facility, delivery of domestic crudes by one of the first two methods is at "par" and is not subject to any quality adjustments. 82/

3. Crude Oil EFPs

The energy contracts traded on the NYMEX are among the fastest growing contracts in the industry, particularly the crude oil contract, and EFP growth has paralleled the growth in trading volume. Crude oil EFP volume was a mere 5,097 contracts from June to December of 1983 but soared to 297,688 contracts in 1986, while EFPs as a percentage of volume grew from 1.63% to 3.60%. EFPs in crude oil consistently have outpaced deliveries. In 1986, only 19,226 crude oil contracts were settled by delivery (.23% of volume). 83/

The same oil industry entities that use the futures market also use EFPs. As is true for other markets, an EFP allows the participants the flexibility to negotiate delivery terms which differ from those required by the contract. Thus, for instance,

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82/ This is because the crude will have had to meet the particular facility's specifications for grade in order to be placed there for delivery.

83/ EFPs in heating oil similarly increased from 1.5% to 1.9% of contract volume between 1983 and 1986, while deliveries in heating oil over that period have never exceeded .33% of volume (1984) and during 1986 were .21% of volume. These statistics are based on calendar months. NYMEX publishes figures for EFPs, deliveries, alternative deliveries, and volume monthly in "This Month at NYMEX." Those figures are computed by contract month rather than by calendar month and show that, for 1986, there were 255,576 EFPs in crude oil.

an oil company may choose a different delivery point, different grade, or timing of a delivery. The cumulative cost of transportation (from the well head to the refiner to the distributor to the end-user) is one of the largest components in the final price of oil. As a result, commercials frequently use EFPs to specify a delivery point (similar to cash market swaps), thereby reducing transportation costs.

As noted, the futures contract specifies delivery in Cushing, Oklahoma. A firm which is long futures with refineries on the Gulf Coast in Galveston, Texas may use EFPs to take delivery from tankers or barges at those points to avoid logistical problems involved in moving the crude oil and save the cost of transportation from Cushing. According to NYMEX staff, EFPs in crude oil are used more often to control location and timing than potential product specifications because of the transportation costs, as noted, and because petroleum trading is primarily based on near-term commitments. (Holding costs and price risks are too great to allow stockpiling in hopes of a beneficial price.) Moreover, approximately 90% of futures deliveries in crude oil are of West Texas Intermediate. 84/

Several FCMs representing oil industry customers indicated that a second major advantage of EFPs is the firm's ability to choose its own partner instead of being matched at random by the

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84/ EFPs are used more frequently for product substitution in heating oil and gasoline.

clearinghouse with an unknown partner at delivery. An EFP allows, for example, a major oil company to be sure that the other side is financially able to handle the transaction and that the entity is one with which it has an established supplier/customer relationship. Specifically, the buyer can determine whether the seller is able to fulfill its delivery obligation, and the seller can evaluate the buyer's ability to take delivery. An EFP also ensures that the buyer will be able to match delivery with the trade size at one location from one opposite party. In contrast, if the buyer took delivery under the futures contract, he could be matched with multiple shorts, resulting in higher costs because of multiple transactions. Since the parties to an EFP are not publicly identified, EFPs may also be used to disguise a commercial's trading intentions where the commercial gradually has accumulated a number of futures positions and then offsets the accumulated positions via EFP for delivery at one location without disclosing that trading strategy to the market.

EFPs also allow a buyer/seller to effect cash market transactions on the basis of negotiated prices and provide flexibility in arriving at price differentials to account for differences in product (cross-hedges) or other trading necessities. Pricing is also the reason underlying another type of transaction, in which the parties enter into a forward contract for delivery of a given amount of crude oil each month over a period of time, for instance, six months. Each party will price the transaction by acquiring a futures hedge when the futures

price is most advantageous to that party. Delivery is made each month, and the corresponding futures positions extinguished, through a series of EFPs. These EFPs are structured like other EFPs in the petroleum complex. Prices established by EFPs during a period of time also may be used as the basis for setting an average monthly sales price for crude oil royalty production payments. According to Exchange staff, based on the EFP forms submitted to the Exchange, the futures leg of the majority of EFPs at NYMEX are priced at the settlement price on the day on which the trade is reported, and the remainder are close to the market. The cash leg is priced at a current market price for that cash component, or may instead be priced at a differential to the futures price which reflects the appropriate spread between the futures and the cash component being exchanged.

EFPs in the energy complex often are arranged principal-to-principal but may be arranged through brokers. The broker may either match two customers or locate an opposite party for the customer through another broker. Brokers may or may not reveal initially the identity of the principals. However, once a suitable partner is located, the parties may negotiate the EFP on a disclosed basis because of the parties' interest in dealing only with entities which are capable of meeting their obligations. Typically, only one side to the transaction will have an existing futures position. For example, an oil company which is long cash and short futures may transact an EFP with a refiner which has no existing futures position. After the EFP, the oil

company will have no cash or futures position and the refiner will be long cash and short hedged in the futures. In effect, the oil company's position has been transferred to the refiner. This distinguishes EFPs in the energy contracts from those in grain, and sugar and cocoa in which EFPs generally offset futures positions of both parties.

An EFP can be negotiated at any time, but, by Exchange rule, the reporting and posting on the exchange floor of such a transaction for the energy contracts must be done during the hours of futures trading. In addition, EFPs involving the spot future are permitted at any time before 2:00 p.m. on the first business day following termination of trading. 85/ The Exchange requires that delivery of the cash take place within a reasonable period of time, that a change of ownership of the cash commodity take place, and that documentation of the cash commodity transaction be submitted to the Exchange. 86/ EFP deliveries are

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85/ Exchange Rules 150.14A, 170.14A, and 200.20A (copies of which can be found in Appendix 3) set forth an alternative delivery procedure ("ADP") which permits parties matched for delivery by the clearinghouse to agree to delivery terms different from those specified by the contract. ADPs may take place after trading has ceased. This is similar to the "commercial settlement" procedure available in the sugar market.

86/ It is interesting to note that, in addition, Exchange heating oil Rule 150.08, concerning product placement with respect to deliveries, requires that for a maturing contract the selling clearing member must receive from its customer a certification stating that "the customer has or will have in position, not later than the calendar day following the

(Footnote Continued)

effected in the same manner as in the underlying cash market, i.e., pipeline, storage, pumpovers, etc.

Exchange rules require that the cash commodity in an EFP be the product, by-product, derivative, or a commodity related to that which is deliverable on the contract. 87/ Thus, for instance, the following would be acceptable pairings: jet fuel or kerosene to heating oil, gasoline or heating oil to crude, and jet fuel to crude. By comparison, natural gas -- which could be cross-hedged against the crude oil contract -- would not be an acceptable cash commodity in an EFP because it is not a by-product or derivative of, or related to, crude oil.

The following example illustrates a crude oil EFP to specify a delivery location. An oil company, C, owns 100,000 bbl. of crude oil located at Shreveport, Louisiana and is short 100 crude oil futures contracts to hedge that position. A Galveston, Texas refiner, R, wishes to purchase the crude oil and take delivery in Galveston. R does not have a futures position. C and R transact an EFP whereby C buys futures (gives up its

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(Footnote Continued)

fifth business day of the delivery month, at one or more eligible delivery facilities at which delivery may be made under exchange rules, a quantity and quality of product sufficient to meet such customer's obligations to make delivery when and as prescribed by the rules in accordance with the buyer's instructions." There is currently no comparable provision in the crude oil contract.

87/ A "related" commodity is one which involves some additional processing and is, therefore, not a true derivative or by-product. For instance, aviation fuel is heating oil with some additives.

short futures position) and sells the cash commodity and R buys cash and sells the futures. As a result of the EFP, C has no cash or futures position and has avoided the costs of transportation to Cushing which would have been required for delivery against the futures contract. R has acquired 100,000 bbl. of crude oil with a short futures hedge of 100 contracts. C will have to transport the crude oil to Galveston for delivery in accordance with the terms of the cash contract.

D. Interest Rates

1. Significant Characteristics of the Cash Market for Interest Rate Instruments

The most significant participants in the cash interest rate markets are national governments and their agencies, banks, insurance companies, domestic and multinational corporations, pension funds, and securities dealers.

Although there are a plethora of interest rate instruments, this discussion is limited to some of those instruments that are deliverable on futures contracts. One of the most important aspects of an interest rate product is its term to maturity. There are short-term (less than a year), mid-term (1 to 10 years), and long-term (10 years plus) instruments. The United States Treasury ("Treasury") issues T-bills, T-notes, and T-bonds, representing each of the term periods, respectively. 88/

88/ One of the most significant features of Treasury securities is that they are risk-free in that the payments of interest

(Footnote Continued)

The Treasury interest rate securities are sold at auctions held by the Federal Reserve Banks for the Treasury.

T-bills are issued in 91-day, 182-day, and 364-day maturities. The majority of the T-bills are bought by primary dealers [89/] through competitive bids. Individuals, usually small, noninstitutional investors, can enter directly noncompetitive bids for a specific quantity of securities (up to one million dollars), and will receive T-bills at the average price of the competitive bids. T-bills are sold at a discount to their face value; that is, if Treasury sells a $10,000 one-year T-bill at 10%, the purchaser will pay $9,000 and receive $10,000 at maturity. Therefore, the actual yield will be greater than the quoted rate; in this example, the T-bill will yield 11.11%.

T-bonds and T-notes are similar to each other, except for their terms to maturity at issuance. The auctions for these instruments are held regularly and are called "refundings." As with T-bills, the majority of these instruments are sold to primary dealers who resell them to the investing public (although they may also be purchased by noncompetitive bids). Unlike T-bills, however, these securities are sold on a yield, rather than a discount, basis. If an investor bought a $10,000,

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(Footnote Continued)

and principal are assured if the instrument is held to maturity.

89/ "Primary dealers" are designated by the Federal Reserve and are used to carry out the Federal Reserve's open market operations.

30-year, 8% coupon T-bond, he would receive two $400 payments a year ($800) and $10,000 at maturity. Yields on T-bonds are calculated using "present value" formulas to take into account the separate cash flows, which in this instance total 61 (the twice-annual interest payments and the return of the principal). These securities are known as "fixed income" instruments because of their predetermined coupon flow. 90/

Treasury securities are issued only in book entry form. The purchaser's ownership of the security will be recorded in an account established for the purchaser at Treasury. The purchaser receives a receipt of purchase rather than an actual certificate.

