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The OTC derivatives markets after financial reforms

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Over the past five years, over-the-counter (OTC) derivatives markets have received heightened regulatory attention, due to their opaqueness, size and interconnectedness, with a view to improving the robustness, safety and resilience of this market segment. There has been continued progress in the follow-up to the G-20 commitments, with the EU (EMIR, MIFID II, CRD/CRR IV, MAD) and the US (Swap Execution Facility or SEF, Title VII of Dodd-Frank Act, Basel III) leading in the implementation timelines and capturing approximately 80-90% of the overall market. Based on the data compiled for the yearly ECMI Statistical Package, this commentary provides a snapshot of the current status of the global OTC derivatives markets by: i) identifying general trends over the past decade, ii) looking at the changes in the market structure (instruments and participants), iii) estimating the uncollateralised derivatives exposure and iv) examining the relationship between OTC derivatives and exchange-traded derivatives (ETD).

Recent market developments

Trends in OTC (over-the-counter) derivatives markets can be identified by tracking in parallel upward/downward movements in the gross notional value of outstanding contracts and the gross market value. Over the past seven years, however, the notional amount outstanding has been altered by the increasing uptake of central clearing and the growing use of portfolio compression services or other risk-mitigation procedures. Central clearing increases the reported notional amounts outstanding due to double-counting. When bilateral counterparties, A and B, centrally clear a contract, this is replaced by an equivalent contract between A and a CCP (central counterparty) and another equivalent contract between B and the same CCP. Multilateral netting performed by the CCPs is assumed to be four times more effective than bilateral netting. This, in turn, is expected to reduce the margins to be posted. Compression of both bilateral and cleared trades, on the other hand, reduces the notional outstanding as economically redundant transactions can be 'torn up' and replaced with a smaller set of trades.

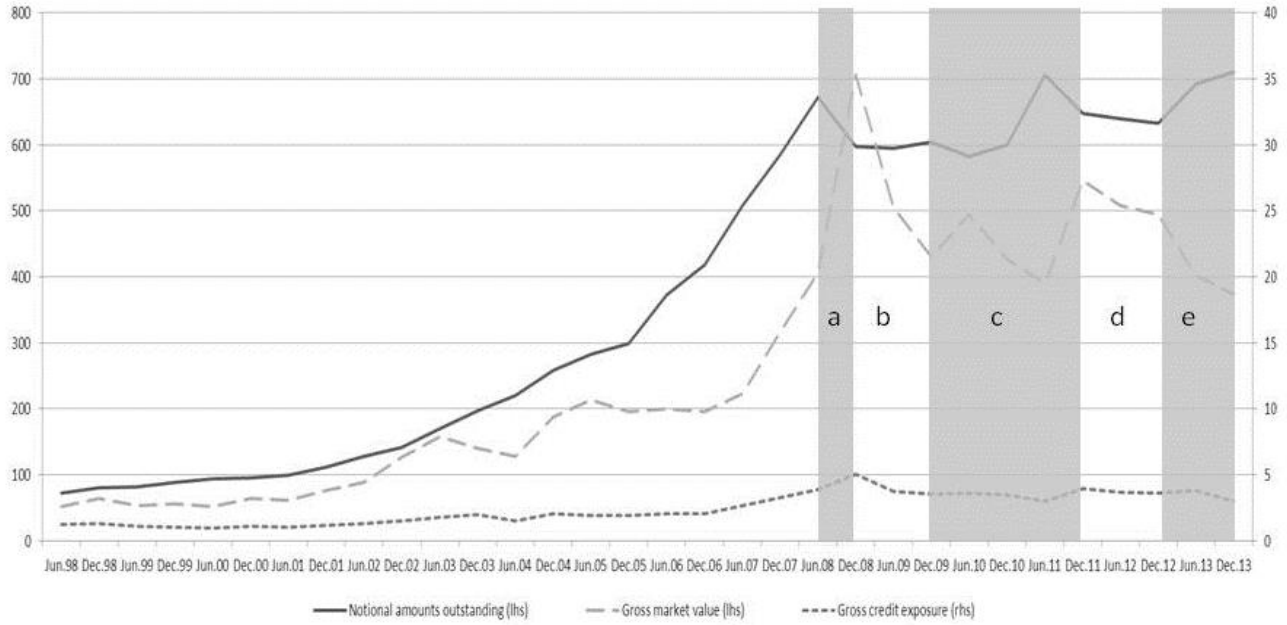
Despite these distortions on notional values, three main trends (*Figure 1*) emerged from reaction to market events: 1) the financial crisis or the European sovereign debt crisis (phase 'a' and 'c'), 2) endogenous market structure adjustments (phase 'b' and 'd'), and 3) potential structural effects caused by more exogenous factors (phase 'e').

