

Supply and Demand Developments in the Financial Futures World Market

1. Introduction: Scope of Paper

This paper concerns financial futures and options on financial futures traded on exchanges, henceforth referred to as “futures” for purposes of simplicity. Five types of contracts are considered as financial futures: long term interest rate, short term interest rate, equity index, currency and precious metal contracts.

The analysis will be limited to the principal exchanges trading these futures, those listed in table 1 plus the Deutsche Termin Börse (DTB), the Swiss Options and Financial Futures Exchange (SOF-FEX), the Montreal Exchange (ME), the Toronto Futures Exchange (TFE), the Financial Futures Market Amsterdam (FMA), and the Hong Kong Futures Exchange (HKFE).

The purpose of the paper is to analyse the current demand and supply situation in this world market, on the basis of which predictions with a five-year horizon are advanced. Demand for futures is understood as the ability and willingness to buy or sell futures, while supply is the provision of the facilities and contracts for this trading, i.e. the activities of the exchanges.

* This paper has benefited from comments provided by Luciano Gabriel, Alexander Leu, Ruth Locher, and Walter Wasserfallen.

2. A Brief History of Financial Futures Trading

2.1. Background

Table 1 lists the year of the introduction of financial futures trading on the principal futures exchanges in the world.

The first traded financial futures contract was the silver contract on NYMEX in 1956, followed by COMEX's gold contract in 1963. The first non-commodity futures were the currency futures on the CME in 1972. Financial futures trading spread to other American exchanges during the 1970s. Financial futures trading began in Europe on LIFFE in 1983 and in Japan in 1984. With the introduction of futures on SOFFEX and DTB in late 1990, the spread of traded futures to the major financial centres has been completed.

The later 1970s and the 1980s was generally a growth period for futures trading.

2.2. Exchanges

The thirteen exchanges listed in table 1 represent the vast bulk of futures trading worldwide. The CBOT and CME dominate the industry, accounting for about 55% of world trading volumes in 1990. The USA also boasts a medium-sized exchange in COMEX and two small exchanges, NYFE and NYMEX. The four Japanese exchanges together

Table 1: Total Financial Futures and Options on Futures Traded on Selected Exchanges (in thousands of contracts).

Exchange	1990	Average Annual Growth Rate 1988-1990 *	Financial Futures Introduction
Chicago Board of Trade (CBOT)	114'617	7 %	1975
Chicago Mercantile Exchange (CME)	93'930	23 %	1972
London International Financial Futures Exchange (LIFFE)	34'170	48 %	1983
Marché à Terme International de France (MATIF)	28'246	33 %	1986
Tokyo Stock Exchange (TSE)	21'623	-6 %	1985
Commodity Exchange (COMEX)	16'323	-1 %	1963
Tokyo International Financial Futures Exchange (TIFFE)	14'451	213%**	1989
Osaka Securities Exchange (OSE)	13'589	130%	1987
Sydney Futures Exchange (SFE)	11'562	-1 %	1985
Tokyo Commodities Exchange (TCE)	10'647	20 %	1984
Singapore International Monetary Exchange (SIMEX)	5'497	67 %	1985
New York Futures Exchange (NYFE)	1'686	-5 %	1980
New York Mercantile Exchange (NYMEX)	920	-24 %	1956
Total of Selected US Exchanges	227'476	11 %	
Total of Selected non-US Exchanges	156'108	39 %	
Grand Total	383'584	20 %	

Notes:

* (1988-89 growth rate in % plus 1989-90 growth rate in %) / 2.

** 1989-90 only, exchange did not exist in 1988.

Source:

Futures Industry Association, Washington D.C.; exchange staff.

account for about 15% of volumes, although MATIF and LIFFE alone each have a larger volume than any one Japanese exchange.

Average annual trading volume growth on the principal exchanges between 1988 and 1990 was a healthy, but not startling 20%. This overall growth figure hides the stagnation on the CBOT, TSE, COMEX, SFE, NYFE and NYMEX, exchanges with a comparatively long period of trading.

2.3. Contracts

Table 2 shows trading volumes in 1990 and average annual growth rates 1988-90 for selected contracts.

The table demonstrates that long term interest rate futures contracts dominate in terms of volume, followed by short term interest rate futures. The other three categories are at roughly the same level, although it should be noted that currency futures are traded primarily in the USA (CME) and precious metal futures are traded primarily in the USA (COMEX and NYMEX) and Japan (TCE).