Eurodollars are short-term interest rate instruments. A Eurodollar is any U.S. dollar on deposit outside of the U.S. The modern Eurodollar market emerged when French and English banks accepted dollar deposits in the late 1950's. 91/ These banks could pay higher interest rates since they were not restricted by Federal Reserve Board regulations that require member banks to maintain reserve requirements. In general, dollar-

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90/ Another type of fixed income instrument is municipal bonds, which are structured like T-bonds in that they are sold at par with coupons attached.

91/ The earliest traces of the Eurodollar market are found in Europe just after World War II. The Soviet Union, fearful of placing U.S. dollars on deposit in the U.S. since they believed the U.S. might seize the deposits for payment of war debts, deposited dollars in two Soviet banks, the Moscow Narodnay in London and the Banque Commerciale pour L'Europe du Nord in Paris. The Paris bank's telex was "Euro" which led to the term "Eurodollar."

denominated loans, deposits, and bonds outside the U.S. are not subject to most U.S. banking or security regulations. 92/ Moreover, most foreign countries generally are reluctant to regulate dollar deposits in their banks. Therefore, one of the most important characteristics of the Eurodollar market is that it is relatively free of regulation. 93/

2. Interest Rate Futures Trading

The primary interest rate futures contracts are CBT's T-bond and T-note, and CME's T-bill and Eurodollar contracts. 94/ During 1986, over 52 million T-bond contracts were traded. The T-bond contract was the most active contract in the industry, constituting 29% of industry-wide futures volume. 95/ T-bond

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92/ G. Dufey & I. Giddy, The International Money Market, 6, 13 (1978).

93/ Id. at 39-40, 133-135; Federal Reserve Bank of Richmond, Instruments of the Money Market, 123-126 (1981). Any currency not deposited in a domestic bank for that currency is a Eurocurrency. A D-mark deposited in France is a Eurodeutschemark ("Euromark"), and a Japanese yen on deposit in the U.S. is a Euroyen. All of these deposits represent relatively unregulated markets.

94/ The CBT municipal bond contract is also of some importance, with volume of nearly one million contracts during 1986, but is not discussed separately herein because there are very few EFPs in municipal bonds, and the reasons for EFPs in that contract are similar to the reasons for T-bond EFPs. Less significant are the CBT's Government National Mortgage Association ("GNMA") contract and the CME's Certificate of Deposit contract.

95/ In 1986 three foreign exchanges also offered U.S. T-bond futures. The London International Financial Futures Exchange ("LIFFE") traded 1.5 million contracts. The

(Footnote Continued)

futures have become an important vehicle for cash traders to hedge their activity. Many government securities dealers hedge their auction bids with the T-bond contract.

CBT T-notes had volume of 4.4 million contracts in 1986. At CME T-bills had volume of 1.8 million contracts, while the Eurodollar contract had volume of 10.8 million contracts, making it the third most active contract in the industry. 96/

The deliverable grade for T-bond futures is any T-bond with a face value of $100,000 that is not callable for at least 15 years or, if a not-callable bond, with a maturity of at least 15 years from the first day of the delivery month. 97/ T-bond futures prices are quoted based on an 8% coupon bond, priced at

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(Footnote Continued)

Singapore International Monetary Exchange ("SIMEX") and Sydney Futures Exchange ("SFE") began trading U.S. T-bonds in October 1986. SIMEX traded 45,011 contracts from October 1986 through March 1987, and SFE traded 8,251 contracts for the same period. In addition, the LIFFE had Eurodollar volume of 1.1 million contracts, while the SIMEX traded 459,847 contracts.

96/ The T-bond, T-note, T-bill and Eurodollar futures contracts all have related option contracts. The T-bond option was the most active option contract (and second most active contract overall) in 1986 with volume in excess of 17 million contracts. T-note option volume was one million contracts, T-bill option volume was about 64,000 contracts and Eurodollar option volume was 1.7 million contracts.

97/ A bond may be callable prior to the date of maturity. If a bond is callable, the issuer has the right to call the bond on or after that date returning the corpus to the buyer and suspending any further coupon payments. Since November 1984, Treasury no longer issues callable bonds, but there are a significant number of callable issues remaining in the secondary market which could be delivered.

100. Deliverable bonds of all other maturities and coupon rates are priced at a percentage of par relative to that standard using a series of conversion factors set by the Exchange. That is, if the yield is other than 8% the delivery invoice price will be the settlement price of the futures times the conversion rate for that coupon plus accrued interest. 98/ T-bonds are delivered through a book entry system regulated by the Federal Reserve. T-bond deliveries can be initiated by the short on any day of the delivery month.

The deliverable grade for T-note futures is any T-note with a face value of $100,000 and a maturity of at least 6.5 years and not more than 10 years. The premium or discount for each deliverable issue is determined on the basis of yield equivalency with an 8% note selling at par. T-notes similarly are delivered through a book entry system regulated by the Federal Reserve. T-note deliveries can be initiated by the short on any day of the delivery month.

To be deliverable against the CME T-bill futures contract, a T-bill must have a $1,000,000 face value and thirteen weeks to maturity when delivered. T-bill deliveries may occur on three days following the last trading day (always a Wednesday), but it is uneconomical to deliver on any day other than the first

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98/ As many as 30 or more different T-bonds may be eligible for delivery. Similarly, a variety of T-notes may meet the delivery specifications.

following day. Delivery is made in a New York or Chicago bank which is registered with the Exchange and is a member of the Federal Reserve System.

CME Eurodollar futures are cash-settled on the last trading day, which is on the second London bank business day preceding the third Wednesday of the contract month. Trading on the last day is from 7:20 a.m. to 9:30 a.m. Chicago time (1:20-3:30 p.m. London time). The Exchange determines the final settlement price by polling a random selection of major London Eurobanks and averaging their London Interbank Offered Rate ("LIBOR") quotes.

The participants in the interest rate futures markets include securities dealers and major financial institutions, such as banks, pension funds, and insurance companies. These participants use the futures markets to hedge their interest rate commitments or investments, for arbitrage, and for other investment and trading strategies. One purpose of hedging in interest rate futures is to predetermine a specific level of interest to be paid or received. Borrowers can protect against increased costs, and lenders can protect against decreased loan revenues.

Cash/futures T-bond arbitrage consists of the simultaneous purchase and sale of similar securities in each market. When the price differential between cash and futures is greater than the

cost of carry [99/] (i.e., when the cash and futures markets are mispriced relative to each other), an opportunity for arbitrage is present. When futures prices are greater than the cash, less the cost of carry, the trader will buy cash and sell futures. On the other hand, if futures prices are less, the trader would short cash and buy futures. Due to difficulties in shorting cash bonds, particularly finding the appropriate coupon in a timely manner and the risk that the bond will be called before the desired results are achieved (since the owner of the bonds may recall them at any time), this latter strategy may only be used by highly capitalized securities dealers.

3. Interest Rate EFPs

The percentage of volume resulting from EFPs has been very small in both the T-bond and T-note futures contracts. However, EFP volume in the T-bond contract has risen from 80,712 contracts in 1983 to 394,954 contracts in 1986, a major increase. Because trading volume advanced in a similar manner throughout this time, however, the percentage of T-bond EFPs relative to total volume has remained less than 1%, increasing from .41% in 1983 to .75% in 1986. EFPs in T-notes rose from 7,349 contracts in 1983 to 54,574 contracts in 1986. EFPs as a percentage of total volume

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99/ The cost of carry is a calculation of the financing rate until the delivery date for the futures, usually based on the actual repurchase agreement ("repo") rate, that is, the cost, or interest rate, which would be paid to sell and repurchase T-bonds for the period.

in T-notes advanced from .90% in 1983 to 1.23% in 1986. EFP activity in the CME Eurodollar contract has been insignificant in relation to the futures volume and cash market activity. Eurodollar EFP volume in 1986 was only 2,963 contracts (only .037%) and represented less than half a dozen transactions. 100/

One of the major reasons for EFPs involving interest rate instruments is to integrate the cash/futures transaction. When unwinding a hedge position, traders are at risk between the time they liquidate their futures positions and execute the corresponding cash transactions. In the interim, they can unwillingly become speculators. In a long hedge, a trader is at risk that the price of the cash may rise after he liquidates his futures position. If an EFP is executed, the interim period is eliminated, and neither trader bears risk since both legs are priced simultaneously.

EFPs by hedgers have become common since they often will execute cash transactions with a primary dealer which is also an FCM, through which the hedgers could also execute futures transactions. An EFP is a logical choice for unwinding those positions because it allows the hedger to execute both the cash and the futures transactions with the same counterparty.

100/ EFPs in municipal bonds are also relatively unimportant. There were approximately 1,500 EFPs in municipal bonds during 1986 (less than one percent of the volume), and all took place in March, April, and May. For that reason, and because EFPs in municipal bonds are similar in purpose to those in T-bonds, they are not addressed separately herein.

Another major reason for EFPs in interest rates is to facilitate arbitrage. As described earlier, an arbitrage opportunity exists between cash and futures T-bonds when the price differential is greater or less than the cost of carry. Similar to basis trading in grains, the EFP assures that a specified differential is obtained and, thus, in the case of arbitrages in T-bonds, locks in the anticipated profit on the transaction. This is important since successful arbitrage is dependent on small price differentials. Further, EFPs to unwind arbitrage positions assure that the desired basis will be achieved. EFPs arranged by an FCM for its customers are common in arbitrage trading since the FCM is often also a primary dealer. 101/

EFPs are also effective in managing the basis risk inherent in dealing in a security whose price may not correlate exactly with the futures price. Because of the number of different instruments deliverable against the futures there is substantial basis risk among deliverable instruments, as there is for non-deliverable forms of the same type of security. For example, the price of the futures contract will track the T-bond

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101/ With respect to arbitrage strategies, it should be noted that whether arbitrage can be employed advantageously depends to a large extent on the identity of the trader since typically it is only dealers, institutions, and professional traders who can identify arbitrage opportunities quickly and obtain sufficiently favorable price quotations.

that is cheapest to deliver. 102/ As a result, another T-bond that is deliverable may exhibit basis movement different from that of the cheapest coupon bond, thus increasing the basis risk for those trying to hedge a different coupon. The basis risk can be more substantial if a trader is hedging a non-deliverable instrument. Again, EFPs help to minimize this risk when the hedge or arbitrage position is unwound because the futures and cash prices are established simultaneously and are assured.