In the last decade, the OTC derivatives market showed an impressive rate of growth, reaching its peak at end-2013 with more than $710 trillion in notional amounts outstanding. Although the OTC derivatives market did not trigger the financial crisis, cases such as the collapse of AIG and Lehman Brothers took centre stage and brought to the fore the systemic importance of derivatives for the overall financial system.[1] From June to December 2008, the notional value of all types of OTC contracts (market activity) went down by 11.06% while the market value soared by 73.46% to $35 trillion. The gross credit exposure hit a record high of $5 trillion, with only limited collateralised exposure.

Note: The main G20 areas of commitment were: i) central clearing of standardised OTC derivatives, ii) exchange/electronic platform trading of standardised OTC derivatives, iii) trade reporting to trade repositories , iv) initial and variation margin requirements for non-centrally cleared OTC derivatives and v) bank capital requirements for derivatives exposures. In April, BCBS (2014a) published standards for calculating regulatory capital for banks' exposures to central counterparties (CCPs), which will take effect on 1 January 2017. In 2014, the following international standards and/or guidance are expected: i) a report from IOSCO, in consultation with BCBS and CPSS, on risk mitigation standards for non-centrally cleared derivatives; ii) publications by the FSB and CPSS-IOSCO on the resolution and recovery of financial market infrastructures (FMIs), including CCPs and iii) CPSS-IOSCO safeguards and quantitative disclosure standards for CCPs.

[1] In effect, the systemic risk in this market is connected to the volatility in the underlying markets, liquidity and counterparty risk.

*Figure 1. Notional amounts outstanding, gross market value, gross credit exposure of OTC derivatives ($ tn)**



* The *notional amount outstanding* represents a market size indicator and is defined as the gross nominal or notional value of all deals concluded and not yet settled on the reporting date. However, this amount is generally not entirely exposed to risk. The amount at risk in derivatives contracts is a function of the price level and/or volatility of the underlying asset/market variable used in the determination of contract payments, the maturity and liquidity of contracts and the creditworthiness of counterparties. In addition, they also depend on whether an exchange of principal actually takes place between counterparties. The *gross market value* represents the cost of replacing all outstanding contracts at current market prices. Finally, *gross credit exposure* looks at the gross market values after legally enforceable bilateral netting but before collateral is taken out. These two last measures might be better measures of risk.

Source: BIS (2014).

Uncertainty about counterparty risk increased the fear of another bankruptcy like Lehman Brothers, thereby driving up the risk of systemic losses derived from knock-on effects (also called 'cascade' effects) and a chain of banks bankruptcies. As widespread government intervention alleviated market pressures, by the end of December 2009, market activity recovered modestly by 1%, whereas the gross market value dropped by 43.14%. The latter indicator signalled better underlying market conditions with a decline in market volatility and stabilising interest rate levels and credit spreads.

Although the worst part of the crisis was over, the underlying market stability did not last for long. As the European sovereign debt crisis started in the first half of 2010, market activity continued to rise, surpassing pre-crisis levels in June 2011 ($706 trillion), while the market value of exposures constantly decreased but with more volatility due to uncertainty in the sovereign bond markets in particular. Between June and December 2011, in particular, the markets went through another round of turbulence due to fears of a euro-area break -up. The issuance of new instruments decreased and the market value of exposures sharply sloped upwards, with a remarkable increase of 40% – the highest level recorded since end-2008. This largely happened in the interest rate derivatives segment with volatility returning to the high peaks of October 2008. After December 2011, a massive intervention by the ECB to cool down funding costs for eurozone banks improved market conditions, reflected once again in lower market activity and lower gross market value of exposure (contracting by 10%).

