

# ON THE CLEARING OF FOREIGN EXCHANGE DERIVATIVES

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This note discusses the case for exempting foreign exchange derivatives from recent regulatory requirements for over-the-counter derivatives, including clearing, trade competition, and minimum collateral requirements. My conclusion is that the arguments that have been made for such an exemption are not sufficient. I focus mainly on the question of clearing, which figures prominently in arguments favoring exemption.

A derivatives contract is “cleared” when the performance of the buyer and the seller is effectively guaranteed by a special purpose financial utility known as a central clearing party (CCP). The foreign exchange (FX) derivatives in question are traded over the counter (OTC) and commit the two parties of a given contract to an exchange of two currencies, for example dollars versus Euros, at prearranged prices, at one or more future dates.

Major participants in the FX derivatives market have strongly resisted the clearing of counterparty default exposures. They correctly emphasize that, as opposed to derivatives that are settled by a payment of only the net market value of the contract, a large fraction of FX derivatives are settled when each of the two parties pays the gross amount of the currency due on its side, through a payment-versus-payment procedure at CLS Bank. A conventional approach to clearing FX derivatives might therefore entail some special operational risks or costs. For example, if CLS were to clear counterparty default exposures and as a result be exposed to the failure of one or more clearing members, then CLS Bank might at some point become unable to complete crucial deliveries of large amounts of

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currencies. This could lead to a significant disruption of financial markets or international commerce. Arguably, this may suggest that CLS Bank should not provide clearing services in combination with its settlement services. On the other hand, the claim by some market participants that FX derivatives exposures are small, thus representing little benefit from clearing, is not well supported by my preliminary review of the data on FX volatilities, gross market values of positions, volumes of derivatives trading by maturity, and total outstanding notional amounts of FX derivatives.

A failure to further regulate counterparty risk in the foreign exchange derivatives market could be a significant mistake. As I will explain in this note, clearing could be effectively accomplished while leaving undisturbed the current procedures for the settlement of FX derivatives at CLS Bank. The component of counterparty risk that is not treated by settlement at CLS could be covered by a parallel system of contracts by which a separate financial utility offers protection against losses in the net market value of FX derivative caused by counterparty defaults. This parallel financial utility would maintain a default guarantee fund and collect initial and variation margin based on the daily revaluation of the FX derivatives, in essentially the same manner as a normal central clearing counterparty (CCP). This would not provide a backstop for the gross deliveries of currencies through CLS, but would insulate original counterparties (some of whom are systemically important) from potentially important losses in market value due to counterparty failure. In order to obtain both operating efficiencies as well as the benefit of netting gains against losses on other classes of derivatives, the financial utility could be encompassed within an existing CCP.<sup>1</sup> Deliveries of currencies through CLS could remain unaffected by the proposed form of clearing, outlined later in this note.

## 1. IS IT TRUE THAT FX COUNTERPARTY RISK IS SMALL?

In terms of total notional amounts of trade, a large fraction of FX derivatives have very small maturities, thus presenting relatively little counterparty risk. Within a very short

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<sup>1</sup>The opportunity to net exposures on FX derivatives with offsetting exposures on other types of derivatives could result in significant reductions in counterparty risk and required margins. See D. Duffie and H. Zhu, “Does a Central Clearing Counterparty Reduce Counterparty Risk?” April, 2011, forthcoming, *Review of Asset Pricing Studies*. For example, if a market participant has FX derivatives with a net positive market value and interest-rate swaps with a net negative market value, the opportunity to offset these exposures within a single CCP reduces counterparty default exposures to both the market participant and the CCP, and lowers margin requirements.

time period, there is a low probability that the prices of currencies will move significantly against the buyer or seller. This does not imply that the aggregate level of counterparty risk on longer-maturity FX contracts is small. A longer time until delivery implies a larger magnitude of expected changes in currency prices before delivery, and thus a larger expected loss to the party that is “in the money” on the contract, should the counterparty fail to deliver.<sup>2</sup> For example, a bank that buys dollars forward with Euros is exposed to the counterparty’s failure if the dollar appreciates substantially before delivery. This is true regardless of whether the contract is settled by payment-versus-payment through CLS. The counterparty risk can be mitigated with bilateral exchanges of collateral and other bilateral credit risk mitigants, whether or not the contract is settled through CLS. Clearing, however, can achieve substantial additional reductions in counterparty risk through multilateral netting, and can lower systemic risk through mutualization of loss risk and through more uniform and more easily supervised collateral norms and default risk management procedures.<sup>3</sup>