Similarly, the EFP allows traders to specify the type of bond or particular coupon desired. If a trader hedges T-notes with T-bond futures, he could use an EFP to receive the T-notes. In addition, short hedgers could use the EFP to deliver a coupon which is not the cheapest to deliver, and, unlike the futures

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102/ The cheapest-to-deliver bond is the one issue that results in the least cost (or most gain) when delivered in settlement of a short futures position. Which bond is cheapest to deliver may be calculated by using one of two methods: (1) the least basis or (2) the highest implied repo rate. These two methods may not always agree on which bond is cheapest to deliver, but they are usually fairly close. The least basis method compares invoice prices (the futures price times the conversion factor) to the individual cash prices to find the basis for each issue. The issue with the least basis is cheapest to deliver because it minimizes the loss (if the cash price is greater than the futures invoice price) or maximizes the gain (if the cash price is less than the futures invoice price) on delivery. The implied repo rate calculation finds the eligible bond with the highest potential return (taking into account the interest accrued on the bond to date, the futures price, and the cost of the security on an annualized basis) when purchased in the cash market today and delivered in the futures market on some date during the delivery month. The formula for calculating the implied repo rate and an example comparing these two methods can be found in Appendix 10.

delivery process, the trader could negotiate adequate compensation for the more expensive T-bond. Thus, EFPs provide important flexibility to both long and short futures position holders in determining which bond is to be delivered.

The EFP also provides flexibility in the timing of the execution. Traders can execute EFPs after the futures market closes and when the cash market is still active. After the close, there can be significant basis change due to cash market trading. If there is price volatility in the cash market, traders can still enter or exit the futures market when the exchanges are closed. EFPs therefore can be used to facilitate 24-hour trading. This technique also is used by "locals" to correct trading errors, such as miscounts where the local ends the trading session net long or short (rather than "flat"). A local in these circumstances can exit the market through an EFP.

Despite the usefulness of EFPs to facilitate hedge and arbitrage transactions in the interest rate markets, EFPs, as noted earlier, have not yet come to comprise a substantial percentage of volume. There are several possible reasons for this. First, EFPs in T-bonds are not used to price cash transactions; thus, the cash and futures markets are not as completely integrated through EFPs as in other markets. Moreover, unlike the grains, sugar, and cocoa markets (where EFPs are a significant percentage of volume), there is significant participation in the T-bond market by local traders and retail customers. Finally, the users of these markets, including retail customers,

may not be as familiar with the availability of EFPs to facilitate their trading strategies.

EFPs can occur at any time, but it appears that most EFPs in interest rates are executed when the futures market is open. EFPs by arbitrageurs are executed when the futures market is open and the cash market is active. 103/ EFPs to facilitate 24-hour trading, on the other hand, are executed when the exchanges are closed. Some market observers believe that 24-hour EFPs in T-bonds may increase, because of the heavy T-bond cash trading in foreign markets, such as Tokyo. At present, however, overnight T-bond volatility does not appear to be significant. 104/ There also does not appear to be a seasonal pattern to changes in EFP volume.

The prices of the cash and the futures legs in interest rate EFPs may be determined in different ways depending on the parties. The common EFP between an FCM and its customers will be negotiated at current cash and futures prices, plus the bid/ask spread on one side. The EFP price assures the current prices of

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103/ The cash market trades 24-hours a day but is more active when the futures market is open probably because of the availability of futures for hedging and because those hours are normal business hours.

104/ As of April 30, 1987, the CBT has had an evening trading session for T-bonds and T-notes in place from 6:00 p.m. to 9:00 p.m. These hours correspond to business hours in Tokyo. Extended trading hours are discussed in greater detail in Section XI.A. of this Report, infra. The existing EFP rules were not amended for evening trading.

both markets and thereby removes basis slippage. Arbitrageurs will price the EFP through a differential, and are generally unconcerned with the actual price of either leg. This differential is usually the current spread between cash and futures prices. Locals who trade EFPs to correct trade imbalances will trade the two cash trades "flat" (i.e., at the same price) and price the futures at a differential to the current cash price. The delivery of the cash instrument occurs at the time of the EFP, in accordance with the procedure for delivery of these instruments as outlined above.

The majority of participants interviewed explained that interest rate EFPs almost invariably involved deliverable instruments. A few participants said that they use EFPs in T-bonds to facilitate cross-hedges of non-deliverable instruments, such as GNMAs versus T-bonds, T-notes versus T-bonds, or T-bonds versus corporate bonds.

The CME tentatively has ruled that forward rate agreements ("FRAs") [105/] and interest rate swaps [106/] are not acceptable

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105/ An FRA is an agreement by two parties to loan a given amount at a fixed rate for a stated period which is then settled in cash to the current LIBOR at maturity rather than an actual loan being made.

106/ Generally, an interest rate swap is a transaction in which one borrower exchanges fixed-rate debt obligations for another's floating-rate obligations with an investment or commercial bank as intermediary. The swap could also be used to exchange short-term for long-term fixed-rate obligations, or vice versa, or for other exchanges of one type of obligation for another.

cash components in Eurodollar EFPs, apparently because they were deemed to be too similar to futures contracts. Eurodollar deposits and Eurodollar certificates of deposit are acceptable as the cash component. CME staff has indicated, however, that this issue is under study and may be subject to re-evaluation. 107/

The following is an example of a typical T-bond EFP in connection with an existing futures position. A portfolio management firm that manages a major fund of Individual Retirement Accounts anticipates a large influx of cash just prior to the tax deadline. The firm plans to invest a sizeable portion in T-bonds. It believes the current March T-bond futures price of 96-00 is attractive and buys T-bond futures to lock in that price through its FCM.

As expected, in late February the firm has a large influx of cash. It decides to liquidate the futures position and to buy cash T-bonds. March T-bond futures are trading at 98-00, and the cash T-bonds are at 98-10. The customer firm contacts the FCM and requests an EFP quote. The FCM quotes a bid/ask spread for the cash transaction of 98-09/98-12 and a futures price of 98-00. The customer firm accepts the quote, and the EFP is executed. The firm liquidates its long futures position by selling March futures at 98-00 and buying the cash T-bonds at 98-12.

107/ For additional discussion of the acceptability of futures as the cash component of an EFP and of the CME's ruling, see Section V. of this Report, infra. A copy of the CME's interpretation can be found in Appendix 3.

The FCM is now long futures at 98-00 and subsequently will liquidate the acquired futures position at the prevailing market price. The customer has acquired the cash bonds, and the FCM has sold cash. The FCM has also received commissions on both legs of the trade.

E. Stock Indices

1. Significant Characteristics of the Stock Market

The trading of stocks began in the U.S. in 1792 on the New York Stock Exchange ("NYSE"), which is still the most active stock exchange in the U.S. In addition to the NYSE, there are the American Stock Exchange and regional exchanges, such as the Midwest, Pacific, and Philadelphia Stock Exchanges, and other smaller exchanges. Trading also occurs through the National Association of Securities Dealers Automated Quotation ("NASDAQ") system, a computerized over-the-counter ("OTC") market, 108/ and other traditional OTC markets.

Stock indices are designed to track the performance of a group of stocks. Some indices attempt to track a particular component of the stock market, while other indices serve to track the overall market. The first index, the Dow Jones Industrial

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108/ Additional information about the securities markets can be found in the memorandum entitled "Overview of the Securities Industry and Examination of Block Trading" in Appendix 11. The trading of stocks is not limited to the domestic markets. There is stock trading around the globe in Japan, Great Britain, West Germany, Australia, and other countries. In recent years some of those markets have attracted substantial business from the United States.

Average ("DJIA"), is currently comprised of 30 "blue-chip" stocks, traded on the NYSE, that track the performance of leading firms in major industries. 109/

The Standard and Poor's 500 Stock Price Index ("S&P 500") is a broad-based market index that is used by portfolio managers and others as a surrogate for the entire market and is viewed as a benchmark for investment performance. It is comprised of 400 industrial, 40 utility, 40 financial, and 20 transportation stocks. 110/ Most of these issues are highly capitalized and liquid. The Major Market Index ("MMI") is comprised of 20 blue-chip NYSE-traded stocks, 16 of which are also in the DJIA. There is a high correlation factor (97%) between the MMI and the DJIA. 111/

109/ The Dow Jones Industrial Average was first published in 1897 and was based on 12 stocks. In 1916 the DJIA was broadened to include 20 stocks and in 1928 was further expanded to include 30 stocks. Since then the DJIA has been comprised of 30 stocks. The individual stocks that comprise the index have been changed over the years.

110/ 470 of the stocks in the S&P are traded on the NYSE, 23 are traded OTC, and seven are listed on the American Stock Exchange.

111/ The correlation factor is the measure of the "closeness" of the relationship between the price movement of two markets (e.g., cash and futures), or pairs of other variables (in this case the two indices). A high correlation factor for the prices in a particular set of cash and futures markets indicates that there is a reliable and demonstrable basis relationship between the two markets. This concept is discussed in greater detail in Section V.B.1. of this Report, infra.

The Value Line Average ("VLA") is an index of 1,700 stocks traded on the NYSE, American Stock Exchange, and in the OTC market that are featured in the Value Line Investment Survey, a periodic financial and marketing analysis and investment rating of all corporations included in the index. The 1,700 stocks represent about 96% of the dollar value of all equities traded in the United States. The NYSE Composite Index is comprised of all the stocks (1574) traded on the NYSE. 112/

The values of the various indices are calculated and computed using one of three methods. 113/ The values of the DJIA and MMI are determined through a price-weighted arithmetic average. 114/ The S&P 500 value is determined through a

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112/ There are numerous other indices and sub-indices, including the following: Standard and Poor's ("S&P") publishes the S&P 100 Index ("S&P 100"), the S&P 400 Index, the S&P OTC Index, and a sub-index for virtually every industry. The National Association of Securities Dealers ("NASD") publishes the NASDAQ index which is comprised of 100 active stocks traded on the NASDAQ system. Perhaps the broadest market index is the Wilshire 5000 equity index, which includes 5,000 stocks.

113/ In simplest terms, each average attempts to show the market value change between periods of time. For instance, the S&P 500 uses the base period of 1941 through 1943. Therefore, any S&P 500 quote is comparing the current value of stocks to the value in 1941-1943. The value of the index was set at 10 for the base period, and the current value reflects the percentage change in the index since that time. However, the stocks making up the index change frequently and there are adjustments for stock splits and increased capitalization so that the index change does not reflect the change in value of those particular stocks over time.