Long term interest rate contracts are on the whole stagnant, with the exception of the Notional Bond on MATIF and the Bund on LIFFE. In contrast, virtually all short term interest rate contracts exhibit strong growth. For equity index futures the picture is mixed, with the established US contracts stagnant and the other, younger contracts showing high

growth rates (an exception being the TOPIX contract on TSE, whose volume fell an average of 17% in each of the last two years). With three exceptions currency and precious metal contracts display negative or close to zero growth.

In sum, only three contracts in the USA exhibit average annual growth rates exceeding 10% between 1988 and 1990, the CME's Eurodollar, T-Bill, and Deutsche Mark contracts. Indeed, between 1989 and 1990 trading volume for the CME Eurodollar contract fell 11%, and that of the DM contract rose only 5%. Outside the USA twelve interest rate and equity index contracts grew at an average annual rate over 10% during the period 1988-90. A single currency contract (the Yen contract on the TIFFE) and a single precious metal contract (gold on the TCE) outside of the USA exceeded this growth figure. Growth in futures worldwide between 1988 and 1990 was limited to a relatively small number of contracts whose initial base volume was typically low or non-existent. Growth in four contracts, the CME's Eurodollar, the LIFFE's Bund, the OSE's Nikkei, and the MATIF's Bond, was equal to slightly over 40% of the total increase in volume recorded in table 1 between 1988 and 1990.

Table 2: Volume of Futures and Options on Futures Contracts Traded. Selected Leading Contracts only, 1988 to 1990 (in thousands of contracts).

Contract	Exchange	1990	Average Annual Growth Rate 88-90*
<i>Long Term Interest Rate Futures</i>			
T-Bonds	CBOT	102'815	7%
Notional Bond	MATIF	23'406	23%
Yen Bond	TSE	16'307	-14%
German Bund	LIFFE	11'386	96%**
T-Notes (6.5 - 10 years)	CBOT	6'990	6%
Long Gilt	LIFFE	6'433	-1%
Australian Bond	SFE	3'685	0%

Contract	Exchange	1990	Average Annual Growth Rate 88-90**
<i>Short Term Interest Rate Futures</i>			
Eurodollar	CME	41'555	40%
Euroyen	TIFFE	14'414	221%**
3 months Sterling	LIFFE	9'731	61%
Bank Bills	SFE	5'687	44%
Eurodollar	SIMEX	3'482	47%
Euromark	LIFFE	2'908	206%**
PIBOR	MATIF	2'611	14%**
T-Bills	CME	1'902	17%
Eurodollar	LIFFE	1'314	-7%
<i>Equity Index Futures</i>			
S&P 500 Index	CME	13'777	7%
Nikkei 225	OSE	13'589	169%
TOPIX	TSE	3'901	-17%**
CAC 40	MATIF	1'641	182%**
NYSE Comp. Index	NYFE	1'600	-2%
FTSE 100	LIFFE	1'444	80%
MMI Maxi	CBOT	951	-10%
Nikkei 225	SIMEX	880	24%
<i>Currency Futures</i>			
Deutsche Mark	CME	12'600	23%
Yen	CME	10'553	6%
Swiss Franc	CME	7'655	10%
Canadian Dollar	CME	1'692	-1%
Yen	SIMEX	116	-29%
Deutsche Mark	SIMEX	64	-23%
Yen	TIFFE	28	65%**
<i>Precious Metal Futures</i>			
Gold	COMEX	11'662	2%
Gold	TCE	6'873	94%
Silver	COMEX	4'661	-8%
Platinum	TCE	3'269	-12%
Platinum	NYMEX	825	-24%
Silver	TCE	504	-47%
Palladium	NYMEX	95	-43%

Notes:

* (1988-89 growth rate in % plus 1989-90 growth rate in %) / 2.

** 1989-90 only, contract not traded in 1988.

Source:

Futures Industry Association, Washington D.C.

2.4. Conclusion

The general picture of stability in US trading volumes suggests a market with many features of maturity. Outside the USA, the concentration of growth in contracts with short trading histories suggests futures trading in Europe and the Far East may as well soon exhibit features of maturity.

Accordingly, a theme of this paper is that a number of features of maturity are now or will soon be present in futures markets, particularly with regard to the behaviour of exchanges.

3. The Supply of Traded Futures: Exchanges and Innovation

3.1. Number and Location of Exchanges

No new exchanges have been established in the USA since the wave of openings in the 1970s. Japan is now home to four exchanges, and with SOFFEX and DTB every major financial centre in Europe and the Far East has its own exchange. The number of financial futures exchanges in the major financial centres should therefore stabilise at the present number.