According to the most recent data provided by the financial industry organization known as the “Foreign Exchange Committee,” and available through the web site of the Federal Reserve Bank of New York,<sup>4</sup> more than half of the monthly volume of new FX forward contracts have maturities over one month. These longer-maturity forwards have a total notional monthly volume of \$1.4 trillion. Roughly 30% of the monthly volume of new FX swaps have maturities of over one month. These longer-maturity swaps also have a total volume of about \$1.4 trillion.<sup>5</sup> Even larger than these new-trade volumes are the total outstanding notional amounts of these derivatives that exist at maturities over one month. Disclosure of the outstanding amounts by maturity is not provided by the Foreign

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<sup>2</sup>The exposure risk, before collateral, rises roughly with the square root of time until delivery, assuming changes in currency prices are not strongly correlated across time. This means that the counterparty risk of a 4-week contract is roughly twice that of a one-week contract. The risk of a 4-month contract is roughly 4 times that of a one-week contract, and so on.

<sup>3</sup>Clearing has the additional benefit of reducing the risk of loss of collateral. In standard market practice for collateralized uncleared positions, the collateral is not returned to the counterparty until the day after settlement. An entity who has given up collateral to its counterparty therefore has a credit exposure to the counterparty, for the amount of the collateral, for at least one day after settlement. A central clearing party, however, holds margin (the economic equivalent of collateral) on behalf of the original counterparties, thus allowing the counterparties to retrieve the margin after settlement without exposure to counterparty default.

<sup>4</sup>See the “Foreign Exchange Committee Semi-Annual Foreign Exchange Volume Survey, October 2010” for the most recent disclosed data.

<sup>5</sup>These data do not appear to coincide with information provided in the comment letter of November 10, 2010 to the U.S. Treasury by the The Global FX Division, an organization affiliated with SIFMA, AFME and ASIFMA, signed by James Kemp. I am not yet aware of how to reconcile the differences.

Exchange Committee. (In my opinion, the outstanding amounts, by maturity, should be publicly disclosed in order to facilitate an analysis of market-wide counterparty risk.)

In its own latest survey, the Bank for International Settlements (BIS) reports a total outstanding notional amount of foreign exchange swaps and forwards (not including ISDA-style currency swaps) of over \$25 trillion, as of June 2010.<sup>6</sup> There are no publicly available data bearing on the effective average maturity of FX forwards and swaps, a critical gap in our knowledge of whether the risks from this class of derivatives are systemically important. Based on the BIS data as well as the monthly volume data provided by the Foreign Exchange Committee, the total outstanding notional amount of FX forwards and swaps with maturities over one month could be of the order of \$10 trillion.

The BIS survey indicates that the total gross market value of outstanding FX forwards and swaps was \$925 billion in June 2010. (The gross market value of a derivatives contract is the amount that would be lost in the event of default, before considering the effect of netting gains against losses on other derivatives, and before considering recoveries, for example through the application of collateral.) The total gross value of FX forwards and swaps is more than that of equity derivatives (\$706 billion) or commodity derivatives (\$457 billion). Equity and commodity derivatives were not exempted from the clearing and other requirements of the Dodd-Frank Act. Further, the total gross market value of FX forwards and swaps is nearly 60% of the total gross market value of credit default swaps (\$1.67 trillion). The market values of credit default swaps (CDS) may have lower volatility, on average, than those of FX derivatives. Absent the disclosure of data allowing a proper quantitative analysis, the total effective amount of counterparty risk in the FX derivatives market could be of a magnitude similar to that of the market for credit default swaps. The importance of clearing credit default swaps figured prominently in legislative discussions preceding the Dodd-Frank Act.

Taken together, the above data do not support the view that foreign exchange derivatives represent a small amount of counterparty risk. The volatilities of currency prices are significant, and could increase dramatically in certain types of financial or currency crises, or dramatic currency realignments such as that following the “Plaza Accord” of September, 1985. The tail risks of counterparty exposure on FX contracts can be quite

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<sup>6</sup>The total outstanding notional amount of all types of foreign exchange derivatives, including currency swaps that are not proposed to be exempted from Dodd-Frank swap requirements, is indicated by the BIS survey to be approximately \$56 trillion.

large, particularly in situations with significant sovereign risk, which may plausibly arise in coming years. Volumes in FX markets have been growing rapidly. Within a decade, the Chinese currency, the Renminbi, is likely to add significantly to the volume of FX markets and to total FX counterparty risk. The FX market also exhibits substantial concentration to specific currencies, particularly the U.S. dollar and the Euro. According to the most recent data provided by the Foreign Exchange Committee, FX derivatives for the delivery of dollars against Euros account for almost 25% of the total volume of FX derivatives trading. By comparison, the market for credit default swaps has a far lower concentration of trade on a single underlying source of risk.