114/ A price-weighted index gives greater weight to stocks with

(Footnote Continued)

capitalization-weighted arithmetic average. 115/ The VLA value is computed through a price-weighted geometric average, with each stock given equal weight in calculating the index. 116/

In recent years, with the development of computer-assisted trading techniques, the stocks represented in indices may be bought or sold quickly and efficiently. For example, a firm may develop a program to buy the S&P 500. The computer will route an order to the Designated Order Turnaround ("DOT") system on the NYSE to buy the 350 least-capitalized NYSE stocks in the index. At the same time, orders for the 120 highest-capitalized stocks will go to the firm's brokers on the floor of the NYSE 117/ and orders for the 30 stocks listed on the American Stock Exchange

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(Footnote Continued)

higher prices. For example, IBM is usually the highest priced stock in the MMI and the DJIA, so its price movement will have the greatest effect on the index.

115/ A capitalization-weighted index gives greater weight to stocks with greater capitalization. A stock price is multiplied by the amount of shares issued and outstanding to determine its weight relative to other issues. Therefore, a stock trading at 20 with 1,000 shares outstanding is given more weight than a stock trading at 30 with 500 shares outstanding. The rationale is that the first stock has a total market value of $20,000, whereas the second stock has a value of $15,000.

116/ The price-weighted aspect is the same as for the DJIA and MMI, but geometric averaging (as opposed to arithmetic averaging) produces a downward bias, that is, price declines in the stocks making up the index are reflected in a greater decline in the index value. A geometric average measures the continuously compounded rate of change of the price of the average stock in the index over a given period of time.

117/ The DOT system will only process orders of 2,099 shares or less.

and OTC will also be entered. It will take less than 2,000 shares each in the less-capitalized stocks and over 2,000 shares each in the more highly capitalized stocks to replicate accurately the index. The process will take from three to five minutes to be completed. While the orders may be executed very quickly, this system does not assure the trader of the prices at which the stocks will be purchased. Consequently, the trader is unable to predetermine the purchase price of the index.

2. Stock Index Futures Trading

Stock index futures contracts originated at the KCBT in February 1982 with the introduction of the VLA contract. The CME introduced the S&P 500 contract in April 1982, the NYFE began trading the NYSE Composite Index in May of 1982, and the CBT began trading the MMI in July of 1984. 118/ Since stock index futures were introduced in 1982, volume consistently has grown, dominated by the S&P 500 contract, which in 1986 traded more than 19 million contracts (in contrast to 8 million contracts in its first full year of trading in 1983). At CBT, the MMI traded 1.75

118/ The success of stock index futures led to the introduction of options on stock indices. The Chicago Board Options Exchange ("CBOE") trades options on the S&P 100. This is the most active stock index option, as well as the most active option contract. In 1986, the S&P 100 traded over 113 million contracts. Furthermore, index options are traded on the NYSE, the American, the Philadelphia, and the Pacific stock exchanges. There are index products available in foreign markets as well. For example, SIMEX offers futures on the Nikkei 250, and the Toronto Futures Exchange trades the Toronto Stock Exchange 300.

million contracts in 1986, compared to 1.5 million in 1984. The KCBT VLA contract traded 950,000 contracts in 1986, compared to 725,000 in 1983. In addition, NYFE's NYSE Composite Index contract increased in volume from 1.5 million contracts in 1982 to 3 million in 1986.

The composition and pricing of the indices on which these four stock index futures contracts are based have been described above. Satisfaction of all stock index futures contracts is accomplished by a book entry cash settlement process. 119/ At expiration the settlement price of the futures contract will be the actual quotation of the cash index. For example, if a trader is long MMI futures at an index value of 100 and the settlement price is 101, the trader would receive the dollar value of one index point. That value is calculated by the contract multiplier, which is $250 for the MMI. 120/ Thus, in this example, the long trader would receive $250 per contract. If a trader was

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119/ The delivery of individual stocks traded in the cash market is consummated when the buyer transfers cash (or securities) and receives the stock certificate. The buyer can margin the purchase but must make full payment within 5 days with interest. Stock transactions are normally settled within five business days, and title passes when a book entry signifying the transfer has been completed. Often the actual stock certificate will be retained by the brokerage firm in its nominee "street" name rather than being registered in the buyer's name. Most transfers of stock between brokerage houses are recorded by book entry at the Depository Trust Corporation. For additional information on the transfer of stock see Section VII.B.2., infra.

120/ The multiplier for the S&P 500, NYSE Composite Index, and VLA is $500.

short five (5) contracts at 100, he would pay $1,250. The time of settlement is specified in the contract, and, for each of these four contracts, is currently tied to the third Friday of the delivery month.

Speculators who trade stock index futures attempt to profit by anticipating the direction of stock price changes as represented by indices. Commercial users of stock index futures most notably are institutional investors which manage portfolios of stocks. These users include investment banks, commercial banks, pension funds, university endowments, insurance companies, and other financial institutions. Portfolio managers use stock index futures contracts to hedge against the risks associated with market swings. Adverse price fluctuations can cause dramatic changes in the current asset value of an existing portfolio, or cause a trader to receive adverse price executions in buying and selling securities. The portfolio manager attempts to construct a futures position that will change in value in direct proportion to changes in value of the cash position (stock portfolio).

Assume that a pension fund manager anticipates that he will need to sell a portion of his portfolio to fund a liability six months hence. He insulates his position against a market downturn by hedging with short futures positions. If his portfolio was identical to the particular index, he could easily hedge the position. For example, if he sold futures at 300 and the market declined to 290, he would have a 10-point profit in

the futures position to balance the 10-point loss in the stock portfolio. While the concept is simple, the actual hedge management is not simple because of variations in value and volatility between the portfolio and the index used to hedge the position.

The first step is to calculate the dollar value of the portfolio to be hedged which must then be equated to the value of a futures contract. Assume that the portfolio to be hedged is valued at $10 million. If the futures price is 300 and the multiplier is $500 each futures contract is presently worth $150,000. Therefore, the portfolio would be hedged with 67 contracts ($10 million ÷ $150,000 = 66.67). Determining an appropriate hedging strategy is not likely to be that simple unless the cash position is identical to the underlying cash index. If it is not, the value of the portfolio is likely to fluctuate differently from the underlying cash index. However, this risk can also be managed by calculating the "beta" (relative volatility) of the portfolio and the index. 121/

121/ The relative volatility of a stock index and an individual stock or a portfolio is measured by the "beta." Beta is a statistical measure of the average historical relationship between the index and a stock, computed by using regression analysis. Since the beta is based on historical relationships, it may not accurately predict future volatility relationships, but it is generally a useful predictive measure. The beta will vary over time as it is recalculated to take into account additional data. If a stock has a beta of 1.00, this means that it correlates perfectly with the index. Betas greater than 1.00 indicate

(Footnote Continued)

Assume that, in the example above, the portfolio to be hedged is less volatile than the index. The portfolio is comprised of low beta stocks, such as utilities, and has a beta of .85. Therefore, to hedge adequately the dollar amount of the portfolio, the manager will sell 57 futures (66.67 x .85 = 56.67). Although this procedure does not assure a "perfect" hedge because of the instability of the beta, it generally should provide adequate protection.

Stock index futures also are employed in arbitrage strategies. 122/ Stock index arbitrage involves the simultaneous purchase (sale) of a cash position and the sale (purchase) of a futures contract that attempts to profit from a mispricing between the two markets, as determined by a "fair value" calculation. 123/ When stock prices and futures prices are mispriced

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(Footnote Continued)

greater volatility, and betas less than 1.00 indicate less volatility. If a stock has a beta of 1.10, the stock would move 10% more than the index.

122/ The practice referred to as stock index arbitrage is just one type of "program trading." Stock index arbitrage is a sophisticated technique that employs computer-assisted trading and requires substantial capital. It is executed by major financial institutions. The arbitrageur aids the operation of efficient markets because his buying and selling forces the markets to converge and, therefore, tends to eliminate mispricings.

123/ The fair value of a stock index futures contract reflects the difference between the financing cost of the index and the dividend income forgone by not owning the stocks in the index. Implicit in the calculation of a contract's fair value is the condition that the price of the futures contract will converge to equal the value of the index on

(Footnote Continued)

relative to each other, an arbitrageur will buy the index in the lower-priced market and sell the index in the higher-priced market. The profit will be equal to the differential less the cost of the transactions.

3. Stock Index EFPs

There thus far have been very few EFPs in stock index futures. Most of those EFPs that have been executed have involved 500 to 1000 futures contracts. 124/ During 1986, EFP volume in the S&P 500, the most active stock index futures contract, was only 1,195 contracts (versus total volume in excess of 19 million contracts), and consisted of only two trades. EFP volume in the NYSE Composite Index contract in two transactions was 2,760 contracts, out of total volume of 3.1 million contracts, and EFP volume in the CBT MMI was 3,052 contracts, out

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(Footnote Continued)

the contract expiration date. If, for example, the cost of financing is 8% per year and the annual dividend rate for an index is 4%, the fair value of a futures contract on the index which expires in one year would be 4% (8% - 4%) higher than the current index value.

124/ There are several possible reasons for the size of these stock index EFPs: (1) a futures position of substantial size is needed to equal a dollar value which is high enough to permit a basket of stocks to be assembled which is in round lots (multiples of 100 shares each) and which replicates the index; (2) to garner sufficient profit to make the trade economically worthwhile by locking in a yield which is greater than the risk-free rate; (3) to match the size of the portfolio of the institution, which will require large numbers of stocks.

of a total volume of 1.7 million contracts, and consisted of only 15 EFP transactions. 125/

The number of stock index EFPs is inadequate to serve as a basis for generalizations about their nature. Moreover, EFPs are only one vehicle to accomplish the trading strategies described. Nevertheless, certain observations, based on the Division's examination and interviews of the FCMs engaging in such EFPs, may be made. The stock index EFPs examined in this study occurred when there was a mispricing between the futures and stocks; that is, they were executed to facilitate stock index arbitrage. Most frequently, the EFPs examined were executed when futures traded at a premium above their fair value. Thus, the arbitrageur sold futures and bought stocks to replicate the cash index. For example, interviewees noted that an institutional investor may attempt to lock in a specified yield on its capital, and use a stock index arbitrage to obtain a yield greater than the short-term (normally, the "risk-free" T-bill) interest rate. 126/ The arbitrage trader expects to profit from current mispricing and the market convergence which is assured on expiration day.