3.2. Innovation

3.2.1. The Number of Contracts Offered

The 1970s, and especially the 1980s with the many exchange openings, witnessed a sharp growth in the number of contracts available on exchanges. The majority of this increase in contracts offered was simply due to the new exchanges filling out the range and variety of contracts they 'produced'. Additionally, the competitive circumstances in the traded futures sector fostered growth in the number of contracts. In the early days of the market few exchanges had established a dominant position in a given contract, allowing a direct, head-to-head competition between exchanges. The competition

between exchanges at the time was manifested in part by the introduction of futures contracts on the same underlying product, e.g. precious metals and currencies.

The success rate of these new products, where success is regarded as an adequate level of liquidity to allow for reasonable trading opportunities, lies in the region of 20%. Four-fifths of the contracts were not successes for a number of reasons. Many suffered from technical problems in their size, settlement procedure, or relation to the underlying. A number simply did not find favour with the financial community. Some did not win the head-on battle between exchanges trading essentially the same contract. Nevertheless, to put this success rate in perspective, in manufacturing industries a 20% success rate for new products would be regarded as very high. In addition, in a new industry it is normal for a flood of new products to come onto the market, with only a minority enjoying long-lasting success. However, the financial industry is very different from other industries in the sense that stability and security are normally regarded as very important. In the financial community the failure of 80% of the products has given the futures markets an image of instability.

Three factors will operate to slow down the rate at which new contracts in the major financial centres are introduced.

First, the number of exchanges will stabilise.

Second, in the context of a mature market the relation between exchanges will shift somewhat from competition to cooperation. Exchanges will be less prone to introducing a contract in competition with a contract traded on another exchange.

Third, there are few opportunities remaining for exchanges to fill out their range of futures traded. Table 3 illustrates this point, providing an overview of the contracts available on the principal exchanges organised according to the underlying product. Each entry in the table lists a contract, the exchange on which it is traded, and whether options on the futures contract are traded. The columns in the table show the 'nationality' of the underlying product: the country of origin of the underlying product. The

rows in the table organise the contracts by type: equity index, interest rate, currency and precious metal contracts. For example, all the contracts traded on a Japanese equity index are gathered together in the table, without regard for the location of the exchange where the contract is traded. Similarly, contracts where the underlying is a yen-denominated interest rate security or the yen-dollar exchange rate are grouped together under the column headed "Japan". The only exceptions are the precious metal contracts, which are listed according to the location of the exchange. This table shows that at least one equity index, short term interest rate and long term interest rate contract is available for nearly every major financial centre. Table 2 shows that the CME, COMEX, NYMEX and TCE have world-dominating futures contracts in currencies and precious metals. There are few opportunities remaining for major new contracts.

Operating in the opposite direction, i.e. increasing the number of contracts offered, are two interrelated factors. First, several exchanges remain in a competitive relation with other exchanges, and will introduce 'overlapping' contracts (see section 3.3. below). Second, it is now a commonplace that globalisation is increasingly important in financial markets. As the interests and perspective of the financial community becomes more and more global, exchanges will seek to serve their members and domestic market by offering contracts for underlying securities where the cash market is located primarily in another time zone or in another country. For example, a number of contracts based on yen-denominated securities have been introduced in 1990 on the CBOT and CME (see table 3).

3.2.2. Product Innovation

The first precious metal futures were traded in 1956, the first currency futures were traded in 1972 and the first interest rate futures in 1975. In 1982 the first cash-settled contract, the first equity index contract, and the first options on a futures contract appeared. Since 1982 there has been no innovation in the type of futures contracts traded.

Innovation in the 1980s for risk management products occurred largely in the area of OTC derivatives developed by banks and brokers as well as new types of securities issued by debtors.

On the one hand, for those seeking to manage their risk these derivatives represent substitutes for futures, thus diverting demand from futures. On the other hand, financial houses often purchase futures to manage the risk they have entered into by handling such derivative products. In this second sense all derivatives, non-futures and futures alike, are complementary goods. The newer kinds of risk management products therefore to a certain extent act as a stimulant to futures trading.

3.2.3. Process Innovation

In response to the challenge of product innovation coming from OTC derivatives, exchanges have engaged in significant process innovation, i.e. the way in which futures are traded.