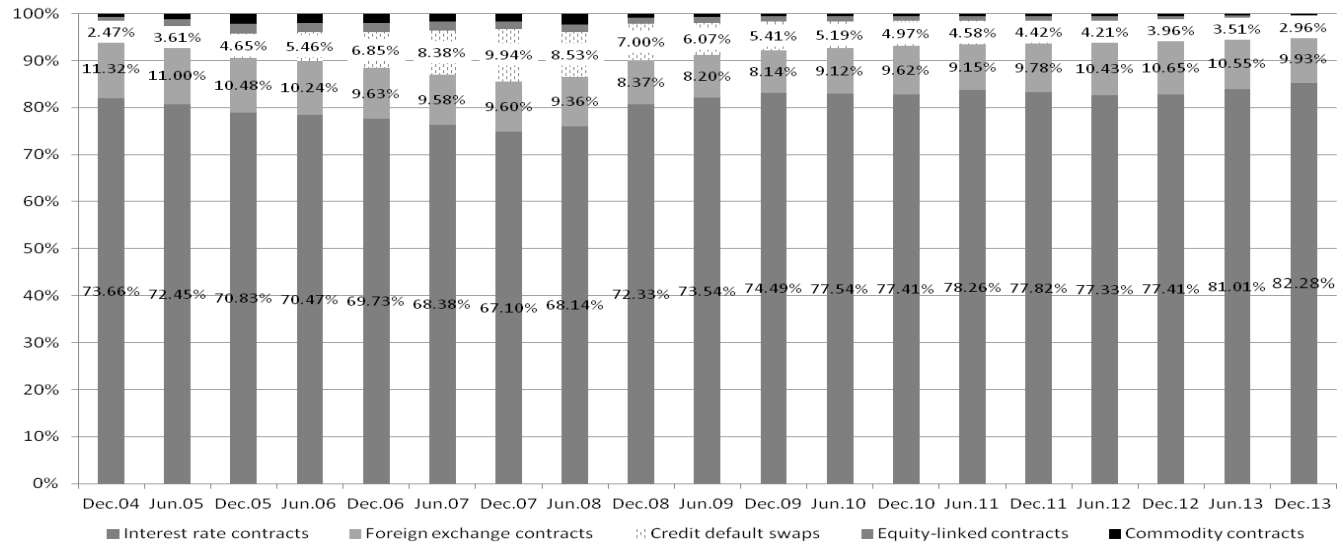
Finally, and most interestingly, from December 2012 to the present, a decoupling of investment trends in derivatives from underlying market conditions can be observed. While the notional amounts outstanding increased steadily, indicating higher market activity – driven perhaps by uncertainty about the future outlook, the gross market value continues to decline, as reflected in improved market conditions. More data on trade counts collected by ISDA[2] confirms a structural upward trend in market activity in the last two years and most recently a drop caused by the increasingly widespread use of compression services.

Evolution of market structure: Instruments and participants

The distribution of derivatives transactions amongst the different instruments has remained relatively constant over the past decade (as shown in *Figure 2*). Interest rate derivatives (IRD) are the largest segment with an average market share of 73%, followed by the foreign exchange derivatives (FX) category that account for 13%. Credit default swaps (CDS), equity-linked and commodities derivatives represent together approximately 7% of the overall market.

[2] Data available at www.swapsinfo.org.

Figure 2. Distribution of OTC derivatives by asset class (% of notional amounts outstanding)

