results in a commonly held view by politicians that a domestic CSD is in the "national interest." It is clear that it will take a considerable cultural change, beyond economic union, involving a playing down of national interest concerns for these barriers to be removed. Moreover, one can envisage a major battle over where such a Euro-hub should be located (and jobs created) and whether it should be run as a private sector co-operative (similar to Euroclear or Cedel) or whether more direct EU or national governmental controls would be required.

Finally, accounting and bankruptcy systems still differ widely across EU countries. Differences in accounting systems impose internal or back-office network costs on participants in cross-border trading. Harmonization of EU accounting standards could have the important positive externality of saving resources in back-office settlement of cross-border trades. Similarly, harmonization of bankruptcy rules e.g., as regards to netting by novation, could also generate important efficiency gains for cross-border equity investors since this could potentially conserve collateral.

IV. Empirical Evidence

There is very little empirical evidence on the costs and efficiency of CSD services. Probably the major reason for this is that these costs -- both direct and indirect -- are very difficult to measure, especially the back-office part of these costs.

In recent years, GSCS (Global Securities Consulting Services) has published benchmark measures -- relative to 100 -- on settlement efficiency, safekeeping efficiency and operational risk across 20 equity markets (see GSCS (1995)). A detailed description of the methodology underlying each of these indexes is to be found in Appendix I, Table 1. The 1994 indexes are based on over 870,000 equity trades as reported by: ABN-AMRO, Barclays, Midland, State Street, Bank of New York, Mellon Trust, Northern Trust, Bankers Trust, Chase Manhattan and the Royal Bank of Scotland. Of these trades the U.S., Japan and the UK accounted for nearly 60% of cross-border trades, with France and Germany accounting for around 5% of the total each.

The settlement benchmarks for 1994 are shown in Appendix I, Table 2. In terms of settlement efficiency, the US dominates with an index of 96.7. Of the European EU members Denmark (94.3) was the most efficient. Interestingly, the book-entry/shorter settlement CSD systems of France (92.8) and Germany (91.1) were more efficient than the U.K. (86.4). The least efficient EU country covered by the benchmarks was Spain (77.8).

With respect to safekeeping Appendix I, Table 3 -- essentially reflecting the efficiency of dividend collection, reclamation of withheld taxes and protection of rights in the event of corporate actions -- the U.S. was again rated most efficient with a score of 95.5. While the UK (95.1), Germany (91.4) and France (90.1) were all rated highly efficient, Italy received the lowest efficiency rating (77.8) based on its poor performance in crediting dividends.

The third benchmark concerns operational risk -- which incorporates the settlement and safekeeping benchmarks as well as taking into account compliance with the group of Thirty recommendations and the complexity and effectiveness of the legal and regulatory structure of the market. The U.S. is once again the most efficient (86.5), as shown in Appendix I, Table 4, with France (82.3) and Germany (83.2) more efficient than the U.K. (79.3).

An interesting question is what the GSCS data base tells us regarding the correlation between improvements in settlement efficiency and the volume of cross-border equity trading. In particular, do we find a strong positive correlation between changes in volume and changes in settlement efficiency? Table 5 shows the 1993/4, year on year, changes in equity volumes (ΔV) and change in the settlement benchmark (ΔS) across the 20 equity markets followed by GSCS. The correlation coefficient between ΔV and ΔS is -0.041. That is, there is no evidence of a statistically positive link between improvements in CSD settlement efficiency and cross-border volumes. Of course, such a result depends very much on the accuracy of the GSCS settlement index as a measure of all-in settlement costs. The result also reinforces the arguments of Section III that it isn't so much settlement efficiency (or inefficiency) that inhibits or encourages cross-border trades but the whole spectrum of legal, regulatory, tax and other differences across euro-equity markets. Such barriers can only be removed by significant improvements in regulatory, legal and tax harmonization.