One step taken by a number of exchanges has been an extension of trading hours to improve the liquidity and marketability of the contracts traded. The longer trading hours, in some cases reaching well into the evening, allows greater accessibility to the exchange, particularly for the international investor living in another time zone. The most famous example is the CBOT's night sessions, from Sunday to Thursday, scheduled to overlap with the working day in the Far East. LIFFE and SFE as well are among the exchanges with longer trading times. A more significant response has been the introduction of electronic trading systems. Such systems not only lower the transaction costs and are arguably a more secure and comfortable way for a futures trader to operate, but provide as well the potential for 24-hour trading: it is simply a matter of keeping a computer network running, rather than maintaining the personnel for a floor exchange. Indeed, the extended trading hours on LIFFE and SFE are accomplished through the use of electronic systems, ATP and SYCOM, respectively, which are switched on following the end of floor trading. In New Zealand and on the TSE, OSE, TIFFE, SOF-

FEX and DTB futures trading is entirely electronic. Most ambitious in scope, however, is the system soon to be jointly provided by the two largest futures exchanges. The CME and CBOT announced in June 1990 that their formerly separate systems, GLOBEX and Aurora, respectively, will be merged into one trading network with terminals in exchange members' offices around the world, laying the foundations for round-the-clock, round-the-world trading. MATIF will as well offer its products on the system, and other exchanges are expected to join the network. For the next several years at least, exchanges will offer their products on the GLOBEX/Aurora network only during time periods when their floor is closed. As of the time of writing, no official date for the start-up of the network has been announced.

3.3. Cooperation and Competition between Exchanges

With the coming of maturity, the exchanges which have survived the initial growth period in good health are in firmly established positions. To an increasing extent, these strong exchanges find it more beneficial to cooperate with one another rather than try to compete with such strong rivals. This tendency towards cooperation is a feature of maturity as found in many sorts of industries.

The joining together of exchanges into a common electronic trading network is one example of cooperation between exchanges. In particular, a condition for MATIF to join the GLOBEX network was that neither CME nor MATIF offer the products from the other exchange on their own floor. Another example of cooperation between exchanges is the same contract traded on two exchanges through a mutual-offset system, where a position opened on one exchange can be closed on the other. The best-known example of this is the Eurodollar contract traded on SIMEX and CME. Furthermore, exchanges cooperate through the exchange of information and a licensing agreement to enable products from one exchange to be offered on another.

As a result of such an agreement a US T-Bond contract has been traded on TSE since December 1989 while CBOT offers a TOPIX contract and a Yen bond contract since 1990. A similar example of cooperation is the arrangement between LIFFE and SIMEX fixing a common final settlement price for both exchanges' EuroDM contract. Finally, the most decisive example of cooperation is the merging of exchanges. COMEX and NYMEX have discussed plans for a merger, while a possible merger of the CBOT and CME is a theme among the membership of the respective exchanges. LIFFE and the London Traded Options Market, the latter not a futures exchange but nevertheless a derivatives exchange, merged in 1991.

Among futures exchanges, cooperation has the direct, readily apparent benefit of increasing liquidity. All of the examples of cooperation between exchanges listed above are intended to mutually bring liquidity from one exchange to the other, with the enlarged pool of liquidity drawing in yet more trading interest for each exchange. The potential for cooperation between exchanges is therefore large because a key factor in futures trading, as is generally the case for trading markets of any kind, is liquidity, and synergy effects are present with regard to liquidity.

Exchanges with significant trading volumes coming from contracts whose underlying product is primarily traded in another financial centre will be in a competitive position vis a vis other exchanges. The principle examples are SIMEX and LIFFE (see table 3).

SIMEX offers no contracts based on its home market, as shown by the blank column beneath "Singapore" in table 3. Rather, it positions itself within the world futures market by offering contracts also traded on other exchanges at a lower transactions cost (particularly in comparison to the expensive Japanese exchanges) and/or in a Far Eastern time zone.

LIFFE is increasingly reliant on non-sterling-denominated contracts for its volumes. The Bund was LIFFE's most heavily traded contract in 1990, and the EuroDM contract contributed significant volumes (see table 2). LIFFE is competing directly

with the DTB over the Bund and MATIF over the EuroDM. The ECU bond contract on LIFFE, scheduled for spring 1991, will compete directly with MATIF's ECU bond contract, while as of yet LIFFE's short-term ECU interest rate contract is unchallenged. Lastly, both LIFFE and SOFFEX will introduce a short-term EuroSfr interest rate contract in spring 1991. LIFFE will have to fight with its Continental neighbours to maintain its non-sterling contracts.