Claims by some commenters that FX derivative counterparty risk is small should be documented with a quantitative analysis of the risk to counterparties of uncleared FX derivatives. The onus for a careful analysis of this type should fall on those who propose exemptions from the principles that have been laid down by legislators. In my view, unless treated by regulation, counterparty risk in the FX derivatives market could easily grow substantially. I recommend that we build robust clearing and settlement systems in all financial markets presenting substantial counterparty exposure, in order to control systemic risk. At a minimum, further analysis is needed before an exemption of FX derivatives from clearing should be finalized.

## 2. HOW MIGHT THE EFFECT OF CLEARING OF FX DERIVATIVES BE OBTAINED WITHOUT DISRUPTING THE DELIVERY OF CURRENCIES THROUGH CLS BANK?

Figure 1 illustrates the settlement of FX contracts through CLS, without clearing. Contract FX1 commits Bank A to deliver 100 million Euros to Bank B, against 150 million U.S. Dollars, on a specified future delivery date. On the delivery date, CLS Bank will attempt to collect 150 million dollars from A and 100 million Euros from B. If and when both deliveries arrive, CLS passes the dollars to B and the Euros to A. This procedure is called “payment versus payment.” Both parties are protected from default losses to the extent that the dollar price of the Euro on the delivery date is close to the original forward price, which in this example \$1.50. If the price of the Euro rises significantly above \$1.50 before delivery, Bank B is exposed to the failure of Bank A. Likewise, if the price of the Euro falls below \$1.50, Bank A will be exposed to losses associated with the default of Bank B. Similarly, as illustrated, contract FX2 commits Bank A to deliver British pounds to Bank C against Swiss Francs.

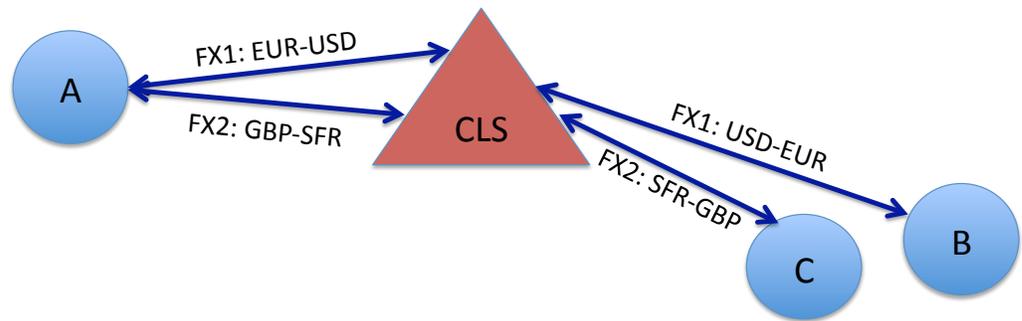


FIGURE 1. Foreign exchange contracts without clearing. Contract FX1 commits Bank A to deliver 100 million Euros to Bank B, against 150 million U.S. Dollars, on a specified delivery date. On the delivery date, CLS Bank will attempt to collect the gross amount of Euros from A, and the gross amount of dollars from B. If and when both deliveries arrive, CLS passes the Euros to B and the dollars to A. If the Euro increases significantly in value relative to the U.S. dollar before delivery, Bank B will be exposed to the failure of Bank A. Conversely, if the value of the Euro falls significantly relative to the dollar, Bank A will be exposed to the failure of Bank B. Similarly, contract FX2 commits Bank A to deliver British pounds to Bank C against Swiss Francs.