V. Implications for Investors, Issuers and Financial Institutions

The principal question we sought to answer was whether economic factors (macroeconomic, regulatory and competitive) and the microeconomics of securities clearance and settlement point

towards a centralized or dispersed European settlements infrastructure being the "model" of the future. While there are unquestionable economies of scale in the settlements segment of the global transactions business, we found that issues of national political interest and competitive considerations may dominate the outcome. We came to the conclusion that centralization is not necessarily ideal nor, realistically, is it likely to emerge before the end of the century. Instead we argued that free market evolution of the present "multiple access" system has much to be said for it and its current dominance is more likely the result of economic and institutional forces rather than the monopoly self interest of organizations such as local exchanges.

In Table 2 we have attempted to summarize our views regarding the current degree of barriers (including economies of scale) to entry into various areas of CSD related service areas and to specify who we believe will gain and lose from greater competition in each area. As can be seen the potential gainers and losers vary widely. Indeed, in some areas a particular agent gains while in another areas the same agent loses (e.g., ICSDs gain from greater competition in settlement but lose from greater competition in payments systems).

Table 7-1. The Economics of Services in the Trading and Settlement Value Chain

	Economies of scale?	Vertical economies?	Barriers to entry?	Who gains from competition?	Who loses from competition?
Information & analytic services	High	Some	Moderate	Investors & dealers	Reuters & others
Trading system	High	High	High	Dealers, Reuters, Globex etc; IMPs?	Nat'l exchanges, existing clearing systems, nat'l regulators
Trade communication and matching services	High	Moderate	High	Euroclear & CEDEL; Taurus?	Nat'l exchanges & clearing systems
Clearance & netting services	High	High	High		Nat'l payment systems
Settlement	High	Moderate	High	Euroclear & CEDEL; Taurus?	Nat'l exchanges & clearing systems
Payment services	Low	Moderate	Low	Big banks	ECS & CEDEL?
Depository	Moderate	Low	Low	ECS & CEDEL	Big nat'l banks
Cash lending	Low	Moderate	Moderate	Big banks	ECS & CEDEL?
Intra-day credit	Low	Some	Low	MGT	Big banks
Comprehensive custody	Moderate	Low	Low	ECS, CEDEL, others	Existing custody banks
Issuer's agent	Low	Low	Low	-	-
Trust	Moderate	Low	Moderate	Some banks	Other banks
Securities lending	Moderate		Low	Some banks & sec firms	ECS, CEDEL, nat'l exchanges?

VI. Summary and Conclusions

In this paper we have evaluated the efficiency case for a centralized euro-equity CSD or hub. The economic arguments for centralization are strong. They include potential economies of scope (network), collateral conservation and economy of scale benefits. We then investigated the reasons why the movement towards a centralized Euro-hub has been very slow. One possibility is the potential monopoly power of local CSDs. However, it was argued that their power to stop a Euro-hub emerging has been exaggerated, declining with the growth of off-market trading and new market systems. The key barrier appears to be the inherent heterogeneity of Euro-equities themselves, due in part to the lack of harmonization of CSD standards and procedures. This lack of harmonization is as much the fault of government and regulators as industry participants. Barriers to harmonization include different settlement cycles, taxation, book versus paper security form, ownership rights and payment systems access. It was also argued that multiple European currencies are probably a less important barrier to cross-border trading than access to national payment systems.

The above suggests a clear regulatory agenda. Specifically, unless the EU (or national governments) seek(s) to harmonize the legal and regulatory environment relating to clearance, settlement and payment of trades across different European markets, the environment will continue to be non-conducive for the growth of one or more ICSDs, *i.e.*, for the development of a critical mass Euro-equity hub. Indeed, without harmonization, European clearance and settlement is likely to continue along the current national CSD model lines, perhaps with enhanced CSD links of the Sicovam-KV or U.K. Crest-Irish Exchange kind.

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Settlement Benchmark

The purpose of the Settlement Benchmark is to provide a means of comparing the settlement efficiency of different markets and track the evolution of settlement performance in individual markets over time. The Benchmark incorporates four components which, combined together, reflect the overall cost to market participants of failed trades. These include average trade size, local market interest rates, the proportion of trades that fail, and the length of time for which they fail. By converting information back into a base currency, comparisons between markets become possible.