Additionally, the Eurodollar contract brings in significant volumes not only for CME, but for both LIFFE and SIMEX as well (see table 2). If the GLOBEX/Aurora system is successful, these exchanges will lose their time zone monopoly position in this contract.

3.4. The Future Supply of Futures

The scope for innovation in futures lies in process innovation, which for the foreseeable future will be realised principally as electronisation.

Because of the potential for synergy effects with liquidity and the internationalisation of financial markets there is an inherent dynamic for the concentration of futures trading. This concentration is realised both through cooperation as well as competition. In terms of contracts, competitive forces have already created a tendency for a specific contract to be traded on only one exchange within a time zone, if not the world. Cooperation between exchanges reduces the likelihood of the appearance of multiple, competing contracts based on the same underlying product. (It should be recognised, however, that cooperation between exchanges can as well go against the tendency for concentration in that more and more popular contracts could come to be traded on two or three exchanges.) In terms of exchanges, cooperation will take the form of mergers and link-ups between exchanges while competition will reduce trading volumes on certain exchanges. The fight for market share in some DM-, ECU-, and Sfr-denominated contracts has been mentioned above. At the extreme, this competition

could eliminate exchanges. It is possible that GLOBEX/Aurora, strengthened by MATIF and, say, a successful DTB, could after five or ten years of operation offer sterling-denominated contracts and thereby absorb virtually all of LIFFE's business. GLOBEX/Aurora, with the addition of TIFFE and/or TSE, could as well endanger the continued existence of SIMEX.

The ultimate outcome of the concentration of trading would be the creation of one exchange to serve the whole of Europe or even the world. The prospects for such an exchange are much better for futures than for equities. Futures are very much the child of the financial community, in particular the small world of the exchanges, banks and brokers. Trading these instruments can be adjusted and shaped relatively easily by the financial community itself. Equity trading, in comparison, is much more influenced by listed firms, institutional investors and governments. In this market it is much more difficult for the financial community to realise an outcome that is rational and efficient for finance.

4. The Demand for Financial Futures: Buying and Selling

4.1. Four Basic Types of Demand for Financial Futures

4.1.1. Hedging Demand

Futures users, anyone who buys or sells futures, may trade futures to reduce or eliminate the risk of loss due to price fluctuations in an asset they currently own or will own. Three categories of hedging may be distinguished according to the use made by the futures user of the price-risky asset.

- a) In asset risk management the primary activity of the futures user is portfolio management, and the user wishes to hedge against an unfavourable movement in the price of an asset currently or soon to be owned.
- b) In liability risk management the primary activ-

ity of the futures user is not directly involved with finance. In the course of business activities the user contracts for a liability, e.g. a loan, an issued security or a transfer of foreign currency, and wishes to hedge against an unfavourable movement in the price of this liability.

- c) In commodity risk management the futures user is primarily concerned with a business activity that adds value to the associated underlying product, e.g. a gold refiner or a broker distributing a new issue of securities. The user wishes to earn a dependable income from the value-added activity by hedging against price fluctuations while the underlying is in his possession.

4.1.2. Investment Demand

Users may buy or sell futures to acquire a financial asset which they hope will increase in value. The futures market enjoys a number of advantages in comparison to the underlying cash market from an investment perspective. The margin deposit system allows for high gearing and therefore a comparatively small cash commitment; broker commissions and exchange fees are low; exchange regulations reduce the risk of default or price manipulation; because each single contract represents a significant value of the underlying, in only moderately liquid markets large positions in the underlying can be opened or closed without requiring significant price changes; the bid-ask spread is often narrow; and the procedure involved in opening or closing a large position is comparatively simple and straightforward. Futures trading, however, suffers from a number of disadvantages from the perspective of an investor. A futures contract is not a security or good, and so there is perhaps a certain psychological distance concerning futures; futures produce no current income such as interest, dividend, or even the premium resulting from selling an option; in comparison to a share, an equity index future does not provide ownership rights within a firm; futures have a value and are tradeable only within a limited

time frame; there is a virtual necessity in practice to follow every opening transaction with a closing transaction; and there is a high level of speculative risk because of the potential for high gearing and unlimited loss.

4.1.3. Locals Demand

Locals demand in this paper will refer to trading characterised by high volume, extremely short term positions and low unit return. All the advantages and disadvantages of futures trading from an investment perspective are relevant for locals demand, with the high gearing and low commissions the major attractions and the high level of speculative risk the major disadvantage. In addition, when users finish each day with a closed position, they can trade large volumes without making any margin payments.