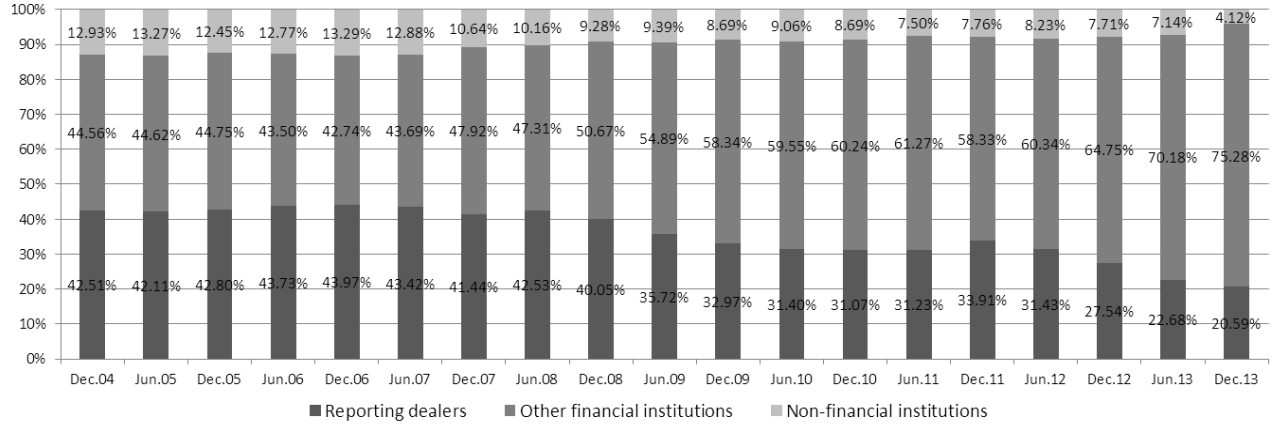


Source: BIS (2014).

Prior research suggests[3] that the OTC derivatives market is concentrated, with a highly interconnected set of "core" participants dominating a less interconnected "periphery" representing the non-financial entities.

Figure 3 confirms that over 85%-90% of notional is being handled by reporting dealers and other financial institutions.

Figure 3. Distribution of OTC derivatives by counterparty (% of notional amounts outstanding)



Source: BIS (2014).

A change within the category of financial institutions, however, can be observed. In the past five years, some dealers exited the derivatives markets or reduced their involvement in OTC derivatives market-making due to a refocusing of their business models, capital shortages or deleveraging, while other financial institutions entered the market for business or risk-management purposes. The latter group includes central counterparties, banks, funds and non-bank financial institutions, which may be considered as financial end users (e.g. mutual funds, pension funds, hedge funds, insurance companies and others). In addition, the portion represented by the non-financial entities has slightly declined from the levels prior to the financial crisis. Most notably, at the end of 2013 the non-financial institutions accounted only for 4.12% of the market activity. This may be the result of a reduction in hedging activities due to either sluggish economic activity/uncertain business prospects or anticipated rise in the total cost of OTC derivatives use.[4]

[3] See Craig and von Peter (2010), Valiante (2010, 2012), Markose (2012), Langfield, Liu and Ota (2013).

[4] Both the Dodd-Frank Act and EMIR include clearing exemptions for sovereigns, supranationals and corporates

An update on central clearing

According to FSB (April 2014),[5] central clearing of OTC derivatives remains most well established for interest rate and credit derivatives, while limited progress has been made in other asset classes. At the end of February 2014, the cleared segment of IRD measured approximately $191 trillion on a single-count basis. This represented around 59% of the transactions that could be cleared on CCPs' current platforms ($325 trillion, i.e. single-currency interest rate swaps, forward rate agreements, basis swaps and overnight indexed swaps) and 46% of G15 dealers' notional amounts outstanding ($413 trillion) reported to the DTCC.[6] Roughly $56 trillion of IRD cannot be cleared by current CCPs platforms (swaptions, cross-currency swaps, options, inflation swaps widely used by corporates, pension funds and insurance companies), plus approximately $10 trillion in clearable IRD in non-clearable currencies and a remaining part of $135-155 trillion.

For credit derivatives, the gross notional outstanding amount across all market participants (not just large dealers, and adjusted for multiple-counting) was $18 trillion at end-February 2014. Around $8.2 trillion (47%) of this total amount outstanding could be centrally cleared given, existing credit derivatives clearing offerings of CCPs, while $3.3 trillion (19%) of the total amount outstanding had in fact been centrally cleared.

In line with recent market developments, IMF (2010) analysis suggests that a substantial fraction of the derivatives market will remain uncleared.[7] One-quarter of interest rate swaps, one-third of credit default swaps and two-thirds of other OTC derivatives will not be sufficiently standardised, liquid, or complex to be cleared. With regard to compression, market participants have eliminated $239 trillion in notional IRD since 2009, according to the post-trade infrastructure provider TriOptima. The amount compressed includes $185.5 trillion of cleared and $53.9 trillion of non-cleared IRD. According to ISDA (2013), a cumulative amount of $85 trillion of CDS has been compressed since 2007, including $20.3 trillion in the past three years.