The Benchmarks are expressed as a score out of a maximum of 100. The lower the score the higher the effective operational costs of failed transactions in any given market. While the level of failed trades is naturally the principal influence on the Benchmark for each market, it is not the only one.

Safekeeping Benchmark

The purpose of the Safekeeping Benchmark is to allow readers to compare the efficiency of different markets in terms of the collection of dividends and interest, reclamation of withheld taxes, and protection of rights in the event of a corporate action.

In the case of income collection, there is both a financial and an administrative cost associated with timely and effective collection. There are also risks to be borne in the area of corporate actions. The Benchmark seeks to assess all of these aspects through use of a five factor model. The factors include typical market yields on equities and fixed income securities, rates of withholding tax and reclaim potential, average time between payable date and receipt of payment, local market interest rates, and the number and type of corporate actions that occur.

By assigning weights to each of these factors, it is possible to calculate the Benchmark expressed as a score out of a maximum of 100. The lower the score the higher the effective operational cost and greater the administrative effort involved in a given market. While the time taken to collect dividends or interest due is the most important factor in scoring, it is not the only one that can impact individual country Benchmarks.

Operational Risk Benchmark

The Operation Risk Benchmark is designed to allow comparison of the overall operational risk associated with individual markets. The Benchmark takes into consideration the Settlement and Safekeeping Benchmarks. However, it assigns them a different weight depending on the relative complexity of each in the different markets. The Benchmark also takes into account other operational factors, such as the level of compliance with the recommendations of the Group of Thirty (G30). It also accounts for the complexity and effectiveness of the legal and regulatory structure of the market, such as constraints on capital flows, foreign investment restrictions and market supervision. Finally, it seeks to incorporate two factors which may not be the direct responsibility of the custodians but cannot be ignored by them, namely counterparty risk and "force majeure" risk. The Benchmark is expressed as a score out of 100. The lower the score, the

higher the risk.

Source: GSCS Benchmarks

Appendix 1 - Table 2
 Settlement Benchmark 1994

Country	Q1	Q2	Q3	Q4	1993 Average	1994 Average	Outlook	% Change
Australia	92.2	96.3	94.4	96.2	92.1	94.8	0	3.0
Austria	94.3	83.6	91.6	90.1	91.1	87.4	0	-4.1
Belgium	86.6	84.2	89.2	92.1	88.6	88.0	+ve	-0.7
Canada	93.7	96.1	90.0	91.5	89.4	92.8	-ve	3.6
Denmark	94.9	94.8	94.1	93.2	91.9	94.3	0	2.6
Ireland	61.3	86.8	77.0	82.7	62.4	77.0	+ve	23.4
France	87.8	94.3	94.8	94.2	91.5	92.8	0	1.4
Germany	89.2	89.3	93.0	92.9	82.4	91.1	+ve	10.6
Hong Kong	87.0	93.8	92.2	93.9	82.4	91.7	0	11.2
Italy	91.4	91.2	97.0	92.1	92.9	92.9	+ve	0.0
Japan	92.2	96.8	93.6	92.4	78.6	93.8	0	19.4
Netherlands	86.6	87.9	91.6	91.6	84.6	89.4	+ve	6.8
New Zealand	89.2	82.6	94.3	94.6	80.6	90.2	+ve	12.0
Norway	83.6	92.1	84.6	80.2	70.2	77.6	0	10.6
Singapore	84.3	91.6	88.9	89.0	79.3	88.6	0	11.6
Spain	77.6	70.8	77.2	86.6	67.3	77.8	+ve	16.7
Sweden	82.9	86.1	89.4	88.6	78.9	86.6	+ve	12.6
Switzerland	80.7	88.4	86.2	89.4	81.1	86.9	0	6.0
UK	88.6	90.1	80.2	86.8	86.4	86.4	-ve	1.1
USA	96.8	97.4	96.2	96.6	94.7	96.7	0	2.1

GSCS (1996)