4.1.4. Arbitrage Demand

Users may buy or sell futures in conjunction with an offsetting transaction in the underlying cash market to take advantage of temporary price divergences. In principle such transactions are risk-free. However, in practice the calculation of theoretical value of a future requires certain assumptions, e.g. for equity index futures concerning the future level of dividends, which, together with the real-time delays involved in executing orders, pose a degree of risk for such transactions.

4.2. The Functioning of a Futures Exchange

4.2.1. The Direct Participants

The circle of firms and people actively involved in trading futures is comparatively small. It is almost entirely made up of so-called locals (individuals who are members of exchanges and trade only on own account), brokers and banks, along with some institutional investors as well as precious metal firms. This makes for a rather odd market, where the buyers and sellers, the demand and the supply,

largely comes from within the same industry, i.e. finance.

The limited circle of futures users may be explained by the demands of trading futures and the current state of competition among fund managers. Trading futures is an information- and knowledge-intensive activity. The user must have access to market information concerning both the underlying and the futures markets as well as be properly trained in the use and trading of futures. In addition to these requirements of financial sophistication, futures trading is time-intensive because of the time involved in planning a trade as well as the need to constantly monitor an open position due to margin requirements and the high gearing. Finally, in practice the use of futures has not been widely integrated into portfolio management. This hesitation is due to the demands involved in trading futures as well as the often discouraging reception by fund managers' clients and superiors to futures trading results: success is regarded as simply luck while failure is confirmation of the unsuitability of futures. A further discussion of this point is provided in section 4.3.1. below.

4.2.2. An Analytic Sketch of the CME and CBOT

The CME and CBOT are the most developed futures markets in the world, as well as the most successful. An overview of how these exchanges function can provide a model against which the performance of other futures exchanges may be compared.

Trading volume is broken down among three groups as follows: one half is accounted for by the locals, one quarter by other members (essentially all firms), and one quarter by clients of members. Clients of members trade futures mostly for the purpose of hedging, along with a measure of arbitrage and a bit of investment. Members use futures for all four reasons listed above. Hedging is employed to cover their own positions entered into through dealing in OTC derivatives for clients as well as book positions in the underlying securities (asset risk management) and the temporary ownership of securi-

ties during distribution activities (commodity risk management). Members bring some investment and locals demand to the exchange, as well as engaging in arbitrage. The over 1000 locals on each exchange engage almost entirely in locals demand. In terms of the four types of futures demand, then, locals demand accounts for half of trading, arbitrage and investment demand together account for between 10% and 20% of turnover, and the remaining 30-40% of trading is hedging demand.

A picture emerges of the two exchanges which is not entirely accurate, but conveys the overall working of the exchanges. Locals demand represents a pool of potential liquidity that translates into purchases and sales of futures through absorbing the orders from the other three sources of demand. A noteworthy feature of this liquidity is that it provides only short term liquidity. This sentence may be explained in the following way. An order from a user with hedging, investment or arbitrage demand comes onto the exchange and finds a counterparty who is a local. At some time soon thereafter the local closes his position through an offsetting position, which is as well an order from one of the other three types of demand. In effect, then, the position of one non-local is balanced through the offsetting position of another non-local. The exchange functions as an allocator of positions, offsetting one against the other. These orders do not come in simultaneously, however, and locals function to temporarily assume offsetting positions which are then passed on to a non-local. With locals demand ending each day more or less completely closed, open interest from day to day represents offsetting longer term positions of hedging, arbitrage and investment demand.

The commonly repeated statement that speculators accept risk from hedgers on futures markets needs to be made more precise. Hedging and investment positions that are held long-term are set off against another through the exchange. The risk assumed by the locals demand is to carry the position for a short period of time, before a suitable counterparty(ies) appears on the exchange. Arbitrage demand involves in principle no risk-taking.

4.2.3. An Analytic Sketch of Other Futures Exchanges

No other futures exchange corresponds to this model of the CME and CBOT. In particular, the pool of liquidity represented by the locals, the key component of these exchanges, is lacking on other exchanges. A number of exchanges have established, as an alternative to the locals, a system of market makers on their exchanges. Market makers are not a perfect substitute for over 1000 locals, because they are willing to handle a large order only when the demand/turnover is high. Without the pool of liquidity represented by the locals, the exchanges other than the CME and CBOT operate much less efficiently, and the trading volumes cannot be broken down so cleanly. The only partial exception to this generalisation concerning the other exchanges is MATIF, who have recently introduced a membership category for locals that now accounts for 20% of trading volumes. MATIF therefore approaches the model presented above of the CME and CBOT.