Estimating the uncollateralised OTC derivatives exposure

Reducing the counterparty risk is an important part of reforming OTC derivatives markets. This is expected to follow from better collateralisation of OTC derivatives exposures, either through bilateral credit support agreements or central clearing. At the end of 2013, according to ISDA (2014a), over 90% of bilateral OTC transactions were subject to collateral agreements with cash and government securities accounting for roughly 90% of the $3.2 trillion estimated amount of collateral in circulation. The reported collateral received and delivered against $407 trillion in notional amounts outstanding of centrally cleared OTC derivative transactions totalled roughly $295 trillion. [8]

At end of 2013, the estimated uncollateralised exposure amounted to $1.45 trillion (see

Figure 4), representing 47.72% of the gross credit exposure. As a result of current reforms and technological developments, the uncollateralised exposure has been constantly going down as the market developed, even before the crisis and despite the growth of volumes in the market. After the initial spike in uncollateralised exposure during the worst moment of the financial crisis, the combination of risk aversion, between end of 2008 and 2009, and market reforms, in the last couple of years, have pushed additional collateralisation into the system. These results are in line with a number of studies that looked at the expected increase in collateralisation as part of the envisaged OTC derivatives markets reforms. According to a report prepared by the Macroeconomic Assessment Group on Derivatives (MAGD,

(subject to thresholds in the EU) that use derivatives to hedge commercial risk. A three-year carve-out for European pension funds was also included in EMIR.

[5] In the US, mandatory central clearing is in effect for specified classes of interest rate swaps (fixed-to-floating, basis, forward rates, overnight index swaps) and index credit default swaps for major swap participants and so-called active funds; for commodity pools, banks and private funds; and for accounts managed by third-party investment managers, pension plans and other entities. In the EU, the first mandatory clearing obligations are expected in Q4 2014 or early 2015.

[6] DTCC data are used. Close to 99% of BIS data on the IRD and CDS notional amounts outstanding had been reported to DTCC GTR. The BIS semi-annual survey has reported amounts outstanding that range from 1% to 3% higher than the DTCC GTR for IRD. The main difference between the two reference sources is that the DTCC GTR is more granular and includes data based on the ISDA product taxonomy.

[7] Higher initial and variation margin requirements for non-centrally cleared OTC derivatives to be phased in from December 15th to November 19th.

[8] The ISDA Margin Surveys track the gross amount of collateral defined as the sum of all collateral delivered and all collateral received by survey respondents. It does not adjust for double-counting of collateral assets, which takes at least two forms. The first occurs when one survey respondent delivers collateral to or receives collateral from another respondent. The second source of double-counting is collateral re-use, sometimes called re-hypothecation, where collateral is delivered from one party to another and then delivered to a third party, and so on.

September 2013), these reforms will result in the total amount of collateral used to back trades rising to between €1.1 trillion and €1.8 trillion, with a central estimate of €1.3 trillion.

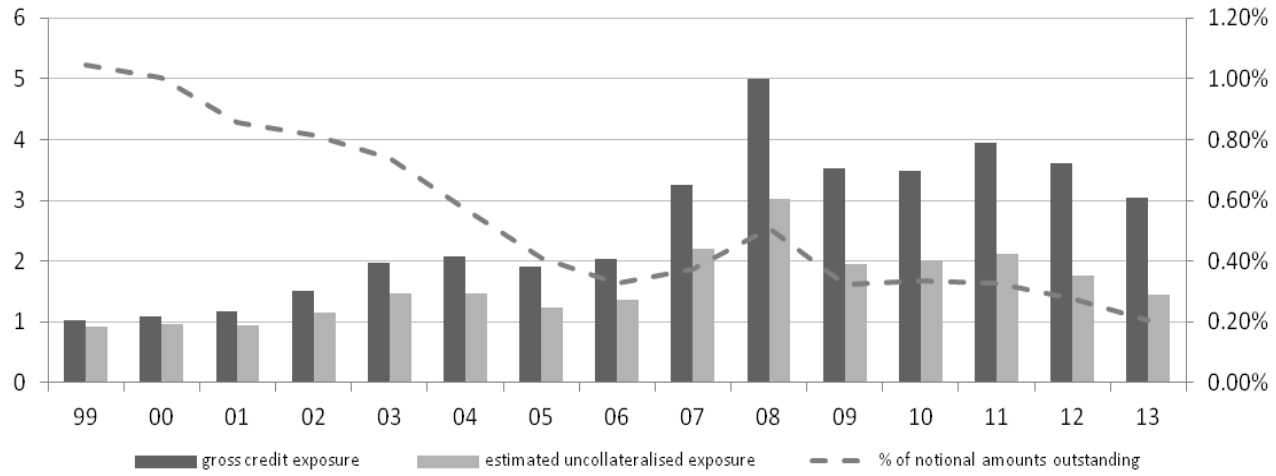
As a side note, it is essential to optimise the use of collateral and to make collateral pools more fungible by promoting interoperating CCPs (mainly through cross-margining agreements) in order for the benefits promised by central clearing to be effectively delivered. However, while CCPs have a valuable function in reducing counterparty risk compared to the regime of bilateral exposure, they are not a panacea for eliminating it. CCPs face a wide range of risks, such as legal, credit, liquidity, investment and operational risks and may become a new source of systemic risk for financial markets if not properly managed. It is therefore of the utmost importance for CCPs to establish adequate levels of capital, a risk-based effective margining system, a robust default management waterfall structure as well as clear governance and conduct requirements for all members in order to prevent that e global OTC derivatives reforms from simply substituting one group of "too big to fail" (TBTF) entities for another.[9] At this stage, the issue of setting up viable arrangements for providing central bank liquidity to CCPs as a last line of defence remains very complicated.