Appendix 1 - Table 3
Safekeeping Benchmark 1994

Country	Q1	Q2	Q3	Q4	1993 Average	1994 Average	% Change
Australia	94.4	91.6	93.6	94.9	93.7	93.6	0.0
Austria	92.5	91.9	91.7	92.0	92.3	92.0	-0.3
Belgium	81.9	89.6	92.3	94.2	84.9	89.5	5.4
Canada	96.0	94.1	92.6	92.3	94.9	93.8	-1.2
Denmark	94.7	97.1	94.5	95.2	92.9	95.4	2.7
Finland	88.5	99.1	94.6	96.7	98.3	94.7	-3.6
France	88.9	90.9	89.9	90.7	85.7	90.1	5.2
Germany	94.0	90.2	89.9	91.3	87.1	91.4	4.9
Hong Kong	96.3	93.3	96.4	93.0	93.1	94.8	1.8
Italy	50.5	93.2	77.1	90.4	78.9	77.8	-1.4
Japan	94.6	97.8	93.2	92.2	95.0	94.5	-0.6
Netherlands	92.6	95.8	95.8	91.0	88.2	93.8	6.4
New Zealand	92.4	88.6	92.6	94.2	91.0	92.0	1.1
Norway	82.7	90.8	96.5	94.2	98.0	91.1	-7.1
Singapore	92.4	95.5	89.3	90.5	93.4	91.9	1.5
Spain	87.5	86.3	91.2	90.7	86.8	88.9	2.5
Sweden	N/A	97.9	88.3	92.8	88.8	93.0	4.7
Switzerland	92.7	92.6	87.3	91.9	90.9	91.1	0.3
UK	93.9	95.4	95.5	95.6	93.3	95.1	1.9
USA	95.9	95.3	95.7	95.0	95.2	95.5	0.3

Source: GSCS (1995)

Appendix 1 - Table 4
Operational Risk Benchmark 1994

Country	Q1	Q2	Q3	Q4	1993 Average	1994 Average	% Change
Australia	81.9	82.8	82.7	84.0	81.5	82.5	1.7
Austria	80.8	76.3	75.5	78.9	79.4	77.9	-1.9
Belgium	73.9	76.7	80.0	82.1	76.2	78.2	2.6
Canada	83.7	83.4	80.5	81.1	81.2	82.2	1.2
Denmark	80.4	81.5	80.0	80.0	78.3	80.5	2.8
Finland	59.6	74.0	68.3	71.4	63.5	68.3	7.6
France	79.6	83.1	83.3	83.0	79.3	82.3	3.8
Germany	83.6	81.9	83.3	84.0	77.0	83.2	8.1
Hong Kong	76.0	77.9	78.5	78.0	72.3	77.6	7.3
Italy	59.8	78.7	73.9	77.8	73.1	72.5	-0.7
Japan	80.5	84.1	80.8	79.9	72.5	81.3	12.1
Netherlands	78.1	80.0	81.8	79.7	75.4	80.0	6.1
New Zealand	76.5	72.0	78.7	79.5	71.7	76.7	7.0
Norway	61.5	72.7	76.1	73.3	70.7	70.9	0.3
Singapore	71.0	75.2	71.6	72.1	68.9	72.5	5.2
Spain	65.3	61.9	66.5	70.0	60.6	65.9	8.8
Sweden	78.2	78.9	76.8	78.2	71.4	78.0	9.2
Switzerland	75.4	78.6	74.8	78.6	74.3	76.9	3.5
UK	79.6	80.9	76.9	79.7	77.6	79.3	2.2
USA	86.7	86.7	86.3	86.2	85.1	86.5	1.7

ce: GSCS (1995)

**Appendix 1 - Table 5
Changes in Equities Volumes
Against Changes in Settlement
Benchmark 1993/1994**

Country	Year-on-year % change in volumes	Year-on-year % change in average Settlement Benchmark
Australia	75.5	3.0
Austria	78.9	-4.1
Belgium	42.4	-0.7
Canada	48.5	3.6
Denmark	55.0	2.6
Finland	90.8	23.4
France	36.6	1.4
Germany	31.3	10.6
Hong Kong	58.2	11.2
Italy	70.1	0.0
Japan	41.6	19.4
Netherlands	41.3	5.8
New Zealand	40.8	12.0
Norway	51.3	10.5
Singapore	24.2	11.5
Spain	-9.6	15.7
Sweden	89.7	12.5
Switzerland	24.6	6.0
UK	42.0	1.1
USA	22.9	2.1