4.2.4. Basis for a Successful Futures Exchange

This analysis of the functioning of a futures exchange suggests that liquidity is the key component for the success of an exchange. It is important to realise that this liquidity comes as much, if not more, from the structure and make-up of the futures exchange as from the size of the 'home' financial market. The Chicago exchanges have been successful not merely because they operate in the largest financial market in the world, but because they could draw on the culture, experience, expertise and liquidity of the locals and member firms who had been trading agricultural futures for years. The prospects for a futures exchange cannot be judged simply from the characteristics of the home financial market. Judgements must be based as well on the set-up of the exchange, in particular the provision of liquidity.

4.3. The Future Demand for Futures

4.3.1. General Factors

A number of general factors will influence the future demand for futures.

a) Volatility

The 1970s and 1980s were a period of historically unprecedented volatility in financial markets. With the strengthening of the EMS, a tendency towards policy, inflation and growth convergence among the major industrialised economies, fewer destabilising influences on precious metal prices, and some signs suggesting the elimination of the US "twin deficits", the 1990s and beyond may experience much more settled financial markets.

b) Investment Demand for Futures

Only a small portion of current futures trading is undertaken for purposes of investment. A number of participants in the futures market argue that, with time, futures will be more frequently used for purposes of investment. Certainly the attractive strategies which can be developed through the use of futures provides an incentive for an increased investment demand for futures. In particular, because of the much lower transaction costs for futures, strategies which are not feasible to perform in the cash markets may be viable through the use of futures. However, it should not be expected that there will be a startling growth in investment demand for futures. When comparing the advantages and disadvantages of futures as an investment vehicle outlined in 4.1.2. above, it should be noted that the advantages are not really beneficial for investment purposes so much as for trading purposes. The advantages are geared towards the transaction itself, i.e. the cost and procedures involved, rather than the benefits of the position resulting from the transaction. It needs to be emphasised that futures are a risk management tool designed to meet the demand for the transfer of risk, not

appreciations in value. That is, futures are a derivative instrument designed for use in combination with the underlying product, not as an autonomous investment tool. Nevertheless, the distinction between hedging and investment can become rather vague. A portfolio heavily weighted in German bonds which wants to be able to take advantage of an expected movement in the French bond market can do so best through futures exactly because of the trading advantages. Whether such a use of futures should be regarded as hedging or as investment is not a point of substance. The potential for futures as a means of investment may well lie in its use as a kind of hedged investment, complementary but subordinate to cash market positions.

c) Wider Acceptance of Futures

It is argued that the concentration of futures users in locals, banks and brokers will change with time. As knowledge of and familiarity with futures spreads throughout the financial community and beyond, correspondingly the circle of futures users will widen far beyond that of professional traders. The benefits of futures as a hedging tool and as a method for investment will induce a wide variety of firms to make use of futures. However, several counter arguments to this point of view can be provided, suggesting that the spread of futures trading beyond professional traders will proceed slowly. First, using futures is not simply a matter of knowledge and familiarity, but the informational and time demands are quite high, as discussed in 4.2.1. above. Such demands are not a barrier to use by professional traders, but present problems for other potential users. Second, there are not strong incentives within the managed funds industry supporting the use of futures. Fund managers are rewarded for steady gains paralleling that of the competition. Performance above the average brings attractive but not spectacular rewards, while performance below the average brings the severe penalties of loss of business to competitors and

possible job loss. In such an environment those involved in managing funds will generally pursue a low-risk strategy of cautious investment. Futures will be avoided because of their perceived risky nature and because of the possibility of a hedged position showing a zero return during a rising market from which the competition realises strong positive returns. Third, it should be pointed out that often industries follow a fashion rather than proceed in a rational manner. Within the financial community examples include the rush into Third World loans, London broking, junk bonds, and takeovers. Regarding the use of futures, futures markets for agricultural products have existed in the USA for over a hundred years. Nevertheless, it is estimated that no more than 10% of US farmers have ever made use of futures markets, despite the apparently overwhelming rational reasons for doing so. Perhaps the fund management industry will never develop the taste for futures use.