125/ A list of all stock index EFPs which took place during 1986 can be found in Appendix 12. From January to May 2, 1987, there were 32 MMI EFP transactions, but after that time the number of MMI EFPs being transacted declined. One interviewee attributed the increase to arbitrage opportunities during that time period.

126/ The arbitrage will be employed only if the yield on the arbitrage provides a risk-adjusted premium above the short-term interest rate.

Since the futures leg of the EFP is noncompetitive, it assures an exact price, and the entire order is filled at one price. The brokerage firm also assures the customer a specific stock price. If the cash stocks are sold out of the brokerage firm's portfolio, the firm has also guaranteed its profit on the trade. If, on the other hand, the brokerage firm must execute a stock trade on a stock exchange, it will assume a price risk because of the bid/ask spread, and possible price movement. However, the brokerage firms' direct access and sophistication minimizes this risk.

EFPs in stock index futures have been executed between a brokerage firm and its customers which are institutional investors, such as a pension fund. In such a case, the customer enters simultaneous orders to buy (sell) the cash index and sell (buy) the futures index, with the understanding that those orders will be executed in an EFP.

The EFP price is set at a differential by the FCM to the customer. This differential is expressed as a net premium or a gross premium to the cash index. The gross premium is the total difference between the current cash and futures price for the index. A net premium deducts the cost associated with the bid/ask spread in the stock market, that is, an estimate of the difference between the current cash price and what the stocks would cost the trader if the order was executed in the stock market. The "bid/ask" means that the customer will buy on the ask and sell on the bid, or, in other words, will not actually

purchase the index at its quote, which is based on the last sale prices for the component stocks. Many of these EFPs have been executed on the close of trading, although EFPs may occur at any time.

At the time of the EFP, the cash position is transferred between the parties, generally by book entry from the brokerage firm to its customer. The profit (yield) on the arbitrage position is assured if both the stock and the futures positions are unwound (or settled) at the futures expiration. This is because the futures expiration is the only time one can be assured that the stock prices will equal the futures index, and that the arbitrageur will realize the original differential between the futures and the cash index. 127/ In order to accomplish this, the stock has been sold on the stock exchange on the close. 128/ Since futures are settled to cash at expiration, it

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127/ The price at which the stock position is acquired initially reflects the appropriate bid or ask quotation. At expiration the stock position frequently will be unwound at the close by the entry of "market-on-close" orders, and the index will settle at the last sale price. A trader is guaranteed the closing price for market-on-close orders which are submitted on time. For that reason, in calculating the anticipated profit on the arbitrage no estimated bid/ask at expiration is taken into account.

128/ It is important that the stock is priced near the close in order to be as close as possible to the settlement price, again, to assure the anticipated yield on the arbitrage. The CME has moved the settlement of the S&P 500 futures contract to the stock market open on the Friday after quarterly expiration days. Thus, an arbitrage position would need to be unwound at the stock market opening to ensure that the basis will be preserved.

is unnecessary to unwind the futures position in order to obtain the profit on the position. If, on the other hand, the futures (established when the futures was above fair value) should trade below fair value prior to expiration (assuming a short futures/ long cash arbitrage position has been established), the position could be liquidated at that point for an enhanced yield. The procedure for unwinding the position in this situation would be to sell stocks on the stock exchange at the bid and execute a corresponding futures trade at the offer. If such an opportunity presents itself, the effect will be a greater yield than originally anticipated both because of a greater absolute profit and because the profit will be obtained in a shorter period of time. For example, if the arbitrage position is established 23 days before expiration at 427.12 (plus the bid/ask) for the cash MMI and 428.80 for the futures (a gross premium of 1.68), and 10 days prior to expiration, futures trade below fair value when the index is at 426 and futures at 425, the profit will be 2.68 index points (less transaction costs), [129/] or 1 index point greater than anticipated, in less than one-half the time. In any situation in which the position is liquidated before expiration, the trader is subject to basis risk which may negate the anticipated profit of the arbitrage. At least one FCM told the

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129/ The futures profit of 3.80 index points (428.80 - 425) less the loss on the cash index of 1.12 index points (426 - 427.12) equals 2.68 index points.

Division that it attempts to unwind the position at the earliest profitable opportunity to enhance the yield. Interviewees said that this could be accomplished through another EFP, but they have not executed this type.

The purchase (sale) of a basket of stocks containing fewer issues than the index is easier to execute than the purchase of the entire index and reduces commission and transaction costs. The basket will concentrate on stocks with the most influence (weighting) in the index, eliminating the stocks with least influence. Although the purchase of the basket will be easier to execute, there will be greater basis risk. That is, since the basket will not correlate perfectly with the index, the "slippage" will add or detract from the profit. The difficulty of executing a purchase of the entire index, however, is being lessened through the use of computer-assisted trading.

Thus far, the cash component of EFPs in the MMI has consisted of all 20 of the stocks in the index in exact proportion to the index. In three of the four EFPs in the S&P 500 from 1983 to 1986, the cash component consisted of a minimum of 480 securities. (The first EFP in the S&P 500 consisted of 141 stocks.) The remaining 20 (or fewer) stocks were not included because of limited liquidity in those particular issues. The two EFPs in the NYSE composite index consisted of 1200 of the 1574 stocks that comprise the index. There have not been any EFPs in the VLA.

One way of executing an arbitrage-related EFP in the MMI can be described in the following manner. [130/] The portfolio manager of a pension fund observes on February 25 that the March MMI future is trading above fair value. On this date, the Major Market Index closes at 427.12, the March MMI future closes at 428.80, the short-term interest rate is 5.27%, the dividend yield expressed as index points is .66, [131/] and there are 23 days to expiration of the futures contract on March 20. Using these variables, the manager computes that the March future would be valued fairly at 427.88. [132/] The bid/ask cost of executing the trade in the market is estimated at .50 index points. Therefore, futures are trading at a gross premium of 1.68 index points or a net premium of 1.18 index points.

The portfolio manager contacts his FCM which is also a stock exchange member and requests to buy the cash index and sell the March futures at a gross premium of 1.68. The brokerage firm

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130/ For purposes of this example, commission costs and taxes will not be considered.

131/ As noted above, a fair value calculation takes into account the dividend yield. The dividend yield is estimated based on the historical pattern of dividend payments for the stocks in the index and a projection of the timing and amount of dividends which will be paid prior to expiration of the futures plus the value of those dividends reinvested at a riskless rate of return (T-bills). The dollar amount of that estimate is then converted to index points for the fair value calculation.

132/ Tables showing the fair value calculation and the accounting entries for this example can be found in Appendix 13.

sells approximately 14,000 shares of MMI stocks out of its portfolio at 427.62 (the current MMI (427.12) plus the estimated bid/ask cost of .50) and simultaneously buys 100 March MMI futures at 428.80. The pension fund has sold 100 March MMI at 428.80 and bought the stocks that comprise the MMI at 427.62. The pension fund has purchased the stock index at a price of $10,690,500 (100 x 250 x 427.62) and has assured a sales price for this portfolio in the futures market at $10,720,000 (100 x 250 x 428.80). This assures a profit of $29,500 (equal to the net premium of 1.18 x 100 x 250), plus dividends of $16,500, for a total return of $46,000. This profit is realized in 23 days (at expiration) and represents an annual yield of 6.83%. This trade has yielded a premium of 156 basis points (1.56%) above the short term interest rate (6.83 - 5.27 = 1.56).

The FCM executes the order for its customer and receives commissions on all the transactions. After the EFP, the FCM is long futures at 428.80 which will provide it with a synthetic cash position to replace the cash position transferred to the customer.

When the March future expires on March 20, MMI futures and MMI cash close at 430.00. The pension fund sells the portfolio in the stock market on the close at 430.00, and its futures position is settled in cash. The "cash commodity" -- i.e., the 14,000 shares of stock -- is bought for $10,690,500 and sold at $10,750,000, resulting in a cash profit of $59,500. The March futures are sold at a cash value of $10,720,000 and expire on

settlement day with a value of $10,750,000, resulting in a $30,000 loss. The cash profit ($59,500) less the futures loss equals $29,500 as guaranteed by the arbitrage. In addition, as noted above, the fund received dividends of $16,500, for a total return of $46,000.

F. Gold

1. Significant Characteristics of the Cash Gold Market

The three major trading regions for gold worldwide are Europe, the Far East, and the United States. These are not three distinct markets but, rather, different locations in an international (or "24-hour") global gold market. In Europe, virtually all physical trading is centered in London and Zurich; in the Far East, the trading of gold is conducted predominantly in Hong Kong and Singapore; in the United States, trading is conducted principally in New York and to a lesser extent, Chicago and Los Angeles. Of these, London is the principal center for physical gold trading. The price of gold is affected by many factors which may include political and economic uncertainty, supply and demand, inflation/deflation, and government auction policies.

The supply of gold is obtained from three basic sources: mined production, scrap recovery, and disposal from private hoards or government stocks. 133/ Demand for gold comes from

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133/ The largest producers of gold are South Africa and the U.S.S.R., followed by Canada, China, Australia and the United States.

fabricators (jewelry, dental, and electronic), private investors, and government mints which use the cash gold market to make transactions to cover their needs and obligations. Central banks also participate in the gold market on behalf of their governments for maintenance of official gold reserves, settlement of international trade accounts between countries, and to generate foreign exchange. There is a growing tendency of central banks to treat their gold and foreign currency holdings as actively managed diversified asset portfolios. Bullion dealers attempt to profit by trading on a bid/ask spread as do large banks (similar to banks and dealers in the currency market). Many of these participants quote bid/ask spreads in gold on a 24-hour basis, again similar to practices in the currency markets. This trading may be accomplished dealer-to-dealer or by buying and selling gold to/for customers on the bid/ask spread. Like traders in other markets, dealers engage in arbitrage, taking advantage of price discrepancies between cash forward and futures markets.

Gold is traded in a variety of ways, including spot and forward bullion contracts, certificates, warrants, futures contracts, options, [134/] and coins. However, spot gold transactions are the most common. Gold bullion is usually stored in approved depositories or vaults, retained by central banks or

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134/ The ACC is designated for trading cash-settled options on physical gold, but there is currently no trading volume.

governmental agencies, or held privately. Much of the physical gold traded worldwide is traded through accounts established with one or more members or associated members of the London Gold Market ("LGM") [135/] and may be delivered on an "allocated" or "unallocated" basis. A buyer with an allocated account receives title to a certain amount of bullion identified by serial number in a depository. With unallocated accounts, which are more common, a book entry is made to adjust the accounts of a buyer or seller on the books of a vault's reserves without identifying specific gold and without issuing a vault receipt. The practice of the trade is that spot gold transactions are settled -- i.e., payment and delivery are made (whether on an allocated or unallocated basis) -- in two days.