Source: GSCS (1995) Such firms have had to make large investments in international networks to service cross-border investors, especially in emerging markets, as well as computer hardware, software and communications facilities, a technology base that appears to be forcing some degree of consolidation in the business -- accelerated by significant compression of fees to 1/100 basis point on assets under custody. Whereas profitability of custody services is difficult to assess, recent studies suggest that it is very significant for the major players -- evidently up to 25% for Northern Trust Company, and between 5% and 8% for Chase Manhattan.²³

²³Norma Cohen, "Shake-Out Beckons as a Sleepy Service Wakes With Vigor," *Financial Times*, 3 April 1995.

fact that the European market is to a large extent dominated by universal banks has impaired transparency in fund management and transaction fees. A recent survey,²⁴ indicated that transactions fees in Europe remain significantly higher than in the United States, and that pension fund managers are less satisfied with the level of transactions fees than they are with either portfolio management performance or custody services. A common practice appears to be offering discounted commissions and management fees, which are then offset by inflated transactions and custody fees. This was confirmed in a survey which showed that 41% of European funds pay their managements an all-in fee, which comprises both commissions, management fees and transactions charges. According to one account, "These fees, paid for each investment transaction, are often not broken out clearly as a separate item by the large European banks that own their own brokerage houses. You have to be sharp when dealing with the integrated banks... One clear finding from the survey was that transactions costs (in Europe) are not very transparent. Most funds had difficulty in identifying clearly the level transactions and the way they were charged."²⁵

²⁴Wyatt Pension Fund Consultants, European Pension Fund Survey 1995.

²⁵Charles Fleming, "Manager Fees Tolerated, but Changes Loom," *The Wall Street Journal Europe*, 14 February 1995, pp. 9-10.

Appendix 2. INTERNATIONAL SECURITIES SETTLEMENT: The chain of services in detail

FUNCTIONS	REMARKS ON EVOLUTION
1. Trade quotations, e.g., price and bid-offer information	Undertaken via screens, conversations; ideally should be tied to trading and execution systems
2. Trade instructions between indirect market participant (institutional investor) and direct market participant (broker)	Undertaken on the phone; evolving to terminal in electronic trading systems
3. Broker-dealer price search and trading with other broker-dealers	Central to the choice of trading system. Automated trading displacing physical trading floor. OTC telephone trading as in Eurobonds proving resilient
4. Firm deal struck between broker-dealers	To the extent that issues of market convention and legal contract issues continue to arise in certain countries, a uniform standard must be sought
5. Trade comparison: Checking & confirmation of details of the trade, <i>matching</i> particulars sent by seller with those sent by buyer.	Presently many domestic systems; prone to delays, inconvenience and risks. For international investors, expect emergence of an efficient, disciplined and timely matching system. Related problem: No worldwide securities identification system exists, although ISIN is an attempt to create a universal system. ISIN faces resistance and has significant imperfections; but some such convention must emerge.
6. Comparison and verification between principal and broker. This cannot be done until broker gets information from the clearing system)	Often paper confirmation sent by broker to principal. Evolution to automated confirmation and G30's recommendation that IMPs have access to a trade comparison system providing affirmation of trade details, like Canada's

Confirmed trade gets "locked in" so that settlement follows automatically and neither party can legally back out.

Reporting: Trades are recorded and reported in accordance with legal and regulatory requirements

- Regulatory reporting
- Audit-trail reporting
- Transparency reporting

Clearance: determination of what each counterparty owes and is due to receive, and when.

In some markets, includes a *netting system*

Instructions for transfer of ownership of the securities are transmitted (once trades are matched and netted), and instructions for payment are sent.