In the EU, EMIR provides the regulatory and supervisory framework for CCPs. These are subject to organisational, conduct of business and prudential requirements defined in the ESMA's Regulatory Technical Standards (No. 152/2013 and 153/2013) covering points such as capital requirements, margining, default fund, liquidity risk controls, segregation and portability of positions and collateral, investment policy and stress testing. On 5 October 2012, the Commission launched a consultation on a possible framework for the recovery and resolution of financial institutions other than banks, including CCPs and CSDs.

In the US, the FSOC (Financial Stability Oversight Council) is authorised under Title VIII, section 131, of the Dodd-Frank Act to designate a Financial Market Utility (FMU) as "systemically important" in cases where a failure or a disruption to the functioning of an FMU could create, or increase, the risk of significant liquidity or credit problems spreading among financial institutions or markets and thereby threaten the stability of the US financial system. Currently designated FMUs, including five clearing entities supervised by the Board, the CFTC or the SEC, are subject to heightened prudential and supervisory provisions aimed at promoting robust risk management, safety and soundness.

With regard to international standards and/or guidance for FMIs, including CCPs, the consultation periods for both the CPSS and IOSCO consultation report on recovery of FMIs and the FSB implementation guidance on FMI resolution have now closed, and both final reports are expected to be published in the first half of 2014.[10]

*Figure 4. Estimation of the uncollateralised exposure ($ tn)**



* Collateralisation further reduces gross credit exposure. In order estimate the level of under-collateralisation, 50% of the collateral in circulation (as estimated in the ISDA Margin Surveys) is subtracted from the gross credit exposure (as reported in the BIS semiannual surveys).
Source: Authors' own calculations based on BIS and ISDA data.

Trade execution requirements

It is useful to look at the evolution of the OTC derivatives and ETD notional amounts outstanding and their market shares relative to the overall trading activity to identify if business has shifted from the OTC space to exchange-based trading. There is little

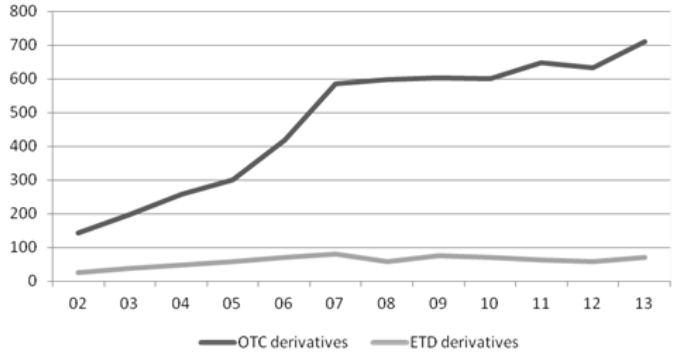
[9] See Lannoo (2014).

[10] See CPSS-IOSCO (2013, 2012), FSB (2013).