135/ The LGM is, for the most part, a wholesale market composed of and dominated by five "member" firms and supported by approximately 55 "associate member" major gold bullion trading firms. Each of the five member firms is an internationally known major gold bullion dealer, has facilities in London for the safekeeping of gold bars and coins in vaults, and participates in the LGM's unofficial gold clearing operations in which transactions between members are effected by book entry. The associate members do not participate fully in the gold clearing operations and most do not have storage facilities in London.

The organization and operations of the LGM are expected to be subject to changes in 1987. The Bank of England's authority to regulate the bullion market is being formalized under the U.K. Financial Services Act of 1986. It is anticipated that a new organization, the London Bullion Market Association, will be established. This association will consist of three groups: fix traders, i.e., the five existing members; wholesale traders, particularly the 10 most active foreign houses; and non-trading firms, i.e., refiners and manufacturers.

The LGM has established rigorous "good for London delivery" standards for gold pertaining to the weight, fineness, appearance, and marking of approved melters and assayers for 400-oz. bars. 136/ Because of its reputation and the various facilities offered by the London market, the prices and conditions of sale established by the LGM are accepted throughout the world, and there is an international market in "loco London" gold at locations other than London. 137/ Bid and offer prices for gold on a loco London basis are expressed in terms of United States dollars per troy ounce and are priced basis f.o.b. the vault of the LGM member in London. For a fee, transportation of gold to destinations specified by a buyer taking delivery may be arranged. Quality standards for gold are uniform worldwide so it may be traded freely across markets.

There are three major cash price quotes for gold published on a daily basis -- Engelhard, Handy and Harman, and the London

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136/ The minimum transaction size on the LGM is 4,000 ounces (the equivalent of 40 Comex futures contracts). There are other acceptable units in international trading including, among others, a 100-oz. bar (London, New York, and Chicago) and the one-kilo bar (32.5 oz.).

137/ More than half of the gold bullion bought and sold around the world is transacted on a loco London basis. The term "loco London" refers to transactions which involve a claim on gold in store in London. In a loco London gold transaction, the principals to the transaction, the place of execution, and the ultimate destination for the gold can be anywhere, but the pricing basis for the transaction is London, and the transaction is cleared through procedures established by the major principals in the London market.

gold "fix." The first two are daily quotes by major bullion fabricators. The London "fix" is determined in the morning and afternoon each business day by the five members of the LGM. Acting as principals they "fix" (locate the unique equilibrium transaction price of gold at a particular point in time) the price of physical gold for the London markets by balancing buying and selling interests at the "fixing price" at which all of the orders received by the individual members of the LGM, which are involved in establishing the fix, will be executed. The price at which purchases and sales balance is used as a reference point for gold bullion prices worldwide, but the quantities of gold involved are not divulged.

2. Gold Futures Trading

Comex, CBT, CME and MidAm are all designated as contract markets for the trading of gold bullion futures contracts. The dominant exchange is the Comex, with 1986 volume of 8,400,125 contracts, followed by CBT, with 124,546 contracts traded in 1986. 138/ The following discussion focuses on trading at Comex.

138/ The Comex contract calls for delivery of 100 troy ounces, while the CBT and MidAm contracts require the delivery of 32.15 (1 kilogram) and 33.2 ounces, respectively. MidAm gold volume was 31,467 contracts in 1986. The CME 100-ounce contract did not trade at all in 1986 and recorded a volume of only seven contracts in 1985. The CME recommenced trading in its gold contract on June 16, 1987. Trading volume in the contract from June 16 to July 15, 1987 totalled 84,272 contracts, and open interest during the same period was fairly stable at between 5800 and 6800 contracts per day. On August 27, 1987, the Commission approved

(Footnote Continued)

Comex rules specify that each gold contract requires delivery of 100 troy ounces of refined gold. The weight, fineness, bar number and identifying stamp of the refiner must be marked clearly on each bar. Gold deliverable against futures contracts on the Comex must have been refined by approved refiners and deposited in an Exchange-licensed depository located in the Borough of Manhattan in New York City. Delivery is made by the issuance of a negotiable warehouse receipt accompanied by weight and assay certificates and an invoice for the gold.

Some types of participants in the cash market also trade in the futures market, using futures for hedging, speculating, and arbitrage, depending on their interests in the cash market. In addition, there are floor traders and speculators who may trade futures only.

3. Gold EFPs

EFP volume in Comex gold increased from 503,287 contracts in 1983 to 626,865 contracts in 1986. In 1984, EFP volume was 580,163 contracts, and in 1985 was 491,307 contracts. As a percentage of total volume EFPs have increased steadily during this time, from 4.86% in 1983 to 7.46% in 1986.

(Footnote Continued)

additional amendments conforming the CME gold contract to the Comex gold contract in most respects. On August 11, 1987, the Commission approved CBT for trading of a 100-ounce gold contract. Other, less significant futures markets are located in Winnipeg, Hong Kong, Sydney, and Tokyo. See Section XI.A. for a description of the Comex linkage with the Sydney Futures Exchange.

The major participants in gold EFPs are bullion dealers, commercial banks, and FCMs who often have inventories of physical gold and who trade in the cash market. Some of these participants serve as "market makers," ready to buy and sell bullion and to quote a price for an EFP transaction on a continuous (24-hour) basis. 139/ Non-dealer (non-market maker) participants in the EFP market are mostly professional traders, large speculators, and institutional clients, rather than retail customers.

The non-dealer EFP market is dominated by professional traders for several reasons. These traders are very active in the cash and futures markets and can efficiently offset positions through the use of EFPs, as do traders in the other markets discussed elsewhere in this Report. Further, these traders conduct arbitrage transactions between the cash and futures markets and can reap substantial profits from small differences in price because of the volume traded. Moreover, transactions in the cash gold market require substantial capitalization, which is the basis for a line of credit (generally in the range of 10-20% of the trader's net worth), and only the large professional traders have adequate capital for that purpose or can get firms to guarantee them.

139/ One clearing member market maker stated that it will not quote EFPs during Comex trading hours, offering quotes only when the futures market is closed, but did not explain the reasons for this policy.

According to interviewees, the participants in the futures market need access to the market after trading hours to avoid some of the risks associated with price changes which may occur overnight. (This need became acute as gold prices became more volatile in late 1979 and early 1980, resulting in differences between the Comex closing price and the price at the open on the following day.) Traders with net long or short open futures positions often are at risk of substantial losses as a result of this overnight volatility. EFPs provide a means of reducing this overnight price risk, however, by allowing a trader to acquire or liquidate a futures position when Comex is closed.

For instance, a holder of a net short futures position may cover that position by buying gold bullion in the various world markets and then execute an EFP to get out of the cash and futures positions. Conversely, EFPs may be used to establish positions in the futures market. If a trader wishes to take a position in the domestic futures market when that market is closed, he can buy or sell physical gold and immediately exchange the cash position for a futures position via EFP. Finally, traders whose position in the physical gold market changes overnight can use EFPs to acquire or adjust a futures position accordingly to avoid risk. Thus, traders take advantage of price movements even when the futures markets are closed. FCMs and dealers may engage in this type of EFP to accommodate their clients, which may be other firms or individual investors. Other FCMs will assist customers to find another party to the EFP but

will not themselves participate in the transaction (other than as a clearing member).

Another major use of gold EFPs is to unwind established arbitrage positions since a trader can execute both the cash and futures trades via EFP at an assured price. EFPs to unwind arbitrage positions frequently take place during Comex trading hours to offset large positions assumed after hours. These large positions are most easily offset through EFPs, without the price risk of pit execution resulting from the bid/ask spread and possible price movement. The use of EFPs to lock in a spread on an arbitrage trade has been discussed in detail in other sections of this Report and operates in the same way in the gold market.

Finally, EFPs may be used to arrange position swaps between the Comex and the London market (or another international gold market). That is, an EFP may be used to exchange a futures position for a physical position or vice versa. For example, a trader with a long futures position may need to be long cash bullion. The trader can sell futures and buy cash in an EFP, thereby offsetting his futures position and acquiring physical gold. (The "physical" cash position acquired could be a forward contract.) Position swaps may also be used to exchange a position for delivery at one time for a position with a different delivery date. An EFP is one way to achieve both the desired position and an advantageous price. According to several interviewees this is the predominant reason for gold EFPs.

The actual, physical gold does not move from one location to another in most gold EFPs (or in most other cash gold transactions). Instead, to facilitate international gold trading, the five LGM members act as unofficial clearinghouses for transactions in unallocated accounts. 140/ Members of the LGM maintain gold accounts with other members, and transactions between members (or member customers) are effected by an immediate book entry, with only large net imbalances between members being settled by a movement of gold. Large traders, gold dealers, banks, and brokerage houses worldwide have accounts at LGM member firms, and when transactions are consummated, an appropriate entry is made for the firm's cash and bullion accounts maintained with LGM member firms, and corresponding entries are made on the firm's books for its own or customer accounts. If the transaction is effected through a line of credit, the gold will remain with the creditor firm as collateral, and interest will be paid on the loan which was made to finance the physical position. Transactions are confirmed by telex.

140/ See explanation of allocated and unallocated accounts at page 110, supra. Again, more than half of the gold bullion bought and sold worldwide is transacted on a loco London basis. Only reputable gold industry firms with proven creditworthiness and which deal in minimum lots of 4,000 ounces can establish an unallocated gold account directly with an LGM member.