Systems may evolve toward including this important feature, although some participants may opt out in order to manage their own settlements

Securities markets abuses and vulnerability will make reporting and audit requirements more stringent in all major markets, but no indication of trend toward global uniformity yet. EC Investment Services Directive considering publication as local option with harmonization of others

Several countries have yet to evolve central clearing and settlement.

Two types of systems may emerge:

- Trade-for-trade where many disparate instruments traded (eg. equities)
- Bilateral, not multilateral, netting for concentrated trading in a few uniform securities traded (eg. T bills)
- Continuous netting to final long or short position with clearing corp: only for exchange traded derivatives--not generalizable

Various domestic systems usually separate delivery from payment instructions. This allows inconsistencies, so evolution *should* be towards consolidated delivery/payment instruction system. Yet credit risk of some clearing systems is a barrier to their serving as a payment system too, unless they assume status of a bank.

11. Counterparty exposure assumption (results from settlement delay, such as 7 day convention in Eurobond market).

Each counterparty has potential credit exposure as market price of security relative to payment medium changes.

Some countries have long settlement periods, e.g., once-a-week settlement. Elimination of such risks requires method for:

- Risk tolerance
- Risk reduction
- Risk sharing, or
- Risk transfer

Evolution:

1. Adopt "rolling settlement"
2. Shorter settlement period (G30 says settle by T+3)
3. Possible goal: within each system, same day settlement in a centralized, automated system. Even with this, time zone obstacles to contiguous trade-then-settlement will remain
4. An alternative approach may be automated marking-to-market of credit exposure.

12. Transfer of ownership of the securities is effected.

Market needs legal clarity to eliminate risk of transfer of securities before irrevocable transfer of title.

Two issues:

- (a) Are cash and securities sides of settlement *final* simultaneously?
- (b) Will clearing system finality be recognized as final by courts of all relevant countries?

Must be clear and clean rules about choice of law governing transfer of title and upper-tier priority.

Safe custody, ie bare depository services

Ancillary custodial functions

- dividend/interest/redemption processing
- tax reporting and assistance
- executing client instruction on rights, etc
- post settlement information provision on corporate events, etc
(This does not include issuers' agent services such as registrars and paying agents)

Resolution of delivery failures

Services:

- Problem resolution & reinstatement of settlement instructions
- *Securities lending for delivery*
- Member bank guarantees and insurance

Nature of custody is a central issue in evolution of international settlement (cf Part 6). Now can be 3 or more levels of custody.

Possibilities:

1. Central Securities Depository in each country (à la G30)
2. Global CSD in single location
3. International institution serves as "virtual custodian," with bank depositories in each country (à la Euroclear/CEDEL)

Also: claims on certificates vs. dematerialized

Full-service custodial functions, as the emerging primary customer interface, will become more comprehensive but more competitors will appear. Will extend to assisting clients to track performance

Many reasons for failure. One failure to deliver can precipitate a string of failures.

Evolution:

1. Better automated systems
2. Removal of regulatory and taxation barriers to lending securities

16. Payment is effected in country of currency's payments system, e.g., CHIPS, Banque de France
Secondary payment service:
• Euroclear/CEDEL maintain payment accounts for all participants to achieve DVP; some may prefer ultimate payment in correspondent banks in domestic payments systems.

Immediate problem is cash shortfall on the part of the payer. Systems must develop guarantees of cash lending, ie automatic overdraft facilities.
Fundamental issue is lack of true DVP in some systems: risk of delivery of securities without the receipt of good payment (or vice versa).
Evolution of solutions include:
- CSD linked to a payments system
- Bank guarantee system
- Clearing agency guarantees
- DVP by simultaneous debit to sellers' securities account and to buyer's cash account at low-risk institution (Euroclear/CEDEL)

17. Ancillary payment services
• Foreign exchange
• Short term lending of cash to achieve DVP
• "Pre-advice" advancing of funds
• Ongoing lending using securities as collateral.

Presently part of full-service settlement. Automation and pressures for "open access" systems may allow evolution towards separability of these services from the settlement process.