d) Managed Funds Methods

Further to the comments above concerning the acceptability of futures to managers of funds, the operating methods and techniques employed by managed funds may limit the spread of futures trading. First, many managed funds are set-up to invest in a particular subset of securities, e.g. SFr. bonds or US equities. Such funds are then obligated simply to remain long in the particular cash market securities, without hedging, assuming a short position, etc. Second, portfolio theory is developing techniques to reduce risk through diversification across markets of long positions in the cash markets without having to sacrifice return as would be the case with hedging through futures. Thus, portfolio risk can be managed without necessarily making use of futures or derivatives of any kind.

e) OTC derivatives as Substitutes for Futures

Section 3.2.2. pointed out that OTC derivatives can serve as substitutes to futures for those seeking to manage risk. OTC derivatives

therefore have a tendency to reduce the demand for traded futures, the complementary character of futures and OTC derivatives notwithstanding. The success of traded futures in meeting the challenge of OTC derivatives will then play a role in the future volume of futures trading. Futures are at a disadvantage to OTC derivatives in that they require greater financial sophistication, while features such as the expiry date as well as value and nature of the underlying are not customised to the needs of the purchaser. The competitive advantages of exchange-traded futures lie in the regulated environment and the competitive framework in which they are traded. Concretely, futures have generally a higher liquidity, marketability, transparency and financial security than OTC derivatives. The greater financial security of exchange-traded futures may well become increasingly important as concerns rise over the creditworthiness of individual banks and brokers who issue and deal in OTC derivatives.

4.3.2. Future Demand for each Type of Financial Future

Demand for precious metal futures will be dominated by commodity risk management demand from the precious metals industry. With little prospect for long term price volatility, asset risk management demand and investment demand will remain restricted.

Liability risk management will be the primary source of demand for currency futures. Such demand could come from virtually any type of firm with international activities. However, both financial and non-financial firms have already implemented procedures for managing such risk. In addition, forward markets in currencies represent a strong alternative to futures markets for purposes of liability risk management. The bulk of demand will come from professional traders wishing to hedge positions entered into by dealing in OTC currency products for clients.

Equity index futures will be traded predominantly for purposes of asset risk management, with a lower level of interest coming from investment and arbitrage demand. The bulk of demand will come from fund managers in addition to professional traders hedging their trading positions in the cash market and their positions entered into by dealing in OTC derivatives for clients.

Demand for each of these three types of financial future is dominated by only one source of demand. The general factors influencing the demand for futures listed in 4.3.1. suggest that there are limited long term growth prospects for each of these sources of demand. Therefore, beyond a certain volume level corresponding to use by professional traders, demand for these three types of futures will be stable or at best grow only slowly.

In contrast, demand for interest rate futures will come from all sources of demand. Bond holdings are both larger in value and spread among more firms than equity holdings, indicating a greater potential for the use of interest rate futures in asset risk management by banks of all kinds, institutions, and managed funds. Virtually all firms and many households are involved in a debt position which they may want to hedge. Whether this is done through futures or through OTC derivatives, interest rate futures trading will grow in response to growth in liability risk management demand. Banks and brokers distributing bonds will continue to hedge this activity, and so commodity risk management demand for futures will grow with the bond new issue market. Investment and arbitrage demand from fund managers, banks and brokers will continue, although at low growth levels. In sum, the range and volume of demand for managing interest rate risk coupled with the relative lack of alternatives to futures markets suggests that the growth potential in interest rate futures is relatively strong.

5. Conclusions

A number of features of a mature market are already present in the US futures market, and the same will

be true of futures markets in Europe and the Far East within several years. Accordingly, principally only futures contracts with relatively short trading histories will experience high growth rates. Cooperation between exchanges will increase in importance relative to competition between exchanges. The broadest scope for innovation in futures lies in process innovation, which for the foreseeable future will be realised largely as electronisation.

The expected low growth rates for futures trading volumes, by and large already realised in the United States, may be explained by the practicalities of futures trading: the demands and risks involved as well as the particular, limited nature of the benefits realised.

Significant and continuous use of futures will remain restricted principally to locals, banks and brokers, extending only slowly beyond this core of users. The success and liquidity of a contract or exchange has as much to do with the structure of the exchange as with the size of the cash market in the underlying. Demand for precious metal, currency and equity index futures will, beyond a certain volume level corresponding to use by professional traders, be stable or at best grow slowly. In contrast, the range and volume of demand for managing interest rate risk coupled with the relative lack of alternatives to futures markets suggests that the growth potential in interest rate futures is fairly strong.