Many bullion dealers quote an EFP price as a differential between spot loco London gold and the Comex gold futures contract. This differential is based on the interest rate determinant (also known as the "cash and carry" rate), a price which reflects current interest rates (and is similar to the cost of carry in interest rate instruments). 141/ This rate is usually the determining factor in whether an EFP will be more profitable than investing the funds elsewhere. The EFP rate arrived at through this calculation (which will be lower or higher than the interest rate determinant) will be added to the current bid or ask price for the spot gold to arrive at an EFP futures price. 142/ The EFP rate will be lower than the interest rate determinant when the FCM is buying futures (bids) and higher when the FCM is selling futures (offers). When there are two cash transactions, one to buy or sell the cash commodity and the second as part of an EFP, the price of the spot commodity will be the same in both transactions, and the EFP rate will be added to

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141/ The interest rate used in the calculation is usually either the Eurodollar rate or the LIBOR. The formula for calculating the interest rate determinant is --

$$\frac{\text{Yield} \times \text{Spot Price} \times \text{Days to Futures Delivery}}{360}$$

142/ If, for instance, the interest rate determinant is 2.55, the EFP price may be quoted as 2.40/2.70 (bid/ask), and that rate will be added to the spot price for gold to set the futures price. A firm's bid/ask spread will be affected by its market position and relative capitalization, as well as volatility and other market fundamentals.

the market price for gold to establish a futures price. The futures price may be established at the time of the first cash transaction at a specified differential (i.e., the EFP price), or the futures price may be established at the time of the EFP cash transaction at the then-prevailing spread.

EFP traders typically prefer to price the physical gold at the prevailing bid or offer cash market quote and apply the differential to the futures side of the transaction. When there are two cash transactions, the physical will be priced "flat" (i.e., at the same price in both transactions). As a result, the physical gold positions will net out, and the profits and losses will be reflected in the futures side of the EFP like any other futures transaction. Margin will be paid on any resulting futures position.

In gold EFPs, the cash component is normally bullion that meets the Comex futures specifications. According to Exchange staff, however, gold coins or non-deliverable bullion also would be acceptable.

Market participants and Exchange staff interviewed believe that EFPs add to the liquidity of the gold futures market. 143/ If EFPs were not available, many traders would not be as active in the market because their exposure to risk would be much

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143/ A broader discussion of the relationship between EFPs and futures market liquidity can be found in Section VIII.D. of this Report.

greater. EFPs permit the traders to limit their risk by providing a means to get in and out of the futures market at any time, thereby making them more willing to trade in that market and to carry positions overnight. This is especially true in volatile markets. In volatile markets, traders must have a trading mechanism to hedge their position imbalances and to participate in favorable market movements even when the Comex is closed. Thus, the EFP is a mechanism which provides traders with risk reduction opportunities when the futures markets are closed.

The gold EFP market and the currency EFP market (discussed below) may be distinguished from the other markets discussed in that EFPs are often used for the purpose of establishing a new futures position overnight, as described in the example below, rather than to liquidate a futures position or to price or hedge a cash trade. In such a case, the customer buys and sells the cash commodity virtually simultaneously, with the result that he does not acquire a cash position but ends up long or short futures. (The regulatory implications of this trading technique will be described in Section VII.C. of this Report, infra.) This strategy is employed in addition to the use of EFPs for arbitrage or hedge-related trading strategies in these, as in other, markets. In contrast, in the grains, crude oil, sugar, and cocoa the market is dominated by commercials who use EFPs to effect cash transactions and either liquidate a futures hedge position or transfer the futures position to the cash buyer. The stock index EFPs examined by the Division were used for arbitrage, and

the customer desired to obtain both a cash and futures position; but, again, the number of EFPs in those markets has not been significant enough to reach any definite conclusions.

The following example illustrates a gold EFP used to establish a futures position. A customer, C, decides to establish a futures position via an EFP. C buys 2,000 ounces of physical gold from an FCM, G, at 392.00. The parties then transact an EFP in which C will sell back to G at 392.00 the 2,000 ounces of gold he purchased moments earlier at 392.00. At the same time, C will buy 20 contracts of February gold in an EFP at 396.10. The cash positions are netted out since C both bought and sold physical bullion at 392.00, leaving him long 20 futures contracts. G is now short 20 contracts at 396.10 and likely will offset that position the next morning at a profit (unless prices rise) because the futures side of the EFP was priced at a level (396.10) that reflected a profit for G at then-prevailing prices.

G. Foreign Currencies

1. Significant Characteristics of the Foreign Exchange Market

Since the emergence of flexible exchange rates in the early 1970s, changes in economic fundamentals have been quickly reflected in the exchange rates of most of the actively-traded currencies. There are several categories of participants in the foreign exchange ("forex") market. Central banks (such as the Bank of England) use forex markets to manage their forex reserves, and also to adjust the value of their respective currencies through purchases or sales of their own or other

currencies. Bank and non-bank foreign exchange dealers (including many FCMs) execute forex orders for their own accounts and sometimes also act as brokers for customers. The banks and non-bank dealers profit by trading on a bid/ask spread, taking positions for their own accounts in currencies, or through arbitrage. Multinational corporations, domestic corporations, importers and exporters, and individuals execute forex transactions to facilitate normal business transactions in which they must make payments in currencies other than their domestic currency. Multinational corporations which execute business in numerous countries need to transfer payments and receipts between currencies. As in all markets, speculators participate to profit from price changes.

Arbitrageurs, who profit by simultaneously buying and selling currencies to take advantage of price discrepancies, are particularly important participants in the forex market. An arbitrageur will attempt to buy a currency at a lower price from one institution and simultaneously sell it to another institution at a higher price. Moreover, arbitrageurs in the forex market will trade cross-rates, which are the exchange rates between two currencies in relation to a third currency; for example, a trader may ask for a D-mark and Swiss franc quote in terms of the French franc.

Still another common cash market technique is covered interest arbitrage. This strategy is derived from the concept of interest rate parity: the concept that a difference in national

interest rates should be equal to but opposite in sign (±) from the forward exchange rate discount or premium for the foreign currency over the same period. 144/ In other words, if interest rates are 2% higher in Canada than in the United States, the Canadian dollar forward should trade at a 2% discount to the forward rate of the U.S. dollar. If the interest rate difference is not reflected in the forward exchange rate, traders will buy the spot currency (to invest in short-term interest rate securities of that country) and sell forwards. If the markets are in equilibrium, there is no arbitrage opportunity. 145/

Most forex trading is executed in the interbank market, in which all world currencies are traded. The interbank market is comprised of major banks in world monetary centers, as well as forex dealers. These participants quote bid/ask spreads on currencies on a 24-hour basis. The leading centers for trading are London, New York, Zurich, Paris, Tokyo, Singapore, and Hong Kong. The participants in the interbank market are generally divided into three groups. First are "market makers," consisting

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144/ This assumes that interest rate instruments are of similar risk and maturity and an allowance for transaction costs.

145/ This strategy could be executed using futures instead of forwards, but the short futures position would have to be liquidated, subjecting the trader to basis risk, or the trader would have to take delivery, which can only be done on one day. The forward contract obligation, on the other hand, is self-liquidating because the bank will simply take back the foreign currency delivered in the spot transaction and return the trader's dollars with interest.

generally of the world's twenty largest banks, who continually quote bid/ask spreads on a 24-hour basis. The second group are "active" participants, who trade on the forex market every day but do not continually provide quotes on all currencies. The third group are occasional participants who use the market on an as-needed basis. The most active currencies traded are the U.S. dollar, D-mark, yen, pound, Swiss franc, Canadian dollar, French franc, Dutch guilder, Belgian franc, and Italian lira. These currencies have narrow bid/ask spreads. 146/ The interbank market trades "spot" and "forward." 147/ Spot transactions are usually settled within two business days. Forwards are usually quoted for one, two, three, six, and twelve months. In general, the bid/ask spread tends to widen as the period to maturity lengthens. Any forward date can be negotiated but will carry a higher rate than those quoted for more typical maturities. 148/

146/ In the less active currencies, there are substantially wider bid/ask spreads denoting increased trading costs.

147/ Figures from 1986 surveys by the Bank of England and Federal Reserve Bank of N.Y. showing the relative percentages of trades in each currency in the bank and non-bank markets and the percentages of foreign exchange executed in the spot, futures, forward, options and swap markets can be found in Appendix 14.

148/ The transactions are executed by telex or telephones. Quotes from many banks are available on electronic quotation systems. Foreign currencies are quoted in two ways. A direct quote is the home currency price of a unit of foreign currency; for example, a direct quote in the U.S. is $.5000/DM, which means that one DM is priced at $.5000. An indirect quote, such as 2 DM/$, conveys that a dollar is

(Footnote Continued)

Another method of trading foreign currency is a "deferred trading system," offered by most banks who trade foreign exchange, which is similar to the interbank market but does not have any capital requirements. Instead of a capital requirement, traders are required to deposit collateral equal to the value of the forex position, and there is a minimum transaction size of one million dollars in most cases. The price for the position reflects the cost of carry. This method of trading is used primarily by large fund managers and professional traders. Approximately 80-90% of these "deferred trades" are spot transactions.

Each bank (or forex dealer or FCM) grants other banks (or forex dealers or FCMs) a line of credit to allow a maximum amount of trading. For example, Bank A may grant Bank B up to 100 million D-marks per day or $200 million in any or all currencies. In the spot market, the transaction will be completed with a book entry delivery and payment within two days. In a forward contract, the delivery will be satisfied by book entry on the forward date. The line of credit will be drawn down on the same day as the transaction. In contrast, in the "deferred trading

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(Footnote Continued)

worth 2 DMs. Mathematically, these quotes are reciprocals of each other. As stated before, the market is traded on a bid/ask spread. If Bank A were to call Bank B for a DM quote, Bank B would quote $.5440/$.5444, which conveys that Bank B is willing to buy DM at $.5440 or to sell DM at $.5444. If Bank B could execute a purchase and sale of 10 million DMs at this spread, it would realize a $4,000 profit.

system" deliveries do not occur. On "delivery day," settlements are made in cash, or the position may be rolled over to the next value date, with payment to cover any loss.

2. Currency Futures Trading

The CME International Monetary Market ("IMM") offers futures contracts in the D-mark, Swiss franc, yen, pound, Canadian dollar, French franc, Australian dollar, Mexican peso, and European Currency Unit ("ECU"). 149/ The four most active contracts in 1986 were the D-mark (6.5 million contracts), Swiss franc (5 million contracts), yen (4 million contracts), and pound (2.7 million contracts). 150/ The CME also offers options on the D-mark, Swiss franc, yen, and pound futures contracts. 151/

All CME currencies are delivered on the Wednesday following the third Tuesday of the contract month. Currencies are traded on a quarterly expiration of March, June, September, and

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149/ One ECU is composed of a fixed number of units of each of the ten currencies in the European Monetary System. Options on actual currencies are offered at the Philadelphia Stock Exchange ("PHLX") in the pound, Canadian dollar, D-mark, yen, French franc, Australian dollar, and Swiss franc. During 1986, volume in these five currency options at the PHLX totalled 7,847,160. The PBT, a PHLX subsidiary, also offers futures contracts on the Canadian dollar, D-mark, French franc, pound, ECU, yen, and Swiss franc. See Section XI.A. for a description of the CME linkage with SIMEX.