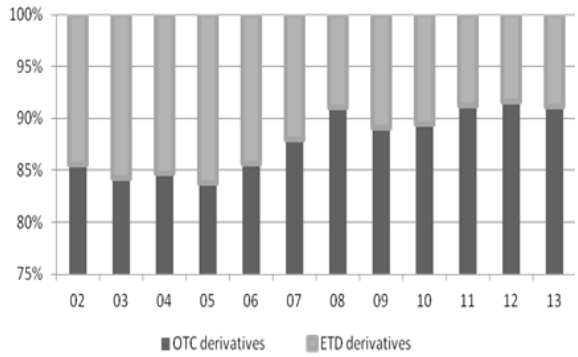
evidence (*Figure 5*) that the market share of the (electronic) trading platforms has gathered steam. On the contrary, the ratio of exchange-traded derivatives to overall derivatives trading seems to have decreased slightly after 2009, from approximately 11% to 8.85% at the end of 2013, with a corresponding opposite trend in the OTC derivatives market share.

Figure 5. OTC versus ETD activity[11]

a) notional amounts outstanding ($ tn)



b) market share (%)



Sources: Authors' own calculations from BIS and WFE data.

These findings have to be interpreted in the context of mandatory trading obligations not being in force in many jurisdictions. In the US, the requirement to execute certain IRD and CDS on Swap Execution Facilities (SEFs) and Designated Contract markets (DCMs) took effect only on 15 February 2014 for market participants. While an initial regional market fragmentation in the Euro IRS emerged, caused by the obligation to trade with US person on US SEFs (ISDA, 2014b), it is early to make a final assessment on the impact of trading obligations. Effects will become clearer when the EU will complete its piece of financial reforms. In effect, the EU agreed on the MiFID 2 in Q2 2014 and is now working to finalise the technical details of the legislation. This legislation is likely to come into force at the end of 2016 at the earliest, formalising the already voluntary moves that EU participants have made towards a greater use of organised trading platforms (such as MTFs), already used under existing legislation for trading of some derivatives and fixed income.

Conclusions

- Over the past five years, the OTC derivatives market showed an impressive resilience in levels of market activity, which are now above pre-crisis levels in outstanding notional value. This confirms its systemic importance. Current volatility of the gross market values and gross credit exposures can be attributed to the uncertain market conditions for the global economy.
- Distribution of derivatives instruments has remained relatively constant over the past decade. Central clearing and portfolio compression is developing fast for interest rate and credit derivatives, while progress in other asset classes is fairly slow.
- The OTC derivatives market is structured with a highly interconnected system of financial institutions. But composition is changing from a dealer-driven business to a more diversified environment, with other financial institutions (such as CCPs and investment funds) playing a greater role.
- Uncollateralised exposure is estimated in constant decline as a result of better collateralization of OTC derivatives exposures, either through bilateral collateral agreements or the use of CCPs, and improvement of market conditions.
- A structural shift of OTC derivatives to organised trading platforms is still not happening. Despite high volumes of on-exchange commodity derivatives and increasing volumes of interest rate derivatives traded on organized platforms, the market for OTC derivatives continues to be bigger than the exchange-traded side of the market, but the situation may rapidly change as the trading obligations gradually enter into force across key jurisdictions.

It is too early to conduct a comprehensive assessment of the effectiveness of the regulatory reforms in meeting the G-20's underlying objectives of

[11] BIS data have been supplemented by World Federation of Exchanges (WFE) data on exchange-traded commodities derivatives. The amounts outstanding of commodities derivatives were estimated by discounting the total end-year notional turnover value of commodities options and futures by a 'decompressing factor' equal to 0.0338977. This methodology was used in D. Valiante (2013), *Commodities Price Formation: Financialisation and Beyond*, CEPS-ECMI Task Force Report, pp. 32-33, Centre for European Policy Studies, Brussels.

increasing transparency, mitigating systemic risk and protecting against market abuse in the OTC derivatives market. The benefits and costs of the underway reforms will largely depend on how these will interact with derivatives portfolios and affect the structure of the derivatives market more broadly. There are multiple factors that may influence the impact of OTC regulatory reforms, such as the netting efficiency, collateral availability, market liquidity, exposures fragmentation, margining and market volatility, safeguards for CCPs, changes in hedging practices and risk-taking behavior and cross-border regulation.

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