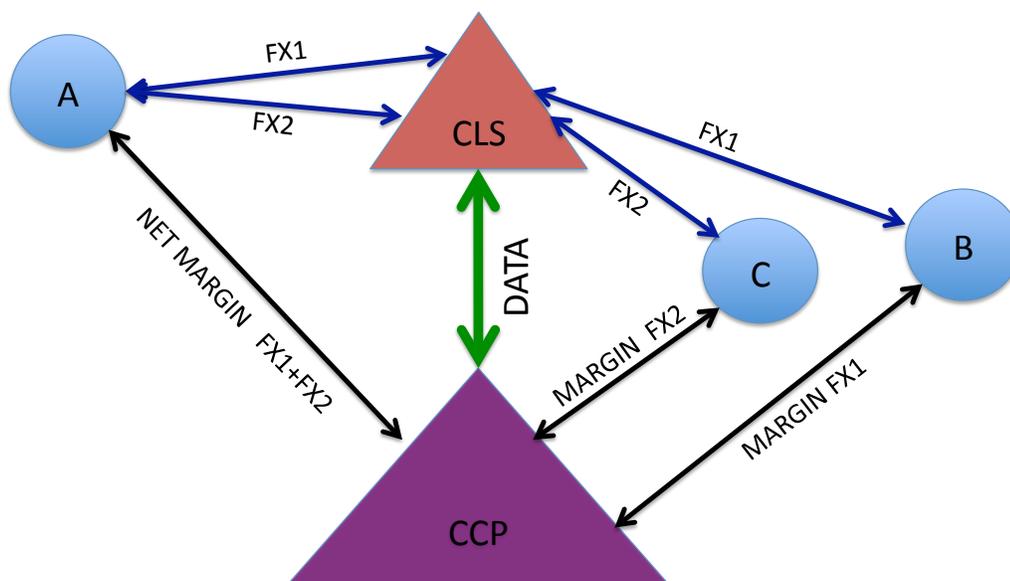


FIGURE 2. Foreign exchange contracts, with effective clearing through a quasi-CCP. CLS Bank processes the currency deliveries for FX1 and FX2 exactly as for the case without clearing. Each day before delivery, a special-purpose financial utility obtains FX contract data from CLS Bank. This financial utility could be maintained by an existing central clearing party (CCP). The CCP computes the mark to market values of the outstanding FX contracts, in terms of a stipulated margin currency, such as U.S. dollars. The CCP collects additional margin from Bank A if the net valuation of FX1 and FX2 has moved against Bank A since the previous day, or releases margin to Bank A if the net valuation has moved in favor of Bank A. Once an FX contract is terminated through the delivery of currencies at CLS, the margin held by the CCP against that contract is released to the margin provider. If, for example, Bank A fails at or before delivery with a net negative mark to market valuation of FX1 and FX2, these FX contracts terminate and mark-to-market valuations are determined by the CCP. The CCP covers any losses of market value to Banks B and C by applying the initial and variation margin of A as well as any variation margin held from B on FX1 or from C on FX2. Additional default management resources, such as default guarantee funds, may be available.

Figure 2 illustrates a potential approach for obtaining the effect of clearing for those FX derivatives that are settled at CLS Bank. As the the dollar-Euro contract FX1 increases in market value to Bank A through fluctuations in currency prices, variation margin payments are collected from Bank B by a special-purpose financial utility. The financial utility could be operated by a traditional central clearing party (CCP). The margin payments are made in an agreed standard margin currency, such as U.S. dollars. If the market value of FX1 for Bank A subsequently declines, a corresponding amount of the margin that had been posted by Bank B is returned to Bank B.

Margin payments by Bank A are based on the total net market value of all FX contracts held by Bank A, in this case the total value of contracts FX1 and FX2. In particular, losses on FX1 may be offset by gains on FX2, and vice versa, in determining the net margin amount. As this net value moves against Bank A, margin is paid by Bank A to the CCP.<sup>7</sup> The ability to net losses with some counterparties against gains with other counterparties allows substantial reduction in counterparty exposure. This multilateral netting effect could be especially strong in the FX market given the large number of potential participants.<sup>8</sup>

Once an FX contract delivers through CLS, the margin held by the CCP against that contract is released to the margin provider. If Bank A fails at or before delivery with a net negative mark-to-market valuation of FX1 and FX2, the FX contracts terminate and mark-to-market valuations are determined. The CCP covers any losses of market value to Banks B and C by applying the initial and variation margin of A as well as any variation margin held from B on FX1 or from C on FX2. Additional default management resources, such as default guarantee funds, may be available.<sup>9</sup>

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<sup>7</sup>Because currency deliveries would be made at CLS rather than at the CCP, it may be natural to design the margining contracts so that the CCP holds variation margins in a segregated account on behalf of in-the-money members. The CCP would send these margin deposits back to out-of-the-the-money members upon a notice of delivery of currencies at CLS Bank. For example, suppose that just prior to the delivery date of contract FX1, the price of the Euro is \$1.70, so that Bank A is in the money by \$20 million. If this margin has been paid to Bank A as it was received from Bank B, then the CCP would need to collect the margin from Bank A upon the delivery of currencies, in order to return the margin to Bank B. Industry participants and regulators may wish to consider other alternatives. CLS Bank would have access to margin account data held at the CCP in order to ensure that a currency delivery is not processed unless there is sufficient margin posted by each party to cover remaining open positions.

<sup>8</sup>For a quantitative analysis of the effect of multilateral netting on lowering counterparty exposure, see D. Duffie and H. Zhu, “Does a Central Clearing Counterparty Reduce Counterparty Risk?” April, 2011, forthcoming, *Review of Asset Pricing Studies*.