150/ The ECU traded 43,826 contracts, and the French franc traded 2,685 contracts. The Australian dollar was introduced in January of 1987.

151/ In 1986, volume for these options contracts was: 2.2 million D-mark, 864,586 yen, 817,897 Swiss franc, and 496,591 pound.

December. Each currency must be delivered in an approved bank in the country issuing the currency. The delivery is executed through a book entry transfer. 152/

Although many participants in the interbank market participate in varying degrees in the futures market, there are many persons, such as smaller traders and individuals, who are involved solely in the futures market and who have little or no access to the interbank market. For instance, one D-mark contract at the CME is 125,000 D-marks, which is too small to be executed in the interbank market, where transactions must involve at least one million dollars worth of currency, and a quoted price is guaranteed up to five million dollars. This minimum interbank transaction size effectively excludes public speculation or hedging by small entities.

The futures market is also used for hedging by multinational corporations that enter into international commercial activity and are exposed to three general types of foreign exchange risk. Transaction exposure measures the effect of an exchange rate change on obligations that are incurred when the exchange rate is at one level and settled after a rate change has occurred. Translation exposure measures the effect of an exchange rate change on the financial statements of a firm as a

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152/ The contract sizes are 25,000 pounds, 125,000 D-marks, 125,000 Swiss francs, 100,000 Canadian dollars, 250,000 French francs, 12,500,000 yen, 125,000 ECUs, and 100,000 Australian dollars.

result of translating the value of foreign currency assets, receivables, etc. into the currency of the corporation's home country. 153/ Economic exposure measures the change in expected cash flows due to an unexpected change in the exchange rate.

The following illustrates a typical hedge to reduce transaction exposure. On January 5, a United States importer agrees to buy five automobiles from a German corporation. The agreement states that delivery and payment will be on March 10. The total purchase price is 125,000 D-marks. If the D-mark strengthens in relation to the U.S. dollar, the importer effectively will pay more for the automobiles because he will have to buy more expensive D-marks with which to make payment. The current exchange rate is $.5200/DM. At this rate the importer would pay $65,000. In order to protect against an adverse change in the exchange rate, without having to purchase D-marks immediately and thereby lose the use of his money for the intervening period, the importer places a hedge in the futures market. On January 5 the importer buys one March D-mark contract at .5200. On March 10 the D-mark has strengthened to .5600. The importer liquidates his hedge by selling futures at .5600. The futures transactions result in a profit of $5,000. The importer buys 125,000 D-marks at the current cash price of .5600 ($70,000). Therefore, the

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153/ In the United States, Financial Accounting Standards Board Statement of Financial Accounting Standards #52 defines how currency translations must be computed.

effective cost of the automobiles is $65,000. Although the cash D-mark appreciated by $5,000, this was offset by the futures hedge. If the importer had not hedged, the net cost of the automobiles would have been $70,000.

Arbitrage is another very active trading strategy in the foreign currency markets. Arbitrage is executed within the interbank market and versus the futures and option markets. For example, if a bank could buy Canadian dollars at $.7000 in the interbank market and simultaneously sell Canadian dollar futures for $.7010, the bank would garner a profit of $.0010.

3. Currency EFPs

EFP growth in the foreign currencies has been the fastest in the industry. From 1983 to 1986, total EFP volume increased tenfold, while EFPs as a percentage of total volume increased sixfold. The D-mark contract is typical of these trends. In 1983 there were 25,214 D-mark EFPs. In the following year, D-mark EFP volume rose to 115,376 contracts. In 1985, the figure was 227,398 contracts, while in 1986 EFP volume soared to 402,766 contracts. The corresponding changes in EFPs as a percentage of D-mark volume were 1.04%, 2.09%, 3.53%, and 6.12%. Likewise, pound EFP volume increased from 19,044 contracts in 1983 to 209,749 contracts in 1986. EFPs as a percentage of total volume in the pound was 1.18% in 1983 and 7.76% in 1986.

EFP volume also rose similarly in the Swiss franc and yen contracts. In 1983, EFP volume in the Swiss franc was 29,439 contracts, increasing to 297,810 contracts in 1986, an increase

from .78% to 5.96% of volume. The volume of yen EFPs grew similarly from 30,355 contracts in 1983 to 290,601 contracts in 1986, from .88% to 7.32% of volume.

One major reason for EFPs in the foreign currency market is to facilitate 24-hour trading. While domestic exchanges are closed, the value of various currencies is being affected by international economic and political information. Significant economic statistics, such as inflation, unemployment, and interest levels, are disseminated. This information is assessed and factored into exchange rates. A very large amount of forex is transacted during normal business hours in Europe, when United States futures markets may not be open. As a result, significant price movements can occur which will have an effect on the risk level of open futures positions. Traders with open positions may execute EFPs, therefore, to reduce their exposure. Thus, although currency EFPs can occur at any time, according to interviewees a large concentration of such EFPs occurs when the CME is closed and trading is active in Europe (early morning Chicago time). As in gold, the availability of EFPs to reduce price risk overnight may enhance the liquidity of the futures markets. Of course, this situation also presents profit opportunities for speculators who use EFPs to access the market to take advantage of these price movements. 154/

154/ In addition, the foreign currency contracts at the CME are (Footnote Continued)

Another common reason for currency EFPs is to facilitate arbitrage or spread trading between the futures and interbank markets. Traders who are long one market and short the other will execute the EFP to liquidate simultaneously their positions in both markets. Traders could also use EFPs to enter into arbitrage or spread positions. In the absence of an EFP the traders would be required to execute two separate transactions. This would increase the basis risk so as to eliminate the profitability of the arbitrage.

The same types of entities who use futures also sometimes use EFPs. (Recall that this includes smaller traders.) In the absence of the EFP mechanism many of these traders would be unable to manage their overnight risk since these traders do not have access to the interbank market. As a consequence, a substantial portion of EFPs is arranged between FCMs with access to the interbank market and their customers. Other EFPs are executed customer-to-customer when both customers are interbank participants. At least one party to the EFP needs access to the interbank market in order to acquire the currency or offset the risk attributable to the futures position acquired in the EFP.

(Footnote Continued)

deliverable only on four dates a year. Therefore, the futures delivery process in currency is less frequently an alternative than in most futures contracts, although actual deliveries are relatively heavy against the futures contracts.

Unlike other markets, in which EFPs are quoted at a differential, EFPs in currency usually are quoted at the price at which the trader will execute the futures trade while the cash currency price is done at the prevailing cash market quote. Because the futures market (IMM) usually is closed when these EFPs are done, the broker will calculate the current market price of the futures contract on the basis of spot to an "IMM equivalent." An IMM equivalent price is calculated based on a cash forward contract, corresponding in size to an IMM futures contract, that expires on the IMM futures delivery date. 155/ The broker will charge the customer a commission which will be reflected in the price of the futures. If the broker sells futures, he will raise the price, and, if he buys futures, he will lower the price. Thus, for example, if the IMM equivalent is $.6000/DM, the broker might sell futures at $.6003/DM or buy at $.5997/DM. The exact price is usually rounded to a futures equivalent price consistent with the minimum allowable price fluctuation in the futures market. The cash portion of the EFP is generally an immediate transfer of spot currency (2-day

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155/ Because the futures market is closed, the IMM equivalent is determined by calculating the cost of carry for a forward contract for the time period until the futures delivery date based on an appropriate short-term interest rate (Eurocurrency, LIBOR, or other rate). The futures price for the EFP will be based on the IMM equivalent as the price at which the futures should be trading at that point in time.

settlement) but may be of identical (IMM equivalent) forwards at the same price and recorded as a book entry.

In most instances, the broker will obtain an unwanted, uncovered futures position. To reduce that risk the broker will hedge the futures position by establishing a position in the cash market. At the open of the futures market the broker will "roll out" of the cash/futures position. This can create a small loss or profit, depending on whether the basis has widened or narrowed since the position was acquired. On the other hand, several interviewees noted that FCMs offering these transactions offer EFPs on both sides of the market. Thus, the hedge position acquired by the FCM often will be offset by a position taken opposite a customer on the other side of the market.

As noted in the discussion of gold EFPs, EFPs in currency frequently are used to establish futures positions overnight and are not only employed for hedge or arbitrage-related strategies. This type of EFP is illustrated by the following example of a typical currency EFP.

A trader obtains economic information which he interprets as bullish for D-marks. The trader is short sixteen D-mark contracts at the IMM. It is 7:00 p.m., however, and the IMM is closed. The FCM with whom the trader deals, however, has a 24-hour trading desk and direct access to the interbank market. There are approximately 30 days to expiration of the futures contract. The spot rate is $.5440/DM, and the IMM equivalent is $.5450/DM. The trader desires to buy sixteen DM contracts to

liquidate his short position and requests an EFP quote from his FCM. The FCM quotes the EFP at $.5453/DM. The customer enters an EFP order to buy sixteen futures contracts at $.5453 and sell 2,000,000 spot D-marks. The FCM sells the trader 2,000,000 spot D-marks and the trader immediately sells them back to the FCM at the same price. As part of the latter transaction, the FCM also sells sixteen D-mark futures contracts at $.5453/DM for its own account. The trader now has liquidated his futures position and has no cash position. The FCM is now short sixteen D-mark futures at $.5453. To cover this position, it buys 2,000,000 D-marks in the spot market at $.5440, holding this position until the futures market opens when it can roll out of the cash/futures position by buying futures and selling the cash D-marks. Assuming no basis slippage, the FCM garners a $.0003/DM profit (or commission).

H. Summary

The reasons for the use of EFPs in the markets examined generally can be categorized as related to basis trading, pricing cash transactions, unwinding hedge positions, specifying delivery, grade, locations, or partners, arbitrage, and trading when the futures markets are closed. The reasons for and structure of EFPs, however, vary from market to market depending on the nature of the underlying cash and futures markets and the participants. The remainder of this Report deals primarily with issues that arise out of the trading practices described above, and which the Division has identified as appropriate to defining

the scope of the Act's EFP exception to the open outcry requirements and the manner in which exchange rules and Commission regulations address those matters.