<sup>9</sup>For the default management practices of CCPs and a discussion of the determination of initial margin requirements, see D. Duffie, A. Li, and T. Lubke, “Policy Perspectives on OTC Derivatives Market Infrastructure,” Staff Report Number 424, Federal Reserve Bank of New York, January, 2010.

In order to lower operational costs, FX contracts with a sufficiently short maturity, for example under one week, could be exempted from a clearing requirement. Likewise, exemptions could be provided for FX derivative contracts in relatively illiquid currency pairs, or for customized financial products with small notional amounts. Finally, one could exempt from clearing those market participants whose total notional derivatives positions are below some reasonable quantity threshold. One must be cautious, of course, to avoid regulations that unintentionally encourage the migration of trade to exempted products or participants.

International standards established by CPSS-IOSCO<sup>10</sup> for the central clearing of derivatives do not contemplate the elimination of delivery settlement risk at one financial utility (in this case, CLS Bank) and the indemnification of losses of net market value due to counterparty failure in a separate financial utility. The CPSS-IOSCO standards call for this combined effect of clearing to be obtained instead by a single financial utility that becomes the legal counterparty to the original buyer and seller. Thus if the U.S. Treasury wishes to adopt an alternative approach such as that proposed here, it may find it necessary to issue an exemption with respect to the manner in which the effect of clearing is to be obtained.

### 3. WHAT IS THE FOUNDATION FOR EXEMPTION FROM OTHER DODD-FRANK REQUIREMENTS?

I have not seen any effective argument concerning why FX markets should be exempted from Dodd-Frank requirements that are unrelated to clearing.

For example, Dodd-Frank mandates that trades in standardized OTC derivatives must be executed on a swap execution facility (SEF), with the goal of increasing the competitiveness of the OTC market. In its Determination, the U.S. Treasury reports<sup>11</sup> that “approximately 41 percent and 72 percent of foreign exchange swaps and forwards, respectively, already trade across a range of electronic platforms and the use of such platforms has been steadily increasing in recent years. The use of electronic trading platforms provides a high level of pre- and post-trade transparency within the foreign exchange swaps and forwards

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<sup>10</sup>See “Recommendations for Central Counterparties,” Committee on Payment and Settlement Systems Technical Committee of the International Organization of Securities Commissions, Consultative Report, Bank for International Settlements, March 2004.

<sup>11</sup>U.S. Treasury, “Determination of Foreign Exchange Swaps and Foreign Exchange Forwards under the Commodity Exchange Act,” April, 2011, page 12.

market. Thus, mandatory exchange trading requirements would not significantly improve price transparency or reduce trading costs within this market.” Taken at face value, this would seem a logical foundation for an exemption of interest rate swaps and credit default swaps from the Dodd-Frank “exchange-trading” requirements once SEF-based trade in these markets achieves levels of penetration similar to that of FX derivatives. In any case, I do not view these levels of SEF-based trading as meeting the intent of Congress. Some additional argument would be needed as a proper foundation for exemption from the Congressional requirement of SEF-based trading of standardized OTC derivatives.

For uncleared derivatives contracts, Dodd-Frank requires minimum levels of collateralization of counterparty exposure. I am not aware of whether the proposed exemption of FX derivatives from the requirements of the Commodities Exchange Act as “swaps” would also exempt uncleared FX derivatives from minimum bilateral collateral requirements. To exempt both cleared and uncleared FX derivatives from minimum regulatory standards for collateralization or margin would, in my opinion, be a mistake.

The costs to FX market participants associated with the Dodd-Frank swap requirements that are described in the Treasury Determination are indeed relevant. These costs can be significant, and will also apply to participants in OTC markets that are not exempted. Both the Dodd-Frank Act and the rules that interpret it are written with consideration of costs and benefits. For example, the SEC and the CFTC have exempted certain end users with legitimate commercial hedging needs from some of the clearing and other requirements of Dodd-Frank.

#### 4. CONCLUSION

In conclusion, I believe that further analysis is warranted before finalizing the exemption of FX derivatives from the clearing and competitive trading requirements of the Dodd-Frank Act. Additional analysis, if carefully conducted, would likely reveal that the proposed exemptions are inappropriate. Perhaps the Treasury would consider an exemption of FX derivatives from some of the requirements of the Commodities Exchange Act as “swaps,” while mandating the economic effect of clearing, for example through the mechanism proposed in this comment. I also recommend that any exemption provide some minimum standards for competitive trading of standardized FX derivatives and for some minimum collateral requirements for uncleared FX derivatives.